

EU CAP Network Focus Group

'Alternative solutions for livestock product differentiation'

Mini Paper 2

Labelling and certification in practice: a tool to promote livestock product differentiation

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Abstract

Farmers and food business operators can use labelling and certification to gain a stronger market position, signal the quality of produce or to obtain an additional price premium. Labelling or certification are useful, when the product has unique quality attributes that are valuable to the business customers or consumers. Quality claims should therefore go substantially beyond the legal requirements or the local standard practice. Labelling schemes and certificates usually emphasize characteristics such as product's origin, local or traditional features of farming, environmental or social sustainability, artisanal production, quality and safety of product, improved farm animal welfare, ecosystem protection, reduced carbon emission, biodiversity, sustainable land management, or impacts of livestock products on consumer health and well-being.

Key enabling factors for a successful labelling include that there is a market segment interested in the feature that is highlighted by the label, consumers or other customers are aware of the label and its benefits, and that there is a wide involvement of actors and transparency of the scheme. Labelling and certification schemes are particularly relevant for long supply chains, but also short supply chain operators who join an existing labelling or certification scheme can strengthen their marketing efforts.

Introduction

1. Demand for labelling and certification in the livestock market

Livestock sector struggles in achieving sufficient profitability and finding ways to add value and strengthen its competitive position. Focus group FG55 works on the question "Which approaches are there to differentiate livestock products for enhanced market diversification and new business models?". The focus group identified labelling and certification as potential approaches to differentiate livestock products and production.

Clearing out misleading environmental claims and unreliable sustainability labels is a prerequisite for equipping consumers with the information they need to make sustainable choices. The European Union's (EU) legal framework provides for essential information on food labels, but it requires updating (European Court of Auditors, 2024). European Commission (EC) vision¹ for an attractive farming and agri-

¹A vision for agriculture and food shaping together an attractive farming and agri-food sector for future generations. Communication from the Commission to the European Parliament, the Council, the



food sector for future generation indicates that an extension of the country of origin labelling with sectoral specificities and its promotion policy, geographical indications valorising food products and targeted animal welfare labelling are in the EC's toolbox.

The aim of this Mini Paper is to propose how labelling and certification can support the differentiation of livestock products in practice. The Mini Paper will elaborate what is labelling and certification, point out their benefits, provide examples of success stories, innovations and lessons learnt, and propose research needs.

2. What is labelling and certification in the livestock market?

The EU defines a label as “any tag, brand, mark, pictorial or other descriptive matter, written, printed, stencilled, marked, embossed or impressed on, or attached to the packaging or container of food”. We consider labels broadly. Quality standard, certification and labelling are concepts related to each other. A quality standard is a set of criteria, which can be used to determine the level of quality of product. Quality standards are documents providing requirements to ensure that materials, products, processes or services fit for the purpose. For example, the criteria can be requirements for origin or how animal welfare or environmental sustainability is ensured. (Figure 1).

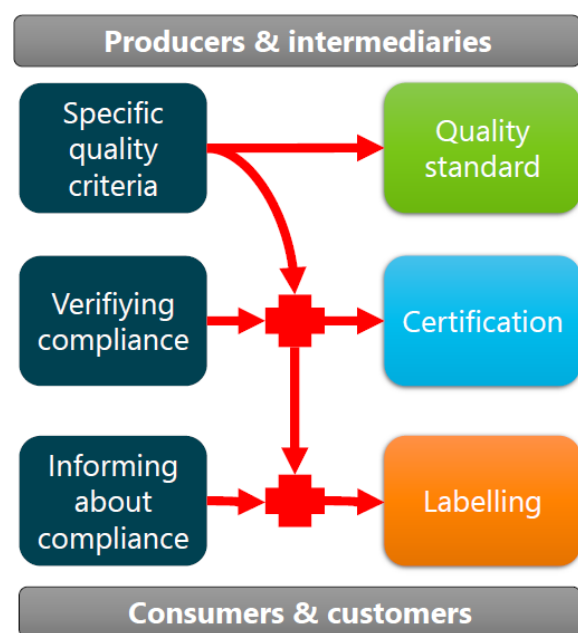


Figure 1. A representation of quality standard, certification and labelling (Source, Niemi, unpublished).

Certification is the process of validating that certain criteria are really met. According to the European Commission (2010), certification is a third-party attestation related to products, processes, systems or persons. Labelling, by contrast, includes the process of communicating to an external audience, such as consumers, that a product or a production process meets certain value proposition, criteria or standard.



3. How farmers can benefit from labels and certificates?

Labelling and certification of livestock products help to ensure the quality of product or production process. They are tools to build trust towards livestock products, convey messages to consumers and business customers about the specific quality of produce, and to help customers to understand the uniqueness of product and to make informed purchase decisions. Especially labelling is used to

sell products to the *market segments* that are willing to pay a price premium for high-quality products, thus adding value to the products. Meta-analyses (e.g. Cicia and Colantuoni, 2010; Yang and Renwick, 2019) suggest that consumers are willing to pay on average 15-43% price premium for animal-based food's quality attributes, depending on the attribute and product. However, there is a high variability of estimates. Figure 2 illustrates average willingness to pay estimates for nine types of attributes. The customers can be also companies. For example, carbon removal certification offers low-emission producers a competitive advantage and an opportunity to sell removal effort to companies who need carbon credits.

