



Making Farm-to-Fork Front-of-the-Pack: Labelling a Sustainable European Diet

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Abstract.

European Union (EU) policies have been evolving beyond the protection of consumers through food safety protocols to the promotion of healthy and sustainable diets. The European Commission’s Farm to Fork Strategy—the most recent step in this evolution—addresses challenges facing European agriculture and proposes measures for creating a more resilient as well as sustainable food system, which includes a plan for product labelling. The effort to improve information conveyed to consumers through product labelling is a long-standing and ongoing phenomenon, and different front-of-pack voluntary labels presently co-exist across EU Member States. One objective of the Farm to Fork Strategy is to harmonize them; a second objective, no less important, is to add ‘sustainability’ as an additional quality to be certified through labels. Yet, adopting some of the current models of voluntary front-of-pack labels—in order to better promote both dietary health and sustainability—might conflict with already-established measures implemented by the Common Agricultural Policies, such as Geographical Indication protection for agri-food products. Furthermore, influencing consumers’ behaviour through labelling should not be regarded as equivalent to ‘empowering’ consumers in terms of nutrition and sustainable choices. Labelling needs to be complemented by higher levels of policy interventions—incentives/disincentives or even policies that limit or restrict choices—in order to rebalance power in the food supply chain and to induce a change in the complex social practices of food consumption. This paper examines the Farm to Fork Strategy through an analysis of EU policy documents, existing literature, and the discussion of a case study—with particular attention paid to the role of labels in promoting healthy and sustainable diets as well as the possibility of new sustainability criteria for products certified with Geographic Indications.

Keywords: European Commission Farm to Fork Strategy, Front-of-Pack Labels, Consumer Choices and Diets, Geographical Indications, Agri-food, Agro-food

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1. Introduction

It is now widely recognized that food is intricately connected with agriculture, health, trade, and development, as well as the environment, and that any extensive reform of the food system must necessarily address these interconnections (Barling *et al.*, 2002; Mason and Lang, 2017; Willett *et al.*, 2019). The simultaneous adoption by the European Union (EU) of the Farm to Fork Strategy (European Commission, 2020a) and the Biodiversity Strategy (European Commission, 2020b) highlights these links. Both policy documents, released on 20 May 2020, were conceived as part of the EU Green Deal, and seek to address the challenge of securing a sustainable food system while recognizing the link ‘between healthy people, healthy society and a healthy planet’ (European Commission, 2020a, p. 4).

Sustainable and healthy diets have long been discussed at the EU level, but, while some Member States have adopted national measures, it has proven difficult to reach policy harmonization between Member States on this matter. This paper explores the evolution of EU policy around healthy and sustainable diets, drawing on the Farm to Fork Strategy (FFS), which proposes a range of actions across the whole food system. FFS is examined in the context of the EU Common Agriculture Policy (CAP) and its long-standing concern with food quality.

During the 1980s and 1990s, a series of food safety crises and controversies—especially Bovine Spongiform Encephalopathy (BSE), as well as discontent surrounding the commercialization of Genetically Modified Organisms (GMOs)—raised public anxiety about levels of risk in the food economy of the EU. These exposed the regulatory shortcomings of the DGIII (Industry) and DGVI (Agriculture), which shared responsibility for agriculture and agroindustry regulation (Vogel, 2012), and led to the establishment in 1999 of the Directorate General for Health and Consumer Protection (DG SANCO). In the same period, risk assessment was entrusted to a new European Food Safety Authority (EFSA), which provided semi-independent scientific advice.¹ Further, in order to reduce the risk of food-related pandemics, the Rapid Response System was established (European Commission, 2000; König, 2007, p. 277).

Rural sociologists and agricultural economists locate in those years ‘*the quality turn*’ in European agriculture and food policy (Goodman, 2003; Murdoch *et al.*, 2009)—a shift in the Common Agriculture Policy (CAP) from supporting higher levels of quantity in food production to supporting higher levels of quality, i.e. food able to enhance consumer and environmental health. At the beginning of the 1990s, CAP reforms led to progressive steps such as agro-environmental measures, Geographical Indications protections (Council Regulation 2081/92), and support for organic agriculture (Regulation EEC 2092/91, 1991). At the end of the decade, Agenda 2000 established the second pillar of rural development policies.

