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**Study on mandatory origin labelling for
pig, poultry and sheep & goat meat**

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ABBREVIATIONS

BEUC	Bureau européen des unions de consommateurs/ European Consumer Organisation
BRC	British Retail Consortium
B2B	business to business
B2C	business to consumer
BSE	Bovine Spongiform Encephalopathy
CAP	Common Agricultural Policy (of the EU)
CAPRI	Common Agricultural Policy Regionalised Impact modelling tool
CGE	computable general equilibrium
CN	Combined Nomenclature
COOL	country of origin labelling
CWE	carcass weight equivalent
Defra	Department for environment, Food and Rural Affairs (UK)
DG AGRI	Directorate-General for Agriculture and Rural Development
DG SANCO	Directorate-General for Health and Consumers
DG TRADE	Directorate-General for Trade
EC	European Commission
EDM	equilibrium displacement model
EU	European Union
FAO	Food and Agriculture Organisation
FVO	Food and Veterinary Office
GAUG	Georg-August-Universität Göttingen / University of Göttingen
GlobalGAP	Global Good Agricultural Practice
GM	genetically modified
GS1	Global Standard 1
GTAP	Global Trade Analysis Project
IFIP	Institut du Porc
IFS	International Food Standard
IRTA	Institut de Recerca i Tecnologia Agroalimentàries
ISO	International Standards Organisation
IT	information technology
ITAVI	Institut Technique de l'Aviculture
LEI	LEI Stichting Dienst Landbouwkundig Onderzoek (DLO foundation) / LEI Agricultural Economics Research Institute
MCDM	multi-criteria decision-making
MCM	multi-criteria mapping
MCOOL	mandatory country of origin labelling
MS	Member State
MSM	Mechanically separated meat
PDO	Protected Designation of Origin
PE	partial equilibrium
PGI	Protected Geographical Indication
QUID	Quantitative Ingredient Declaration
SPS	Sanitary and phytosanitary
SWOT	strengths, weaknesses, opportunities, threats
t	tonne
TBT	Technical Barriers to Trade
TRACES	Trade Control and Export System (EU)
TSG	Traditional Speciality Guaranteed
UECBV	Union Européenne du Commerce du Bétail et de la Viande /

	European Livestock and Meat Trading Union
USDA	United States Department of Agriculture
WTP	willingness to pay
WP	Work Package
WTO	World Trade Organisation

1 INTRODUCTION

Regulation (EU) No 1169/2011 on the provision of food information to consumers provides for mandatory indication of country of origin or place of provenance for unprocessed meat of pigs, poultry, sheep and goats, as from 13 December 2014.

The Regulation requires the adoption of implementing acts, to be drawn up following impact assessments and consideration of options for expressing the country of origin or place of provenance, in particular with regard to each of the following determining points in the life of the animal: place of birth; place of rearing, and; place of slaughter [Article 26 (9) of the Regulation].

The Regulation includes the possibility to differentiate products from different origins at EU level, country level and also indicate origin from a particular region within a country.

Because of the growing competition on international markets, consumer sensitivity to origin has become a relevant issue for commercial managers as well as policy makers. Origin is important for retailers, who seek to maximise the benefits of favourable connections to specific countries or regions on consumer product evaluations ([Leclerc et al., 1994](#), and [Keller, 2003](#)).

The study examines and compares different options of implementing origin labelling for fresh and frozen meat (including minced meat and cuts) of pigs, poultry and sheep and goats, with the aim of giving appropriate origin information to consumers, whilst not causing disproportionate burdens on the meat supply chain, trade, consumers and the administration.

Investigation of the options used a variety of means including literature review, internet searches, stakeholder consultations and case studies.

The impact of implementing mandatory origin labelling was assessed considering the following areas:

- Food supply chain: the economic impact on the food supply chain was assessed in the context of costs and feasibility of applying origin labelling, taking into account the existing rules for identification of animals and traceability, both during the life of animals and (for meat) until the final consumer stage, i.e. from farm to fork. Trade at the level of operators was also considered, taking into account the current situation as regards movements during the life of the animals as well as trade at different stages of the meat supply chain.
- Trade: the impact on intra-EU trade and on trade with third countries for each of the species was analysed from the perspective of possible distortion of the global trade flows due to additional labelling requirements and bearing in mind the obligations in the context of the World Trade Organisation (WTO).
- Consumer behaviour: the study also analysed consumer behaviour as regards different types of origin indication as well as the level of willingness to pay for information related to origin of meat (geographical level and stage of the life of the animal).
- Administrative burden: the impact on the administrative burden on producers, traders and the Member States, as well as on the strengthening of the controls to ensure a proper system of origin labelling, was studied.

The study evaluates the situation and possible impact of the implementing options of mandatory origin labelling across the European Union. Using indicators derived from the case studies, it was possible to develop a classification that enabled the impacts to be analysed across the EU.

2 CHARACTERISTICS OF THE SUPPLY CHAIN

2.1 Relevant legislation

2.1.1 EU legislation relevant for mandatory origin labelling of unprocessed pre-packed meat

The indication of origin is currently mandatory for beef and beef products and it has created consumer expectations. The Commission's impact assessment (SEC, 2008) on general food labelling confirmed that the origin of meat appears to be the consumers' prime concern.

Accordingly, Regulation (EU) No 1169/2011 on the provision of food information to consumers requires, amongst others, mandatory indication of country of origin or place of provenance for unprocessed meat of pigs, poultry, sheep and goats falling within the Combined Nomenclature (CN) codes listed in Annex XI thereto from 13 December 2014. The modalities of this requirement will be laid down in a Commission implementing act, following an impact assessment, by 13 December 2013.

The mandatory origin indication could vary from one type of meat to another taking into account the principle of proportionality and the administrative burden for food business operators and enforcement authorities. It applies to 'pre-packed' unprocessed meat of the specified types.¹

Under Annex XI of Regulation (EU) No 1169/2011, the types of meat for which the indication of the country of origin or place of provenance is mandatory are:

- CN code 0203: Meat of swine, fresh, chilled or frozen;
- CN code 0204: Meat of sheep or goats, fresh, chilled or frozen;
- CN code Ex 0207: Meat of the poultry of heading 0105 (fowls of the species *Gallus domesticus*, ducks, geese, turkeys and guinea fowls), fresh, chilled or frozen.

It should be noted that it is for the Member States to decide whether to require the provision of origin on a mandatory basis for non pre-packed unprocessed meat (including meat packed on the sales premises at the consumer's request or pre-packed for direct sale) by means of national measures [Article 44 of Regulation (EU) No 1169/2011].

The indication in the Regulation 1169/2011 is the 'country of origin or place of provenance' of a food and not simply the 'country of origin'.

For the definition of 'country of origin', Regulation (EU) No 1169/2011 refers to Articles 23 to 26 of Regulation (EEC) No 2913/92. This Regulation defines 'country of origin' as the country where live animals were born and raised. However, goods whose production involved more than one country shall be deemed to originate in the country where they underwent their last, substantial, economically justified processing or working in an undertaking equipped for that purpose and resulting in the manufacture of a new product or representing an important stage of manufacture. This is known as the customs definition.

¹ 'Pre-packed food' is defined in Regulation (EU) No 1169/2011 as any single item of presentation as such to the final consumer and to mass caterers, consisting of a food and the packaging into which it was put before being offered for sale, whether such packaging encloses the food completely or partially, but in any event in such a way that the contents cannot be altered without opening or changing the packaging. It does not cover foods packed on the sales premises at the consumer's request or pre-packed for direct sale.

Place of provenance is defined in Regulation (EU) No 1169/2011 as any place where a food is indicated to come from, and that is not the 'country of origin'. Thus, the wording 'country of origin or place of provenance' in Regulation (EU) No 1169/2011 extends the options for origin labelling beyond the customs definition (country of last substantial change).

Article 26 (9) of Regulation (EU) No 1169/2011 states that the impact assessment for the implementation of country of origin or place of provenance labelling shall consider the following determining points in the life of the animal: place of birth; place of rearing; place of slaughter. This consideration is consistent with the declaration of origin at these life stages for compulsory beef labelling [Regulation (EC) No 1760/2000].

The requirement for mandatory origin labelling of meat applies without prejudice to more specific measures, particularly Regulation (EC) No 510/2006 on Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI) and in Regulation (EC) No 509/2006 on agricultural products and foodstuffs as traditional specialties guaranteed.

Table 1 below provides an overview of the legislation relevant to origin labelling for unprocessed (fresh, chilled or frozen) meat.

Table 1. Overview of EU legislation on origin labelling of unprocessed meat

Legislation on origin labelling of unprocessed meat		
Beef	Regulation (EC) No 1760/2000 and Regulation (EC) No 1825/2000.	Compulsory origin labelling for fresh, chilled and frozen beef and veal, including minced meat. Processed beef (e.g. roast beef and corned beef) and products containing beef (e.g. pies, sausages and burgers) are not covered. Indication on the label: <ul style="list-style-type: none"> - Member State or third country of birth; - Member State or third country of rearing; - Member State or third country of slaughter; - Member State or third country of cutting. Simplifications are permitted when more than one stage takes place in a single country, where animals spend less than 30 days in the country of birth and/or country of slaughter, and when full origin information is unavailable for imported beef although the third country of slaughter should be indicated and the animal should generally have been kept for a minimum six months in the country of slaughter.
Imported poultry meat	Regulation (EC) No 1234/2007	Country of origin labelling for imports of fresh and frozen poultry meat from third countries outside the EU;
Swine, sheep and goat, poultry meat	Regulation (EU) No 1169/2011	Mandatory indication of country of origin or place of provenance for pre-packaged fresh, chilled or frozen meat of swine, sheep and goats, and poultry. Subject to an implementing act following impact assessment to consider the modalities of expressing the country of origin or place of provenance, in particular with the following determining points in the life of the animal: place of birth, place or rearing; place of slaughter.

Source: EUR-Lex

2.1.1.1 Minced meat

The scope of the study included minced meat. Regulation (EC) No 853/2004, Annex I includes the following definition of minced meat: *"Minced meat" means boned meat that has been minced into fragments and contains less than 1 % salt.*

Food business operators operating establishments producing minced meat, meat preparations or MSM (mechanically separated meat) must ensure that they are constructed so as to avoid contamination of meat and products, in particular by: (a) allowing constant progress of the operations; or (b) ensuring separation between the different production batches.

Regarding the requirements for the raw material, Regulation (EC) No 853/2004 states in Annex III:

The raw material used to prepare minced meat must meet the following requirements.

- (a) It must comply with the requirements for fresh meat;*
- (b) It must derive from skeletal muscle, including adherent fatty tissues;*
- (c) It must not derive from:
 - (i) scrap cuttings and scrap trimmings (other than whole muscle cuttings)**

As scrap cuttings and scrap trimmings are not permitted as a raw material for minced meat, they are outside the scope of this particular study.

Scrap cuttings and scrap trimmings may be used as raw materials for "meat preparations", which are also defined in Regulation (EC) No 853/2004.

2.1.1.2 Conformity assessment of mandatory origin labelling

Conformity assessment is crucial in order to verify if requirements are met. The aforementioned EU regulations on origin labelling do not give information about how the origin requirement should be implemented and how the origin is to be verified.

In order to verify origin claims, some kind of tracking and tracing system is necessary, especially if origin information about different stages of the production process needs to be reported. Such reporting along the supply chain is required for beef.

EU rules on traceability of food are summarised in section 2.1.2 below.

2.1.1.3 Implementation in the Member States

The origin labelling legislation formulated in Regulation (EU) No 1169/2011 will apply directly in all Member States from 13 December 2014.

Current mandatory origin labelling of foodstuffs (e.g. for beef, honey, olive oil) is based on vertical legislation.

Member States can currently introduce mandatory origin labelling for certain foodstuffs pursuant to a specific notification procedure [see Article 4(2) of Directive 2000/13/EC on food labelling]. The notification procedure is also maintained under Regulation 1169/2011 where Member States want to extend mandatory origin labelling to other foodstuffs not harmonised by the Regulation, through a notification procedure specified therein.

Under Regulation (EU) 1169/2011 Member States cannot adopt national measures with respect to the origin or provenance of unprocessed pre-packed pig, poultry, sheep and goat meat.

2.1.2 Traceability and labelling legislation

General requirements for food traceability

EU traceability legislation is based primarily on the need to ensure food safety. The EU White Paper on Food Safety, 2000, established the principle of traceability of products through the whole food chain.

Regulation (EC) No 178/2002 – known as the General Food Law - notes that the functioning of the internal market can be jeopardised where it is impossible to trace food and feed, and that it is necessary to establish a comprehensive system of traceability within food and feed businesses.

It is necessary to ensure that a food or feed business including an importer can identify at least the business from which the food, feed, animal or substance that may be incorporated into a food or feed has been supplied, to ensure that on investigation, traceability can be assured at all stages.

Traceability means the ability to trace and follow a food, feed, food-producing animal or substance that is intended or expected to be incorporated into a food or feed, through all stages of production, processing and distribution.

Traceability requirements are described under Article 18 of the General Food Law and include:

1. The traceability of food, feed, food-producing animals, and any other substance intended to be, or expected to be, incorporated into a food or feed shall be established at all stages of production, processing and distribution.
2. Food and feed business operators shall be able to identify any person from whom they have been supplied with a food, a feed, a food-producing animal, or any substance intended to be, or expected to be, incorporated into a food or feed.

To this end, such operators shall have in place systems and procedures which allow for this information to be made available to the competent authorities on demand.

3. Food and feed business operators shall have in place systems and procedures to identify the other businesses to which their products have been supplied. This information shall be made available to the competent authorities on demand.
4. Food or feed which is placed on the market or is likely to be placed on the market in the Union shall be adequately labelled or identified to facilitate its traceability, through relevant documentation or information in accordance with the relevant requirements of more specific provisions.

The requirement to identify suppliers and other businesses to which products are supplied is known as the 'one step back - one step forward' approach.

If a food business operator considers or has reason to believe that a food which it has imported, produced, processed, manufactured or distributed is not in compliance with the food safety requirements, it shall immediately initiate procedures to withdraw the food in question from the market where the food has left the immediate control of that initial food business operator and inform the competent authorities.

The EC Standing Committee on the Food Chain and Animal Health has in 2010 approved a revised guidance document² on the implementation of the General Food Law, which provides advice on traceability requirements.

² Guidance on the implementation of Articles 11, 12, 14, 17, 18, 19 and 20 of Regulation (EC) N° 178/2002 on General Food Law. Conclusions of the Standing Committee on the Food Chain and Animal Health, January 2010.

The guidance notes that, apart from their food safety role, traceability requirements help to ensure fair trading amongst operators and the reliability of information supplied to consumers in terms of substantiating claims made by manufacturers.

Article 18 of Regulation (EC) No 178/2002 applies to food business operators at all stages of the food/feed chain, from primary production (food producing animals, harvests), food/feed processing to distribution and supply, including brokers, regardless of whether they take physical possession of the food/feed in question.

The 'one step back - one step forward' approach implies for food business operators that:

- they shall have in place a system enabling them to identify the immediate supplier(s) and immediate customer(s) of their products;
- a link 'supplier-product' shall be established (which products supplied from which suppliers);
- a link 'customer-product' shall be established (which products supplied to which customers). Nevertheless, food business operators do not have to identify the immediate customers when they are final consumers.

The guidance points out that the obligation for food business operators to identify their suppliers and their customers creates a general obligation to participate and have systems in place to exchange information throughout the food chain. Each business is responsible for its own activities within a chain, but there is a joint responsibility throughout the chain.

Article 18 of the Regulation is worded in terms of its goal and intended result, rather than in terms of prescribing how that result is to be achieved. This allows industry flexibility in the implementation of the requirement. The law recognises that distributors and retailers may require primary producers and processors to fulfil contractual obligations regarding the safety and quality of their products.

Article 18 requires food and feed operators to have in place systems and procedures to ensure the traceability of their products. Although the Article does not provide any details about these systems, the use of terms 'systems' and 'procedures' implies a structured mechanism able to deliver the needed information upon request from the competent authorities.

From the 1st July 2012, the provisions set out in Commission Implementing Regulation (EU) No 931/2011 on the traceability requirements set by Regulation (EC) No 178/2002 in respect of food of animal origin are applicable.

Regulation (EU) No 931/2011 applies to food of animal origin defined as 'unprocessed and processed products' in Article 2(1) of Regulation (EC) No 852/2004. It does not apply to food which contains products of plant origin together with processed products of animal origin.

This Regulation places an obligation on food business operators to ensure that the following information concerning consignments of food of animal origin is made available to the food business operator to whom the food is supplied and, upon request, to the competent authority:

- a) an accurate description of the food;
- b) the volume or quantity of the food;
- c) the name and address of the food business operator from which the food has been dispatched;
- d) the name and address of the consignor (owner) if different from the food business operator from which the food has been dispatched;
- e) the name and address of the food business operator to whom the food is dispatched;

- f) the name and address of the consignee (owner), if different from the food business operator to whom the food is dispatched;
- g) a reference identifying the lot, batch or consignment, as appropriate; and
- h) the date of dispatch.

The information in the above list must be updated on a daily basis and as a minimum be kept at least until it can be reasonably assumed that the food has been consumed.

Regulation (EU) No 931/2011 requires additional information to be provided for food of animal origin to ensure the correct application of the traceability requirements set out in Article 18 of Regulation (EC) No 178/2002.

Regulation (EC) No 853/2004 requires that products of animal origin have an identification mark indicating the last approved establishment in which the product was prepared. The identification mark must indicate the country where the establishment is located and its approval number. Establishments located within the Union must be indicated as EC (or equivalent abbreviation in other languages).

The General Food Law and the requirements for food traceability ensure the traceability of food-producing animals and food of animal origin through all stages of production, processing and distribution.

Importation from third countries

Imports of live animals and animal products from third countries are governed by detailed legislation in the veterinary field. The Directorate-General for Health and Consumers (DG SANCO) has summarised the import rules in a guidance document³. The EU ensures that the legislation is fully compliant with international requirements, particularly of the Sanitary and Phytosanitary (SPS) Agreement of the World Trade Organisation (WTO) and relevant international standard setting organisations.

In general terms, the EU cannot legally require exporting third countries to apply EU traceability legislation as such, but at least they must have traceability systems in place for exports, which are able to provide equivalent standards to those in the EU.

Regulation (EC) No 853/2004 sets general obligations for the importation of products of animal origin from third countries. Food imported should comply with the general requirements of Regulation (EC) No 178/2002.

Live animals and meat can only be imported from countries and establishments that are on approved lists maintained by the DG SANCO Food and Veterinary Office (FVO).

In most cases an on-the-spot inspection by the FVO is required to evaluate the animal and public health situation, the official services, the legal provisions, the control systems, the production standards and other measures needed to meet EU requirements before a third country (or region) and establishments can be approved for export.

FVO ensures that equivalent standards of animal identification, movement control and traceability systems must be in place in exporting third countries to ensure traceability throughout the whole process of production and supply of live animals and food of animal origin.

³ General guidance on EU import and transit rules for live animals and animal products from third countries, DG SANCO Directorate D – Animal Health and Welfare, 2007

Beef traceability

With regard to beef, Regulations (EC) No 1760/2000 and (EC) No 1825/2000 provide detailed specifications for complete traceability of individual bovine animals and fresh, chilled or frozen beef products with recording of country of birth, rearing and slaughtering on the product label.

Operators at all stages of production up to the point of sale must have systems in place to ensure the link between bovine animals, carcasses and/or cuts of fresh, chilled or frozen beef including minced beef. Some derogations are allowed by way of simplification of the origin information to be stated on the label.

The following indications must be included on the label:

- a reference number or code linking the meat to an animal or group of animals;
- the approval numbers of the slaughterhouse and cutting plant;
- the Member State or third country of birth;
- the Member State or third country of rearing;
- the Member State or third country of slaughter;
- the Member State or third country of cutting.

When beef is sold loose at retail level the approval numbers of the slaughterhouse and cutting plant do not need to be indicated.

Where meat is derived from animals born, reared and slaughtered in the same Member State or third country, the indication may be given as 'Origin: [name of Member State/third country]'.

Where beef is derived from animals that have been reared for 30 days or less:

- in the Member State or third country of birth, or;
- the Member State or third country where slaughter took place;

the indication of those Member States or third countries as places of rearing shall not be required, provided the animals were reared for a period longer than 30 days in another Member State or third country.

Where full information is not available for beef imported from third countries, it may be permitted to state the country of origin as 'non-EC' provided that the name of the third country of slaughter is indicated. In this case live animals must generally have been kept for a minimum of six months in the designated country before slaughter and export of the beef into the EU.

A derogation is allowed for minced meat where the label shall indicate as a minimum 'Prepared: [name of Member State/third country]' to show where the minced meat was prepared; and 'Origin: [name of Member State/third country]' if the meat originated from a country or countries other than the country of preparation.

The existing beef traceability and labelling system provides detailed origin information for consumers.

Sheep and goat meat traceability

Regulation (EC) No 21/2004 concerns the identification and registration of sheep and goats to permit individual traceability throughout their lifetime via electronic identification for animals born after 1 January 2010.

The Regulation requires individual electronic identification to allow the recording of individual animal codes with movement information. Recording of individual codes during movements (individual tracking) is required as from 31 December 2014.

Member States may allow batch identification for animals intended for slaughter before the age of 12 months within the country of birth.

Electronic identification is optional in Member States with populations of less than 600 000 sheep and goats for animals not involved in intra-Union trade. However individual recording and traceability using conventional ear tags is still required.

The sheep and goat traceability system enables the complete traceability within the EU of live sheep and goats through individual electronic identification on the one-step-back/one-step-forward basis.

Traceability of sheep and goat meat falls under the general provisions of Regulation (EC) No 178/2002 (General Food Law), as described above.

National databases containing information on individual sheep and goat movements are not compulsory but may be implemented voluntarily in Member States. The lack of national databases makes full information on the origin of sheep and goat meat more difficult to access than in other systems, particularly beef traceability.

Pig meat traceability

The identification and registration of live pigs is described in Council Directive 2008/71/EC. Pigs must be identified and registered in such a way that movements of animals and the farm of origin can be traced rapidly and accurately. The pig identification system is based on batch identification and not individual identification.

The Directive requires that:

- identification marks must be applied before pigs leave the holding of birth, making it possible to determine the holding of origin;
- animal keepers are required to keep records of movements of animals entering and leaving a holding, at least on a batch basis and including the origin or destination, as applicable;
- keepers must supply the competent authority on request with all information concerning the origin, identification and where appropriate the destination of animals that they have owned, kept, transported, marketed or slaughtered;
- these procedures apply to intra-Union movements;
- pigs imported from third countries must be similarly identified and a link established and recorded to identify the third country. Imported animals going direct to a slaughterhouse need not be re-identified.

The pig identification and recording system enables identification of the holding and country of birth, and identification of the last holding from which an animal has come. Intermediate holdings may be identified through records of movements, although the system does not guarantee the method of identification of all intermediate holdings prior to the last holding. Traceability is achieved on the basis of the one-step-back/one-step-forward approach.

Traceability of pig meat falls under the general provisions of Regulation (EC) No 178/2002 (General Food Law) and Commission Implementing Regulation 931/2011.

The national databases for pigs do not contain information on all individual movements. This makes it more difficult to achieve the provision of full information on the origin of pig meat than in other systems, particularly beef traceability.

Poultry meat traceability

Traceability of poultry meat is covered by the general provisions of Regulation (EC) No 178/2002, as described above: i.e. the 'one step back - one step forward' requirement whereby food business operators must be able to identify the supplier and food business customer for their products.

In the case of pre-packaged poultry meat imported from third countries, Commission Regulation (EC) No 543/2008 requires that the packaging or label states the country of origin.

Summary of meat traceability regulations

Regulation (EC) No 178/2002 (The General Food Law) and more specific EU legislation ensures the traceability of food-producing animals and food of animal origin through all stages of production, processing and distribution. As traceability is ensured, it means that origin information is available through the traceability system.

Traceability requirements vary between the different species of meat producing animals. This means that ease of access to origin information varies between the species.

Beef legislation is the most specific regarding traceability from the product label back to the holding of birth. The location and movements of individual bovine animals must be registered on national databases. Therefore, origin information is readily available for bovine animals.

EU legislation does not require all movements of individual live pigs, poultry and sheep and goats to be recorded on national databases, which can make it more difficult to access origin information for these species when compared to bovine animals.

Commission Implementing Regulation (EU) No 931/2011 requires additional information to be provided for unprocessed and processed products of animal origin to ensure the correct application of the traceability requirements set out in Article 18 of Regulation (EC) No 178/2002. The additional information covers: the volume or quantity of the food of animal origin; a reference identifying the lot, batch or consignment, as appropriate; a detailed description of the food; and the date of dispatch. The information must be updated on a daily basis.

In summary, Regulations (EC) No 178/2002 and (EU) No 931/2011 enable origin information for unprocessed pre-packed food of animal origin to be made available through the traceability system.

Processors and retailers may require their suppliers to participate in food chain information systems that provide complete traceability back to the place of origin ('one-step-back traceability'). This may be necessary to enable product recall and withdrawal and for retailers to be able to fulfill their legislative requirement to guarantee their products are safe to eat. In this situation origin information will be available to retailers.

In situations where complete food safety or quality management systems are not in place, it may be necessary to make changes during processing (such as batch separation and label changes) in order to ensure origin information is universally available on product labels and at the point of sale.

2.1.3 Voluntary quality and certification schemes

2.1.3.1 PDO, PGI and TSG

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

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

The TSG scheme is based on the specific and traditional character of a product and there does not need to be a link to a geographical area.

Mandatory origin labelling will provide factual information about origin or provenance of products and foodstuffs.

2.1.3.2 Voluntary certification schemes

As well as EU schemes there are a large number of private certification schemes in operation covering agricultural and food products (including third country imports) marketed in the EU.

Increasingly distributors and retailers establish food chain management and traceability systems that require their suppliers to provide detailed information on the origin and production conditions of their products. The systems may be established through private arrangements or through recognised certification systems (such as ISO 22000, BRC Global Standard, IFS, GlobalGAP).