Examples from grocery stores in Germany (Thiele et al., 2020) and Finland (Niemi et al., 2021) suggest that the average price of milk sold with an animal welfare label, organic label or certain other quality attributes is higher than the price of milk sold without these features. The same applies to beef. A study on animal welfare labelling (European Commission, 2022) pointed out that products bearing animal welfare claims tended to be more expensive than other products. Price premiums are heavily dependent on the case, and they can be substantial. The sources of price difference, or the lack of difference, between labelled and non-labelled products were multiple and included market demand, value chain dynamics, retail pricing strategies, and elevated production costs. These studies point out that producing high quality products and certifying them through a labelling or certification scheme carry a cost that must be

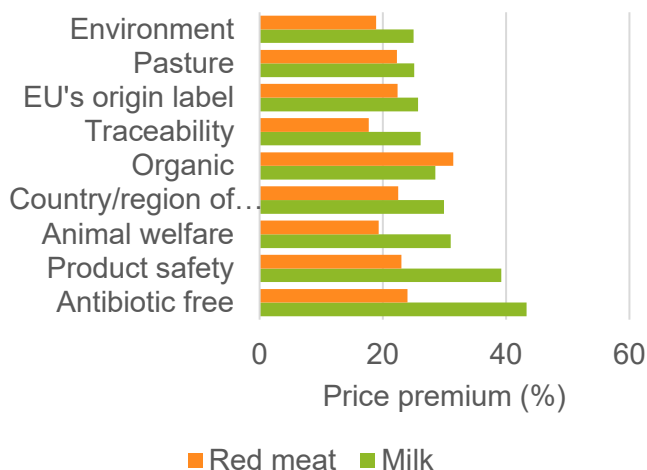


Figure 2. Consumer average willingness to pay a price premium (% of the basic price) for milk and red meat credence attributes based on meta-analysis (Source: Yang and Renwick, 2019).



recovered by additional income. The premium must be reasonable because a rise in the product's price may exclude some customers as the product's potential buyers.

The retailers drew the biggest and farmers the lowest additional margins for higher welfare products. Processors had opportunities to draw margins by adding value to the product, and that commonly happened in relation to by-products (for dairy in particular) but also by generating different cuts for meat, which were sold at a premium to retailers. Farmers get compensated for the higher costs of production, but this compensation is not always sufficient to allow them to receive a better income compared to conventional products. (European Commission, 2022).

Current approaches in the livestock market

4. Different types of labels and labelling approaches

All claims made about a product should be objective and verifiable by using scientifically sound documentation or other relevant evidence. Food cannot be suggested to possess a *special characteristic* when in fact all similar foods possess the same characteristic. Quality claims should go substantially beyond the minimum legal requirements or what is the local standard practice, although some exceptions may exist. However, product's origin and method-of-production (e.g. organic or free-range production) can be branded and used to differentiate products from each other².

The landscape of livestock sector labels and certification schemes can be categorized broadly into five primary domains that aim to differentiate products by bringing specific features to the attention of attentive consumers and business customers:

- Origin of product schemes which emphasize local, cultural or traditional features of farming and may link these to environmental and social sustainability, craftsmanship, taste, quality and artisanal production and safety of products.
- Animal welfare schemes which indicate how animals themselves are doing, how they are treated and how is the environment in which they are kept.
- Environmental schemes focusing on ecological impacts of farming, such as ecosystem protection, reduction of carbon emissions, biodiversity, and sustainable land management.

²In general, the indication of the country of origin or place of provenance is mandatory (Regulation EU No 1169/2011).



- › Nutritional information highlighting the impacts of food on consumer health and well-being.
- › Holistic schemes integrating ethical, social and environmental claims.

There are different approaches to organize a business based on a label or a certificate:

- › Public schemes such as the EU organic label, production system information of eggs, or geographical and quality indications of the EU (see section 5).
- › National quality initiatives such as governmental animal welfare labels in Denmark and Germany, industry's 'Laatuvastuu' pig health quality scheme in Finland, or the Irish quality system 'Origin Green'.
- › Quality assurance schemes without a label.
- › Self-declared quality schemes or labels, which may be certified by an external body.
- › Privately driven labels such as method-of-production labels indicating for example whether it is indoor, outdoor or organic production.
- › Privately operated schemes which are limited to a single operator.
- › Fund-based schemes which direct revenue to farmers such as Initiative Tierwohl animal welfare scheme in Germany.
- › Single-tier or multi-tier quality labels. A single-tier label ensures that certain criteria are met. A multi-tier label offers two or more levels of quality, for example 1, 2 or 3 stars indicating the level of product's quality.
- › "Blending" labels, which ensure that certain proportion of sold produce meets the criteria. For example, 85% of milk is from cows that are grazing.