As food *quality* became more closely linked to *the production process*, interest grew in agriculture with reduced inputs and food with less chemical residues. Many consumers understood the BSE crisis to be the failure of a system based on excessively industrialized agriculture and ultra-processed food (Brunori *et al.*, 2013), and therefore—by contrast—that the safer and healthier choice was organic or local products linked to known places of origin. Within this gradual broadening of attention from agriculture to food, the emergence of alternative food networks and short food supply chains involving an increasing number of urban consumers pointed to a much more visible role played by ‘citizen-consumers’, i.e., consumers whose values as citizens help shape their food choices (Renting *et al.*, 2012).

Food ‘quality’ became a much more complex bundle of attributes—comprising not only environmentally friendly and safe food, but also social justice, animal welfare and nutritional content. The emergence of this new social actor, the ‘citizen-consumer’, called for a ‘democratization’ of the food system (Lang, 2006). This may be seen as a two-sided process: the

¹ While the scientific independence of EFSA has been questioned—due to the fact that communication is driven by state authorities through government officials and seconded personnel (Levidow and Carr, 2007, p. 6)—EFSA has shaped how Member States inform EU consumers about possible risks concerning food products.

involvement of civil society in decision-making regarding the food system, but also the devolution of responsibility for ‘sustainable diets’ from the state to the consumer. In any case, quality choices demand consumers’ collective responsibility (Costato and Albisini, 2012; European Commission, 2014). In this respect, the consumer is required to make the ‘right’ choice for a healthy, sustainable diet, while the State’s role is confined to controlling the information that reaches the consumer or to ‘nudge’ them toward optimal decisions. In this context, food labels—particularly Front-of-Pack (FoP) labels that attract the consumer’s attention—became a matter of great public importance.

In this article, the concept of ‘food quality’ is explored alongside the discussion of possible dietary guidelines as proposed in the Farm to Fork Strategy from the perspective of a sustainable food system. Particular attention is given to the role of labels, especially nutritional FoP labels.

From a methodological point of view, this paper is based upon a document-based policy analysis (Bowen, 2009), which takes into account EU Food Policy documents, laws and regulations, official statements and declarations as well as implementation documents. It is also supported by the analysis of independent reports and evaluations, by the discussion of case studies and relevant scientific literature. Drawing upon the analysis of official European Union Commission documents and the rich literature on the ‘quality turn’ of CAP, the possible conflicts and contradictions between the pursued objectives of high-quality food and harmonized nutritional and sustainability standards in the EU’s FFS are tackled and highlighted.

In section 2, the shift from an over-riding concern for ‘safe’ food to the promotion of healthy and sustainable diets will be illustrated with reference to EU documents, like the EESC Opinion on Healthy and Sustainable Diets (EESC, 2019) and the Farm to Fork Strategy (European Commission, 2020) along with its attached document on FoP labels. Section 3 will focus especially on consumer information and labels, adding critical reflections on the project to harmonize front-of-pack labels as formulated in the Farm to Fork Strategy. Section 4 will consider possible conflicts between Geographical Indications (GIs) and nutritional strategies that emerge with the introduction of nutrition-based FoP labels, as well as concerns about sustainable and health issues in some GIs food products. Conclusions will synthesize and discuss the arguments presented in the entire article. Contradictory elements in EU policy towards quality food (GIs) and information transparency (the right to know the nutritional aspects of food and its sustainability) create difficult scenarios. But it is clear that informing consumers is not equivalent to enabling the transition to healthy and sustainable diets. More encompassing and higher levels of intervention² are necessary to rebalance power and create the basis for a stronger alliance that brings together environmental, social, economic, nutritional, and health concerns in the food system.

2. From health protection to promotion of healthy and sustainable diets in the EU

Efforts to set up guidelines for sustainable and healthy diets in the EU are not entirely new. Since the 1970s and until the end of the 1990s, nutrition was considered crucial in preventing chronic diseases and reducing their impact on public health (Lang *et al.*, 2004). In 1998, the European Commission funded the Eurodiet project (Kafatos and Codrington, 1999; Teicholz, 2014, p. 183) with the aim of contributing toward a coordinated approach to nutrition, diet and healthy lifestyles (Eurodiet, 1998). One important objective of Eurodiet was to demystify misleading messages on dietary principles based on the notion of ‘free from’,³ often driven by Member States’ policies and by commercial interests (Carreño and Vergano, 2014). Those past attempts were focused mostly on

² The reference is here to the intervention ladder of the Nuffield Council on Bioethics, which order levels of policy intervention from the softest (‘do nothing’, ‘provide information’) through intermediate levels (changing the default, incentives/disincentives) to the hardest (restrict/eliminate choice) (Nuffield Council on Bioethics, 2007, p. 42).