These systems provide food chain management and they help distributors and retailers fulfil their regulatory obligations to ensure their food products are safe to eat, as well as facilitating recall and withdrawal in event of food safety incidents.

The schemes cover a wide range of different initiatives and product characteristics, including in some cases designation of origin or provenance of meat.

In 2010 the Commission compiled a new inventory of 441 schemes for agricultural products and foodstuffs marketed in the EU⁴. Of the schemes in the new inventory, 101 cover meat traceability and 71 cover meat origin and specific production environment.

Examples of voluntary certification schemes include: Global G.A.P. (DE), IKB Integrated Chain Management (NL), ITALA (IT), KRAV Standard (SE), Label Rouge (FR), Marca de Garantia (ES), ORGAINVENT-Rind (DE), Polskie Zrzeszenie Producentów Bydła Mięsnego (PL), Neuland (DE), Pork Quality System – PQS (PL), Pro Agro (DE), PRODI – Produção Integrada (PT), Produccion Integrada (ES), Quality Food from Hungary (HU), Quality Standard Scheme for Beef and Lamb (UK), Red Tractor Farm Assurance Scheme (UK), Terra Nostra (BE), Unser Land (DE).

An impact assessment carried out on behalf of the Commission on certification schemes for agricultural products and foodstuffs⁵ found that the various schemes cover different elements of the food chain, different purposes, various stages of the chain (whole chain, pre- or post-harvest) and operate at a business-to-business or business-to-consumer level.

The impact assessment classified certification schemes for agricultural products and foodstuffs into three broad groups:

Food safety and liability schemes (post farm gate)

These schemes were developed by the food industry and retailers to ensure the safety of own-brand products to protect their reputation and gain legal security. Examples include the British Retail Consortium (BRC) standard and the International Food Standard (IFS) among others. There is often a high degree of duplication between schemes and different retailers use different schemes; so primary producers supplying more than one retailer may have to be members of more than one scheme. This is an extra cost for producers. These schemes are almost always business-to-business and not communicated to consumers.

Food assurance schemes (pre farm gate and whole chain)

⁴ http://ec.europa.eu/agriculture/quality/certification/index_en.htm

⁵ http://ec.europa.eu/agriculture/quality/policy/com2009_234/ia_annex_d_en.pdf

The most prominent example of food assurance schemes is GlobalGAP, but there are others including for example Assured Food Standards/Red Tractor Mark in the UK and Qualität und Sicherheit/QS in Germany. These schemes were developed to provide assurance to retailers and consumers about product safety and other aspects of production, which may include origin. Some of these schemes use advertising and logos to communicate to consumers.

Differentiation schemes

Differentiation schemes aim to distinguish certified products through certain attributes. Producers benefit from such schemes by improving their marketing position and gaining higher prices for their products. These schemes use logos to differentiate from competing products. Examples include Label Rouge (France), Fair Trade (international) and Prodotti della Campagna Romana (Italy). Some schemes are potentially misleading in that they carry the name of a country or region but the products do not necessarily wholly originate from the designated area.

The proliferation of certification schemes, the variety of subjects, and the lack of consistency and overlap between them means that there is a danger of undermining the benefits, particularly in terms of consumer choice. Consumers may simply be confused to the extent that they ignore the labels. They may also have suspicions that some information is missing or concealed, including the precise origin.

It may be that some of these voluntary quality and certification schemes are affected by the introduction of mandatory origin labelling, as retailers rationalise their use of voluntary schemes. Indeed, there have already been reports of some instances of rationalisation^{6,7}.

2.1.4 WTO dispute on country of origin labelling: challenging US COOL for meat

2.1.4.1 US legislation of country of origin labelling

The US mandatory country of origin labelling (MCOOL) law aims to provide information to consumers and thus a consumer information programme. Retailers, such as supermarkets and grocery stores, are required to provide information regarding the source of certain foods. The requirement of origin labelling is in addition to the US food safety and traceability requirements. The US COOL covers both domestic and foreign products sold on the US market.

The programme came into effect on March 16, 2009. The Agricultural Marketing Service of the US Department of Agriculture is responsible for administration and enforcement of the MCOOL programme⁸.

Type of label

US MCOOL involves a label for consumers in order to provide additional information to consumers (B2C label). For tracking and tracing along the supply chain labelling is also necessary at the business level (B2B label). The origin label can take various forms: labels, stamps, marks, placards, or other signs on the covered commodity or package, display, holding unit, or bin containing the commodity at the final point of sale.

Target group

The country of origin labelling requirement applies to retailers of a certain business size. Specifically: retailers that annually purchase more than US\$ 230,000 (about 175,260 Euro) of respective agricultural commodities are subject to US MCOOL. Food service establishments do not have to use the origin labels.

⁶ www.farmersguardian.com/home/business/nba-and-npa-launch-attack-on-sainsburys-red-tractor-move/50891.article

⁷ <http://www.fwi.co.uk/Articles/19/11/2012/136285/Sainsbury39s-drops-NI-assurance-logo.htm>

⁸ USDA webpage of the Agricultural Marketing Service: <http://www.ams.usda.gov/AMSV1.0/COOL>

Product coverage

US MCOOL covers the products listed below. If these products are used as inputs in processed food, origin labelling is not required. Generally, processed food that has undergone specific processing (for example, cooking, curing and smoking) or that has been combined with another food component does not need to be labelled⁹. Origin labelling however does apply to ground meat products, whereby those countries should be listed as long as the raw material from a specific origin has not been stored with a US processor for more than 60 days.

The following products are covered:

- Muscle cuts of beef (including veal), lamb, pork, goat, and chicken;
- Ground beef, ground lamb, ground pork, ground goat, and ground chicken;
- Farm raised and wild fish and shellfish;
- Perishable agricultural commodities (e.g. fresh and frozen fruits and vegetables);
- Peanuts, pecans and macadamia nuts;
- Ginseng.

Information contents

US COOL is specified according to the details of the supply chain, with information requirements about where the animal was born, reared and slaughtered¹⁰. However, the label does not explicitly specify the countries where the different stages of production take place.

The origin of the final product is specified by applying the following scheme:

1. **Product of the US** - meat from animals born, raised, and slaughtered in the US or from animals present in the US prior to July 15, 2008;
2. **Product of the US, Country X, Country Y**, if applicable - meat from animals born in Country X or (as applicable) Country Y, raised and slaughtered in the US and not derived from animals imported for immediate slaughter;
3. **Product of Country X, US** - meat from animals imported into the US for immediate slaughter;
4. **Product of Country X** - foreign meat imported into the US;

2.1.4.2 Challenging US COOL for meat at the WTO Dispute Settlement

Canada and Mexico are the major suppliers of live cattle and hogs (pigs) that are exported to the US for feeding and processing in US meat plants. Canada was rather concerned about the US MCOOL requirement, fearing that the origin labelling would adversely affect the Canadian livestock sector. The trade figures showed a drop in exports from Canada between 2008 /2009 in comparison to earlier years, and studies supported a negative effect. Against this background, Canada challenged the US MCOOL at the WTO level.

WTO panel ruling

On 19 November 2009, the WTO Dispute Settlement Body established a single panel to examine the dispute on US MCOOL¹¹.

⁹ Note that many imported items are still required to be marked with country of origin information. For example, consumer-ready packages of meat must be labelled with country of origin information as required by the US Custom and Border Protection as well as the US food safety regulations.

¹⁰ In order to qualify for the label "product of the US", peanuts, pecans, and macadamia nuts as well as other perishable agricultural commodities covered must be grown in the US. In addition for the aforementioned products, both domestic and imported, labels may contain state, regional or locality designations in lieu of country of origin labelling.

¹¹ WTO webpages: http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds384_e.htm
http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds384_e.htm#bkmk384abr

The WTO panel found that the origin labelling requirement is a technical regulation under the Technical Barriers to Trade (TBT) Agreement, and that it is inconsistent with the WTO obligations of the US. The WTO panel ruling can be summarised as follows (for details see Jurenas and Greene [2012]):

- The US MCOOL was found to treat imported Canadian cattle and hogs less favourably than US domestic like products. This is a violation against the national treatment obligation described in Article 2.1 of the TBT Agreement. The detrimental impact on imported livestock, particularly due to record-keeping and verification requirements in relation to US MCOOL, creates an incentive for processors to exclusively use domestic livestock, instead of imported livestock. Furthermore, record-keeping and verification requirements impose a disproportionate burden on upstream producers and processors of livestock.
- The US MCOOL does not fulfil its legitimate objective of providing consumers with information on origin, and therefore violates Article 2.2 of the TBT Agreement. The objective of the MCOOL measure as being “to provide consumer information on origin” was acknowledged as a “legitimate” objective, but it was found that US MCOOL is unable to fully reach the objective. A considerable proportion of meat sold in the US is not subject to the MCOOL at all. While obtained at the producer level, not all relevant information about the country of origin is communicated to consumers in an understandable or accurate manner at the retail level. As such, US MCOOL was found to be inconsistent. Note that the ruling did not include judgement on whether the US MCOOL was more trade restrictive than necessary to fulfil a legitimate objective.

In response to the ruling, the US informed the WTO Dispute Settlement Body about the intentions to implement the recommendations and rulings on 21 August 2012.

Appeal of the panel ruling at the WTO Appellate Body

The US, Canada and Mexico appealed some points and legal interpretations developed by the WTO panel ruling on the US MCOOL case. Following the common procedure, the appeal was brought to the WTO Appellate Body. On 23 July 2012, the WTO dispute settlement adopted the Appellate Body report and the panel report, as modified by the Appellate Body report.

The Appellate Body upheld the panel ruling that the US MCOOL measure does result in less favourable treatment to imported Canadian cattle and hogs than to like domestic cattle and hogs (violation of Article 2.1 of the TBT Agreement upheld). The Appellate Body agreed with the WTO panel ruling, but it should be noted that the reasoning differs. The Appellate Body emphasised that little information was actually communicated to consumers (in comparison to the information collected in the tracking and tracing and record-keeping effort) in an understandable or accurate manner. The detrimental impact can thus not be exclusively considered to be exclusively due to the labelling requirement, which is generally considered a legitimate regulatory distinction, but instead reflects discrimination, which is in violation of Article 2.1. For these reasons, the Appellate Body upheld the WTO panel ruling under Article 2.1.

The Appellate Body reversed the panel ruling that the US MCOOL violates Article 2.2 of the TBT Agreement since it does not fulfil its legitimate objective of providing consumers with information on origin. While considering MCOOL as a measure to provide consumer information on origin, which is a “legitimate” objective according to WTO law, the Appellate Body noted that MCOOL does contribute, at least to some extent, to achieving its objective. Although the objective may not be completely fulfilled, MCOOL should therefore be considered consistent with Article 2.2. The WTO panel found that MCOOL measures were inconsistent with Article 2.2, and thus the Appellate Body reversed the WTO panel ruling. Note that the Appellate Body was unable to ascertain that MCOOL is more trade restrictive than necessary to meet the legitimate objective of consumer information.

2.2 EU meat production

Statistics quoted

Note that there is not full correspondence between all statistics quoted in this section. Many statistics have been derived from different Eurostat tables, which are not always complete for the years stated. In some cases composite data has been used covering more than one year, which has caused some anomalies both within and between tables.

Pig meat comprises 52% of EU meat production followed by poultry (28%), beef (18%) and sheep and goat meat (2%). Per capita consumption follows a similar trend with pig meat accounting for almost half, followed by poultry meat, beef, sheep and goat meat.

The EU is a net exporter of pig meat and poultry meat. Apart from an exceptional performance in 2011, the EU is usually a net importer of beef and this position is likely to resume in future years. The EU imports about a quarter of its sheep and goat meat requirements and this situation is likely to continue or increase as domestic production (as well as consumption) continues to decline (EC, 2012).

The following table shows production and self sufficiency of each major meat type in Member States. Note that there are some gaps in the self-sufficiency data as accurate up-to-date figures could not be obtained.

Table 2. EU meat production and self sufficiency

EU meat production (tonnes) and self-sufficiency (%)								
	Pigs		Poultry		Beef		Sheep & goats	
	tonnes	%	tonnes	%	tonnes	%	tonnes	%
AT	543 771	106%	109 000	72%	217 111	145%	8 346	72%
BE	1 108 255	239%	495 795	119%	272 286	136%	2 438	
BG	48 222	40%	98 448	78%	4 700	75%	6 000	108%
CY	55 213	97%	27 400	84%	4 816	47%	4 929	77%
CZ	262 944		170 084	99%	72 124		161	
DE	5 598 000	107%	1 425 000	96%	1 159 000	117%	22 000	51%
DK	1 718 400	665%	186 300	157%	133 000	89%	1 500	29%
EE	30 961	100%	14 800	52%	7 617	91%	86	89%
EL	115 121	39%	175 233	75%	59 231	24%	104 760	87%
ES	3 469 345		1 373 605	96%	604 113	94%	141 730	108%
FI	201 755	115%	101 508	102%	82 654		890	27%
FR	1 998 317	106%	1 733 000	117%	1 559 350	105%	92 683	46%
HU	387 304	96%	383 491	134%	25 979	180%	162	639%
IE	233 708	175%	117 000	99%	546 761	673%	48 121	351%
IT	1 570 225	70%	1 219 882	108%	1 009 212	59%	33 728	49%
LT	58 856	94%	75 631	79%	41 079		97	100%
LU	9 504	65%	41	2%	8 880	122%	41	4%
LV	23 451	85%	22 808	97%	17 131		217	90%
MT	7 262	75%	4 155	81%	1 115		75	0%
NL	1 347 165	244%	720 000	186%	381 558	112%	14 732	95%
PL	1 810 778	112%	1 384 837	112%	379 929		608	150%
PT	383 750	63%	292 106	94%	95 999	44%	10 954	66%
RO	263 329	57%	293 858	79%	29 067	111%	4 100	150%
SE	256 085	90%	119 796	84%	147 779		5 076	42%
SI	22 954	70%	58 284	113%	35 571	103%	118	99%
SK	56 908	51%	77 600	69%	11 281	118%	526	150%
UK	806 021	54%	1 560 122	90%	936 561	75%	289 506	90%
Total	22 387 604	110%	12 239 784	104%	7 843 904	100%	793 584	76%
%	52%		28%		18%		2%	
<i>Figures are 2011 or the most recent available pre 2011</i>								
<i>Source: Eurostat</i>								

2.3 Key actors in meat supply chains

Meat supply chains can be varied with different levels of inter-linking and complexity. The following actors are common to all meat supply chains and are relevant for origin labelling:



Supply chains may be more or less vertically integrated depending on the actors involved. The number of actors at each stage is important and will vary according to the nature of the supply chain.

Fresh, chilled and frozen meat are unprocessed products. Cutting, packaging and labelling may take place in a cutting plant attached to the slaughterhouse as well as in separate processing plants. Alternatively, carcasses and split carcasses may be labelled and delivered directly to butchers and other retail outlets.

The slaughterhouse is a key check point with regard to traceability and origin labelling of live animals. Slaughterhouses are registered and under the control of the veterinary authorities, and they receive information on the origin of incoming animals according to the rules for each species.

Sheep and goats are tagged to identify their holding of origin and must be individually identified if they move outside the country of birth. The history of all countries and holdings on which they have been kept is therefore available at least from the registers kept on each holding. Sheep and goats sent for slaughter within the country of birth under 12 months of age need only be identified with a flock number, which will indicate the holding and the country. Country of origin information for live sheep and goats is therefore readily available to slaughterhouses.

Pigs must be identified with the holding of birth and the last holding must be known, but information on intermediate holdings may only be available from supply chain records and is not specifically guaranteed. Complete origin information of live pigs is more likely to be readily available in vertically integrated supply chains.

Meat producing poultry are invariably grown on one site from day old and information on the relevant holding must be available at the slaughterhouse.

Packing and labelling plants are important when origin information is recorded on retail packages. The key to linking origin information of live animals to meat labels is the nature and connection of the internal traceability and management systems in the slaughterhouse and cutting/processing plant.

Key supply chain information for assessing the provision of origin information will include:

- The recording of animal traceability data available at the slaughterhouse, with particular attention to pigs, which may have been born and raised on more than two holdings;
- Traceability mechanisms between arrival of animals at the slaughterhouse and packaging or labelling of meat in the packing plant, butchery or retail outlet;
- The level of horizontal and vertical integration, and the number and variety of actors in supply chains and the supply chain information systems that are in place;
- The use of quality certification schemes that record origin information;
- The proportion of fresh, chilled and frozen meat sales through supermarkets, wholesalers, butchers and catering outlets;
- The level of technological development in traceability and supply chain information systems.

In some supply chains, there may be imbalances and delays in price transmission (price asymmetry) along the chain. For example, in a situation where retailers are in a strong negotiating position with respect to their suppliers further up the chain (including the producers), they may require the suppliers to provide origin information on their products without reimbursing any additional costs through higher prices. These effects may be more important in the short term as they will be resolved by supply and demand in the longer term. However the effects of price distribution along the chain are too inconsistent to be meaningful in the cost calculations. The analysis is therefore based on the simple assumption that consumers have to pay for additional information and that the payment will go to the chain participant making the additional costs for labelling the fresh meat with origin information. If the information is mandatory then it affects all chains.

The requirement for mandatory origin information may also affect market forces within the unprocessed meat supply chain. For example, it may restrict the ability of unprocessed meat suppliers and retailers to substitute sources of unprocessed meat according to price and availability. Producers in particular areas may receive higher, or lower, prices for their livestock, possibly with long-term consequences. This may eventually translate into different contracting arrangements – possibly more long-term contracts - between producers and meat suppliers. It may also be reflected in changes in the range of unprocessed meat products available as suppliers and retailers develop products tailored to different sources of supply.

An extreme scenario could be that restrictions on procurement and additional costs incurred by unprocessed meat suppliers as a result of mandatory origin labelling may contribute to any consolidation of the meat sector as suppliers seek to strengthen their bargaining power with large retailers.

2.4 Pig meat supply chain

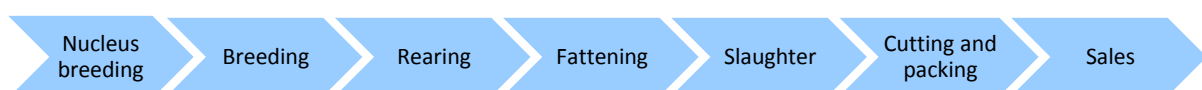
2.4.1 Pig supply chain for unprocessed pig meat

The pig supply chain (shown below) involves all activities related to the production of pig meat, from supply to the farmer until sales to the final consumer. The first stage consists of nucleus breeding of pigs and is only indirectly relevant for origin labelling as the main output is breeding pigs and only pigs surplus to breeding requirements are sent for slaughter.

Pig farming for direct human consumption covers piglet production, rearing and fattening. These phases may be undertaken at one, two or three sites by the same or different operators. Precise figures are not available, but the standard production cycle requires that the piglets are transported to specialized rearing farms and consequently to fattening farms. About 15 million piglets (roughly 6% of the total production) are traded beyond borders. One of the main reasons for moving sites is disease control.

After fattening, slaughter pigs are sent to slaughter and then cut and packed into unprocessed meat products. Finally, unprocessed meat products are sold to the final consumer, either through supermarkets, butchers, wet markets, on-farm sales or via restaurants and catering services.

Figure 1. Supply chain for unprocessed pig meat



Supply industries to the pig sector are not included in the above figure; they include feed production and service industries like housing and equipment. Intermediate and additional activities take place, like transport (feed, live animals, meat), services (veterinary, banks, accountants, advice) and governmental activities (control, permits, statistics).

2.4.2 Production, trade and consumption

The supply of pig meat for consumption within the EU is shown in the table below. The self-sufficiency rate is 110% at EU level. Annual per capita consumption across the EU is 41.4 kg, representing half of the total per capita meat consumption.

Table 3. EU supply balance of pig meat, 2011

EU pig meat supply balance (1 000 tonnes carcass weight equivalent)	
Gross indigenous production	22 986
Import live animals	0
Export live animals	79

Net production	22 907
Imports – meat	24
Exports – meat	2 125
Consumption	20 806
Self-sufficiency %	110%
Per capita consumption kg	41.4

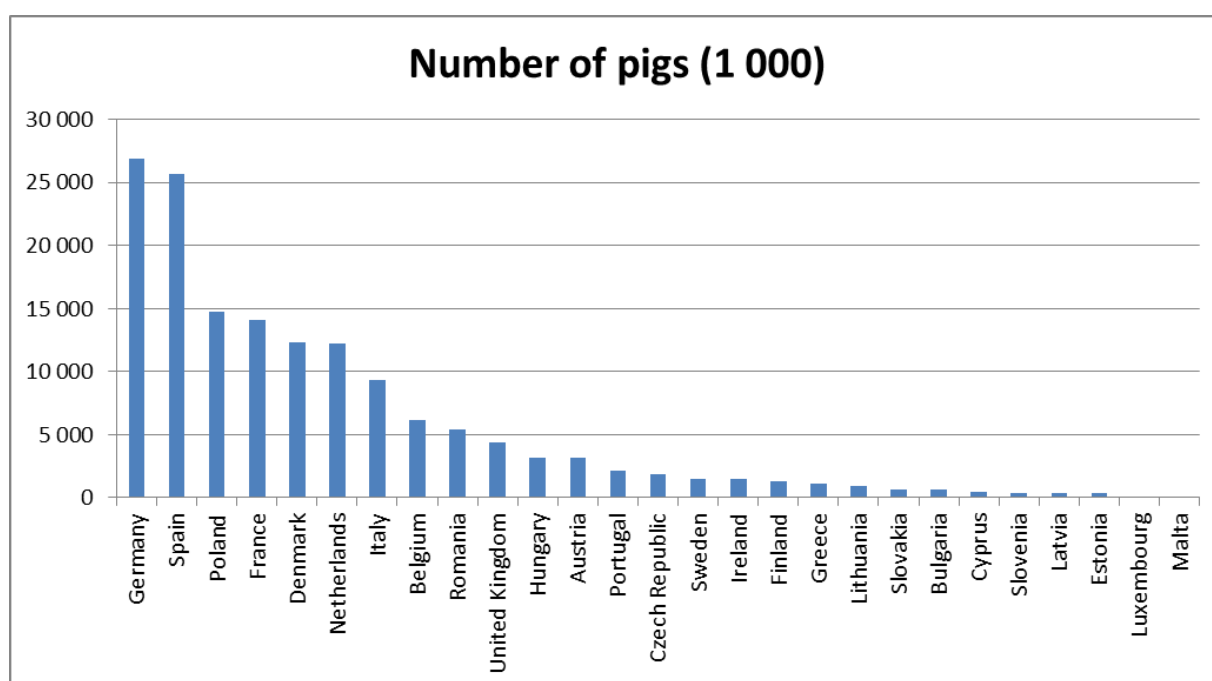
Source: DG Agri (2012)

2.4.2.1 Pig production

EU pig production is concentrated in a few Member States.

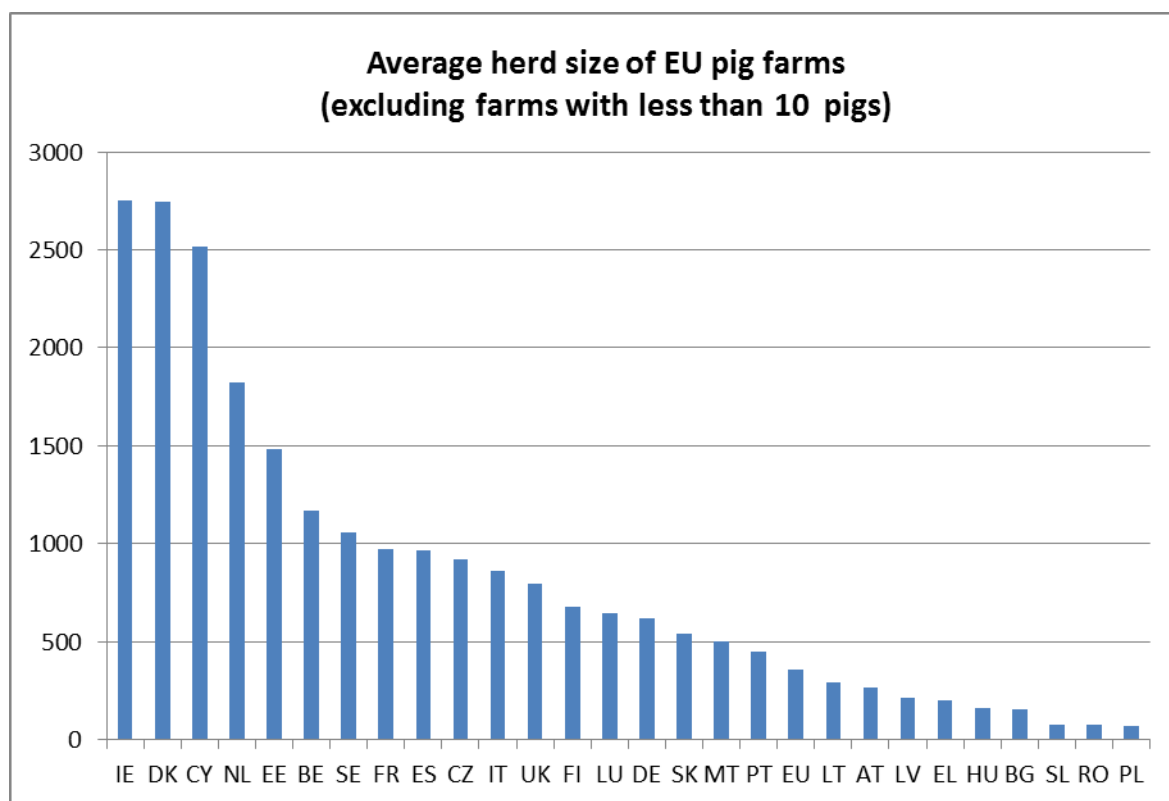
The following two figures show the population of pigs and average herd sizes by Member State:

Figure 2. Number of pigs by Member State (1 000)



Source: Eurostat

Figure 3. Average herd size (number of pigs per farm, excluding farms with less than 10 pigs) 2010



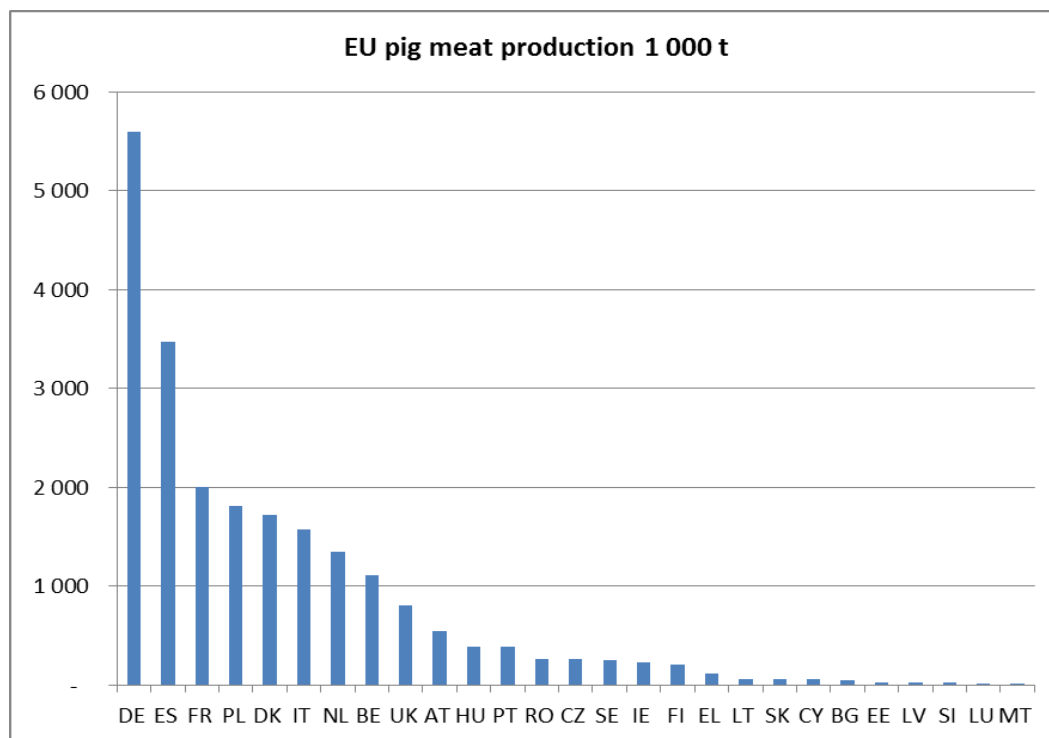
Source: DG Agri (2012)

Concerning pig breeding, six Member States account for more than two thirds of breeding pigs: (in descending order) Denmark, Germany, Spain, France, the Netherlands and Poland.