Labelling and certification schemes are particularly relevant for long supply chains, where consumers and even business customers may know only little about production practices and where systematic collection of information is important. Long supply chains may even foresee it profitable to develop their own label or certificate. However, also short supply chain operators who join an existing labelling or certification scheme can strengthen their marketing message. For them, an external certificate validates that the production process and products are of high quality.

5. EU quality policy and geographical indications

The EU has established a system of **geographical indications (GI)** and product names, which can be granted for products that have a specific link to the place where they are made. Hence, the GIs are tools for farmers and small producers to differentiate their product through a name associated with specific region and having specific qualities, traditions or a reputation linked to the production territory. The GI recognition enables consumers to trust and distinguish quality products while helping producers to market their products better. In total 1735 agricultural products, some of which are



livestock products, have been granted the GI recognition or are under consideration. The new regulation³ increases the protection of GIs as ingredients and online, better recognises sustainable practices and empowers producer groups to manage, enforce and develop their GIs.

Protected designation of origin (PDO) products have a strong link to the place in which they are made, because every part of the production, processing and preparation must take place in the specific region. For example Pecorino Romano DPO, a hard, naturally lactose-free cheese is made of sheep milk in the regions of Lazio and Sardinia and the province of Grosseto in Tuscany, Italy.

Protected geographical indication (PGI) emphasizes the relationship between the geographic region and the product's name, where a particular quality, reputation or other characteristic is essentially attributable to its geographical area. For most products, at least one of the stages of production, processing or preparation takes place in the region. An example is Westfälischer Knochenschinken PGI ham produced in Westphalia, Germany using age-old techniques, but the meat used does not exclusively come from animals born and reared in Westphalia.

Traditional speciality guaranteed (TSG) mark highlights the traditional aspects, such as the way the product is made or its composition, without being linked to a specific geographical area. TSG protects the product against falsification and misuse. An example of TSG is 'kalakukko', which is a traditional dish in Finland consisting of a fish and bacon or bacon filling that is baked inside a thick rye bread crust.

The term 'mountain product' is regulated by Commission Delegated Regulation (EU) No 665/2014⁴. 'Mountain product' highlights the specificities of a product, made in mountain areas, with difficult natural conditions. Mountain production exists primarily in the Alps (several Bergkäse (mountain cheese), Alpkäse (alp cheese) or Bergwurst (mountain sausage)), in the Southern EU member states, and to a small extent in

³ Regulation (EU) 2024/1143 of the European Parliament and of the Council of 11 April 2024 on geographical indications for wine, spirit drinks and agricultural products, as well as traditional specialities guaranteed and optional quality terms for agricultural products, amending Regulations (EU) No 1308/2013, (EU) 2019/787 and (EU) 2019/1753 and repealing Regulation (EU) No 1151/2012. <http://data.europa.eu/eli/reg/2024/1143/oj>

⁴ Commission delegated regulation (EU) No 665/2014 of 11 March 2014 supplementing Regulation (EU) No 1151/2012 of the European Parliament and of the Council with regard to conditions of use of the optional quality term 'mountain product'. http://data.europa.eu/eli/reg_del/2014/665/oj



Finland and Sweden (Joint Research Centre, 2013). Moreover, agricultural products from the EU's outermost regions have a dedicated logo (Figure 3).



Figure 3. Logos of four geographical indications of the EU (Source: <https://agriculture.ec.europa.eu/farming/geographical-indications-and-quality-schemes/geographical-indications-and-quality-schemes-explained>)

Competent authorities have approved a few **national quality schemes**. The compliance of participants is monitored by an independent inspection body. EU funding may be available to farmers participating in these schemes. National quality schemes must include binding product specifications that determine the product's specificity. National. Examples include Laatuvaustu/Sikava pig herd health scheme in Finland and Origin Green quality scheme of Ireland.

6. Nutritional claims

Food products contain labels that inform the consumer about nutritional properties, absence or presence of certain substances, safety or health properties of food product. For example, products may contain claims that they are free from additives, preservatives or antibiotics. Processors may differentiate their product as a healthier option, therefore targeting health-conscious consumer segments. There are logos or labels that endorse, for example, energy density or salt, sugar or fat content of the product (for example, in Finland, Slovenia and Croatia). There are graded nutritional indicators such as Nutri-Score, a 5-point colour-coded label developed in France and recommended by the EC (European Court of Auditors, 2024).

7. Organic production

Organic labelling is a tool for farmers to differentiate products which pay attention to environmental protection, biodiversity, animal welfare through greater freedom of movement and expression of natural behaviours, and limit the use of genetically modified (GMO) inputs, chemical fertilisers, herbicides, pesticides and of antibiotics.



All organic products must comply with the organic regulation EU 2018/848⁵ and related secondary acts⁶, laying down the rules on organic production, control, trade and labelling of organic products. Food can be sold organic only when specific mandatory production, traceability, control, acceptance and certification procedures have been followed and organic products have been kept separate from non-organic products. Dozens of local organic labels exist in the EU. Some of them have specific value propositions that are additional to the EU requirements. An organic certification is valid across the EU, but because of local preferences, local labels may have a better market access than foreign labels.