³ A ‘free from’ message conveys the vision of a product with low fat and sugar level that decreases caloric intake. But a zero-calorie or sugar-free soft drink, for example, will not add any nutritional value for healthy functioning of our bodies. ‘Free from’, indeed, often means a food product that does not add positive elements to the body. It is disputable whether formulations of sugar- and fat-free products will not be harmful in the long run.

aspects related to consumers' health. According to Kafatos and Codrington (1999), they failed to reach the so-called 'net effect', i.e. to drive progress towards a sustainable diet.

In February 2019, the European and Economic Social Committee (EESC) released the Opinion entitled *Promoting healthy and sustainable diets in the EU* (EESC, 2019), which was in line with the previous opinion *A Comprehensive EU Food policy*, adopted in December 2017 (EESC, 2017). The Opinion was born out of long-lasting efforts to reach some level of harmonisation on the orientation toward healthy and sustainable diets among Member States. The novelty of the document lies in its suggestion to combine healthy diets with environmental, social, and economic sustainability through coordinating policy measures on both the supply and the demand side. Furthermore, it saw CAP as a central element in fostering an improved concept of diet rooted in healthy ecosystems (EESC, 2019, p. 3).

The legal roots of EU intervention in this field go back to the 1999 Treaty of Amsterdam, which assigns the EU a mandate to ensure 'a high level of human health protection [...] in the definition and implementation of all Community policies and activities' (Art. 168). The EESC Opinion proposes a concept of diet that expands the scope of health protection, putting forward a multi-sectorial and multi-level approach, that links food to education, agricultural practices, and diverse sources of sustainability and accountability: in short, it presents a holistic perspective of human health to be achieved through the promotion of sustainable diets. Consumers should not only be advised about what food is good or bad for their health, but also enabled to make dietary choices that are simultaneously nutritious and sustainable.

On the supply side a sustainability approach means considering the long-term perspective, developing conditions for shorter regional food supply chains and creating the conditions for the food industry to produce, process, distribute and sell healthier as well as more sustainable food. On the demand side public policies should 'empower' consumers to choose healthier diets, through education, campaigns, dietary guidelines, labelling, public procurement and intervention in the food environment.

According to the EESC Opinion, a more comprehensive approach on diets calls for the development of new EU Sustainable Dietary Guidelines, which should take into account 'cultural and geographical differences between and within Member States' (EESC, 2019, p. 3). A common European food labelling approach, including also environmental and social aspects, is also recommended, as well as clear criteria for public procurement. Such Guidelines would contribute to create clearer directions for farmers, processors, retailers, foodservice, and businesses, benefiting the entire food system (EESC, 2019, §1.4 and §1.5).

An Expert Group has yet to be constituted in order to formulate Europe-wide sustainable dietary guidelines. Nevertheless, the EC published the Farm to Fork Strategy in May 2020, following the adoption in December of the European Green Deal (European Commission, 2019). As recommended by EESC 2019, the strategy provides some clear direction on the matter. With the objective of achieving a circular economy from production to consumption, the FFS embeds concepts such as: better informed citizens; sustainable food production; better storage and packaging; sustainable food processing, wholesale, retail, hospitality and food services; responsible business and marketing conduct; sustainable food consumption as well as healthy diets; reduced food loss and waste. FFS suggests strict eco-environmental measures to significantly reduce dependency on pesticides and antimicrobials, reduce excess fertilization, increase organic farming, improve animal welfare and reverse biodiversity loss. It also proposes a shift towards a new model for the Common Agricultural Policy (CAP) that would strengthen the nexus of food, agriculture, environment, and people. With this Strategy, the EU goal is no less than *a just transition to a sustainable food system* (European Commission, 2020a, p. 2)—one able to:

- ensure a neutral or positive environmental impact of the entire food chain on natural resources (land, soil, water, air, biodiversity (European Commission, 2020a, p. 5))

- ensure food security, nutrition and public health (access to sufficient, nutritious, sustainable food) (European Commission, 2020a, p. 10)
- preserve the affordability of (sustainable) food (European Commission, 2020a, pp. 11-15).

According to EU statistics, in 2017, over 950,000 deaths were attributable to unhealthy diets. While aimed at ‘reversing the rise of overweight and obesity across the EU by 2030’ and reducing the risk of diseases caused by unhealthy diets, the Farm to Fork Strategy points out the necessity to shift toward a ‘more plant-based diet with less red and processed meat and with more fruits and vegetables’, which ‘will reduce not only risks of life-threatening diseases, but also the environmental impact of the food system’ (European Commission, 2020a, p. 14).