Concerning pig meat production, the order changes slightly due to trade in growing pigs. Denmark and the Netherlands fall slightly down the production order because of their intra-Community exports of young pigs for growing and fattening (mostly Denmark) and fat pigs for slaughter (mostly the Netherlands).

The following figure shows overall EU pig meat production:

Figure 4. EU pig meat production, 2011 (1 000 t)



Data is based on Table 2

The following table shows the production volumes and market share of the ten major pig meat producer countries in the EU:

Table 4. Production and market share of the major EU pig meat producer countries, 2011

Major EU pig meat producer countries			
Country	Carcass weight (1000 t)	% share	Cum. % share
EU27	22 354	100%	
1 Germany	5 598	25%	25%
2 Spain	3 469	16%	40%
3 France	1 998	9%	49%
4 Poland	1 811	8%	57%
5 Denmark	1 718	8%	65%
6 Italy	1 570	7%	72%
7 Netherlands	1 347	6%	78%
8 Belgium	1 108	5%	83%
9 United Kingdom	806	4%	87%
10 Austria	544	2%	89%

Source Eurostat, 2011

2.4.2.2 Trade

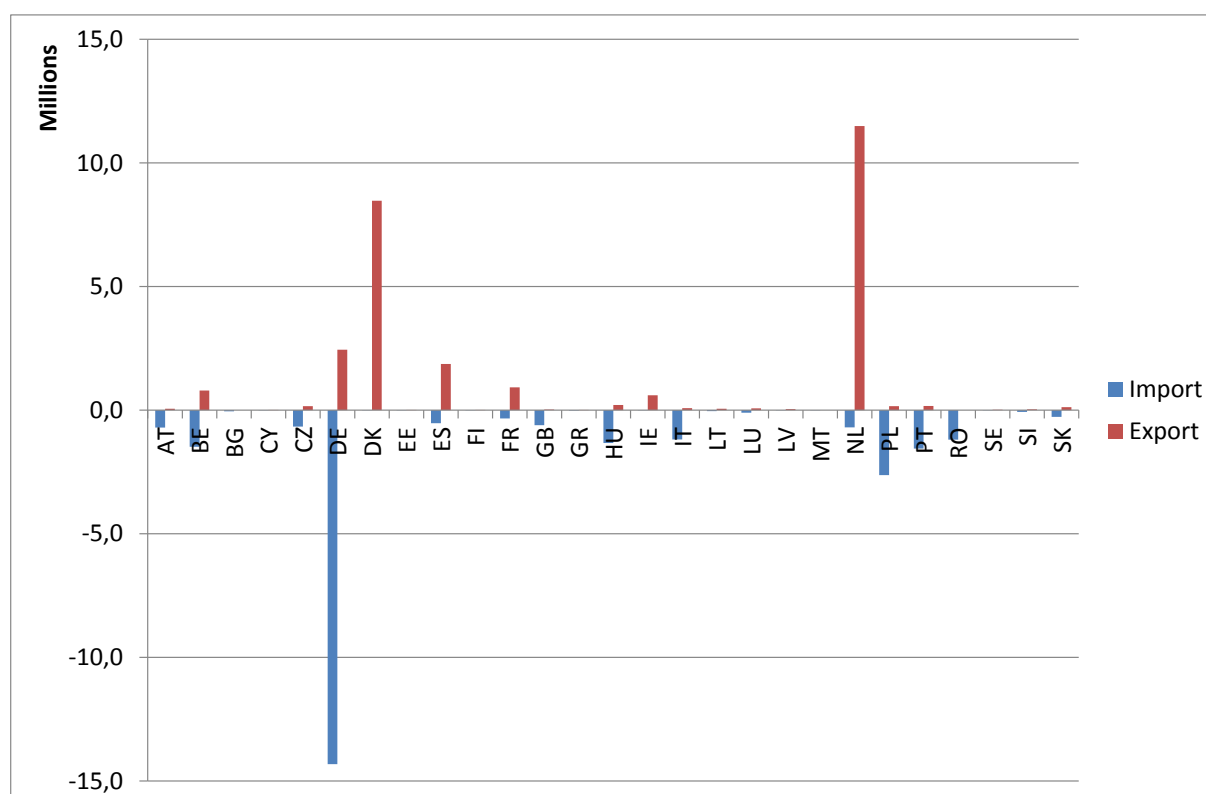
Intra-Union trade in live pigs

There is a very dynamic intra-Union trade in live pigs. Annually about 29 million live pigs are traded between Member States, mainly piglets and slaughter pigs (source: TRACES, 2011). Of these 40% (11.3 million) of these are exported from the Netherlands and about 30% (8.8 million) from Denmark.

Other important exporting countries are Germany (2.5 million), Spain (1.8 m), France (0.7 m), Belgium (1.1 m) and Ireland (0.7 m). The biggest importing country is Germany (14.9 million), followed by Poland (3.2 m), Portugal (1.6 m), Belgium (1.5 m), Italy (1.3 million) and Hungary (1.1 m).

The following figure shows the intra-Union trade in live pigs:

Figure 5. Intra-Union trade in live pigs



Source: TRACES (2011)

The reasons for the intra-EU trade include location advantages such as entrepreneurship and craftsmanship, feed production and availability, and labour availability and cost. Countries like the Netherlands and Denmark are very high performing in piglet production, rather than in fattening. InterPIG results show a level of about 27.0 slaughter pigs produced per sow in 2011 in the Netherlands and Denmark (Hoste, 2013), which is much higher than the calculated average of 18.4 at EU level (Eurostat; GIRA, 2012).

The exports consist of both slaughter pigs and piglets; however within the TRACES data, no distinction can be made between these categories. The main piglet exporters are Denmark and the Netherlands. Given the fact that the increase in sow performance exceeds the developments in domestic fattening capacity, the piglet exports from both countries are rising rapidly. Denmark exported 8.2 million piglets, of which 6.1 million go to Germany, and the Netherlands exported 6.8 million piglets in 2011, of which 58% to Germany (sources: Danmarks Statistik; PVE, 2012). German fattening farms are close to the piglet supply from Denmark and the Netherlands and many of them have own crop production for feed, which gives them some advantage over competitors.

A small proportion of piglets is traded as weaners (about 7 kg live weight). Especially Denmark exports about 0.4 million weaner piglets (2011, source: Danmarks Statistik), which however, is only 5% of the total piglet exports from Denmark. Also from the Netherlands, weaner piglets are exported. No data is available, but it is expected to be only a small share of the total piglet export.

Slaughter pig exports from Denmark (mainly to Germany) were over 1 million in 2009, but decreased to almost 400 000 in 2011 due to improved profitability of slaughtering in Denmark. The Netherlands export about 4 million slaughter pigs, of which 90% go to Germany. Germany is by far the biggest importer of live pigs, both piglets and slaughter pigs. Slaughter pigs are often exported to Germany, given their large-size meat industry with rather low wages compared to Denmark and the Netherlands.

Export of pigs to third countries

The trade of pigs to third countries is rather limited and concerns mainly nucleus breeding pigs.

EU trade in pig meat

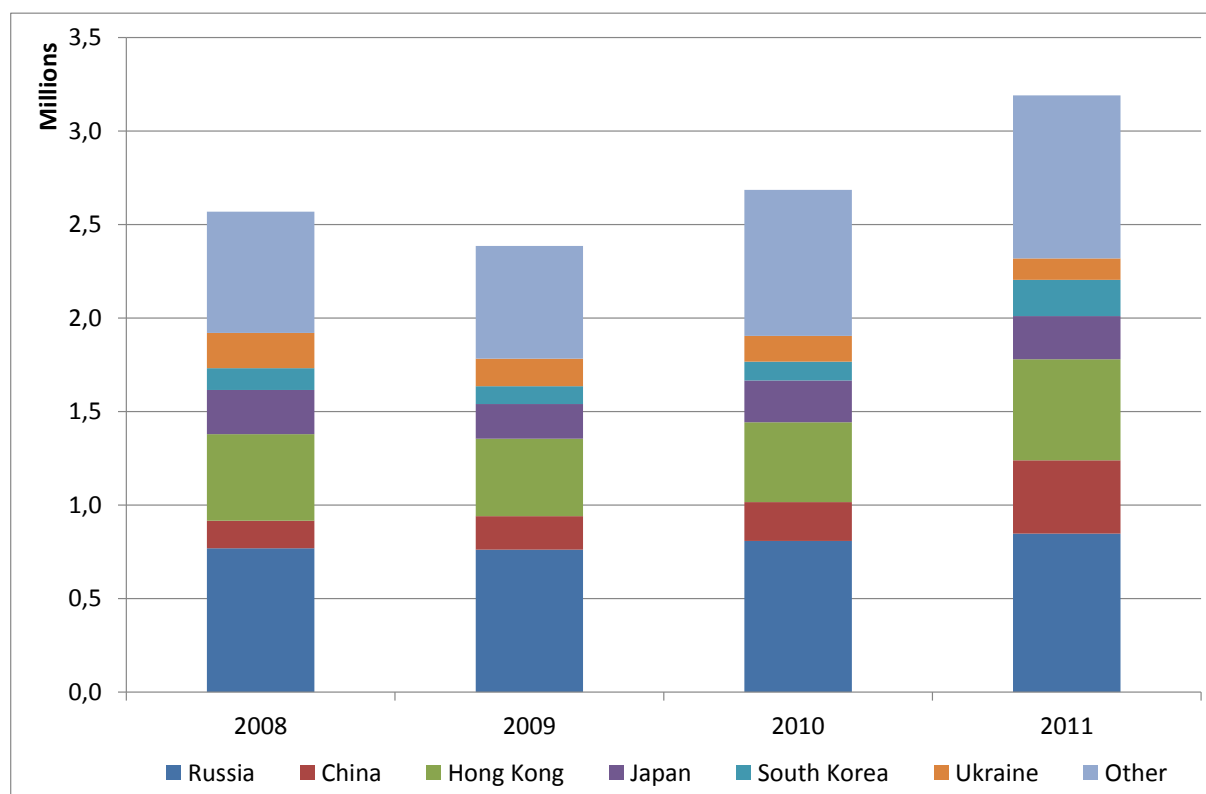
Intra-EU trade is mostly chilled meat, since frozen meat has a lower value due to its lower quality and being less attractive for direct sale to consumers.

Export of pig meat and meat products to third countries

The EU is more than self-sufficient in pig meat, producing about 110% of domestic consumption. Exports go all over the world, with a focus on the Russian Federation and Far East countries such as Hong Kong, China, Japan and South Korea. Denmark is highly specialised in export to non-EU countries, with a self-sufficiency level of almost 700%. Not only lean meat is exported, but especially the so-called fifth quarter: tails, ears and trotters. Export outside the EU is mainly frozen, due to long transport times and different consumer preferences.

The export of pig meat to third countries is shown in the following figure:

Figure 6. EU exports of pig meat to third countries (tonnes product weight)



Source: Comext

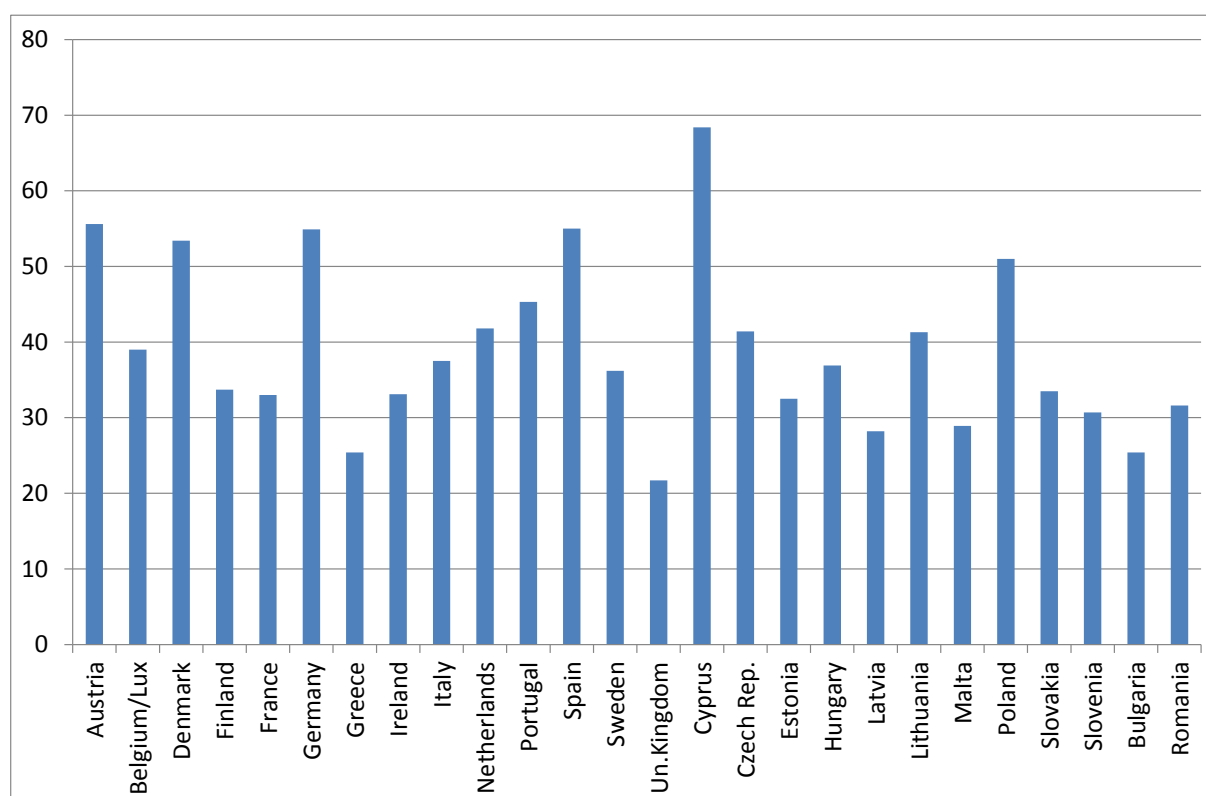
Imports of pig meat from third countries

Import of pig meat is very limited. Import tariffs are in place as well as non-tariff measures to prevent imports from countries with lower production standards, such as the USA, Brazil or Canada. These countries however, have a lower cost of production (Hoste, 2013) and are competitors on international markets.

2.4.2.3 Consumption

Pig meat consumption amounts to 40.5 kg in the EU on average (Gira 2012). It differs however, between countries from 22 kg in the United Kingdom to 68 kg in Cyprus (see figure below).

Figure 7. Pig meat consumption in 2011 (kg/capita)



Source: GIRA

Table 5. Country data on pig production and consumption

	Number of pigs (1 000)	Average pigs per farm	Net pig meat production (1 000 t)	Self-sufficiency (%)	Consumption (kg/capita)
Austria	3 134	71	542	106%	55.6
Belgium	6 176	895	1 124	239%	39.0
Bulgaria	664	6	37	40%	25.4
Cyprus	464	619	57	97%	68.4
Czech Republic	1 846	253	276		41.4
Denmark	12 293	1 903	1 666	665%	53.4
Estonia	372	128	32	100%	32.5
Finland	1 340	514	203	115%	33.7
France	14 063	405	2 010	106%	33.0
Germany	26 901	341	5 443	107%	54.9
Greece	1 087	33	114	39%	25.4
Hungary	3 168	14	416	96%	36.9
Ireland	1 500	2 007	214	175%	33.1
Italy	9 321	90	1 633	70%	37.5
Latvia	390	14	23	85%	28.2
Lithuania	929	10	55	94%	41.3
Luxembourg	89	463	10	65%	39.0
Malta	69	566	7	75%	28.9
Netherlands	12 206	1 342	1 288	244%	41.8
Poland	14 776	28	1 741	112%	51.0
Portugal	2 145	27	384	63%	45.3
Romania	5 359	3	234	57%	31.6
Slovakia	687	21	69	51%	33.5
Slovenia	396	17	25	70%	30.7
Spain	25 704	217	3 369		55.0
Sweden	1 520	732	263	90%	36.2
United Kingdom	4 385	412	774	54%	21.7
EU	150 984	44	22 011	110%	40.4

Source: Eurostat

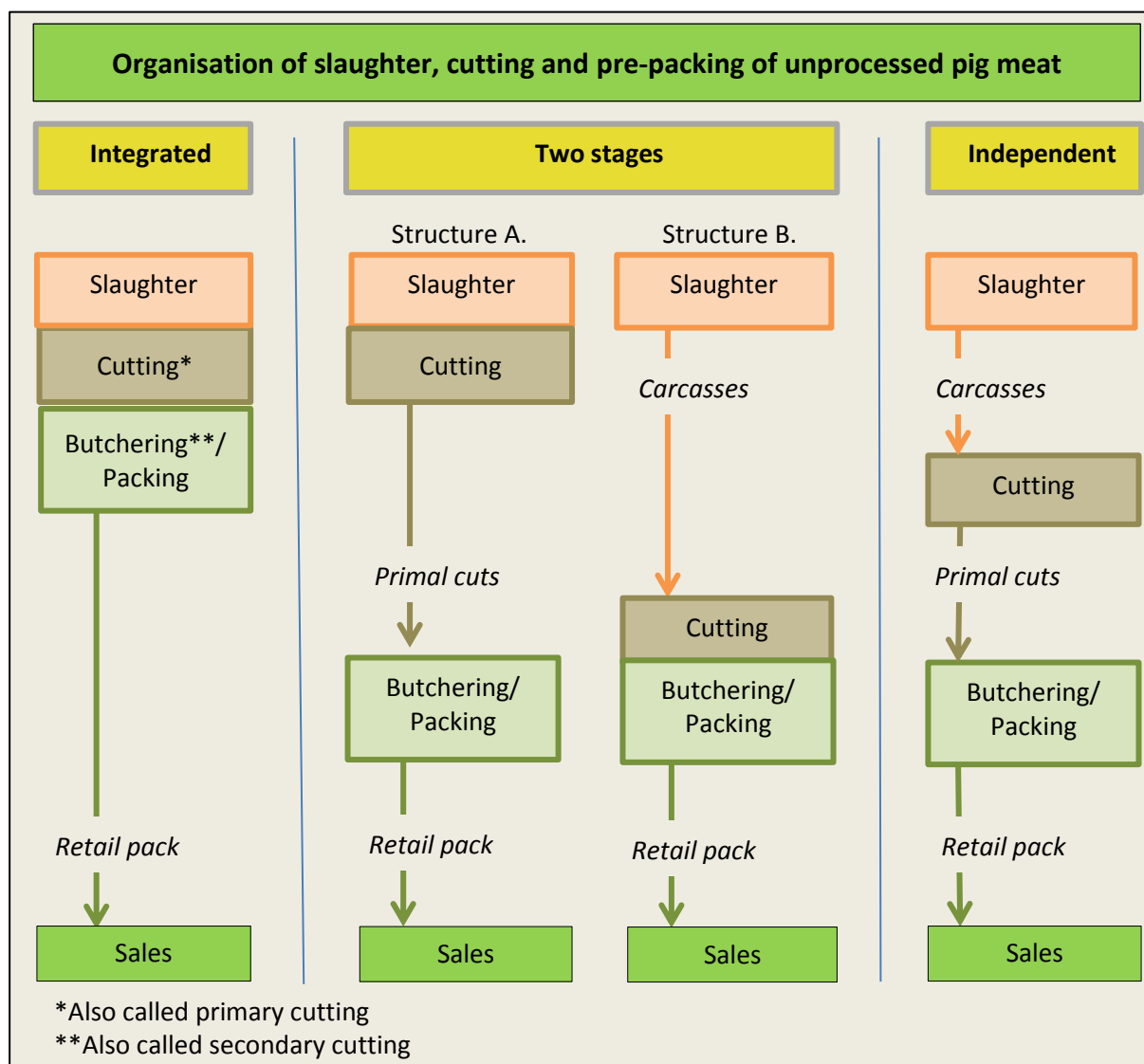
Unprocessed meat is sold to consumers via supermarkets, local butchers, wet markets, directly from the farm or via catering channels (e.g. restaurants, hospitals). No literature or data are available about the division of sales between these sales channels at EU level. In the Netherlands 59% of the sales of meat (all kinds of meat) are sold via supermarkets, 35% through catering channels, 4% via butchers and 2% miscellaneous (PVE, 2012). It is expected however, that the focus on supermarkets varies between countries.

An increasing share of the meat is sold pre-packed. In the Netherlands this is 92%, but it is less in other countries (PVE, 2012).

2.4.3 Organisation of the supply chain

Typically supply chains in pig meat are loosely coupled systems, where piglets, slaughter pigs and meat are sold on spot markets. Pig meat chains in some countries are characterized by integration and cooperation.

Figure 8. Organisation of slaughter, cutting and packing of unprocessed pig meat



The Spanish and Belgian pig sectors have a high level of vertical integration, where either feed companies or meat companies are the integrators. In France, farmers cooperate in farmers' groups, which often include feed production and sometimes meat processing. Full vertical integrations are found, for example in Poland and Romania. In the United Kingdom, retailers often have some kind of dominance and control over the preceding parts of the supply chain, including meat processing and even farming (EC, 2011).

Germany, the Netherlands, France and Denmark in particular have well developed supply chain quality management and information systems. For the pig meat sector Germany, Spain and France will be analysed in more detail. These examples illustrate high and low levels of integration at the pig production level and the role of producer groups.

Germany

Germany is the first ranked producer in the EU of pig meat (numbers slaughtered and weight of carcasses), and is a major importer of both young pigs for fattening and slaughter pigs.

The pork production chain has a relatively low level of vertical integration. The most typical relationship between business partners is repeated market transactions with intermediaries playing an important role. Concentration and integration is more likely downstream than upstream. However, the German pig meat industry is becoming more integrated and focused on exports. The biggest four pig slaughtering companies have a market share of about 60% (ISN, 2012).

At the retail level, there is a trend away from buying meat from butchers and serviced sales departments towards pre-packaged sales. There is an increasing focus on quality, food safety and traceability; with a preference for German and/or locally produced meat.

The trend is consistent with consumer buying behaviour, which has shifted rapidly in recent years. Currently 70% of all meat and meat products are pre-packaged sales, while in 2000 the rate was only 43% (ISN 2012a). This shows the decreasing share of butcheries and service counters.

Spain

Spain has the largest sow herd in the EU and is the second ranked producer of pig meat. It is an exporter of live pigs (e.g. piglets to Portugal) and pig meat (to Italy). Fresh and frozen meat is exported to EU markets and there is a growing market for export of frozen meat to international markets (currently 23% of the total pig meat export).

The pig production chain (breeding, rearing, fattening) has a high level of vertical integration. Slaughterhouses may be part of the integration or independent. At least half of pork is marketed as fresh meat. Spain produces various PDO and PGI pork products and the quality meat sector is important.

Consumption of pork meat in 2011 was estimated to be 493 000 tonnes of fresh meat (47%) and 560 000 tonnes of processed products (53%). From 2009, processed products have outperformed fresh products. In 2009, only 17% of fresh pork was sold pre-packed (EC, 2011).