8. Green claims

Farmers can differentiate their products with an environmental claim related to the food product itself, for example meat or milk which environmental footprint is verifiably low, or to other features such as low-emission packaging or logistics. Claims of “greenness” convey a message that the product’s environmental impact is lower than what is usual for the same product type, or that the production has positive effects on the environment and ecosystem services (e.g. “land was set aside to protect biodiversity”). Dairy and egg products had more commonly environmental claims than meat products. A general (explicit) claim, where the environmental benefit was unclear, was the most common claim (European Commission, 2024).

Both visual (e.g. logo, images, colours) **and textual elements** can **signal greenness**, but care must be taken to avoid giving misleading impressions. The potential to mislead was related particularly to text claims. Unclear and ambiguous claims typically used vague terminology (e.g. ‘natural’, ‘sustainable’, ‘eco’ or ‘bio’), or they were inaccurate. Independent certification scheme improved the clarity of the claims. (European Commission, 2024). The EC has adopted a proposal for a Directive on Green Claims.

To provide common playing field in the European market, the EC produced the **Product Environmental Footprint (PEF)** guide⁷ to regulate the calculation of environmental indicators used in sustainability claims. Those indicators should be calculated using Life Cycle Assessment (LCA) method that quantifies all direct (on-farm) and indirect (material and energy inputs) impacts of a production system or a

⁵ Regulation (EU) 2018/848 of The European parliament and of the council of 30 May 2018 on organic production and labelling of organic products and repealing Council Regulation (EC) No 834/2007. <https://eur-lex.europa.eu/eli/reg/2018/848/oj/eng>

⁶ https://agriculture.ec.europa.eu/farming/organic-farming/legislation_en

⁷ https://green-business.ec.europa.eu/environmental-footprint-methods/pef-method_en



service. The PEF guide was adapted sectorally with tailored category rules (PEFCR) for indicator calculations. Unfortunately, PEFCR were developed only for two livestock sectors, namely feed for food-producing animals and dairy sector.

Carbon farming refers to agricultural practices aimed at enhancing carbon sequestration and reducing greenhouse gas emissions. In livestock systems this includes practices such as rotational grazing, agroforestry, cover cropping, reduced tillage and improved manure management. The EU recently established a voluntary certification framework to quantify and validate carbon sequestration through standardized methods. Under this system⁸, farmers can receive certified credits, and hence revenue, for documented carbon removal and emission reduction achievements (see also SustainCERT, 2023).

9. Farm animal welfare claims

Animal welfare labelling and certification schemes are widespread in Europe, but there is no harmonized European scheme. Valorising animal welfare claims at the EU level would require clear terms, visual entity, and active participation of value chain actors, as proposed by the Subgroup on animal welfare labelling of the EU Animal Welfare Platform⁹. Over 100 voluntary schemes operating mainly at the national level and providing information about animal welfare have been identified (Niemi et al., 2021; European Commission, 2022). Participation in these schemes often incurs higher product prices—even up to 94% more—because of factors such as production costs, supply chain dynamics and retail strategies (European Commission, 2022). Despite bearing higher production costs, farmers typically receive a smaller share of the price premium than retailers and processors.

The market reach of welfare labels varies widely. For example, Label Rouge covers a substantial share of broiler market in France, and Beter Leven label broiler, pig, and laying hen retail market in the Netherlands (European Commission, 2022). While some labels differentiate with specific welfare aspects, like pasture access of dairy cows, others use a broader range of criteria (Stygar et al., 2021). However, welfare assessment tends to focus more on resource-based measures rather than direct, animal-based welfare indicators (Sørensen and Schrader, 2019; Heinola et al., 2019). The use of digital technologies for welfare verification remains rare (Stygar et al.,

⁸ Regulation establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products. Regulation (EU) 2024, PE-CONS 92/1/24 REV 1, Strasbourg, European Parliament and Council. <http://data.europa.eu/eli/reg/2024/3012/oj>

⁹https://food.ec.europa.eu/animals/animal-welfare/eu-platform-animal-welfare/platform-conclusions_en



2021), although there is potential for schemes to improve by better use of existing data along the value chain.

Best practices for labelling and certification

10. Mandatory and voluntary food information

Some food information (e.g. allergens, nutritional information, best before or use by date, origin) is mandatory and other voluntary. Food information shall be accurate, clear, easy to understand, and it shall not mislead the public¹⁰. Therefore, the wording of quality arguments is often in a comparative form (better, more, additional) as this reduces the risk of misleading the consumer. The EU is not limiting excessively the development of market-based, voluntary labels as long as these systems comply with the statutory standards, data protection and marketing claim requirements.