The link between healthy diets and sustainable food systems is strongly emphasized in the FFS. It derives from the fact that food which is recommended to be consumed most frequently (vegetables, grains, pulses, fruit) is also more sustainable and has less environmental impact.⁴

Being a comprehensive political tool, FFS covers many topics at all levels of the food system, but of particular interest here is its commitment to ‘empower’ consumers to make informed dietary choices. In this, the Commission proposes *harmonized*, mandatory front-of-pack nutrition labelling, as well as *extending* the mandatory origin or provenance indications to other products beyond fresh meat, refined oils, and fats. Ways to harmonize voluntary green claims and to create sustainable labelling are also supported.

Currently, the mandatory information required on the back of food packaging (as specified by Regulation 1169/2011) must contain transparent and legible nutritional values (with a minimum font size specified), allergen information, and the origin of the product for fresh meat as well as for refined oils and fats. This information also conforms to international food standards set by the *Codex Alimentarius* (FAO/WHO, n.d.), while EU Member States and public or private organizations can add other mandatory or voluntary requirements in the FoP labels. Under the Farm to Fork Strategy, other information not currently required, but that might influence purchasing behaviour—such as ethical, cultural, health and sustainability concerns—could become mandatory. For example, ‘The farm fork strategy is called in to redesign how the information of animal welfare is provided on labels but also to reshape the essential elements of the Animal Welfare Strategy that relied on individual responsibility.’ (European Commission, 2019).⁵

The shift towards sustainability appears clear in its scope as ‘European food must remain safe, nutritious and of high quality. It must be produced with minimum impact on nature. And also the agricultural sector is asked to adapt to this new formula’ (European Commission’s DG SANTE, 2019).

How market mechanisms, farmers, and entrepreneurs in the agri-food industry will be able to satisfy all these requirements—and what EU policies are necessary to support the industry in doing so—is still to be determined. Productive and economic interests of the sectors of agriculture, markets, suppliers, and consumers are often at odds, with possible conflicts deriving from current political trends and/or pressure from powerful lobbies (Senior Nello and Pierani, 2014); (ARC, 2020); (Nestle, 2018); (Rubin, 2020); (Apuzzo and Gebrekidan, 2019).

3. ‘Empowering’ the consumer through a pan-EU front-of-pack label system

In the Farm to Fork Strategy, harmonized mandatory FoP labelling is envisaged as a useful tool to ‘empower’ the consumer. The FFS echoes what is already stated in the EESC Opinion:

⁴ It could be noted, though, that the implicit link says nothing about the production processes through which fruits and vegetables are produced, or their sustainability.

⁵ Currently, the information on animal welfare is still based on voluntary schemes, except for the labelling of table eggs, for which it is compulsory to specify the different methods of production (cages, free range, barn, etc.), (European Commission, 2012).

a common European food labelling approach reflecting the Sustainable Dietary Guidelines would improve transparency and discourage the use of unnecessarily cheap raw materials that are both unhealthy and unsustainable (e.g. trans fats, palm oil and excess sugars). Consumers would benefit from extension to food labelling, to include environmental and social aspects. This would help drive consumers' choices towards healthier and more sustainable options. (EESC, 2019, §1.8).

Which common FoP labelling scheme should be adopted is very much in dispute, as Member States have different views on quality, nutrition, and dietary habits—not to mention sustainability—and many are also actors who are part of the food systems and want their interests represented. Currently, at EU level, uniformity of regulation is guaranteed only with respect to back labels, where some information is mandatory (Regulation 1169/2011). On the front of the pack, however, there is a great diversity of symbols, expressions, and flags meant to convey to consumers a simplified version of the information reported on the back label. The UK Traffic Light (TL) system and the Nutri-Score (NS) scheme, originally proposed by France, are among the best-known examples. The NS scheme has received larger support to date, as scientifically developed utilizing specific algorithms, and has been adopted by many EU countries (including, in addition to France, Germany, the Netherlands, and Belgium) and by some food multinationals (Hagmann and Siegrist, 2020).

Many other schemes are used in EU Member States, with ‘Keyhole’ or ‘Heart’ utilized as symbols, as those used in Lithuania as well as Sweden, Denmark, and other Scandinavian countries. Finally, Italy has proposed a NutrInform battery (Italian Republic, 2020, pp. 42–45), which shows the percentage of energy and nutrients from a recommended daily intake (See Table 1).

This system seems to raise consensus especially in the countries in Southern Europe that adopt a Med-diet since many Mediterranean products scored low under the Nutri-Score system (e.g. olive oil which is considered a very healthy food in Mediterranean countries). Nutrients are not classified on the basis of good and bad, and there are no demonized colour attributions. The system is based on the percentage of daily recommended intake, although this cannot easily be calculated by consumers.