Several types of operator are involved in the production and distribution of pork, as shown below:

Production

i) Open cycle operators. There are three types:

- Producers of piglets (phase I) - sows and nursing piglets up to 6 kg.
- Producers of piglets (phase II) - continue the previous cycle to 20 kg.
- Fattening Pigs - piglets from 6 or 20 kg are fattened until slaughter at 100-105 kg.

ii) Closed cycle operators. They perform throughout the production process until animals reach slaughter weight.

Processing and commercial wholesalers

- Slaughterhouses may take third-party or their own animals and sell the carcass to cutting plants, to meat wholesalers or to the processing industry. Or conversely, integrated operators may perform part or all of the post-slaughter operations .
- Cutting plants can be attached to the slaughterhouse or independent establishments.
- Wholesalers tend to be operators located on the markets that cater to the HORECA channel (the sector of the food service industry that prepares and serves food and beverages) and traditional trade.

According to ZMP (2007) the largest slaughtering companies have a market share of about 20% in pig slaughtering. A significant group of slaughterhouses in Spain does not exceed 500 pigs per week on average.

At the retail level sales are divided evenly between traditional outlets and supermarkets (EC, 2011). This can be taken as a rough indicator of the level of pre-packing as traditional outlets generally pack at the point of sale, whilst supermarkets tend to sell in pre-packs. Wholesalers are important in the traditional market channel as they provide carcasses or cuts to butchers. However there is an increasing trend towards vertical integration and coordination of supply and distribution, as well as pre-packaging for convenience. This means that there is a decline in the participation of wholesalers as large retail chains become more important and powerful.

France

France is the third ranked producer of pork with a self sufficiency of 106%. However, France imports and exports roughly a third of its production. Over 90% of production is controlled by 73 producer groups. In 2008, the 15 biggest producer groups, with over 500 000 pigs produced annually, represented 68% of the production (HCCA, 2008).

The main structure of French pig farming is the "breeder-fattener" system. The breeder-fattener structures contain 62% of pigs for fattening and 83% of total sows.

In France, there are 50 pig producer organizations which sell more than 90% of French pigs. Of these, 80% are cooperatives. They offer services to their members such as technical advice for feed, reproduction, economic management, etc. Some of them own slaughtering plants or further processing sites.

The top ten slaughter companies account for 82% of the national slaughtering.

Table 6. Top 10 French pig slaughterers, 2011

	Volume (thousand pigs)	% of total pork production	Type of company
Cooperl Arc Atlantique	4 968	20	Cooperative
Bigard-Socopa Viandes	4 839	19.5	Privately owned
Gad / Prestor / Cecab	2 546	10.3	Cooperative
Jean Floc'h	1 854	7.5	Privately owned
Kerméné	1 674	6.8	Privately owned
Abera	1 033	4.2	Privately owned
Tradival	1 041	4.2	Privately owned
Gatine Viandes	1 087	4.5	Privately owned
AIM	789	3.2	Privately owned
FIPSO Industries	619	2.5	Cooperative
Top 10	20 450	82.5	
France	24 803	100	

Source: IFIP

Over 80% of fresh pork is sold in supermarkets and hypermarkets. Almost half of pigs are produced under compliance certificates for quality and origin. Label Rouge, which is quite important in poultry meat, is hardly relevant in pig production.

Table 7. Percentage of fresh pork products with origin labelling, June 2012

Labelling sign	"VPE"	"Origine France"	"Origine UE"	None
%	27%	57%	5%	11%

Based on data collected by Inaporc – retail sector (hypermarkets, supermarkets, hard discount)

2.4.4 Quality systems

To a great extent pork is a commodity meat, where the price is the main criterion for trade. Quality parameters, like cut, weight, fat coverage, lean meat content are important for grading, and variables like volume and flexibility of supply are important for market penetration.

A number of countries have national quality systems (like Q&S, IKB or Certus) or participate in international quality systems (such as ISO 22000, BRC Global Standard, IFS, GlobalGAP), which focus on quality control of the production and/or supply chain. These are business-to-business systems.

There are also business-to-consumer systems, which include a wide range of quality features, such as animal welfare. Examples are Label Rouge in France or welfare focused concepts in the Netherlands and Germany. In many countries most pig meat is sold to the consumer without special branding, origin labelling or regional marks.

2.4.5 Carcass valorisation

A serious challenge for the meat industry is carcass valorisation. Every part of the slaughtered pig should be sold for the best price. There is an interdependency between sales markets in terms of products, quality and volumes. If, for example, the market for pork bellies to South Korea is attractive, the sales of belly meat to other meat processors will face shortages or increased prices. Slaughter companies also have to choose how to cut the pigs, since a ham, for example, can be sold for curing, or be cut into pieces (like cutlets) to be sold as fresh meat. This also interferes with the quality parameters, like lean content or slaughter weight.

Sometimes meat is collected from multiple suppliers before delivery to a customer. This could be the case if the supplier is a rather small company. Another example might be if a retailer has a special product offer and the expected sales volumes of this particular product are increased. In that case, the supplier may have an imbalance between supply of pig meat products and the demand; and trade with other companies will take place.

The challenge for optimal valorisation is especially important in market segments with additional value. Where production costs of pigs are higher for high-value sales markets, the sales of the high-value products must bear the additional cost. High value markets usually do not utilise the entire carcass, but only specific parts. So, there is always a part of the carcass that must be sold as commodity meat.

2.4.6 Origin labelling

The majority of pig meat is produced and sold within one country. However, both live pigs and pork meat may travel through a number of Member States before eventual consumption.

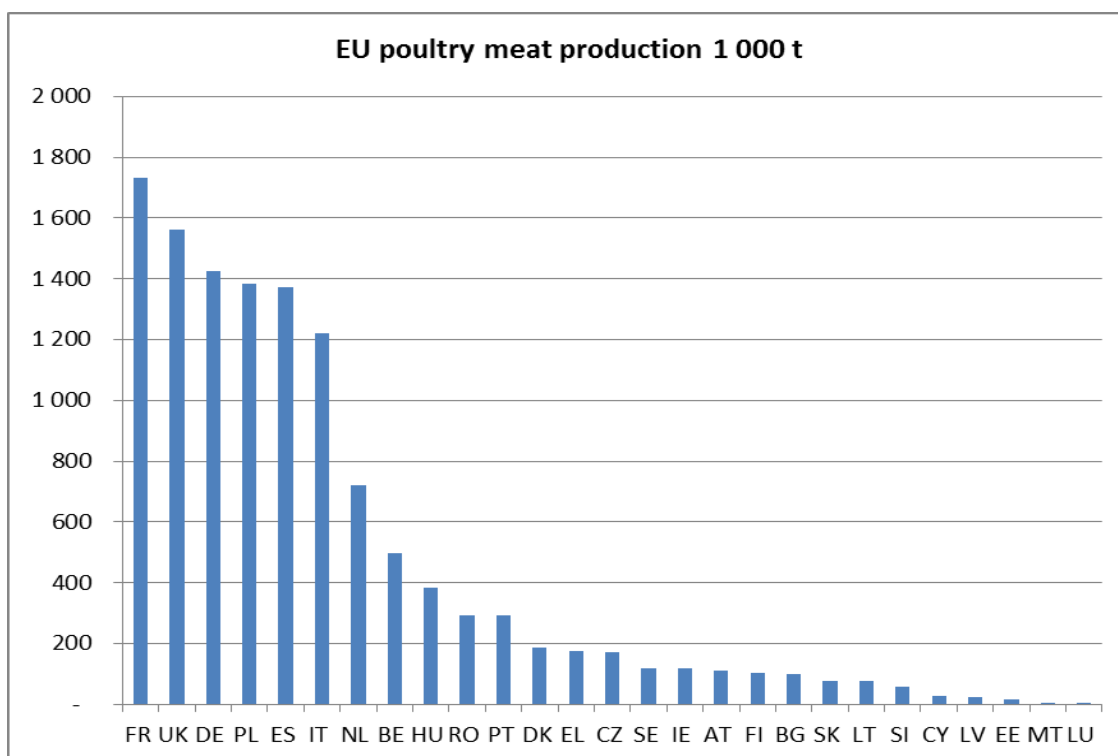
For example, a piglet may be born in the Netherlands, transported to Spain for rearing and fattening and transported to Portugal for slaughter.

This dynamic trade is a function of the EU internal market. Mandatory traceability and origin labelling will have impacts on the pig sector, possibly to a greater extent than the other meats covered by this study.

2.5 Poultry meat supply chain

EU poultry meat production is shown in the following graph.

Figure 9. EU poultry meat production, 2011 (1 000 t)



Data is based on Table 2

For clarity, the following definitions are proposed for the study of the poultry sector:

Poultry meat: broiler chickens, spent breeders, turkeys, ducks, geese;

Chicken meat: broiler chickens and spent breeders;

Broiler meat: broiler chickens grown for slaughter in 6-10 weeks (including free range and organic).

2.5.1 Production of poultry meat in the EU and Member States

In 2011 total poultry meat production in the EU was around 12 million tonnes. This is 15% of the total world production (Windhorst, 2011). The total poultry meat production relates to different types of poultry, including chicken, turkey and duck. However, the main poultry meat is chicken meat with a total EU production in 2011 of 9.6 million tonnes (MEG, 2012). The quantity of poultry meat is measured in carcass weight after slaughter. There are no statistics on numbers of birds slaughtered.

Based on an average live weight of 2.0 kg and a carcass yield of 67% (carcass weight/live weight), 9.6 million tonnes of chicken meat corresponds with about 7.2 billion broilers. Table 8 gives an overview of the supply balance of poultry meat in the EU. The self-sufficiency rate is 104% at EU level in 2011.

Table 8. EU supply balance for poultry meat, 2010 and 2011

EU supply balance of poultry meat, 2010 and 2011 (1,000 tonnes, carcass weight equivalent)		
	2010	2011
Gross indigenous production	12 093	12 235
Export	1 149	1 287
Import	782	801
Consumption	11 718	11 743
Self-sufficiency %	103	104
Per capita consumption kg	23.4	23.4

Source: MEG, 2012 / EC

Table 9 below gives an overview of production, export, import, consumption and self-sufficiency of poultry meat in all 27 EU Member States (Note that there may be some small differences between figures from different sources)

Table 9. Supply balance for poultry meat in all 27 EU Member States, 2011¹²

country	production (1000 ton)	export (1000 ton)	import (1000 ton)	self sufficiency rate (%)	consumption (kg/head/year)
France	1800	548	370	118	23.7
Germany	1663	448	462	108	18.9
United Kingdom	1590	295	410	93	28.8
Italy	1330	172	54	111	18.3
Poland	1330	433	31	128	23.5
Spain	1278	145	121	101	30.5
Netherlands	762	1070	445	205	22.4
Hungary	410	172	44	143	28.5
Portugal	335	16	42	93	33.8
Romania	288	75	91	--	--
Belgium/Lux	244	439	199	190	16.8
Czech. Rep.	212	25	91	78	24
Greece	181	21	56	82	20.5
Denmark	180	88	62	135	24.1
Austria	125	52	91	74	20.5
Ireland	120	69	56	104	29.5
Finland	101	15	5	105	16.9
Bulgaria	97	47	102	na	na
Slovakia	88	28	46	70	20.2
Sweden	86	44	37	95	11.8
Lithuania	78	31	24	93	22
Slovenia	65	18	13	--	--
Cyprus	28	2	7	--	--
Latvia	24	7	26	54	19.8
Estonia	16	9	20	--	--
Malta	4	0	5	--	--
EU-27	12435	1264	172	104	23.4

Source: MEG, 2012

Table 9 illustrates that seven countries produce more than 500 000 tonnes of poultry meat: France, Germany, UK, Italy, Poland, Spain and the Netherlands. These large producers have a 78% share of total EU production.

¹² Note that there are some inconsistencies between this table, which is based on MEG (German) data, and the preceding table, which includes some Eurostat data.

Important exporters of poultry meat are the Netherlands, France, Germany and Poland. Export can relate to export of fresh poultry meat to neighbouring countries (e.g. the Netherlands to Germany) or export of frozen poultry meat to other EU countries or third countries (e.g. frozen leg meat from Germany to Bulgaria or frozen whole birds from France to the Saudi Arabia).

The main importers of poultry meat are the Netherlands, UK, Germany and France. Note that a number of countries are at the same time importers and exporters of significant volumes (Poland being an exception).

The self-sufficiency rate shows the domestic production plus exports and minus imports. Most EU countries have a self-sufficiency rate between 90% and 100%. Of the main producers, the Netherlands (205% self-sufficiency), Belgium (190%), Hungary (148%) and Poland (128%) are net exporters, whilst the Czech Republic (76%), Portugal (93%) and the UK (93%) are net importers.

Average EU per capita consumption of poultry meat is 23.4 kg per year. However there is a wide range between countries with relatively high consumption in Portugal, Spain, Ireland, UK and Hungary (almost 30 kg per head per year); and relatively low consumption in Sweden, Finland, Belgium, Italy and Germany (less than 20 kg per head per year). Consumption of poultry meat is growing in almost all EU Member States, the EU average increased from 22.1 kg in 2006 to 23.4 kg in 2011.

Leading Member States in chicken, turkey and duck meat

In 2011 the total poultry meat production of the EU was 12.5 million tonnes (MEG, 2012). Of this total production 9.6 million tonnes was chicken meat, 1.8 million tonnes was turkey meat and 0.5 million tonnes was duck meat (MEG, 2012). Chicken, turkey and duck production of the ten leading countries is shown in the following table. All other countries have a level of chicken production below 250 000 tonnes, low turkey production (below 25 000 tonnes) and low duck production (below 25 000 tonnes).

Table 10. Production of different poultry meats in leading poultry producing MS, 2011

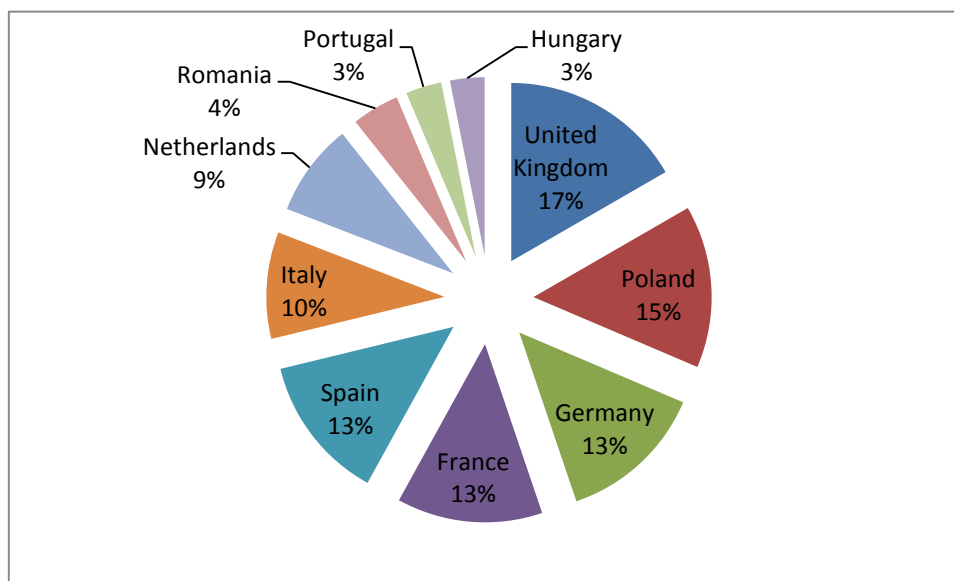
	production chicken	production turkey	production duck
country	(1000 ton)	(1000 ton)	(1000 ton)
United Kingdom	1357	170	33
Poland	1200	280	17
Germany	1090	401	63
France	1076	400	244
Spain	1073	104	4
Italy	788	275	14
Netherlands	687	27	17
Romania	350	--	--
Portugal	265	38	9
Hungary	254	101	71
total EU-27	9623	1874	510

The above table illustrates that ten EU countries have a chicken meat production of more than 250 000 tonnes. For these ten countries, chicken accounts for 80% of the poultry meat production from the three species.

The UK is the largest producer of broiler meat followed by Poland, Germany, France, Spain, Italy and the Netherlands.

The following figure illustrates the market share of the leading EU chicken meat producers:

Figure 10. Market share of the 10 leading chicken meat producing EU Member States



For turkey meat Germany and France are important producers. These two countries each have a share of 21% of the total turkey meat production of 1 874 000 tonnes. Other important producers are Poland, Italy and UK. For duck meat France is by far the main producer with a share of 48% of the total EU production of 510 000 tonnes.

Trade in fresh chicken meat within EU

Intra-EU trade is mainly based on fresh poultry meat. Within the EU the Netherlands dominates broiler meat export with a share of 29% of total intra-EU exports followed by France and Belgium. Germany and Poland follow with an increasing amount of export in recent years.

Trade in frozen chicken meat within EU

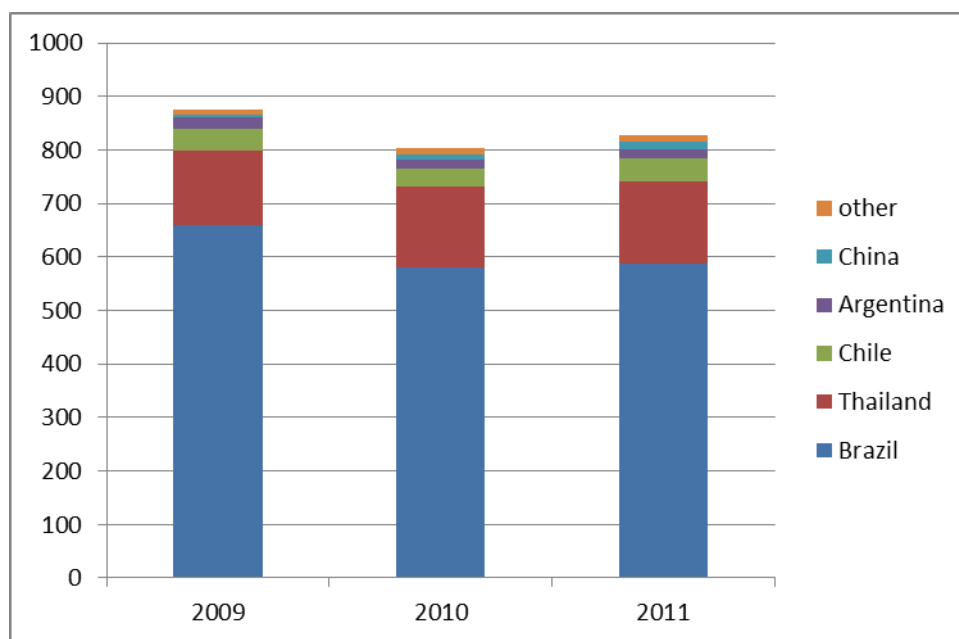
Some EU countries, especially in north-west Europe export frozen leg meat to eastern-European countries.

Imports

The four leading importing countries in the EU are the Netherlands, UK, France and Germany. These four countries account for 62% of all broiler meat imports in the EU (Windhorst, 2011). The EU imports are mainly frozen natural breast meat from Brazil or frozen cooked breast meat from Thailand.

The following figure shows the import of poultry meat from third countries:

Figure 11. EU poultry meat imports from third countries, 2009 -2011 (1 000 tonnes CWE)



Source: EU, 2012

Exports

Exports of poultry meat to third countries comprise more than 90% frozen products (EU, 2012). Important destinations are Russia, Saudi Arabia, Benin, Ukraine and Hong Kong. The exports to Eastern Europe and Africa are mainly frozen leg meat. Exports to Saudi Arabia and other countries in the Middle East relate to frozen whole birds exported by some French companies.

Trade in live poultry with third countries

Trade in live poultry (including day-old-chicks and slaughter birds) between the EU and third countries is negligible.

Trade in live poultry within the EU

Information on day-old-chicks and chickens for slaughter is given in the following section.

2.5.2 Description of the poultry meat supply chain

This section provides a description and statistical analysis of the production and supply chain for each sector including the level of integration; large and small scale production; trade at each level of production relevant for origin labelling (i.e. rearing and fattening phases, slaughter animal trade, carcasses, cutting and packaging of unprocessed meat); distribution and retail channels.

The production process

Production of poultry meat is organized within a production chain as represented in the following two figures:

Figure 12. Supply chain for unprocessed poultry meat production

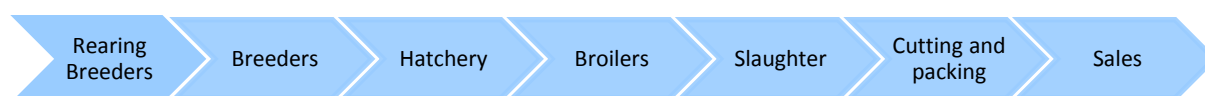
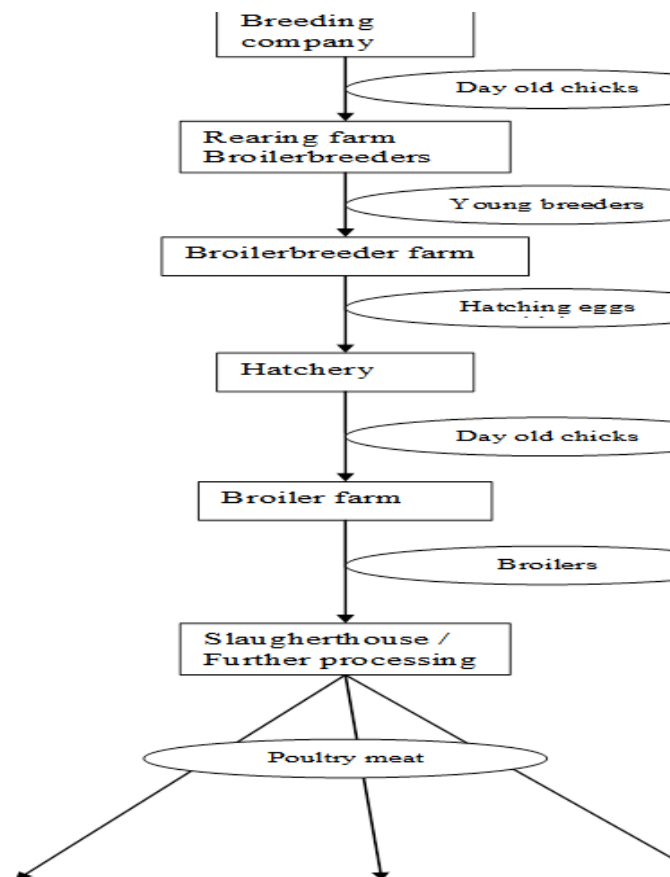


Figure 13. Overview of the production chain for poultry meat



The production process starts with the breeding company that selects a number of pure lines, produces crossbred grandparent stock and parent stock as day-old chicks. The day-old chicks are grown in rearing farms to become broiler breeders. At the age of 20 weeks the young broiler breeders are moved to broiler breeder farms to produce hatching eggs for broilers.

After incubating and hatching in a hatchery, the day-old broiler chicks go to broiler farms. Fast growing broilers reach slaughter weight in 38-45 days, depending on the broiler product and the market, and are delivered to the slaughterhouse.

Most slaughterhouses are combined with cutting and packing operations. Whole carcasses may be pre-packed and sold as whole chicken, or cut into portions (e.g. breast, legs, drumsticks, wings) which are then pre-packed.

In the final stage, poultry meat is distributed to retail (supermarkets), food service (restaurants, catering, institutions) and food industry (further processing into convenience consumer products) (van Horne, 2008).

Organization in the production chain

The European poultry industry is working within a very strict organizational model. Within the model, the different parts of the production chain are linked to each other. Within the links of the chain there is trade in hatching-eggs and day-old-chicks for growing into broilers and producing poultry meat. At the different stages feed is provided by a feed mill (van Horne, 2008).

Within Europe there are two organizational models practiced:

a) Independent links in the broiler production chain

In this model the different links in the production column are independent companies. The hatchery, the feed mill and the processing plant are each independent firms that trade through the open market. Breeder and broiler farmers buy birds and feed at their 'own risk', and sell the hatching eggs and broilers to the next link in the production chain. The farmer is the owner of the birds.

The broiler farmer often has a long term agreement with the slaughterhouse for the supply of chickens. Compared to integrated systems, farmers in independent systems are more directly confronted with fluctuations in the supply and demand of poultry meat and feed and market price for feed and broilers.

b) Integrated production

Through vertical integration several or all links within the production chain are under control of one company. The hatchery, feed mill and processing plant are owned and controlled by the integrating firm. Also broiler or breeder farms can be owned by the integrator. However, many integrators work with contracts to link the broiler or breeder farm to the integrator. The integrator provides the day-old chicks and the feed and owns the birds at any time. The farmers are paid a set rate for their input through labour, providing the poultry housing and for the variable costs.

Both organisation models are used within Europe. In Italy, France and Spain the integration model is mainly used. Farmers grow broilers based on contracts with large integrators. Main integrators in those countries are Groupe Doux and LDC in France, Gruppo Veronesi and Amadori in Italy and Gruppo Sada in Spain. In the Netherlands and Belgium the production is organized with independent links. The market leaders in the Netherlands are Plukon Royale Group and 2 Sisters Storteboom. In Germany both models exist. The main player in Germany, PHW-Wiesenhof, is working as an integration.

Large and small scale production

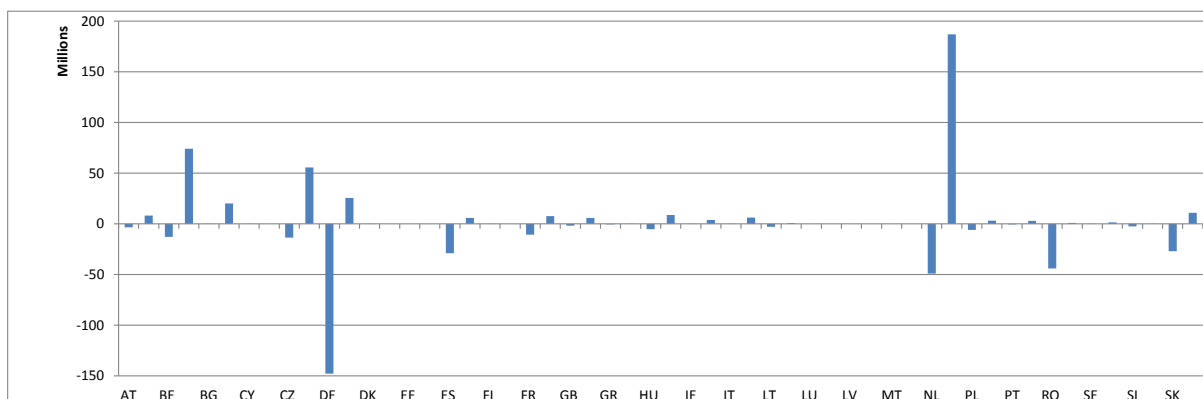
There is no relationship between farm size and labelling.