Food cannot be differentiated by using effects or properties which it does not possess. This concerns all features of food, such as nature, identity, properties, composition, quantity, durability, country of origin or place of provenance, method of manufacture or production. It does not make sense to differentiate food by suggesting that it possesses special characteristics when many similar foods possess such characteristics. The characteristics that a product is said to possess, must be verifiable and the seller must be able to prove the claims used in the marketing. Regulation (EC) No 765/2008¹¹ sets out the general requirements for accreditation and market surveillance relating to the marketing of products. Certification schemes supported by public bodies may not lead to restrictions based on the origin of producers or otherwise impede the common market. Any support schemes granted by a Member State for certification must comply with the state aid rules, and competition regulations (e.g. no unreasonable inclusion and exclusion criteria or entry or exit fees) must be complied with.

¹⁰ Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004. <http://data.europa.eu/eli/reg/2011/1169/oj>

¹¹ Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation (EEC) No 339/93. <http://data.europa.eu/eli/reg/2008/765/oj>



11. Key factors to successful labelling

Based on the recommendations of European Commission (2010) and experiences that ClearFarm project collected from animal welfare labels¹², several factors are needed for a successful product labelling. These factors are pertinent for schemes open to a wide range of farmers and other stakeholders who wish to differentiate their products:

- Business operators are **motivated** and **desire for openness** and transparency.
- A multi-actor approach with **wide participation of different actors** such as farmers, processors, retailers, and interest groups in designing and implementing the labelling scheme. Farmers must be involved in the development of the schemes and preferably in the decision-making structure.
- **Consumers and business customers are aware** of the label and its benefits, and interested in certified features. This requires adequate, correct and coherent communication so that customers understand the benefits of the label.
- The scheme is **transparent**. This includes that the scheme's rules, assessment criteria, auditing, decision-making and other details are clear, understandable and available for all participants.
- The scheme is **financially viable**. Enhanced quality of produce and its verification carries a cost at throughout the value chain. A commercial scheme must provide adequate additional value to all relevant actors, including animals, consumers, farmers, food business operators and other entities involved.

Schulze et al. (2024) recommended to embrace the diversity of viewpoints of food system actors, as they are the main drivers of the success and failure of labels, and also a source for differentiation. Specific issues in labelling are heterogeneous, but not country-specific. Therefore, introducing a 'one size fits all' label is not advisable in the current market environment. Initiatives and bundling of actors who agree on the labelling approach are more relevant.

12. Best practice guidelines for voluntary schemes

In consultation with stakeholders, the EC has developed guidelines for voluntary certification schemes for agricultural products and foodstuffs (European Commission, 2010). The guidelines were published because certification schemes can have drawbacks such as threats to the single market, potential for misleading consumers, costs and burdens on farmers, particularly when they have to join several schemes, and impacts on international trade. In addition, there is a need to avoid consumer confusion, to increase the transparency and clarity of the schemes, to lower the

¹² https://www.clearfarm.eu/wp-content/uploads/2022/03/Clearfarm_PracticeAbstract6_ENG_web.pdf



administrative and financial burden on farmers and producers and to increase compliance with EU internal market rules and principles on certification.

The guidelines provide several recommendations for farmers and other operators. The best practice guidelines include the key factors for successful labelling presented in section 11. In other words, it is recommended that the scheme facilitates the participation of all concerned stakeholders by being open to relevant parties, transparent and having non-discriminatory criteria to participants who are willing and able to comply with the specifications. It is also important to have a supervisory structure which allows all concerned stakeholders to contribute, and a documented structure for participation.

An industry-wide quality label that is accessible to any stakeholder is comparable to a standard, which defines the requirements of production. The technical standard of a label or a certificate affects how much value it can generate and it may determine the local marketing standards. Therefore, the technical standard should be developed by technical committees of experts, with input from stakeholders. It is also important to ensure the participation of all concerned stakeholders in the development of inspection criteria and checklists, and sanctions as this creates a deeper understanding and commitment towards the labelling scheme. Any modifications made to the scheme should be justified and made only when necessary, and all relevant parties should be informed about the changes so that they can adjust business accordingly.

The principle of continuous improvement helps to upgrade the quality of business operations and it can benefit the farmers in the long run. A continuous improvement approach requires feedback mechanisms, regular review of the scheme's rules and requirements in a participatory manner. The schemes may benefit farmers also by containing useful audits, advising and education to farmers.

Clear, sufficiently detailed and easily understandable specifications are important to valorise the scheme on the market and for farmers and other stakeholders to comply with the scheme's requirements. In customer communication it is important to indicate clearly, how the scheme goes beyond the legal requirements and standard practice. All claims should be based on objective and verifiable evidence and scientifically sound documentation. Clearly stated social, environmental, economic and legal objectives as well as scope (products and/or processes) improves the understandability of the scheme. It is advisable to make the scheme's quality specifications freely available, explain the links between the claims, technical specifications and objectives of the scheme. If the scheme operates in multiple countries or language regions, multilingual



documentation should be provided. It is also good to establish a feedback mechanism and provide contact information on all documentation for those who wish to engage in a conversation or ask for further information.

13. Independent certification is needed to make information trusted

Openness creates trust and credibility towards the quality system. Weaknesses in the monitoring, reporting, control systems, and sanctions may lead to consumers being confronted with confusing or misleading labels, or labels that they do not always understand (European Court of Auditors, 2024). Therefore, reliable verification of the scheme is important. Certification bases on transparent audits and inspections, which verify whether the production process and the product are within approved limits, by comparing documentation, procedures and outcomes against predetermined standards. The general guidelines for auditing are provided by ISO 19011:2018 guidance for auditing a management system. While current livestock sector's quality schemes are based on on-farm inspections, the advancement of technology increasingly enables remote inspections.

Certification schemes can be based on a self-declaration or third-party attestation (certification). Third-party attestation is suitable to both consumer and business markets and it may focus on certifying the product, management systems or a process. It is recommended that the verification of conformity is made by an independent body, and that regular inspections with clear, understandable, and realistic criteria take place.

Mechanisms for improving trust in differentiated food products may include consideration of what is important to the public. People usually have a negative attitude towards intensive livestock farming, because it is considered to breach the concept of 'naturalness'. Therefore, alternative and extensive practices can be useful attributes in livestock product differentiation. Practices that are considered natural and proactive are important to the consumers and mentioning them in communication is essential.

Besides certification, it matters who communicates about the scheme to consumers and business customers. The most trusted organizations to provide information include animal health and environmental organizations, consumer organizations, quality assurance schemes, and government bodies. In terms of professions, veterinarians and scientists, and to some extent also farmers, are trusted sources of animal health and welfare information. However, it differs by country which sources are the most trusted. This highlights the need to develop and transmit collaborative messages from trusted bodies (Clark et al., 2019, Niemi et al., 2021).



14. Possible challenges in applying a certification system

According to a study on animal welfare labelling (European Commission, 2022), labelling schemes may face practical and economic challenges. The main challenges for producers are related to the implementation of required changes and competition with other schemes. While the scheme's participants can benefit from improved market access, financial rewards or stabilised income, improved brand reputation and improved animal health, there are costs arising from the scheme. Audit costs and administrative costs associated with membership are common. Adherents incurred adjustment costs (changes in production to meet the scheme's requirements) and administrative costs (costs that companies incur to comply with the scheme's requirements). Moreover, consumers may not be willing to pay a sufficient price premium, which poses a risk to the economic viability of the scheme. The distribution of costs and benefits across the chain may also be an issue especially if additional revenue stream directed to farmers is insufficient.

Operational adjustments and investments to comply to the scheme requirements are a common challenge that farmers face when trying to comply with a label. For example, in the event of animal welfare labels, housing, enrichment material, staff training, administration and audit costs and equipment used were among the most common challenges of implementing an animal welfare label.

Transparency and rigor are necessary to avoid criticism of "green washing" or "welfare washing" and to reduce skepticism about operators' compliance with and reliability of the label. If many labels exist, there is a risk of consumer confusion and misinterpretation of similar labels, and consumers may find it difficult to compare them. Some schemes may also suffer from the situation where a high price market segment is available for certain high-value cuts of carcass but not for all cuts, which reduces the value that the scheme can generate.

15. The potential of digital tools in quality schemes

Digitalisation offers new opportunities to change the way labels are used in a business environment¹³. It allows innovative technologies to be used for the benefit of consumers, which can change communication and give rise to new business models based on precision livestock farming technology and data. Some of the key Information and communication technologies (ICT) available today are Internet of Things (IoT) and

¹³ https://www.clearfarm.eu/wp-content/uploads/2022/03/Clearfarm_PracticeAbstract6_ENG_web.pdf



sensors, machine learning (ML) and other artificial intelligence (AI) methods, and blockchain and QR codes. These technologies are summarized in the Mini Paper 4: “Information and Communication Technologies for Product Differentiation”.

IoT devices such as wearable sensors, RFID tags, and environmental monitors can continuously collect data on animal health, movement, and feeding behavior, and transmit data via wireless networks to centralized databases or cloud platforms. An example is GPS collars with animals' health tracking. Initiatives such as Terra Thessalia in Greece employ GPS to verify grazing conditions and animal movements, enhancing consumer trust and product differentiation by informing that animals are genuinely raised under stated conditions.

ML and other AI methods are algorithms that can learn from big data and are capable of analyzing complex datasets, e.g. from IoT sensors. AI-driven welfare monitoring, as demonstrated in Finland, enables automatic, real-time animal welfare monitoring, which can be communicated to consumers via package labels or online platforms.

Blockchain is a decentralized digital ledger that records every transaction in a secure, immutable manner. **QR codes** allow consumers to access detailed information about production practices, animal welfare, and sustainability. For example, the Greek Digital Meat Traceability initiative ensures transparency across the meat supply chain. Consumers can verify livestock origin, feeding practices, and compliance with welfare and safety standards in real-time. This raises consumer confidence and provides competitive advantage to producers who adopt such systems.