With regard to size of slaughterhouses, there are no suitable data on the distribution of slaughterhouses with regard to size in the Member States. Detailed information is available for only a few countries including the Netherlands, Belgium, Germany and Ireland (AgraCeas, 2010).

Trade at each level of production relevant for origin labelling

Eurostat data provides an overview of intra-Union trade in live poultry. A distinction has to be made between day-old-chicks (code 01051199, live fowls of the species *Gallus domesticus* of a weight of less or equal than 185 g, excluding grandparent and parent female chicks and laying stocks) and chicken for slaughter (code 01059400, live fowls of the species *Gallus domesticus* of a weight more than 185 g).

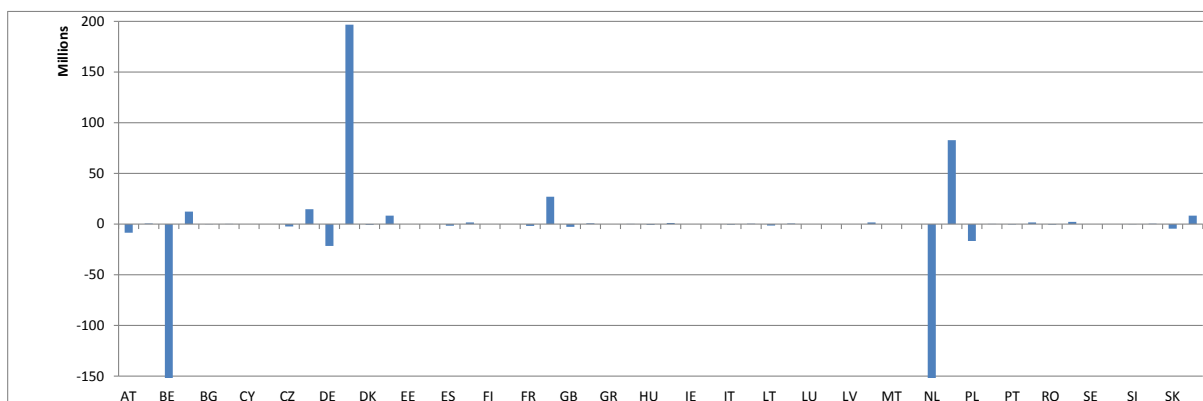
Figure 14. Import and export of day-old-chicks in 2010 by MS



Source: Eurostat

The above figure shows that Belgium, the Czech Republic and especially the Netherlands are the major exporters of day-old-chicks to other EU countries. At the same time the Netherlands is also a significant importer of day-old-chicks. However, Germany is by far the largest importer of day-old-chicks.

Figure 15. Import and export in 2010 of live chicken for slaughter by MS



Source: Eurostat

The above figure shows that Belgium and the Netherlands are the major exporters of chickens for slaughter. The main importers are Germany and the Netherlands.

It can be concluded that there are large trade flows in both day-old-chicks and chickens for slaughter, particularly between three countries: the Netherlands, Germany and Belgium. For Germany the trade is especially with the western part (state of Niedersachsen) with many poultry farmers doing business with Dutch companies (hatcheries, feed mills and slaughterhouses).

In the southern part of the Netherlands farmers are doing business with companies in Flanders (the northern part of Belgium). Transport distances between these companies in the Netherlands, west Germany and north Belgium are relatively short. Trade is based on the availability of slaughter capacity and the regional (cross border) activities of integrators.

Similar statistics are available for turkey day-old-chicks, turkeys and ducks. However, the study focused on chicken meat as it represents 80% of the volume.

2.5.3 Voluntary origin labelling for poultry meat already in place at EU level

Label rouge in France

France is a high volume producer of poultry meat with an integrated production structure. France also has a substantial production of high quality (Label Rouge) poultry meat.

In France, as in most countries throughout the world, standard poultry production units are organised in integrations. The use of contracts to vertically coordinate the poultry production is a very common practice of large integrators.

Producers remain the owners of production buildings, but most technical choices (from one-day chicks to feed suppliers, or even the type of buildings) are made by the integrator (feed mills or slaughterhouses), who also plan chick placements in relation to the market needs. Producers are often grouped in production organisations (producer groups, mainly cooperatives), who negotiate the terms of the contracts with the industry. In France, most contracts afford the producers some guaranteed margins.

The scheme is a little different in the Label Rouge (LR) production system, where production is managed by “quality groups”. Each quality group brings together the major stakeholders in the production chain, namely: input suppliers, chicken farmers (usually organised as a farmer group or cooperative), and slaughterhouse(s). The quality group is responsible for the enforcement of the internal rules (“*cahier des charges*” = specifications), the production organisation, the commercialisation and communication.

Italy regulation on origin labelling

Italy has a compulsory regulation for labelling country of origin of poultry and poultry products imported into the country. Under the Order adopted in August 2005, Italian producers and the first recipients of poultry meat are obliged to indicate the Member State for origin of the meat, as well as the date of import for poultry meat and products coming from other Member States and third countries.

2.6 Sheep and goat meat supply chain

2.6.1 EU supply chain

The supply of sheep and goat meat for consumption within the EU is shown in the table below. The self-sufficiency rate is 76% at EU level. Annual per capita consumption across the EU is 2.3 kg, representing less than 3% of the total per capita meat consumption of 83 kg.

Table 11. Sheep and goat meat supply balance, 2010

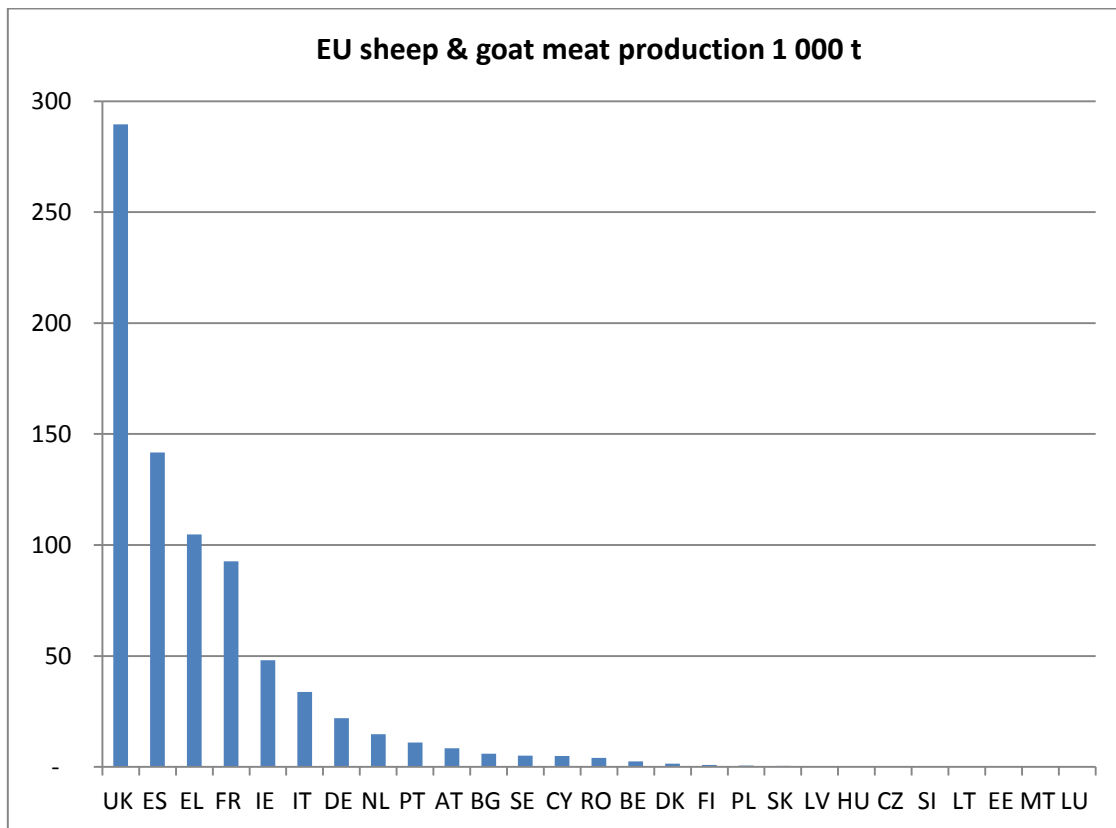
Supply balance of sheep and goat meat	
2010	1 000 t
EU production*	787
Exports - live animals*	11
Exports - meat	13
Net production*	763
Imports - meat	239
Consumption	1002
Self-sufficiency %	76%
Per capita consumption kg	2.3
* carcase weight equivalent	

Source: DG Agri¹³

¹³ Agriculture in the European Union, Statistical and economic information, 2011, DG Agriculture and Rural Development

Production is concentrated in a small number of countries, as shown in the following figure:

Figure 16. EU sheep and goat meat production, 2011 (1 000 t)

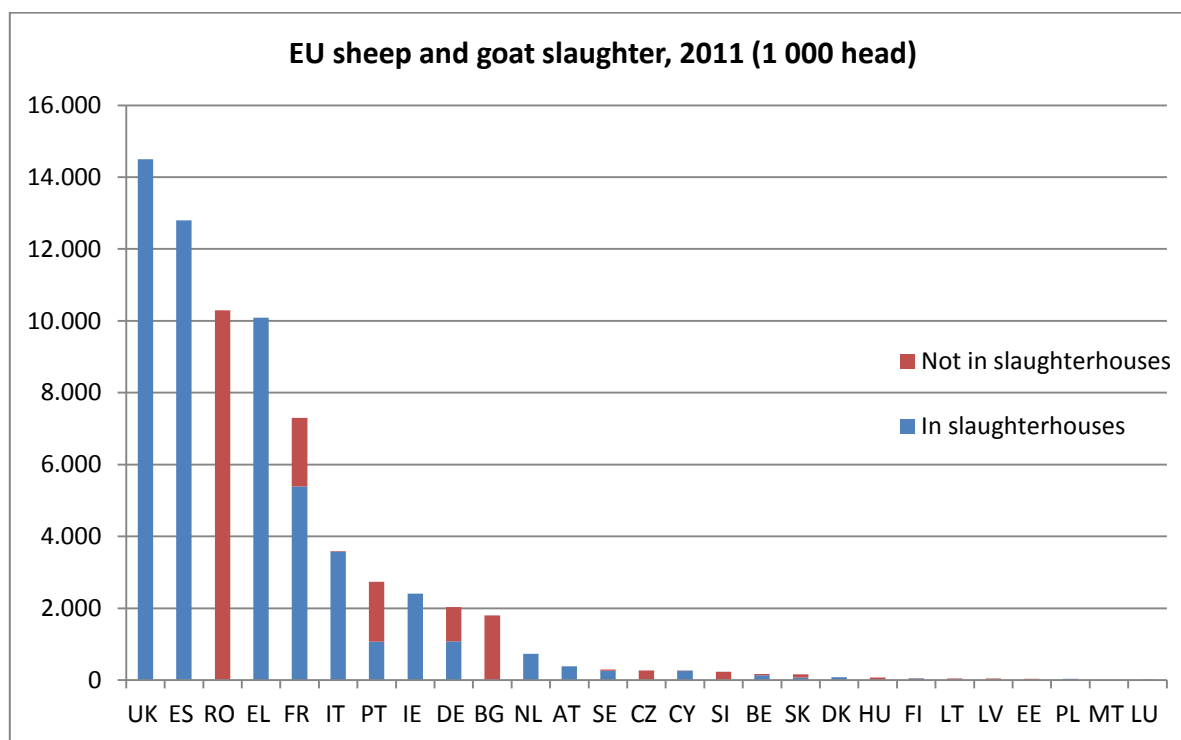


Data is based on Table 3

The following figure shows EU sheep and goat slaughter by the number of head. The rankings show some changes compared to those by weight due to differing average weights at slaughter in different Member States. In particular Romania, Portugal and Bulgaria move up the ranking when compared by number of head.

The figure includes estimates of animals slaughtered outside specialised slaughterhouses, which is particularly evident in Romania due to the domination of small lambs slaughtered at local slaughter points for Easter (note there are discrepancies in the Romania figures due to different information sources).

Figure 17. EU sheep and goat slaughter, 2011 (1 000 head)



Source: Eurostat

The following table shows that two Member States - UK and Spain - account for over 50% of sheep and goat meat production; and six countries account for 90%. Only three of the top 10 producing countries (covering 97% of production) are self-sufficient: UK, Spain and Ireland.

Table 12. Major EU producers of sheep and goat meat in 2011

Major EU producers of sheep and goat meat					
		1 000 t	Share %	Cumulative %	Self-sufficiency %
	EU27	794	100%		76%
1	UK	290	36%	36%	90%*
2	ES	142	18%	54%	108%
3	EL	105	13%	68%	87%
4	FR	93	12%	79%	46%
5	IE	48	6%	85%	351%
6	IT	34	4%	90%	49%
7	DE	22	3%	92%	51%
8	NL	15	2%	94%	95%
9	PT	11	1%	96%	66%
10	AT	8	1%	97%	72%
11	BG	6	1%	97%	108%
12	SE	5	1%	98%	42%
13	CY	5	1%	99%	77%
14	RO	4	1%	99%	150%

*UK became self-sufficient during 2011
Source Eurostat, 2011

EU sheep and goat meat production represents only 2% of EU meat production (see Table 2). Sheep and goat meat production is declining worldwide and also within the EU. This is matched by a gradual decline in the overall population of animals.

The decline in meat production is matched by a similar decrease in per capita consumption to around 2.3 kg, or 2.5% of all meat consumption. These trends are expected to continue with per capita consumption declining further to around 2 kg by 2020¹⁴.

Prices have tended to increase in recent years such that lamb is now an expensive meat. However, profitability has tended to decrease in the meat producing countries (UK, Ireland) and those with mixed production (Spain, France). Decreasing profitability and production, and higher prices have been attributed¹⁵ to a pre-existing trend, which was accelerated by the 2003 reform of the Common Agricultural Policy.

Over 70% of the sheep and goat population is located in less favoured areas and it is becoming recognised that specific support measures are needed to maintain production in these areas and arrest further decline¹⁵.

Promotional measures have been recommended to increase consumption, both through quality schemes and through generic campaigns.

Of the total sheep and goat meat production, sheep meat comprises 92% and goat meat 8%. Member States producing a significantly greater proportion of goat meat are Cyprus (52% sheep / 48% goat meat), Greece (68% / 32%), Malta (85% / 15%) and the Netherlands (87% / 13%).

Imports of sheep and goat meat are overwhelmingly from New Zealand (83% of imports in 2010), followed by Australia (8% of imports in 2010). There are no live animal imports.

Table 13. EU imports of sheep and goat meat, 2010

Imports of sheep and goat meat		
2010	1 000 t	%
New Zealand	199.1	83%
Australia	19.1	8%
Argentina	5.8	2%
Chile	5.8	2%
Uruguay	4.5	2%
Other	4.7	2%
Total	239.1	100%

Source: DG Agri

2.6.2 Description of the sheep and goat meat supply chain

Sheep and goat production systems in the European Union are very diverse across a wide range of climatic systems.

The sheep and goat sector can be milk or meat oriented, or mixed. Production systems can be extensive or intensive. A lamb grown for meat may be born, reared and fattened on one holding, or may move to further holdings for fattening.

¹⁴ Prospects for agricultural markets and income in the EU 2011-2020, DG Agri

¹⁵ Evaluation of CAP measures for the sheep and goat sector, Tender Agri/2010/EVAL/02 undertaken by AND International for DG Agri, 2011

In southern Member States sheep farming is mostly milk oriented (Greece, Italy, Romania) or mixed milk and meat production (Spain, Portugal). Sheep meat is a by-product of the dairy flocks and lambs (the males and surplus females) are slaughtered at light carcass weights (9-12 kg). Spain is more meat oriented but still produces light lamb (about 11 kg).

As mentioned above, over 70% of the sheep and goat population is located in less favoured areas.

In many countries producers sell their sheep and goats at local live animal markets.

Figure 18 Unprocessed sheep and goat meat supply chain from dairy flocks



In the north of the EU (e.g. UK, Ireland, Belgium, the Netherlands, Luxembourg, Denmark, Germany, Sweden, Finland) sheep husbandry is predominately for meat production and lambs are slaughtered at heavier carcass weights (around 20 kg). France has a mixed production from dairy and meat flocks but produces heavy lamb (about 17 kg). Lambs may be reared and finished on the farm on which they are born, or may be transferred to another farm for fattening. Lambs will be slaughtered for meat production within 12 months. The UK and Ireland produce most of the intra-EU trade in sheep meat.

Figure 19 Unprocessed sheep and goat meat supply chain from specialist meat breeding flocks



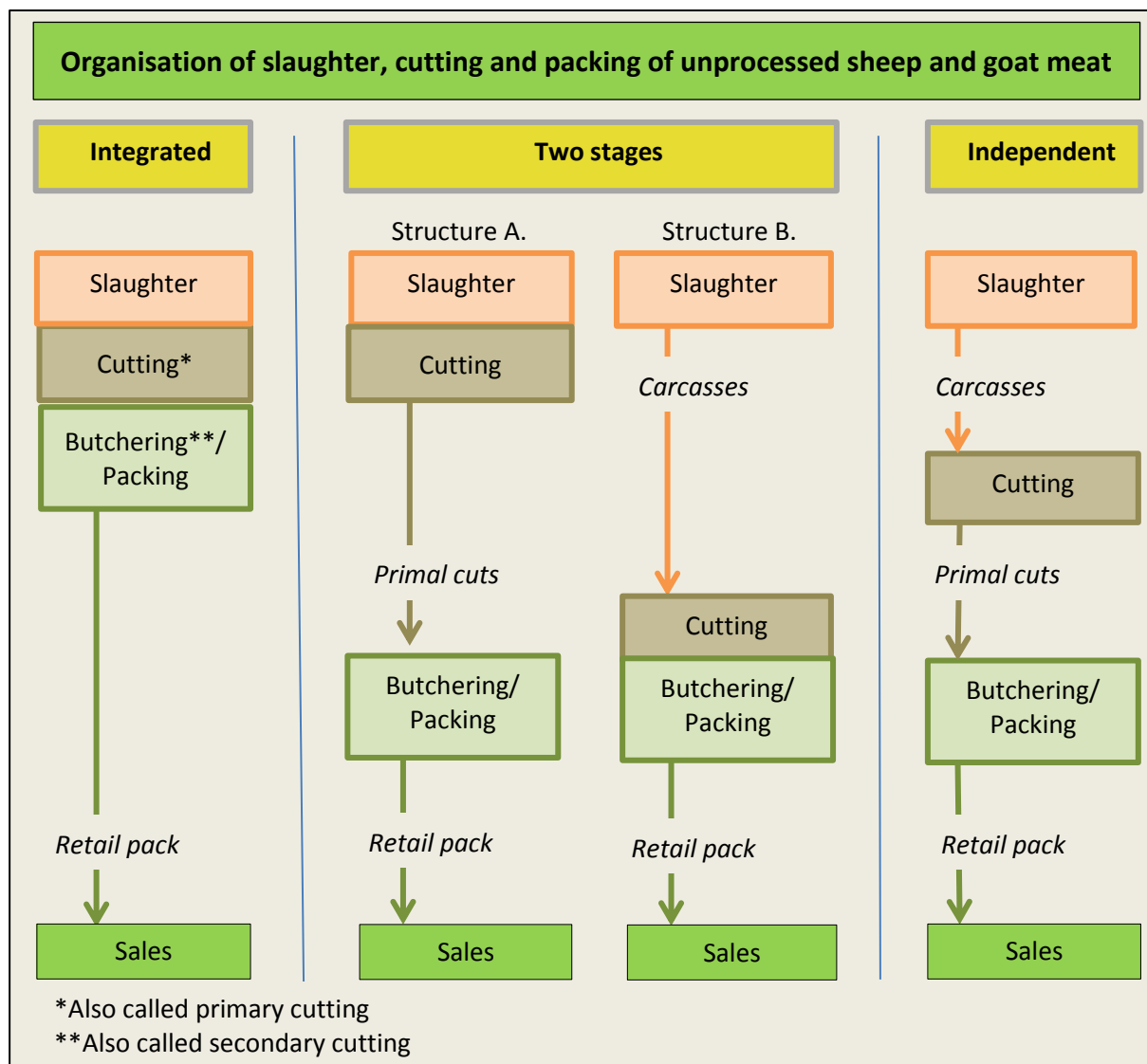
EU regulations ensure traceability of movements of live sheep and goats on the one step back - one step forward basis and enable the provision of origin information for animals entering the slaughterhouse. However, unlike the bovine traceability system, national sheep databases are not required by legislation although they may be provided on a voluntary basis. This may make it more difficult for slaughterhouses and others to access complete origin details for sheep and goats, although the information is available under the regulations.

Simple line numbering and carcass labelling systems can ensure that origin information is linked to carcasses leaving the slaughter line. Therefore, slaughterhouses that have such systems in place should not incur significant costs in providing this origin information to cutting and packing plants.

The stages of the supply chain of main concern for the introduction of mandatory origin labelling of unprocessed sheep and goat meat are the cutting, butchering and packing operations between the slaughterhouse and the completion of retail packing and labelling. Origin information from the slaughterhouse must be transmitted between these stages. Origin information must already be available at each stage of the chain for traceability purposes.

Slaughter, cutting, butchering and packing operations may be integrated in one business, or carried out by separate businesses, as illustrated:

Figure 20. Organisation of slaughter, cutting and butchering/packing of sheep and goat meat



Variations on these structures would include butchers shops that make up pre-packs for sale in their shops, and butchers that prepare catering packs for sale to restaurants and catering organisations.

Integrated operations are invariably large scale. The two-stage structure shown as 'Structure A' in the above figure is also common where a large scale slaughter and cutting plant supplies a number of separate butchering/packing plants. The trade takes place in the form of primal cuts as this enables more flexibility in marketing with different cuts going to different markets.

The two-stage 'Structure B' in the above figure is suitable for slaughterhouses that carry out contract slaughter for cutting, butchering and packing operators. In this case the product being transferred is the carcass.

Separate businesses may be of varying scale, particularly at the butchering and packing stage.

Large scale operations are suited to supplying supermarkets and are likely to use sophisticated methods to ensure accurate recording of origin information through the various stages from slaughter to retail pack. Nevertheless mandatory origin labelling may present a number of logistical and commercial difficulties that may necessitate changes in methods and increase business costs. Some of the logistical difficulties identified during the project stakeholder workshop included:

- increased number of batches;
- more complex marketing and stock control due to increased number of batches;
- difficulties in utilising many different batches of offcuts and trimmings;
- complications in preparing minced meat and fresh meat packs containing mixed species.

Difficulties that may be particularly significant for smaller businesses may include having to manage many different types of labels pre-printed with origin information.

Where the stages are split between two or more businesses, it is necessary for origin information to be transmitted between the businesses. It is a regulatory requirement to have such traceability mechanisms in place, but this does not guarantee that the tracing system will be suitable for providing origin information efficiently and sufficiently rapidly. For example difficulties may occur when suitable interlinked computer management systems are not in use.

The products to be tracked through these stages include carcasses and primal cuts, which can both be traded internationally.

Sheep and goat meat sold or transferred from slaughterhouses to primary cutting plants is in the form of dressed carcasses. Typically these will be identified with a 'luggage label' attached to the carcass.

The output from primary cutting plants is known as primal cuts, which may be identified individually with a label, or by the box.

The output from butchering is the labelled retail packs.

2.6.3 Supply chains in main producing countries

Sheep and goat production is generally fragmented as compared to other meat sectors. There is also a wide diversity in production and supply chains in different Member States. A number of examples (United Kingdom, Spain, Greece, France and Romania) are described below to illustrate this diversity.

United Kingdom (UK)

The UK sector is dedicated to the production of sheep meat and is the largest sheep meat producer in the EU, slaughtering nearly 40% of the EU total by weight. The UK is a net exporter of sheep meat to other Member States and in 2011 it became a net exporter to all countries (i.e. over 100% self-sufficient).

Approximately one third of the total UK supply is traded each year with imports roughly in balance with exports. There are a number of reasons for the large traded volume including traditional import trade (with New Zealand), seasonality of production and price variations linked to exchange rate movements:

Table 14. UK sheep meat supply balance, 2007-2011

UK sheep meat supply balance (1 000 t dressed carcase weight)					
	2007	2008	2009	2010	2011
Domestic production	329	332	313	287	301
Imports from EU	21	20	21	19	16
Non-EU imports	116	115	122	109	93
Exports to EU	76	94	105	101	112
Non-EU exports	1	1	1	1	1
Total supply	389	372	350	313	297

Source: Defra

Most imports are from New Zealand and most exports are to other Member States, particularly France (60% of exports), Germany and Ireland.

The vast majority of UK grocery (household items) sales are made through large-scale supermarket chains. Approximately 80% of unprocessed meat is sold through these stores and a high proportion of it will be pre-packed.

In some cases, supermarkets and meat processors are integrated together in large multiple companies. However, it is more common for supermarket chains to have supply relationships with one or more large meat processing companies. Supermarkets also have supply relationships with smaller scale meat processors, who provide them with high value and speciality products.