ICT tools can support labelling in many ways: (a) they can generate data reliably and automatically, minimizing human input, (b) they can process data in ways that convert field information to performance indicators valued by the market or necessary for compliance checks, and (c) they can relay the information along the supply chain, to intermediary or final consumers. These digital innovations can streamline certification audits, automate data collection, and facilitate real-time monitoring, substantially reducing farmers' administrative burden while enhancing consumer trust.

ICT tools can be combined with e-commerce and feedback features so that the information flows from farm to the consumer and vice versa. Hence, they can enable a shorter supply chain. Blockchain technologies can be adapted to the establishment of contracts and relay information safely and verifiably across the supply chain, maintaining confidentiality but still enabling certification. Digital tools have the potential to enhance labelling and certification processes by promoting transparency, reducing bureaucracy, and improving data reliability and traceability.



In the future of ICT application in labelling and certification schemes, digital innovations add dimensions of value chain (market innovation, data-sharing with retailers, certifiers, farmers) and data governance. These system innovations should benefit farmers with better governance, livestock tracking and data sharing for business innovation and certification. It is critical for farmers that they can control their data and be part of the structure that decides about the use of quality assurance and other data generated on the farm. It is also important to find customised solutions, which take into account the heterogeneity of farming. (Krampe et al., 2024)

16. Examples of successful labels and certifications

a. **Beter Leven animal welfare label in the Netherlands**

Beter Leven¹⁴ is a well-known three-tier animal welfare labelling scheme which covers cattle, calves, chickens, rabbits, pigs and turkeys. It is a chain-wide scheme managed by the Dutch Society for the Protection of Animals. This means that in addition to livestock farms, all subsequent links in the chain such as abattoirs, egg packers and processors are also inspected and certified.

The scheme uses a star rating to indicate the animal-friendliness of the system used to rear livestock for meat, eggs and dairy produce. The higher number of stars a product has, the more attention is paid to animal welfare. One star typically represents products with a slight improvement in animal welfare compared to the legal requirements, two stars are often products that go a further in terms of animal welfare, but are not as demanding as organic products, and three stars are awarded to organic products or products with a comparable level of animal welfare. Major differences between the three levels are in the space allowance, housing conditions (e.g. straw on the floor and enrichment material), whether the animals have outdoor access and the duration of transport. The animals should not be slaughtered without stunning. In pigs, the highest levels require rearing long-tailed pigs, higher weaning age, provision of enrichments, outdoor access, limited darkness period, and castration with anaesthesia. The certificate is valid for one year at a time. Because labelled products tend to be more expensive, two first levels target segments between conventional and organic products. The scheme should attract a larger premium to remain viable in the long term. According to some experts, there are concerns about whether the price premiums are sufficient to cover the additional costs of the scheme.

¹⁴ <https://beterleven.dierenbescherming.nl/zakelijk/en/>



b. Origin Green quality scheme in Ireland

Origin Green¹⁵ is Ireland's food and drink sustainability programme, operating on a national scale, uniting government, the private sector and the full supply chain from farmers to food producers and right through to the foodservice and retail sectors. The programme is the world's first national food and drink sustainability programme. It enables the industry to set and achieve measurable sustainability targets that respect the environment and serve local communities more effectively. Origin Green measures sustainability on Ireland's farms through the Irish Food Board's (Bord Bia's) Sustainable Assurance Schemes. Accredited by Carbon Trust (PAS 2050) and to ISO: 17065, the Sustainable Assurance Schemes are responsible for about 800 farm audits each week. As part of the inspection, auditors confirm that the animals on certified farms are being treated properly. The processes covered include manufacturing and processors at the packing level.

The Origin Green programme measures the sustainability of over 53,000 primary producers in Ireland every 18 months and it collaborates with over 300 food and drink companies to prove and improve the sustainability of the food they produce. 90% of Ireland's food and drink exports now come from Origin Green members. Hence, the scheme is a tool to differentiate Irish products from those of other countries.

c. Slowfood scheme

Slow Food¹⁶ is a global movement of local groups and activists united by the common goal of ensuring everyone has access to good, clean and fair food. Founded in Italy in 1986, the movement is now active in more than 160 countries. Slow Food is a global grassroot movement, and the Slow Food Foundation is the coordinating legal entity. The movement is articulated in more than 2000 local groups. Convivia are groups of individuals who subscribe to Slow Food and promote it in their local area, and therefore enable local marketing and differentiation efforts.

Slowfood integrates several sustainability attributes of food, valorises the local aspects of food and differentiates itself in several aspects. The products are often organic and utilize for example local animal breeds. Slow Food envisions a world where all people can eat food that is good for them, good for the people who grow it and good for the planet through three interconnected principles:

¹⁵ <https://www.bordbia.ie/industry/origin-green/>

¹⁶ <https://www.slowfood.com/>



- **Good:** Sensory quality which trained, educated senses can recognize, resulting from the producer's expertise, the choice of raw materials and production methods that do not alter the natural state of the product.
- **Clean:** The environment must be respected through agricultural practices, animal husbandry, processing, marketing and sustainable consumption. Every stage in the agrifood chain, including consumption, must safeguard ecosystems and biodiversity, protecting the health of the consumer and the producer.
- **Fair:** Social justice should be pursued by creating work conditions that respect human beings and their rights, that generates adequate compensation; by seeking balanced global economies; by practicing solidarity and by cultural diversity and traditions.

Conclusions

Labelling and certification schemes are tools to verify the uniqueness of livestock products on the basis of animal welfare, social or environmental sustainability, local traditions or other quality characteristics for attentive consumers. A successful labelling or certification requires identifying a market niche that can be served with current or prospective specialties of farmer's production and with a reasonable additional effort. Because of setup and administrative costs, they are suited especially to long supply chains which have large customer base and are distant from the consumers and therefore wish to be identifiable from the competing products, but also to short supply chains seeking to strengthen their quality position.

Label's quality criteria should be such that they differentiate the labelled product from typical mass products with adequate clearness. The criteria should be concrete and understandable also to consumers, and they should be communicated to consumers. All claims should be clearly linked to the objectives of the scheme, and specifications should be clear, sufficiently detailed and easily understandable. Following a multi-actor approach and ensuring that the scheme provides adequate value (value proposition) to relevant actors, including consumers, farmers, food business operators and other businesses is critical to achieve success.

Current labelling schemes have a low degree of harmonisation. From the differentiation perspective this is good because it helps to emphasize specific features of each product. However, among consumers this may cause confusion.

The future of labels lies in robust sustainability metrics that provide a holistic view of production and yet address the needs of different market segments, empowering consumers to make informed, ethical, and environmentally responsible purchasing decisions. Digitalization offers new opportunities to provide personalized information



to the consumers. In the future, integration of technologies allows unprecedented levels of tracking and verification, giving consumers greater confidence in the labels they see. However, technology does not eliminate the need for third-party attestation.

Research needs from practice

The most effective business models and business strategies for labelling and certification of livestock products are unclear, especially from the perspective of generating additional value to the sector through unique product attributes. Gaps in the EU legal framework for food labelling are known, and future research analysing European labelling and certification practices, including how effectively they can differentiate products and add value to the livestock sector is needed. Comparative studies of labelling and certification approaches would produce useful information also for practice. Given the current state of labelling initiatives and their limitations, the following research topics are recommended:

- **Beyond consumer willingness-to-pay studies:** Research should be carried out on actual observed consumer purchasing behaviour for labelled or certified livestock products. Research would indicate how actual behaviour is formed, which labels and communication strategies work the best, and identify strategies on how to better respond to different consumer segments' expectations and improve their understanding of labels and certificates.
- **Comparative studies to improve labelling and certification:** Analysing national and international labelling and certification practices, how effectively they differentiate products and add value to the livestock sector, uncovering ways in which they are (in)efficient and suggesting ways to improve them is recommended. Research would inform policy and practice particularly regarding transparency, consumer communication, and the development of environmental and animal welfare standards.
- **Barriers and enabling factors:** Multi-actor research is needed to investigate practical, technical, economic, regulatory, social and psychological barriers that farmers face when adopting certification schemes, with the goal of developing targeted strategies to overcome the barriers and enhance the adoption of the best schemes.
- **Economics of labelling and certification models:** Focus on practical research questions to gain evidence on whether some types of labels and certificates able to gain a higher price premium than others, how well the price premium covers additional costs, how the costs and revenues of labelling and certification schemes are currently shared within the value chain and how farmer's share and position in the schemes could be strengthened? What are the risks and benefits of adopting different types of schemes (e.g. investment, long-term profitability, sustainability impacts)? Knowledge about economics would support schemes that are cost-effective and fair to participants.



Ideas for research and Operational Groups

Concerning the implementation of projects and specifically Operational Group (OG) projects following topics could be developed:

- **Regional branding of extensive livestock systems:** Developing a hands-on certification scheme for products from extensive systems, such as the Axios Delta initiative, focusing on sustainability, natural pasture grazing, and associated health benefits, supported by marketing campaigns aimed at premium markets. Issues such as biodiversity, animal welfare, local food, GI and possibility selling not only food but also experiences such as visits to the farm could be combined to the activities of OG.
- **Farmer-led cooperative certification:** Groups to establish cooperatives or associations that certify for example local breeds or specialty products, and incorporate digital tools for certification and quality assurance. The OG could promote local networks between farmers, hotels and restaurants, processors and retailers. The OG would also address practical challenges in labelling and certification at the farm level and share best practices that farmers have used to overcome challenges they have faced when adopting a labelling scheme.
- **Social innovations in short chain marketing:** Social innovation practices help to differentiate animal products by creating new organizational models like collaborations that strengthen farmers' market power and resilience. The OG could build direct, transparent relationships with consumers and co-create knowledge with researchers and communities, producers can promote sustainable and ethical practices. These innovations would empower rural communities, generate local economic value, and foster cultural change by making consumers active supporters of ethical food systems.

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