Table 15. UK share of grocery sales through large supermarkets, November 2012

Supermarket	% of retail grocery sales	Number of stores
Tesco	30.7%	2975
Asda	17.3%	523
Sainsbury	16.9%	1012
Morrison	11.7%	455
Co-operative	6.5%	-
Waitrose	4.5%	282
Aldi	3.0%	-
Lidl	2.8%	-
Iceland	2.0%	-
	95.4%	

Source: Grocery News¹⁶

Spain

Spain is the second largest sheep meat producer in the EU following the UK. Meat production is the main activity, but it has been declining in favour of milk production from both sheep and goats.

Different sheep production systems are used including pastoral free range grazing systems, mixed sheep grazing and crop systems, and industrial systems where sheep are kept indoors.

Spain is self-sufficient in sheep and goat meat and there is a growing trade in sheep meat with other European countries, both imports and exports. However modest quantities of sheep meat are imported from New Zealand, Italy, Argentina and the Netherlands; and live sheep are imported from France and Portugal.

Sheep meat is exported to France, Italy, the United Kingdom, Portugal and Hong Kong. Live sheep are exported to France, Italy and Portugal.

The sheep breeding flock has been declining since 2003 due to low levels of profitability and reduced demand. The decline in the domestic market has resulted in reduced imports and increased exports. Exports to France have increased as the low prices have attracted French importers. To some extent exports from Spain may have displaced imports from New Zealand.

There are indications of a continuing fall in domestic demand resulting in further decreases in imports and increased exports.

¹⁶ <http://grocerynews.org/2012-06-16-08-27-26/supermarkets-market-share/grocery-stores>

Greece

The sheep and goat sector is the most important form of animal production in Greece and is oriented mainly towards milk production. Greece is the largest producer of sheep milk in the EU and has the largest goat herd, accounting for around 50% of goats in the EU. Goats are kept primarily for cheese production.

Greece is the third largest sheep and goat meat producer in the EU and is 87% self-sufficient overall, but 100% self-sufficient in goat meat. However there has been a steady decline in both meat and milk production since the 1980s.

Sheep and goat production is concentrated in the mountainous least favoured areas, which are unsuited to other forms of agriculture. Farms are generally small-scale but there is a trend toward fewer, bigger farms.

Lambs are born between November and January and are weaned at one month of age. The cost of feeding is high and lambs are slaughtered at very light carcass weights between 6-10 kg. Slaughtering reaches a peak in the spring, when numbers slaughtered can be three times higher than average.

Lamb and kid are eaten mainly at festivals, the main one being Easter but also Christmas and May Day.

France

Sheep meat production has been in long decline in favour of dairying. High production costs indicate a continuing decline in sheep numbers and sheep meat production.

The self-sufficiency rate is 46% and France has historically been the largest importer of sheep meat globally, although it has recently been overtaken by China. France is a high value market and is the largest market for UK sheep meat, which is also its largest supplier. Other major suppliers are New Zealand, Ireland and Spain, and smaller quantities come from Austria, Belgium, South America and Australia. France imports both lamb and mutton.

The main reason behind the reliance on imports is that the three main suppliers – UK, Ireland and New Zealand – have significantly lower production costs allowing them to compete successfully against domestic production.

France also imports significant numbers of live sheep, mainly from Spain, Hungary, the Netherlands and Romania. Live sheep imports in 2011 numbered approximately 350 000.

Recently Spanish sheep meat has become more competitively priced and, together with the proximity of Spain, this has resulted in a shift towards more imports from Spain, whose domestic market is currently depressed.

France has a small export trade in sheep meat and a significant but declining export trade in live sheep, principally to Spain.

A continuing decline in French sheep meat production is forecast due to low profitability, but this is unlikely to be compensated by increased imports due to high prices. Therefore consumption is expected to continue to decline in the near future.

France is the largest goat milk producer in the EU. Goat meat is produced as a by-product of the goat milk and cheese sector and cannot be sustained on its own. The sector is characterised by a seasonality of kid production resulting in prices being concentrated during a few weeks of peak production. Kid is traditionally consumed around Easter. Mature goat meat comes exclusively from culled breeding animals. Seasonality of production and the priority focus on the profitability of goat milk production results in relatively low volumes of meat production. The sector increasingly aims to produce a high value product emphasising quality.

Romania

The sector is oriented mainly towards milk production and the number of animals and output are increasing. Live animals are exported to other Member States and also outside the EU.

Romania ranks third in the EU in terms of sheep and goat numbers, but only 14 in terms of meat production by weight. This reflects the husbandry situation where lambs are sold at relatively light weights, but also the fact that most sheep and goat meat production is for home consumption and therefore does not appear in official statistics. However self-sufficiency is 150% and so exports are important at national level.

The Romanian sheep and goat meat sector still works largely on traditional lines and is heavily concentrated on the supply of light lambs at Easter. This mainly involves a slaughter service at local slaughter points with the carcass returning to the owner. The meat does not enter a supply chain. There is very little pre-packing of domestic production and it is therefore mostly not covered by the origin labelling regulation.

Imports of sheep meat are largely in the form of carcasses, of which only a small proportion goes for pre-packing. Sheep meat is imported at times when domestic supplies are not available and therefore does not mix with domestic produce. This makes it a relatively straightforward matter to identify and label pre-packs of domestic and imported production with the country of origin. Confirmation of origin to the packing plant could be done simply through declarations of origin from the supplier. Additional costs to processors may be little more than the cost of adding origin information to the label.

There may be an additional administrative cost for government inspectors to monitor slaughtering, cutting and packing, and verify that declarations of origin are valid.

As there is virtually no supply chain, consumers are already aware of the origin of most sheep meat and therefore have a low awareness of origin labelling on the small proportion that is sold in pre-packaged form.

At the present time it seems that the impact of origin labelling of sheep meat in Romania will be modest for both producers and consumers.

2.6.4 Existing systems of traceability and controls in the supply chain

EU sheep and goat meat traceability legislation is described in section 2.1.2.

The legislation ensures traceability of all live animals back to their holding of birth on the 'one step back – one step forward' basis. Information on the origin of live sheep and goats is generally available. The majority of sheep and goats are born and raised in one country, and also mostly slaughtered in the same country. Movement of live sheep and goats born and raised in one country to a second country for slaughter is also common, but in this case the country of birth and rearing is visible on the animal ear tag, allowing animals imported from different countries to be easily distinguished.

Traceability of sheep and goat meat is provided under Regulation (EC) No 178/2002 and Commission Implementing Regulation (EU) No 931/2011 using the 'one step back – one step forward' approach to transmit information between operators.

Internal traceability of carcasses through a slaughterhouse is normally achieved using a line numbering system and/or a temporary 'luggage label' on each carcass.

Internal traceability of cuts of meat through primary and secondary cutting plants up to the point of packing is normally achieved using a batch system. In large scale plants batch details are recorded using computerised barcoding and scanning systems, which enable origin information to be printed automatically on the label. In smaller plants less sophisticated systems may be used to record batch details. This system is well established for traceability purposes in all sectors and is used to provide compulsory origin labelling information in the beef sector; and in the sheep meat sector where voluntary schemes that include origin labelling are already in place.

The traceability of cuts of meat becomes increasingly difficult as the carcass is subdivided, firstly into primal cuts, then secondly butchered into retail cuts. For this reason the impact of mandatory origin labelling of sheep and goat meat is likely to be most felt at the secondary stage of butchering immediately prior to packing.

2.6.5 Voluntary labelling

Sheep and goat meat is a high value product in many countries and is marketed under a large number of PDO, PGI and TSG quality schemes. Some of these specifications state that animals must be born and raised or; born, raised and slaughtered in a specific country or region within a country, for example:

Designation	ISO	Type	Origin
Vadehavsstude	DK	PGI	Born and reared in the geographical area
Agneau de Lozère	FR	PGI	The lambs are born, raised and slaughtered in the PGI area
Scotch Lamb	GB	PGI	Born, reared throughout their lives, slaughtered and dressed in the designated geographical area
Isle of Man Manx Loaghtan Lamb	GB	PDO	Born, reared and slaughtered on the Isle of Man
Orkney Lamb	GB	PDO	Born, reared and slaughtered in Orkney

2.6.6 Type of sales

The types of sales along the sheep meat supply chain are illustrated in Figure 20 above.

Sheep and goat meat sold or transferred from slaughterhouses to primary cutting plants is in the form of dressed carcasses. Typically these will be identified with a 'luggage label' attached to the carcass.

The output from primary cutting plants is known as primal cuts, which may be identified individually with a label, or by the box.

The output from butchering is the labelled retail packs.

3 ANALYSIS OF LABELLING OPTIONS

3.1 Labelling options to be considered

Four labelling options were put forward for consideration in a stakeholder workshop, interviews and case studies. These options were:

Figure 21. Labelling options to be considered

Option 1:	Mandatory EU or non-EU origin labelling Meat from an animal born, reared and slaughtered inside the EU is labelled "Origin: EU"; Meat from an animal born, reared or slaughtered outside the EU is labelled "Origin: non-EU".
Option 2:	Mandatory country of origin labelling Meat from an animal born, reared or slaughtered in more than one country includes on the label: Member State or third country where the animal was born; Member State or third country where the animal was reared, and; Member State or third country where the animal was slaughtered. Meat from an animal born, reared and slaughtered wholly within one country may be labelled "Origin: Member State or third country".
Option 3:	Mandatory labelling of country of rearing Member State or third country where the animal was reared.
Option 4:	Mandatory labelling of country of rearing and of slaughter Member State or third country where the animal was reared; Member State or third country where the animal was slaughtered.

3.2 Overall findings from stakeholder consultations

The case studies and other investigations present a diverse picture of the impact of origin labelling across the meat sectors, different countries, stages of the supply chain and between stakeholders.

Nevertheless some characteristics seem to be emerging from the investigations to date, which will inform the further work of the study:

1. Views on origin labelling tend to be polarised one way or the other.
2. Consumers are generally in favour of country of origin labelling with an emphasis on where an animal was reared (or raised, farmed, bred, fattened). It may not be the main priority when shopping, but the absence of origin information can lead to distrust in relation to unprocessed meat, which could be an accumulative effect over a series of food scares. Consumers have not expressed a preference for EU/non-EU origin labelling on the basis that it does not provide useful information. Neither have they expressed a preference for the customs definition of origin as the place of last substantial change, as this concept is not well understood in relation to meat and does not satisfy the need to know the place of rearing. Country of origin labelling is seen as providing clear and accurate information on a meat product, which is useful for a variety of reasons. Consumers are not willing to pay for this information and do not always refer to it when shopping, but they think it should be provided as a matter of course and to omit it may raise suspicions of something to hide. Although consumers are not willing to pay directly for origin information, increased confidence in meat may benefit the livestock and meat sector in general. In particular mandatory origin labelling may help to limit damage caused by food safety crises and other market shocks.

3. The greatest impact of mandatory origin labelling on food chain businesses is in terms of trade. Individual food businesses are generally for or against according to how their trade is likely to be affected. Positive and negative trade impacts have been perceived at all stages of the supply chain. Businesses targeting high value differentiated unprocessed meat products are more likely to favour origin labelling than those providing commodity unprocessed meat products, particularly when they are of mixed origin. The experience of traceability and compulsory labelling of beef suggests there can be significant trade impacts. Other costs are secondary to trade effects and are unlikely to alter a decision that benefits trade.
4. The length of the supply chain is an important factor. Origin information becomes more important as chain length increases, but it also becomes more difficult to obtain. Origin information is irrelevant to a subsistence producer and in traditional local supply systems where consumers already know where their food was produced. It has only become necessary as supply chains have lengthened. One reaction to mandatory origin labelling by cutting and packing plants and retailers may be to simplify their supply chains.
5. The impact of mandatory origin labelling should be separated from the implementation of traceability legislation. The provision of origin information along the food chain does not put additional demands on operating practices beyond those already required for traceability purposes. For example, separation or identification of cuts or batches of meat of different origin is already a requirement for traceability and no further separation or information is required for origin labelling. The main difference between traceability and origin labelling information requirements is the accessibility of the information: traceability information is not usually required instantly and therefore more sophisticated information systems may be required to access origin information.
6. The degree of vertical integration in a supply chain is important, as is the size of food businesses. Large scale integrated supply chains can most easily put traceability and origin information systems in place along the whole chain. Costs are relatively higher for smaller businesses.
7. Increase of costs for implementing origin labelling strongly depends on the severity of control measures (as can be seen from horse meat food scandals in 2013).

3.3 Identify possible impacts of labelling options¹⁷

3.3.1 Possible impact on meat supply chain

Food businesses selecting a strategy of origin labelling to influence consumer perceptions of product quality face the challenge of establishing the label and achieving brand authenticity; as well as the achievement of brand coherence [\[Tregear\]](#). Food businesses will have more difficulty switching production of branded goods across geographic boundaries to gain cost advantages.

In situations where live pigs move between countries during the production process, the pork sector sees disadvantages in a system of national origin labelling in terms of complexity, logistics and cost. Where origin labelling is nevertheless seen as desirable, there is a strong preference within the sector for an EU label. In situations where pigs are farmed and slaughtered wholly within one country, there is more likely to be support for origin labelling at the country or regional level to promote the local production.

¹⁷ Note. Although this study is limited to unprocessed meat, some of the impacts identified in this section apply to both unprocessed and processed meat.

Poultry slaughterhouses and meat cutting plants work with supply chain management systems, which guarantee the traceability of products. The origin of the end product is known (farming and slaughter). These systems were introduced in the Netherlands in recent years, partly in response to the dioxin crisis in Belgium. The requirements and wishes of supermarket chains also mean that it must be possible to trace the origin of a product quickly and accurately in the event of problems. An EU-level origin labelling scheme would have little or no impact on the EU poultry sector as the extra costs would be low [Van Horne et al., 2006]. Imported pre-packed poultry meat must already be labelled with the third country of origin, so there is no impact on imports.

National origin labelling results in higher costs, particularly in the event of opting for fairly detailed labelling, stating the country in which the animals were raised and where they were slaughtered. Between 10 and 15% of the live chickens supplied to Dutch slaughterhouses originate from Belgium and particularly Germany. Slaughterhouses and meat cutting plants will need to process the meat from each country separately. For the meat cutting plants in particular, the costs of stating the country where the animals were raised could end up very high if a transition run is required between batches up to 10 or 15 euro cents per kilogram of final product [Van Horne et al., 2006].

French retailers have the obligation to indicate on marketing leaflets the origin of meat sold on sales promotions. If several countries are indicated (for example “origin France or Germany”), the retailers are forced to guarantee that both origins are available in store during the promotion period. Therefore retailers prefer the flexibility of voluntary country of origin labelling as promotional operations are usually planned long in advance (up to nine months) and often involve different suppliers for one product (Magdelaine and Legendre, 2013b). Voluntary country of origin labelling would enable flexibility to include only one of the two countries indicated on the label.

Product label information alone has its limitations for assessing whether relevant meat and dairy products are following the full range of guidance in product quality schemes, but it can be used to demonstrate origin according to legal requirements or voluntary codes.

3.3.1.1 Administrative costs for food businesses

Administrative costs for food business operators are defined by the Commission:

“Administrative costs are defined as the costs incurred by enterprises in meeting legal obligations to provide information on their action or production to public authorities. Information is to be construed in a broad sense, i.e. including costs of reporting, monitoring and assessment needed to provide the information and registration. In some cases, the information has to be transferred to public authorities. In others, it only has to be available for inspection or supply on request.”¹⁸

It should be noted that one of the general aims of Regulation (EC) No 1169/2011 is to reduce the administrative burden for food business operators and enforcement authorities. The preamble to the regulation notes the need for an appropriate transitional period to allow operators time to adapt to new requirements.

3.3.2 Possible impact on trade

Research on implementation costs on trade shows that increased costs of production for complying with origin labelling at the farm gate, processing, and retail levels, as well as for imported commodities, lead to decreases in the production of relevant commodities, increases in prices, and decreases in producer and consumer welfare [Jones et al., 2009].

¹⁸ Brussels, 24.1.2007. COM (2007) 23 final

Research on bilateral trade data of beef meat cuts shows that market shares of Australia, Canada, France, and Netherlands have expanded as a result of the implementation of beef origin labelling, while those of Germany and Ireland were negatively influenced. The origin labelling programme was estimated to decrease German bovine meat export by at least US\$ 433 million annually [Matsumoto, 2011].

A US study (Brester et al, 2011) for the US Meat Export Federation undertook an economic analysis of impacts of potential changes in US access to global red meat markets and costs associated with possible increases in domestic adoption of traceability programmes. The study focused on the use of traceability for age and source verification in the beef sector, and for source verification in the pork sector.

The study found that substantial economic damage could occur to US livestock industries due to a slow response to global animal identification and traceability standards. The study noted that countries with well-developed mandatory animal identification and traceability programmes enjoy comparative advantages in red meat exports.

The study cited an earlier study [Souza-Monteiro and Caswell (2004)], which observed “four patterns of adoption are evident in the major producing and trading countries: adoption of mandatory systems in response to consumer concerns (EU and Japan), imposition of mandatory traceability to maintain or enhance export shares (Australia, Brazil, and Argentina), industry managed mandatory programs for animal identification (Canada), and voluntary systems (United States)” and noted that “The United States lags behind many other countries in adopting livestock and meat traceability systems.”

Besbes et al (2010)¹⁹ looking at animal identification, traceability and performance recording in the global context noted the following trends: a massive increase in demand for food of animal origin; longer transport and value chains; and the awareness of consumers about food safety, quality, animal welfare and environmental impact of livestock production. Traceability was identified as a tool to ensure fair practice in the food trade and substantiate product claims, such as geographic indication and food quality.

The introduction of origin labelling on eggs had no consequences on demand [Tacken and van Horne 2001]. Before the stamping of eggs with housing system and country of origin became compulsory, German traders of Dutch eggs were afraid that stamping would have negative consequences on demand for Dutch eggs in Germany. Demand figures after the introduction of this law showed that stamping of the eggs had no consequences on demand.

The impact of origin labelling on trade is related to the image of food products of a specific origin in the destination country (van Wijk et al, 2010). In situations where the origin has a positive image on food in general or on the specific product, origin labelling can have a positive impact on consumer demand or no impact at all; and similarly in the opposite scenario.

3.3.3 Possible impact on administration burden for competent authorities

Administration costs for competent authorities are costs of administrative information to carry out official controls for a specific labelling option. Additional costs can be extra labour costs, other variable costs (e.g. energy or water), materials or fixed costs (e.g. extra storage capacity).

¹⁹ Presentation at the EU Conference on Identification and traceability along the food chain, Brussels, 14-15 June 2010.

It should be noted that one of the general aims of Regulation (EC) No 1169/2011 is to reduce the administrative burden for food business operators and enforcement authorities. An impact assessment of the regulation by Defra (2012b, which did not cover the origin labelling requirement at the time as the options were not yet defined) found that enforcers would benefit in terms of time saved from the consolidation of the rules and simplification of enforcement procedures.

In a study for DG SANCO, headed by AgraCeas (in press) on country of origin labelling following the standard cost model, no clear increase of administrative costs and burden could be estimated. Two very relevant observations have been made related to the estimate of these costs:

- **Status quo (baseline):** Control of labelling is only part of a wider overall control system to verify compliance with relevant standards and regulations. Time spent to check the country of origin cannot be separated from the other checks;
- **New rules:** Most competent authorities in Member States expect an increase of control costs to enforce new rules in the short term. However after a period of familiarisation the additional costs will become almost zero because traceability systems and databases have been put in place or adapted to the new rules, and official inspectors have become familiar with the new rules. This point is confirmed by the Defra impact assessment, which concludes with regard to the whole of Regulation (EC) No 1169/2011: *"Similarly for regulatory authorities ('enforcers') following a period of familiarisation, the burden of work will remain largely as before."*

Some additional general remarks made by AgraCeas in the aforementioned study are:

- Administrative costs and burden will be higher if the origin labelling is more detailed. This would mean that scenario 1 (EU versus non-EU labelling) would have lower cost increases in the short term than scenario 2 (origin labelling per Member State and per stage of live of the animals (born, raised, slaughtered));
- Given the fact that national budgets for enforcement are currently stable or decreasing, extra checks can and will be compensated by lowering the frequency of the controls.
- Member State competent authorities have different opinions regarding the type of cost increase: staff time needed, qualification of staff needed and staff unit costs.

Regarding the administrative costs of competent authorities, it is noted that DG Sanco is currently proposing a new legislative package "Smarter rules for safer food" for healthier plants and animals and a safer food chain. The proposals include new rules for simplification and clarification of official controls and the allocation of appropriate resources for control authorities through fees charged on operators²⁰. This will have implications for the allocation of costs. Although mandatory origin labelling under Regulation (EU) No 1169/2011 is not a food safety issue, it seems possible that the control actions applied to food businesses by competent authorities may be affected by this new initiative.

3.3.4 Possible impact on consumers

Food retailers may differentiate products of different origin at EU-level, country level, or region in a country. Regulation (EU) No 1169/2011 aims to extent mandatory labelling for unprocessed fresh and frozen meat (incl. minced meat and cuts without spices) of pigs, poultry and sheep and goats, with the aim of giving appropriate origin information to consumers, whilst not causing disproportionate burdens on the meat supply chain, trade, consumers and the administration.

²⁰ http://ec.europa.eu/dgs/health_consumer/pressroom/animal-plant-health_en.htm

As a result of growing competition on international markets, consumers' sensitivity to origin information has become a relevant issue for food businesses as well as policy makers.

Consumers are able to choose from products of different origin, a phenomenon that has become known as the country-of-origin effect (for reviews see ([Agrawal and Kamakura, 1999] and [Verlegh and Steenkamp, 1999]) or region-of-origin effect [Van der Lans et al., 2001]. Origin can be additional purchase information for consumers in addition to other cues like 'best before', nutritional information, and the name of the meat cut.

The main objective of this section is to provide a literature overview on consumer decision making with regard to country of origin labelling in the EU.

3.3.4.1 Consumer interest in origin information

Because the final purchase decision about food products is in the hands of consumers, research typically has surveyed consumers about their opinions on country of origin labelling (SANCO 2012; BEUC 2013). These studies indicate that European consumers have an interest in origin information.

Fresh meat was the most commonly mentioned food that should have origin labelling according to 69% of consumers in the EU-27 (SANCO, 2012). Also in a BEUC (the European Consumer Organisation) survey, meat is the product that comes first in consumers' desire for origin labelling.

These studies illustrate that the level of importance attached to country of origin information seems to be country-specific (e.g. Becker 1998; SANCO, 2012; BEUC, 2013). The percentage for origin appreciation varies from 83% in Sweden to 93% in Austria. In a quantitative study of 894 Dutch consumers, 88% welcomed the country of origin information on the packaging of a food product. For consumers who welcomed origin labelling this was mainly because they 'may be interested in', are 'in need of better understanding', or 'like to know where products come from'. Consumers who were negative about the state of origin labelling experienced no additional trust or confidence, or expressed disinterest (Van Haaster-de Winter and Ruissen, 2012).

However, in the EU there is an additional concept of origin, which cannot be found in the literature. This is the intra-EU trade or single market aspect based on the customs definition of country of origin as the last place of substantial change.

Food consumers (particularly of meat) have been found to be confused over the meaning of the term 'country of origin'. From a consumer perspective country of origin is the place where an animal was 'farmed' i.e. born and/or raised. Use of 'country of origin' in the customs sense of the place of last substantial change can be misleading and increases scepticism regarding the value of origin information for meat products²¹.

Consumers lack the expertise or experience to assess whether a certain meat has been produced in a specific country. A policy option is to provide the information by a country of origin label. However, policy makers and marketing specialists need to be aware of the use of an origin label, how it works for consumers, and how it contributes and impacts decision making and behaviour.

Translating consumer needs for information about quality attributes into actual consumer behaviour is a complex matter (Ingenbleek et al., 2011). According to Meulenberg (2003), a behavioural scientific approach to consumers offers a more suitable basis for understanding their consumption than does microeconomic theory, in which the consumer is a rational decision maker with full knowledge and understanding of all relevant information.

²¹ Country of Origin Labelling: A Synthesis of Research, Oxford Evidentia
<http://www.food.gov.uk/multimedia/pdfs/coolsyn.pdf>

In this context, Meulenberg also mentions a model that perceives the consumer as a problem solver (e.g. Engel et al 1995), which Steenkamp (1997) cites as insightful for understanding food purchase processes. The model consists of five phases: (1) need recognition; (2) information search, (3) information evaluation, (4) purchase decision and (5) post-purchase evaluation. Each of these phases is described in the following sections.

3.3.4.1.1 Need recognition

In the case of meat, consumer needs for information may be wide-ranging. In addition to requiring a product to satisfy hunger, consumers may also demand products that are healthy, safe, fresh, animal friendly, and produced in their own country or another specific country. The importance of country of origin drops significantly when multiple quality attributes in the study are included (Verlegh en Steenkamp, 1999; Steptoe en Pollard, 1995; Usunier, 2006).

U.K. consumers ranked origin labelling as more important than brand labelling, but steak colour, price and fat content were most important (Roosen et al., 2003). Results of the SANCO (2012) consumer survey show that the most important factors of meat purchases for consumers are freshness (10.2% of consumers surveyed), then taste (8.7%) and hygienic conditions (8.4%), followed by price (reasonable price 8.1%, affordable price 7.9%) and then origin (produced in the home country (7.9%).

Origin labelling plays a particularly important role as a purchase motive of beef, where it is mainly associated with food safety (Shimp and Sharma, 1987; Roosen et al., 2003; Verbeke and Ward, 2006; Loureiro and Umberger, 2007).

The demand for country of origin information varies per country. A meta-analysis of international studies into origin appreciation, for example, shows that appreciation of origin labelling varies from country to country and that appreciation in Europe is generally lower than in North America and other parts of the world (Ehmke, 2006). Consumers from Greece, Estonia, Italy and Slovenia are more likely to look for country of origin information, whilst Belgian, Maltese and Dutch consumers are less likely to do so (SANCO, 2012).

In other words: consumers find origin important, but only after other wants and needs like food safety, good taste and affordable price are fulfilled first.

Geographical indication of origin

Regional designation seems to function as a summary construct for differentiated origin labelling cues. While respondents evaluated the origin labelling cues 'Made in Belgium' and 'Made in Poland' for chocolate products as significantly different, the Regional Designation 'Made in the EU' could not be significantly differentiated from either cue [\[Eberl, 2012\]](#).

The effect of the product-specific regional image on product preference is an indirect effect, through product attribute perception. The influence of the attitude towards the region appears to have both a direct and an indirect effect on product preference. The direct influence is found to be primarily based on feelings towards the region of origin that 'bypasses the purely cognitive inferential evaluation'. The indirect influence works through the product-specific regional image and product attribute perception [\[Van Ittersum, 2003\]](#).

A perception study about Dutch eggs found that consumers in Nordrhein-Westfalen in Germany preferred Dutch eggs above eggs from Southern or Eastern Germany, because Dutch eggs were perceived as regional eggs. A regional provenance is very important for German consumers, because it is related to freshness and shelf life. Freshness of eggs was in the top three buying motives of most consumers. Dutch eggs have a good image on quality and safety in the German market [\[Van Wijk et al., 2010\]](#).

3.3.4.1.2 Information search

The food purchase process is a routine process, during which consumers rely on prior experiences, so they collect and use new information to only a limited extent (Steenkamp 1997; Meulenberg 2003).

In their search for country of origin information, consumers may rely on various information sources. During a routine purchase process, memory is the main source of information. Through information stored in their memory consumers identify a limited number of products for consideration during the purchase process (Stern and El-Ansary 1992). To enhance what they already know, they may look for extra information, such as that contained in a label, advertising, in-store displays or product packaging.

Thus consumers are not perfectly informed, rational decision makers. They collect a very limited amount of information, and all kinds of distortions take place in their memory (e.g. Robertson and Kassarian 1991). In many studies it appears that respondents value origin labelling on the package, but when consumers were asked to choose products this did not play a decisive role for buying food. For example, country of origin is the fourth most important information aspect when purchasing meat: the priorities are use by/best before date (68%), the price per kilogram (67%), the price (67%), country of origin (48%) (SANCO, 2012).

In a survey in the Netherlands, around half of the respondents indicated they do not read origin labelling at all; they only looked for information about the best-by date, price, weight and use and storage instructions. For most respondents, the country of origin is not decisive for their choice: the country of origin is nice to know rather than a need to know factor (Van Haaster-de Winter and Ruissen, 2012).

Label

A consumer seldom buys products on the basis of a completely rational evaluation of all product attributes; instead, he or she uses cues such as labels. For the consumer a label helps lower search costs (Grønhaug and Lines, 2002). Added value results when the label stimulates unique associations in a consumer's memory. For example, a consumer may have confidence in the reputation of a certain region of origin (Acebrón and Dopico 2000; Bernués et al., 2003).

The country of origin of meat can be linked to a number of aspects of origin: the place where the animal was born, the place where the animal was reared (also referred to as raised, or farmed), the place where the animal was slaughtered, or the place of last substantial change (corresponding to the customs definition).

In the SANCO (2012) survey 54% of consumers understood the country of origin of meat as the place where the animal was farmed, while 12% understood it as the place of last substantial change. From the BEUC (2013) survey most consumers in France (62%), Poland (41%) and Sweden (49%) interpret country of origin on a fresh meat label as relating to the country where the animal was born, reared, and slaughtered. This is however not the case in Austria, where the proportion of consumers who believe that the labelled origin only refers to the country where the animal was slaughtered is higher than that of those who understand that the three life stages took place in the country (35% vs. 32%). The second reply most frequently given by French (12%), Polish (27%) and Swedish (13%) consumers is that the animal was reared and slaughtered, but not born, in the labelled country (as compared to 16% of Austrian consumers), followed by approximately 10% of consumers in these three countries who interpret that the animal was only slaughtered there.

The findings for processed meat products such as bacon, ham, sausages (which are not covered by this study) are similar: many consumers are also unclear as to the meaning of country of origin labelling. The main confusion is about whether the labelled country of origin refers to the country where the animal was produced and/or to that where the meat was further processed into the final food. Consumer perceptions in this regard vary between countries (BEUC, 2013).

French consumers consider the rearing country as the most relevant information about country of origin (Magdelaine and Legendre, 2013a). Thus although the country of origin label seems objective information, the interpretation of the label is still arbitrary by consumers because a label can evoke certain associations in the consumer's memory.

Providing information by a country of origin label can also evoke associations that are not indicated by the label. For example, country identification can evoke associations of nationalism. The SANCO survey reveals that consumers have a preference for national or local meat. This is particularly the case for Greece, France, Poland, Austria and Sweden. Only consumers of Portugal and Slovakia preferred foreign meat (SANCO, 2012).

This national preference can be emotional, in terms of national identity or pride, but also rational, as consumers may have a better knowledge of national products and processes. For instance, consumers may be more familiar with quality controls, certifications and other country-specific aspects. The presence of an emotional component is illustrated by the fact that 'produced in the EU' obtains a low score in the SANCO survey. Apparently the EU is of low emotional cue.

There is also a tendency to ethnocentrism: consumers perceive meat from their own country as safer than foreign meat (Wezemaal, 2010). Ethnocentrism not only differs per country but also within country, which is expressed in stronger or weaker preferences for products from their own country (Van Haaster-de Winter and Ruissen, 2012).

Positive and negative information

Consumers do not comprehend all origin information. Regardless of whether they receive information about origin, the consumer may associate the country of origin with a certain quality level or food safety, but there may also be a preference for products from their own country as a way of supporting their own economy or farmers or because it means lower transport costs and thus CO₂ emissions, whereby the product is considered to be more sustainable (Van Haaster-de Winter and Ruissen, 2012).

It appears that people generally absorb information that confirms their existing opinion and reject information that does not fit (te Velde, Aarts and van Woerkum, 2002). Furthermore, people absorb negative information more easily than positive information. For example, disease outbreaks have led to consumer mistrust of foreign meat and a greater preference for domestic meat (Vukasovic, 2009).

3.3.4.1.3 Information evaluation

Using available information, a consumer weighs price and quality, generally according to the model of quality and price (e.g. Zeithaml 1988; SANCO 2012).

Quality information

Product attributes refer to product characteristics that can be objectively determined. The origin label is an extrinsic attribute, like brands, price, and other advertising which are product-related but not part of the physical product. Consumers often use these attributes, or a combination of attributes, as cues to assess the quality of a product (e.g. Robertson and Kassrajian, 1991).

In the case of meat, a consumer might consider physical characteristics such as its smell and freshness and the (externally labelled) origin of the product (Horne et al., 2003). Steenkamp (1986) finds that quality labels positively influence the quality perceptions about meat products, particularly when the product lacks a separate brand (see also Van Trijp et al., 1997). However the relation between quality and origin information is not always clear to consumers.

Two thirds of the respondents in the Netherlands did not know that origin labelling on products of beef was the result of EU legislation (Van Haaster-de Winter and Ruissen, 2012). This group was under the impression that producers or supermarkets did this voluntarily or that it was related to Dutch legislation. Over half of the consumers were not aware that origin labelling involved extra costs for the producer. They thought it was just a question of a little more ink and were unaware of the additional effort involved.

A country or region's reputation could also be an extrinsic attribute, especially through a 'spill over' or 'halo' effect. That is, the associations (positive or negative) a consumer holds because of other news about that country or region and which may contribute to an opinion about other attributes. The image that the consumer has of the country of origin may be based on previous experiences with the same or other products from the country, on advertisements, other forms of product information such as word of mouth advertising, TV programmes or newspaper articles (Verlegh et al., 2005). This implies that perceived quality significantly depends on the expectations created by labels. The use of a country of origin label therefore could cue consumers' quality perceptions.

Price information

Beyond quality attributes, price influences consumers' perceptions. A higher price often indicates better quality for consumers (Monroe 2003), so for example, pork consumers prefer products with a price that they approximately expected, followed by products with prices higher than expected (Meuwissen et al. 2007). Just as some consumers use price as a cue of quality, others use quality cues to develop their price perceptions.

When considering price differences in brands due to quality differences, country of origin labelling has no significant influence on prices (Van Haaster-de Winter and Ruissen, 2012). In other words, the majority of consumers do not seem to pay more or less because they hold better or worse image regarding the quality of products originating in different countries.

From the research by Van Haaster-de Winter and Ruissen (2012), it appears that only 10% of Dutch consumers are prepared to pay extra for origin labelling on food. This low willingness among consumers to pay for country of origin labelling on food is also demonstrated in international literature (Agrawal and Kamakura, 1999; FSA, 2010). For example for pork: Sweden (5.8%), France (4.8%), Britain (4.0%), Denmark (-2.9%) (Dransfield et al., 2005).

According to respondents from the Dutch survey, among the reasons why people are unwilling to pay more for origin labelling on food are that food is already expensive enough and should not be made more expensive; they do not feel the need for it; origin labelling should be provided as an additional free service; they do not consider that origin labelling should involve extra costs; they have not asked for it (Van Haaster-de Winter and Ruissen, 2012).

When asked who should pay for the costs of labelling, Dutch consumers pointed to the producer, the government, the supermarket or the EU. Respondents did not seem to feel it logical that they or the farmers should contribute to the costs. Among the small group of Dutch consumers prepared to pay more for origin labelling are people who are generally more highly educated, who tend to buy organic products, are more concerned with food and its quality and who recognise that there are differences in products from different countries of origin.

When considering price differences in brands due to quality differences, origin labelling has no significant influence on prices. In other words, consumers do not seem to pay more or less because they hold better or worse image regarding the quality of products originating in different countries. There is no price premium or discount for brands originating in different countries, once their quality differences are taken into account [Agrawal and Kamakura, 1999]. In case of superior foods there is evidence that consumers will pay a premium in general and for assured country of origin foods in particular; however this premium is generally rather modest [FSA, 2010].

3.3.4.1.4 Purchase decision

A broad set of factors constitute the consumer's macro environment, which consists of economic, demographic and cultural factors such as the economic climate, the media and cultural norms and values (Steenkamp 1997).

For origin labelled products these cultural factors come together in the shopping environment. Product origin is not an isolated concept. There is a positive connection between the degree of importance a consumer places on origin as a reason to purchase a product and the degree of importance that consumer places on animal welfare, environmental friendliness, regionally-produced food, and organic products (Van Haaster-de Winter and Ruissen, 2012). From the same study it becomes clear that 70% of the consumers would purchase the same product without origin labelling. In the case of pork, origin is hardly considered a purchase motive (Ehmke, 2006).

Market segmentation based on origin labels

Retailers use origin labels to differentiate their products. Retailers could choose to offer the 'national' product only, but can also choose to add different origin products when they expect this is of added value to consumers.

Although not every consumer makes the same assessment, segmentation can occur on the basis of groups of consumers who have similar preferences. One group may prefer different options for country of origin, and be prepared to pay for it; another may be happy with less choice and satisfied with the option of only one country.

Segmentation of pork consumers in the Netherlands has shown that country of origin was not a discriminating factor between the segments. When consumers must choose among different attributes (Meuwissen et al. 2007) the results vary by segment, suggesting six unique groups: environmentalists (17%), ecologists (17%), animal friends (16%), health-concerned (18%), unpronounced subjects (20%) and economists (12%), but all segments preferred pork originating from the Netherlands and with a zero risk of Salmonella (Meuwissen et al. 2007).

Van Haaster-de Winter and Ruissen (2012) differentiate three groups of consumers based on attitude and willingness to pay. Most people (66%) are not markedly positive or negative about the statement of country of origin but are somewhere in between. The group which does not see the point of the statement of country of origin is bigger than the group which is in favour of it (21% and 14%, respectively). These two groups differ from each other in terms of values, views and behaviour.

3.3.4.1.5 Post-purchase evaluation

Country of origin labelling is important for marketers who seek to leverage the effects of countries favourable connotations on consumer product evaluations (Leclerc et al., 1994; Keller, 2003). Consumer satisfaction depends partly on the specific need and specific set of alternatives available (Khan et al. 2005). Such mechanisms could occur in origin labelling as well.

Consumers may experience a sense of dissatisfaction when they learn that a product has been produced in a country with low quality standards. This feeling may influence subsequent purchase processes through associations in the consumer's memory that ultimately negatively affect consumer confidence in a certain country of origin. According to Urban (2005), this confidence increasingly plays a role in consumers' purchase processes. Consumers make decisions based on a minimal amount of new information and are susceptible to negative information, which is increasingly easy to access through new media such as the Internet. This could be provided with clear and simple information via a logo, with the possibility to use new technological support to give more details for fresh meat (Magdelaine and Legendre, 2013a).

3.3.4.2 Conclusions

Country of origin labelling is only part of the solution to offer transparency for consumers about origin of meat.

Consumers look for information whether externally or from their memory about which meat products can satisfy their requirements. In both processes, distortions occur, and instead of complete information, most consumers use associations. Consumers are making only limited efforts to inform themselves about aspects of meat and meat products; further effort could help them make more informed purchase choices.

Although a country of origin label provides complete and undistorted information on the origins of a product, consumers associate the information on the label with information obtained elsewhere in all type of sources media, advertisements etc. As such a country of origin label works more as a mechanism that attaches associations to a product, despite the aim of providing objective information. Even when consumers consider country of origin for meat important, they do not automatically choose a product from a specific country. Policy makers should therefore consider all wants and needs of consumers and not only their concerns with regard to country of origin information.

The substantial number of studies on origin labelling do not provide a clear direction on origin labelling effects and seem to be moderated by specific country circumstances and cultural habits.

Both favourable and unfavourable effects on demand and trade have been reported for countries with origin labelling. The impact of origin labelling on trade is related to the image of food products of the country-of-origin in the destination country. Country-of-origin is associated with a range of positive attributes by many consumers, including overall quality and food safety (trust in food), and is important as an information cue.

However, in the global context traceability and origin information are seen as positive and economically justifiable benefits to improve competitiveness on international markets.

This is also related to the concept of consumer ethnocentrism: that meat from the home country is perceived as safer. Origin labelling is for consumers a cognitive shortcut when evaluating products, especially when other information is scarce, and when consumers are less motivated to process available information, for example when involvement is low. However, consumers do not seem to pay more (or less) for this information because they hold better (or worse) images regarding the quality of products originating in different countries.

3.3.5 Experience of compulsory beef origin labelling

The experience of compulsory beef origin labelling provides some lessons that may be of relevance for other species. The Commission evaluated the application of origin labelling of beef following the implementation of Regulation (EC) No 1760/2000²².

The evaluation, carried out in 2004, found that the provisions for beef traceability and origin labelling greatly helped to restore consumer confidence and beef consumption following the BSE crisis. However, according to the European meat trade sector the scheme caused a certain re-nationalisation of the trade in beef, in particular for beef products sold directly to final consumers (i.e. in the retail sector).

²² European Commission, COM/2004/0316 final, 2004, Report from the Commission to the Council and the European Parliament on the implementation of Title II of Regulation (EC) No 1760/2000 of the European Parliament and of the Council establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products.

The beef traceability system entailed major changes in how operators organise their work so as to ensure that batches of meat products are of homogenous origin. All batches of meat must be homogenous, meaning that the national origin of the animals is identical, whether they have single or mixed origin. Production lines must be organised so as to process each batch separately without mixing beef of different origins.

The evaluation included some points of interest relevant to origin labelling:

- The Commission noted that a number of Community rules are proving difficult to apply to certain types of operators in the beef sector in all Member States. The problems mainly concern the requirements regarding homogeneity in batches of beef at secondary cutting plants, traceability and labelling of off-cuts, supplies to minced beef plants and consumer information on beef products marketed in non-pre-wrapped form.
- FVO reports highlight particular difficulties in secondary cutting plants, which are involved in preparing retail packs, and where it may be necessary to combine meat from different batches to make up an order from a retailer or the catering sector.
- It was considered that in most of these cases it should be possible to find a satisfactory solution without changing the principles underlying the Community legislation or compromising the operation of the traceability and origin labelling scheme already implemented by operators.
- Labelling of trimmings – Trimmings must be labelled according to the same provisions as for unprocessed cut meat sold to the final consumer. However the use of trimmings in the production of minced meat is prohibited and in practice trimmings are sold to the meat processing industry, whose products such as meat preparations are sold as processed meat. Trimmings are assembled for sale by the box and the amount from a single batch of a certain origin may not be enough to make up a full box. In practice operators may not be able to make full consignments of trimmings of homogenous origin.
- Labelling in retail outlets – FVO inspections found origin labelling errors in retail outlets where beef is cut, pre-wrapped and labelled before being placed on sale. Some facilities did not have equipment to read the information on the label of the beef delivered by suppliers.

The evaluation commented with regard to beef imports from third countries - where the same origin labelling provisions apply – that a derogation may be provided in any country where the animal identification system does not provide the required level of assurance as to origin. Where origin can be assured the meat can be labelled “origin: name of third country”. If not, the derogation provides for the meat to be labelled: “origin: non-EC” and “name of country in which slaughtered”. The evaluation noted that (up to 2004) no third country had applied the derogation and that the Commission collaborated with major supplier countries to implement compulsory identification systems for cattle whose meat is destined for the EU market.

In summarising the impact on the beef market, the evaluation noted that origin labelling had a significant impact on the recovery of beef consumption following the BSE crisis. The beef labelling rules also had a major impact on the organisation of the beef sector and the beef market in the European Union. They considerably improved transparency in the sector by limiting the number of intermediaries between the farmer and final consumer, as well as the number of suppliers to each operator.

However, according to the European meat trade sector, compulsory beef origin labelling also led to a certain re-nationalisation of trade in beef, particularly in the retail sector selling beef products to the final consumer. In addition the evaluation noted an increased tendency for the distribution sector to restrict the range of origins of beef placed on the market. Retailers in self-sufficient Member States tended to offer consumers beef of wholly or predominately domestic origin. This was in response to consumer preferences, but also externalised the risk of origin labelling errors and possible trade consequences. However the evaluation also noted signs of recovery in the intra-community beef trade from 2002.

A focus on country of origin for marketing purpose can lead to problems in finding outlets for animals of mixed origin.

The evaluation noted that raw beef supplied to the restaurant and institutional catering sector and the fast-food sector is covered by the traceability requirements of Regulation (EC) 1760/2000, although origin information it is not automatically provided to the consumer.

3.3.6 Summary of possible impacts

Possible impacts identified in the stakeholder workshop and case studies include:

- a) Differences in origin labelling rules for beef, pigs, poultry and sheep and goats would be inconsistent and could create confusion and misunderstanding for the consumer rather than greater clarity as intended by the legislation.
- b) Concerns have been expressed by some stakeholders that mandatory origin labelling may undermine relevant PDO, PGI and TSG schemes as consumers may fail to appreciate the wider benefits of quality schemes and retailers may prefer to support a universal scheme that simply provides basic information. Those consumers that perceive the EU quality schemes as origin indicators may not be prepared to pay extra for the quality labels when origin information is universally available for all unprocessed meat. On the other hand, it has been pointed out that quality labels for beef continue alongside origin labelling on the same pack, suggesting that at least some consumers appreciate the difference between basic origin information and the quality labels.
- c) Increased transparency from origin labelling may raise consumer confidence in meat in general, and particularly limit damage caused from food safety crises and other market shocks.
- d) Increased costs of labelling and recording of origin data is likely to have most effect on the meat sector, particularly cutting plants. Problems increase as the carcass is cut into smaller pieces. Smaller plants will incur relatively higher impact costs.
- e) Mandatory origin labelling may adversely affect sales of meat of mixed origin. Countries (particularly small countries) and supply chain operators that habitually exchange significant volumes of live animals, carcasses and primary cuts during the production process may be affected disproportionately.
- f) Concerns have been expressed over increased costs and complications for the meat sector with regard to traceability and an increase in the number of batches as retailers demand a greater number of lines to accommodate different origin preferences. On the other hand, following the introduction of compulsory beef labelling distributors and retailers reduced the range of origins of beef placed on the market, which could result in reduced numbers of batches. Separation of batches of different origin is necessary for traceability purposes regardless of the choice of labelling option. The issue is therefore whether the number of batches would increase or decrease for commercial reasons as suppliers and retailers adjusted their sourcing according to the new labelling rules. This is primarily a trade effect.

- g) Negative experiences reported by the meat sector from compulsory beef labelling would be repeated with other species, particularly regarding the number of batches.
- h) A particular concern with batches is difficulties in utilisation of trimmings at the end of batches. This issue is mentioned as one of the experiences of regulation of the traceability and labelling of beef. The use of scrap trimmings in minced meat is prohibited²³ and they are usually sold to the meat processing sector for use in meat preparations, which are sold as processed meat. The concern is that trimmings from a single batch may not be enough to make up a full box for sale to processors. Traceability requirements and separation of batches also apply to trimmings, regardless of the choice of labelling option.
- i) Effects on trade as operators adjust their supply and marketing practices to streamline the number of batches. This may be coupled with an increase in food nationalism, although it is not clear that this was a lasting effect of the beef experience. Retailers may be obliged to keep more stock units and may have less flexibility in procurement.
- j) Consumers appreciate origin information even though it is not their first priority when purchasing meat. However they are generally unwilling to pay a significant premium for origin information. There is a tendency for origin information to be more widely available on higher value packs and it is argued that it should be available equally on all packs on the basis that all shoppers have the right to clear information on the food they buy, regardless of budget.
- k) Administration costs and inspections can be a proportionately heavier burden for smaller companies. One example given was inspection costs being charged on a per animal basis, rather than per hour.
- l) One remark pointed out that attention should be paid to the legibility of the label (format and font size). It is necessary to provide a minimum prescribed format.

The logistics of large-scale production mean that poultry hatching eggs and day-old-chicks are traded widely. It is also a good stage for stock movements to take place from an animal welfare perspective. A requirement to indicate the sources on the label of the final product would be an added complication and extra cost. It may be worth considering the value of this information to the consumer and the option to remove the 'born in' designation from the origin labelling requirements for poultry (as well as considering for other types of meat).

3.4 Classification/typology of the meat supply chain and labelling options

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

Supply chain indicators

1. Chain length of live animals (number of movements between stages)
2. Chain length of meat chain (number of movements between meat businesses)
3. Number of international movements
4. Scale of businesses (small, medium, large)
5. Traceability systems in place
6. Separation of supply chains for origins
7. Amount of meat sold unprocessed
8. Amount of unprocessed meat sold pre-packed.
9. Market differentiation (high value products versus commodity)

²³ Regulation (EC) No 853/2004

10. Voluntary labelling in place
11. Inspection costs

Trade indicators

12. Self-sufficiency in meat
13. Import/export of live animals
14. Import/export of unprocessed meat products

These indicators have been used to inform the modelling and analytical stages.

4 IMPACT OF OPTIONS ON MEAT SUPPLY CHAIN

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

4.1 Analysis of options

Four options for mandatory origin labelling were analysed, as shown in the following table:

Table 16. Analysis of options

Option	Description	Type of analysis
Option 1:	Mandatory EU or non-EU origin labelling	Qualitative, no impacts
Option 2:	Mandatory country of origin labelling	Quantitative, with CAPRI
Option 3:	Mandatory labelling of country of rearing	Quantitative, with CAPRI
Option 4:	Mandatory labelling of country of rearing and of slaughter	See Option 3

With respect to the impacts of mandatory origin labelling, two out of the four predefined options have been analysed using the CAPRI modelling tool. For option 1, which focuses on EU versus non-EU origin labelling, the cost impacts were estimated to be approximately zero, which made a quantitative analysis superfluous. The costs impacts of option 4 were very close to option 3 and so the impacts associated with both scenarios will be very similar.

Since the costs for EU producers associated with option 1 (EU or non-EU origin labelling), were estimated to be approximately zero a full quantitative analysis of this option was not useful (see table below). Also with respect to the consumer side no specific impacts are expected, since consumers are now already effectively able to distinguish EU from non-EU meat products. Since in this option both cost-shifts and changes in willingness to pay are zero, this option is expected to have a zero impact on EU producers, consumers and trade. This holds for products of all the meat types.

Table 17. Average cost impacts per labelling option and per species

Meat type	Cost impacts as a percentage of wholesale price			
	Option 1	Option 2	Option 3	Option 4
Pork	0.00%	2.3%	1.50%	1.50%
Poultry	0.00%	1.3%	0.92%	1.02%
Sheep and goats	0.00%	0.64%	0.28%	0.30%

The above table provides an overview of the cost shocks that have been applied in the simulation analysis. The shocks are weighted for production per country and assume that the structure of meat companies (large, medium, small) is almost equal for all Member States. As the table shows there is only a slight difference between the cost impacts associated with options 3 and 4.

As the cost impacts of option 4 are almost the same as to those of option 3, only option 3 has been analysed and a separate analysis of option 4 has been left out. Although, in terms of information option 4 (which provides information on place of rearing and place of slaughter) is likely to be

preferred by consumers over option 3 (provides only information about rearing), there was insufficient evidence to “translate” this into differences in willingness to pay by consumers between options 3 and 4. As consumer preferences imply no measurable monetary impact, there is no reason for a separate analysis of option 4.

4.2 Administrative burden on companies from origin labelling

Administrative costs can be related to any additional costs of origin labelling. With option 1 (EU or non-EU origin label) there will be barely any additional costs attached. The same will apply with the other options (country of origin level) when companies source only domestic animals. For example, this is the situation in France for poultry and pork meat.

According to the industry, country of origin labelling will not create new administrative costs. The current administration systems already allow the transmission of all information to the public authorities. Data from the case study in France on the additional costs for the options at country level are low (less than 0.5%). These costs mainly relate to the adaptation of the software used in the company and are once-only. In adjusting the software simultaneous changes can be made to provide the public authorities with the correct information.

Origin labelling of sheep meat in Romania would not result in any significant administrative costs. There could be some minor costs related to software adaptation. The main meat companies all hold the same opinion. The reason for this is that all companies made major adaptations in the pre-accession period. Formerly the inability to control or monitor activities was a major burden to food business companies. At the present time, following adaptations by companies the further demands of origin labelling would give no significant additional administrative costs.

The situation is different in other countries. The case study on pork meat in Germany found that additional administrative costs would be incurred. For option 2 (mandatory labelling of country of birth, rearing and slaughter) three companies gave detailed data on the additional administration costs. These costs related to investments in hardware and software ranging from €50 000 to €300 000 once-only costs. German companies estimated additional labour costs for administration ranging from €10 000 to €50 000 per year. Reported extra costs for audits range from €5 000 to €20 000 euro per year. The total estimated administrative cost per year for adjusting hardware and software, administrative labour costs and extra auditing ranged from €25 000 to €130 000 per company.

It can be concluded that there is a wide range of costs estimated for the additional administrative burden of origin labelling. The costs to adjust hardware and software are once-only. The extra additional labour cost for administration relate to extra labour input (estimates range from the equivalent of one quarter to one full-time worker per company). The cost of an additional audit has been estimated at €3 000 euro. The actual costs depends on the number of audits by the public authorities. On average the companies expect two audits per year. When the annual cost for administration are related to the total extra cost of origin labelling the percentages for the three companies investigated are 1%, 2% and 6%.

In the case study on poultry meat detailed data were collected in the interviews with companies in the Netherlands. The Dutch slaughterhouses state that the administrative costs for option 1 (EU/ non- EU label) will be very low. For the other options (origin labelling at the country level) the administrative costs will be substantial. Most companies will have to make some adjustments in the software. However, the main additional cost will be a full-time worker for collecting data and doing the administration. For an average Dutch slaughterhouse these costs were estimated to be €40 000 per year. This equates to 10% - 15% of the total cost of origin labelling based on option 2.

5 IMPACT OF OPTIONS ON TRADE, CONSUMERS AND ADMINISTRATION

The analysis of the economic impacts of different origin labelling options on trade, consumers and producers is made using a partial equilibrium model, having sufficient detail with respect to the EU pork, poultry and sheep and goat meat sectors at Member State level. Following the literature on mandatory origin labelling a market-analysis approach is followed.

5.1 Trade

5.1.1 Pig sector

The impacts on net trade of the most important pork producing Member States are presented in Table 18 below. As the table shows, the impacts on the net trade position of Member States are in most cases relatively limited, with the induced changes in the net trade in general being less than 2 per cent up or down from the reference level.

In option 2 (mandatory country of origin labelling) France's net trade worsens by about 1.7%, whilst Germany improves by the same percentage. Poland's pork trade improves as net imports decline by almost 9%. Despite being a big producer Poland is still a net importer. The decline in its net imports implies that the local pig sector strengthens its position in the domestic market. The pattern observed for Poland also holds for other eastern European Member States with similar characteristics.

For option 3 (mandatory labelling of country of rearing) the impacts are similar to that of option 2. However, the overall impact of option 3 is only about half of the impact of option 2.

Net exports increase for the EU as a result of a decline in domestic demand. EU net exports increase under option 2 by 2% over the reference level and by 1% under option 3.

Table 18. Impacts of different EU mandatory origin labelling options on pork trade

Member State (in order of production volume)	Reference (net trade)	Option 2 (impact on net trade)		Option 3 (impact on net trade)	
	1 000 t	1 000 t	% change	1 000 t	% change
1. Germany	327	332	1.60%	332	1.50%
2. Spain	571	569	-0.40%	573	0.30%
3. France	92	91	-1.70%	92	-0.90%
4. Poland	-113	-103	-8.90%	-110	-2.10%
5. Denmark	1 648	1 644	-0.30%	1 646	-0.10%
6. Italy	-701	-695	-0.90%	-697	-0.60%
7. Netherlands	491	490	-0.10%	491	0.00%
EU27	1 800	1 836	2.00%	1 820	1.10%

Source: Study calculations with CAPRI model

Producer and consumer prices are affected differently. The average changes in pig meat producer and consumer prices in the EU27 are about -0.4% and +0.9% respectively for option 2²⁴. Under option 3, the average changes in producer and consumer prices in the EU27 are somewhat lower: -0.2% and +0.5% respectively.

²⁴ Note that the model implies a kind of arbitrage between suppliers and demanders of meat products where prices in different Member States will converge to each other (apart from differences due to transport costs). For that reason also price changes faced by consumers and producers in different Member States are related to each other.

It can be calculated that on average in the EU27 about 12% of the extra costs for labelling are transmitted to the producers, while about 88% of the extra costs are transmitted to the consumer. For example, the 0.4 % lower producer prices equals a price decrease of about 0.6 eurocents (0.4% of €1.60/kg) while the 0.9% increase in consumer price represents an amount of about 5.4 eurocents (0.9% of €6/kg). This can be different per Member State. In France, Spain, Portugal, Ireland and the UK more than 20% of the extra costs are transmitted to the producers.

5.1.2 Poultry sector

The impact on poultry trade is presented in Table 19, which shows the impacts for the most important poultry producing countries in terms of volume. In comparison to the pork case the impacts are smaller. This is in accordance with Table 17, which shows the cost increase due to mandatory origin labelling in the poultry sector is much lower than in the pig sector. Some countries show large percentage changes in net poultry trade (notably Germany's net trade improves and Italy's worsens) but it should be realised that their net trade positions are close to zero or small in absolute or volume terms.

For option 2 at EU27 level the net exports increase by 0.8%. This is again the result of a decline in domestic demand (as a response of consumers to the higher poultry meat prices), and a less pronounced decline in domestic production. As a result of this the exportable surplus increases, increasing EU net exports to the rest of the world.

The impacts found for option 3 are in general terms smaller than for option 2. However, UK and Spain experience a slightly greater decline in net trade, whilst Poland has a slightly greater improvement in net trade than in option 2. These effects are due to the structure of the supply chains.

Table 19. Impacts of different EU mandatory origin labelling options on poultry trade

Member State (in order of production volume)	Reference (net trade)	Option 2 (impact on net trade)		Option 3 (impact on net trade)	
		1 000 t	% change	1 000 t	% change
1. France	223	222	-0.70%	222	-0.50%
2. Germany	-16	-14	-10.30%	-16	0.50%
3. United Kingdom	-107	-107	0.10%	-108	0.70%
4. Italy	-13	-14	8.00%	-14	6.00%
5. Poland	372	374	0.40%	375	0.70%
6. Spain	-39	-39	0.50%	-40	1.90%
7. Netherlands	296	298	0.60%	297	0.40%
EU-27	767	773	0.80%	772	0.60%

Source: Study calculations with CAPRI model

The average changes in poultry meat producer and consumer prices in the EU27 for option 2 equals about -0.1% and +0.4% respectively. Assuming producer and consumer prices of €1.75/kg and €5.40/kg respectively this implies that producers receive 0.2 eurocent per kg less (0.1% of €1.75), whereas consumers pay an additional 2.2 eurocents per kg (0.4% of €5.40). For option 3, the average changes in producer and consumer prices in the EU27 are again somewhat lower, namely -0.10% and +0.30% respectively. Price changes in the Netherlands are relatively large and are explained by the relative large cost shock.

It can be calculated that on average in the EU27 about 8% of the extra costs for labelling are transmitted to the producer, while about 92% of the extra costs are transmitted to the consumer. Again there are differences between Member States. In France, Italy and Spain the share of the extra

costs that are carried by the producers is relatively large. The reason is that when the cost increase in a country is large relative to those observed in other countries, or a number of firms are seriously affected whereas others have relatively low costs, such a country can only to a limited extent pass on the additional costs to consumers.

5.1.3 Sheep and goats sector

As regards sheep and goats the impact on trade are very small relative to the impacts observed for pigs and poultry. In the sheep and goat sector there are already well-developed traceability systems, while also the trade in live animals (including lambs) between Member States is limited (France being an exception, because it uses to slaughter sheep coming from various Member States throughout the whole year). The adjustments in net trade are generally below 1.5% for option 2; Greece being an exception with a 2.4% improvement in net trade. For option 3 the changes as compared to the reference situation are all below 1%.

The EU27 is a net importer of sheep and goat meat. At EU level the net imports decline marginally by 0.4% for option 2 and 0.2% for option 3. It might be expected that increases in labelling costs would worsen the competitive position of EU meat as compared to non-EU meat and imports would increase. However, consumers reduce consumption due to the price increase and this has a negative impact on overall demand. There will be some substitution of EU produced meat by meat from non-EU origins, but the effect will be limited as the imported meat will not be a perfect substitute for the domestic product.

Table 20. Impacts of different EU mandatory origin labelling options on sheep and goat meat trade

Member State (in order of production volume)	Reference (net trade)	Option 2 (impact on net trade)		Option 3 (impact on net trade)	
		1 000 t	% change	1 000 t	% change
1. United Kingdom	-20	-20	1.20%	-20	0.60%
2. Spain	17	17	-0.00%	17	-0.10%
3. Greece	-12	-11	-2.40%	-12	-0.40%
4. France	-121	-120	-0.50%	-120	-0.40%
5. Ireland	38	38	-0.10%	38	0.00%
6. Italy	-57	-57	-0.30%	-57	-0.10%
EU-27	-195	-194	-0.40%	-195	-0.20%

Source: Study calculations with CAPRI model

For option 2 the average changes in sheep and goat meat producer and consumer prices in the EU27 amount to about -0.1% and +0.5% respectively. Assuming producer and consumer prices of €2.50/kg and €9.00/kg respectively this implies that producers receive 0.3 eurocents less per kg of meat (0.1% of €2.50/kg), whereas consumers pay an additional 4.5 eurocents per kg (0.5% of €9.00/kg).

Under option 3, the average changes in producer and consumer prices in the EU27 equals about -0.1% and +0.3% respectively. From the selected Member States the change in sheep and goat meat consumer prices is relatively large in France. This is explained by the relative large cost shock attached to this country (related to the slaughtering of animals from abroad).

On average in the EU27 about 9 % of the extra costs are transmitted to the producer, while about 91% are transmitted to the consumer. However, depending on the structure of the market the impact on producers and consumers can differ. Remarkably enough, in the UK about 80% of the extra costs (which were relatively low in the UK relative to those in Spain and Greece) were found to

be transmitted to the producer. This is due to the UK's position as an important exporter of sheep meat and the additional competitive pressure this generates²⁵.

5.1.4 Remarks on simulation analysis

From the simulation analysis it turns out that the impacts on the net trade positions of the main EU producing Member States are limited, although there are some exceptions. The induced changes in production are limited, which in turn can be explained by the limited induced cost increases in the production chain.

According to the modelling outcomes, consumer prices will be relatively more affected than producer prices. The impact on producers and consumers ultimately depends on the slope of the supply and demand curves. From an economic point of view such an outcome is plausible, given the full competition assumption underlying the CAPRI model²⁶. As a result of this assumption producer prices will be equivalent to the average costs of production. This implies that when somewhere in the supply chain an additional cost factor is added, the dominant part of this might be expected to be passed on to the final consumer.

Because the consumers appear to bear the brunt of the burden (i.e. a price increase) their welfare will be negatively affected. This effect can be further demonstrated by calculating the welfare changes. As the following table shows, consumers in the EU27 lose about € 1.35 billion due to the increase in EU pork, poultry, and sheep and goat meat prices as a result of the labelling costs that have to be made in option 2. As such the consumers need to have sufficient non-monetary benefits from the additional information to be better off than in a situation without labelling.

Table 21. Welfare impacts of EU mandatory origin labelling options for pork, poultry and sheep and goat meats (€ billion)

	Option 2		Option 3	
	Consumer	Primary agriculture	Consumer	Primary agriculture
EU27	-1.35	-0.03	-0.81	-0.01

Source: Study calculations

Some qualifying statements have to be made with respect to the trade impact simulations. Firstly, the assumption of full competition, although thought to be a reasonable one, has not been empirically tested. As such it cannot be excluded that imperfect competition may exist at different places along the supply chain. If this is the case, the distribution of the impacts over different actors might change (for example a larger part of the burden might be passed on to primary agriculture).

Second, the CAPRI model provides only a net trade representation of EU intra trade. It is not possible to explicitly allow for the heterogeneity of meat products over EU Member States. It is implicitly assumed that meat products from different Member States are perfect substitutes for each other. In

²⁵ In terms of the market structure for the UK sheep and goat sector this implies that they combine a relatively inelastic supply curve with a relatively elastic demand curve. The relatively elastic aggregate demand curve consists of a relatively inelastic domestic demand for sheep and goat meat in the UK and a relatively elastic excess demand curve for UK sheep and goat exports. With a flat demand curve a large part of the additional costs burden will be carried by the suppliers and producers.

²⁶ Supply chains might differ with respect to the degree of integration and market concentration. This might suggest that deviations from the full competition-regime are possible and some stages of the supply chain might hold some degree of market power. Depending on the stage which has and uses the market power the distribution of the costs of labelling might be different from the one obtained here (e.g. if the retail sector has market power they might be able to "protect" their clients (consumers) and enforce that a larger part of the costs are shifted to upstream sectors, including the primary livestock producer).

reality quality differences exist, which might reduce the degree of substitution. This would then also affect the trade impacts. On the other hand the willingness to pay for origin labelling by consumers is low which supports the assumption that meat from different origins are more or less perfect substitutes.

It has been observed that countries which are important exporters are at the same time important importers. This is likely to be mainly driven by specific commercial interests that go beyond pure origin considerations (e.g. there may be a surpluses of some cuts of meat, which are exported and shortages of other cuts, which are imported or big retailers want to have at least two big suppliers of the meat which cannot be found in their own country). The relatively small changes in relative costs are not likely to overrule these concerns and generate strong realignments in bilateral imports and exports due to cost-arbitrage.

In general this would imply that bilateral trade between Member States will adjust to a lesser extent than is now implied by the CAPRI model outcomes (assuming consumer preferences will remain unchanged). In the event that consumers use the new information to change their preferences (start to differentiate between various meat products) bilateral trade patterns might adjust more than is now suggested by the limited changes in net trade patterns. Since, at least from the literature, no clear evidence has been found that consumers are prepared to pay a premium for specific meat products (changes in willingness to pay) it is impossible to analyse further the impacts on bilateral trade flows between EU Member States.

Finally, to the extent cost shocks and margin information from the case studies differ from the general market information as included in CAPRI (for base year 2010), the percentage changes applied in the CAPRI simulations might contain a small approximation error. However, the order of magnitude of the results will not be affected.

5.2 Consumers

Country-of-origin is associated with a range of positive attributes by many consumers, including overall quality and food safety, and how origin labelling contributes to willingness to pay. Origin labelling provides consumers with additional information to make informed choices about the food they wish to purchase and consume.

It is difficult to estimate the benefits to the consumer of origin labelling in monetary terms for the purposes of cost benefit analysis. Origin labelling of meat products may have a positive impact on purchasing if it inspires confidence in the authenticity of the product; it may have a negative impact related to perceived attributes of the product or concerning the country or area in question; or it may have no impact if origin is of not a priority for to the purchaser.

Added (or reduced) value from origin labelling can be measured in terms of willingness to pay extra, and product loyalty or substitution. Sales of a product may be affected in terms of both price realised and volume sold.

In order to model the demand for mandatory origin labelling, the study relies on information about willingness to pay estimates in the Member States and third countries. When complete information is not available various approximations and assumptions have been made for the model.

Only monetary signals can be taken into account in the modelling analysis and non-monetary benefits are therefore not considered.

It has been established in section 3.3.4 that consumers have a low willingness to pay for origin information.

5.2.1 Pork meat

Consumers face a price increase. The average change in pig meat consumer prices in the EU27 is about +0.9% for option 2. This amounts to about 5.4 eurocents (0.9% of €6/kg). Under option 3, the average change is somewhat lower at +0.5%.

Price effects can be different per Member State. In France, Spain, Portugal, Ireland and the UK more than 20% of the extra costs are transmitted to the producers, and therefore consumers face price increases representing less than 80% of the extra costs, compared to an average of 88% for the EU as a whole.

5.2.2 Poultry meat

The cost increases due to mandatory origin labelling in the poultry sector are much lower than in the pig sector.

The average change in poultry meat consumer prices in the EU27 for option 2 is about +0.4%. Assuming an average consumer price of €5.40/kg this implies that consumers pay an additional 2.2 eurocents per kg (0.4% of €5.40/kg). For option 3, the average change in consumer prices in the EU27 is again somewhat lower, namely +0.3%. Price changes in the Netherlands are relatively large. This is explained by the relative large cost shock attached to the Netherlands.

It can be calculated that on average in the EU27 about 92% of the extra costs for poultry meat are transmitted to consumers. Again there are differences between Member States. In France, Italy and Spain the share of the extra costs that are carried by the producers is relatively large. In France, for example, about 70% of the cost increase is carried by the consumers. Also in Italy and Spain the share of the extra costs that is transmitted to consumers is below average. The reason is that in a country where the cost increase is large relative to those observed in other countries, the country can only pass on the additional costs to consumers to a limited extent.

5.2.3 Sheep and goat meat

For option 2 the average changes in sheep and goat meat consumer prices in the EU27 amount to about +0.5%. Assuming a consumer price of €9.00/kg this implies that consumers pay an additional 4.5 eurocents per kg (0.5% of €9.00/kg).

Under option 3, the average changes in consumer prices in the EU27 equals about +0.3%. From the selected Member States the change in sheep and goat meat consumer prices is relatively large in France. This is explained by the relative large cost shock attached to this country (related to the slaughtering of animals from abroad).

On average in the EU27 about 91 % of the extra costs are transmitted to the consumer. However, depending on the structure of the market the impact on consumers can vary. In the UK only 20% of the extra costs (which were relatively low in the UK relative to those in Spain and Greece) were found to be transmitted to the consumer. This is due to the UK's position as an important exporter of sheep meat and the additional competitive pressure this generates²⁷.

5.3 Administrative burden for competent authorities

As explained in section 3.3.3 no significant and lasting change in administrative costs is anticipated as a result of mandatory origin labelling.

²⁷ In terms of the market structure for the UK sheep and goat sector this implies that they combine a relatively inelastic supply curve with a relatively elastic demand curve. The relatively elastic aggregate demand curve consists of a relatively inelastic domestic demand for sheep and goat meat in the UK and a relatively elastic excess demand curve for UK sheep and goat exports. With a flat demand curve a large part of the additional cost burden will be carried by the supply chain.

Whilst it might be expected that competent authorities incur extra costs with specific regard to carrying out controls for origin labelling, in practice the incremental cost is considered to be almost zero as traceability systems and databases are adapted to the new requirements. Control of origin labelling is part of a wider control system and time spent on this specific aspect cannot be separated from the general system of official controls.

In fact one of the intentions of Regulation (EC) No 1169/2011 is a reduction in the administrative burden for both food businesses and enforcement authorities. Whilst the precise impacts of origin labelling have not been isolated, it seems that they will be minimal.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Regulation (EU) No 1169/2011 requires mandatory indication of country of origin or place of provenance for unprocessed meat of pigs, poultry, sheep and goats. This study aims to assess the arguments for different levels of origin labelling (geographic and/or stage of life of animals).

The study focused on four aspects:

- a. Additional costs in the meat chain of the different labelling options;
- b. Impacts for consumers of different labelling options;
- c. Impact on intra and inter EU trade of different labelling options;
- d. Additional administrative costs for public and private operators for the different labelling options.

Based on the findings from stakeholder meetings and workshops in different Member States four possible labelling options have evolved;

1. Mandatory EU or non-EU origin labelling;
2. Mandatory country of origin labelling of all life stages (born, reared, slaughtered), equivalent to the present situation for beef labelling;
3. Mandatory labelling of country of rearing;
4. Mandatory labelling of country of rearing and of slaughter.

Option 1 (mandatory EU or non-EU origin) will have almost no additional costs for companies in the meat chain. Also, the additional administrative costs for food companies and national governments will be negligible. The added value of EU/ non-EU labelling of fresh and frozen meat for consumers is also very low. This labelling option will have no impact on the intra and inter trade of meat in the EU. All these conclusions hold for fresh and frozen meat of pigs, poultry, sheep and goats.

Option 2 (mandatory country of origin labelling of all life stages: born, reared and slaughtered) provides the most comprehensive origin information of all the options, but will increase the production costs in meat chains. The biggest cost increase is expected for pigs (2.3% cost increase of the wholesale price), followed by poultry (1.3% cost increase) and sheep (0.64% cost increase). For individual firms the expected cost increase cost can be far higher (above 10% additional costs of the wholesale price) depending on:

- size of the firm (highest cost increase for small and - especially - medium sized companies);
- the method of sourcing animals or meat (exponential cost increase as the number of origin sources rises);
- the traceability system in place (lower costs if good traceability system exists);

- the presence of voluntary labelling systems (lower costs if a voluntary origin labelling system exists);
- the IT systems in place (a large part of additional costs is related to necessary changes of IT systems);
- the degree of integrated production (if the production chain is more integrated the additional costs for origin labelling will decrease).

In many of the case study interviews food businesses said they have to adapt the production plan for implementing the origin regulation and will not adapt the present structure. From the experience of the beef labelling regulation it is known that adapting the structure (sourcing, batch sizes, reducing middle men) is more cost effective than upgrading the internal traceability and administration systems. This also means that the cost calculations made during the case studies will probably overestimate the real costs of implementation.

Option 2 also increases the administrative costs for firms and national governments. The cost increase depends highly on the level of control (strictness of regulation). From the case studies only limited quantitative insights could be given on the level of the cost increase. The figures gathered show additional administrative cost increases of 1-10% of the total cost increase related to detailed origin labelling. Economies of scale will inevitably result in lower costs for larger plants (e.g. software development, inspection costs). National governments will face a cost increase in the short term to enforce the origin labelling. In the long run this enforcement will be part of the overall control of food companies and total costs will be limited by national budgets.

Option 2 is most preferred by consumers because it offers the most information and transparency. The willingness to pay for the additional origin information by consumers is low to negligible. According to economic theory consumers will pay the large proportion of the additional costs because origin labelling is mandatory with increased costs for meat production chains in competitive markets in the EU.

Option 2 will have small changes in intra-EU and third party trade according to model calculations. The impacts of origin label on the trade can be negative (less trade) and positive (more trade). For some net meat exporting countries the decline in consumption because of the meat price increase can be higher than the decline in production. The net impact is an increase of export (trade).

Even for option 2 with the highest increase in costs for the different meat chains, the impacts on trade are in general small (in percentage and/or volume terms). This holds especially for third country trade but also for the trade between EU Member States (intra-EU trade).

Option 3 is country of rearing. For this option also the biggest cost increase is expected for pigs (1.5% of the wholesale price), followed by poultry (0.92%) and sheep (0.28 %). As with option 2 cost increases can be far higher for individual farms depending on specific circumstances. However for many firms with a high cost increase in option 2 the additional costs will decrease substantially with option 3 because no information on the country of birth is mandatory.

Option 3 will also increase administrative costs for firms and national governments. The cost increase will be less than for the second option because administration of country of birth is not mandatory.

Option 3 delivers less information to the consumer than the second option because he or she will not know where the animal was born nor in which country the animal is slaughtered. However the most important aspect in the eyes of consumers (country of rearing of the animal) is transparent.

As stated above the impact on intra-EU and third country trade will be small for option 2. For option 3 the impact will be even smaller.

The results and conclusions for option 4 strongly resemble the results and conclusion of Option 3. This is because the additional information on the place of slaughter is readily available. The additional costs in the meat chain in option 4 equals the additional costs estimated for option three. This also holds for the administrative costs. Compared to option 3 consumers get additional information about the country of slaughtering. Trade impacts do not differ between option 3 (country of rearing) and option 4 (country of rearing and slaughtering).

The preference of chain participants for the different options is correlated with the expected cost increase for their businesses. Businesses able to label the country of origin at all stages because they source locally or have a voluntary labelling in place prefer labelling option 2. On the other hand firms importing animals and /or meat from different countries prefer option 1. Especially in small countries like Denmark, Belgium and the Netherlands cross border trade of animals and meat is relatively important and many more businesses are affected by the labelling option 2.

6.2 Recommendations

Recommendation 1: Areas of provenance

Mandatory country of origin labelling will have a disproportionately high impact on food businesses in small countries and those located near to borders between Member States in circumstances where the supply chain involves repeated border crossings between the neighbouring Member States. This also applies to food businesses participating in EU meat chains involving cross-border transactions. These cross-border arrangements are drawn up for logistical and commercial reasons with little significance for consumers as regards the quality of the retail meat product.

Businesses participating in such meat supply chains will experience relatively higher cost increases under options 2, 3 or 4 (mandatory origin labelling at Member State level for one or more stages of the life of animals) due to the need to record on the label all the different countries of origin.

The additional costs of origin labelling would be significantly reduced if these businesses had the option to declare that the animals were born, raised and slaughtered in a designated area of provenance covering two or more neighbouring countries or parts of countries.

It is recommended to consider the possibility of designating a limited number of supra-national areas of provenance in specific areas within the EU where the meat supply chain involves repeated cross-border transactions and heterogeneous sourcing. The aim would be to simplify the labelling or origin and minimise additional costs by designating an area of provenance rather than two or three countries of origin. There would be no discernible detriment to the consumer and may even be a benefit in clarity by indicating a single area of origin.

It seems possible that designation of areas of provenance could be included as a derogation under the country of origin options (2, 3 and 4), although the precise details would need to be elaborated.

Recommendation 2: Consistent labelling for all unprocessed meat of pigs, poultry, sheep and goats, and beef

One of the aims of Regulation (EC) No 1169/2011 is to improve clarity in food labelling. Consultations with stakeholders under this study have confirmed that consumers are often confused by the range of different indications on food labels in general. It is therefore recommended for the purpose of improved clarity that the same labelling options is applied consistently to all unprocessed meat of pigs, poultry, sheep and goats, and beef.

Recommendation 3: Options 2 and 4 are the most preferable

The study has found that option 2 (mandatory labelling of country of origin for the places of birth, rearing and slaughter) and option 4 (mandatory labelling of country of origin for the places of rearing and slaughter) both offer the origin information most valued by consumers at a limited additional cost to the meat supply chain and with modest impact on intra-EU and third country trade. Option 2 provides the most origin information and has the further advantage of corresponding closely with existing beef origin labelling legislation.

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