The consumer is able to choose based on the percentage of that nutrient content recommended per day. This signifies a shift from the Nutri-Score that tries to impose a codified model of healthy diet. In the battery system the consumer is able to make some informed choices on whether to eat that specific product based on its personal choice, knowing that it should not go over the suggested daily intake to maintain a healthy diet. Nevertheless, this is far from being a perfect system as it leaved to consumers the difficult task of calculating their daily intake for example of sugar and salt based also on what they have assumed daily on other food. What all these FoP labels have in common is the objective of informing consumers on health aspects of food and nutrients.

Among the two most debated labelling systems, the Traffic Light system classifies foodstuff from the most to the least healthy through a colour scale that goes from green to red (van Dooren *et al.*, 2017), showing all relevant nutrition information at a glance. Nutri-Score, being a more complex and elaborate system,⁶ analyses the nutritional value of 100 grams of products and converts the result into a code consisting of five letters, from A to E, each with its own codified colour, from green (the healthiest) to red (the least healthy). An ad hoc created algorithm attributes negative score to food contents with sodium, sugar, and saturated fats while protein, fibre and the presence of fruit and vegetables have a positive score; in this regard, it might be considered as a more scientifically developed scheme since it also takes into account the content of some positive nutrients.

⁶ For information on the methods for the calculation of Nutri-Score, see: (Santé publique France, 2021).




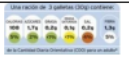




Taxonomies put forward in the literature				Examples of FOP schemes		Developer	EU Member State
Nutrient-specific labels	Numerical	Non-directive	Reductive (non-interpretative)	Reference Intakes label		Private	Across the EU
				NutrInform Battery		Public	IT
	Colour-coded	Semi-directive	Evaluative (interpretative)	UK FOP label		Public	UK
				Other 'traffic light' labels		Private (retailers)	PT, ES
Summary labels	Positive (endorsement) logos	Directive	Evaluative (interpretative)	Keyhole		Public	SE, DK, LT
				Heart/Health logos		NGO	FI, SI
				Healthy Choice		Private	CZ, PL Phased out in NL
	Graded indicators			Nutri-Score		Public	FR, BE ES, DE, NL, LU

Table 1: Typologies and formats of FoP nutrition labelling schemes implemented/proposed/announced at EU Member States' and UK level (based on European Commission, 2020, p. 7).

Altogether, according to some studies, front-of-pack labels have an impact on consumers' choices (Hagmann and Siegrist, 2020), and both TL and NS serve the purpose of reducing calories and fats (Finkelstein *et al.*, 2019).

The algorithm created by Nutri-Score, however, is rather limited as it tends to discriminate products that, if eating in moderation, have been considered quite beneficial in a diet. This simplification of nutritional content does not help to properly inform consumers on what they should eat but rather it could create further confusion.

Though it is beyond the scope of this paper to analyse the impact of these nutri-pack labels on improving consumers' behaviours towards healthy diets and their overall health, we must note that these labelling systems do not address diets in their total complexity. They focus on a single product only, and merely from a nutritional point of view. They fall short of considering social, economic, and cultural values attached to products. They also neglect the fact that a proper diet is well-balanced through diverse ingredients and products. In this respect, these labelling systems are nutrition-oriented and correspond with a 'nutritionist ideology' (Pollan, 2009) or nutritionist reductionism. This is more a medical approach than a holistic approach to overall sustainability (Cecchini and Warin, 2016), as other considerations—the ways in which people combine different products into diets, for example—are neglected.

Furthermore, today's consumers need to navigate through a great variety of voluntary symbols—which are not consistent across countries and contexts (supermarket chains, retailers, producers)—in order to make informed decisions on which products to buy. Decisions about buying food, which seem small and simple, become very complex. It is a matter of deciphering infinite warnings and cryptic information on product packages, whilst trying to balance the household budget and buy the right food or product for the whole family. Widespread consumer concern and uncertainty leaves large spaces to be capitalized by different market actors with the promise of health and sustainability, fostering a vicious circle between uncertainty and multiplication of labels (MacKendrick, 2018).

Although voluntary nutrition-oriented FoP labels try to send consumers simple signals on the nutritional content of products, they do not give indications on the products to be included in the diet. Consumers' studies conducted in the USA and in Canada since the 70's—where level of

obesity started to raise jointly with the spreading of the ultra-processed food—demonstrated that satisfying consumers' demand for transparency with a labelling policy does not necessarily translate into more informed choices and better people's nutrition (Jacoby *et al.*, 1977).

Other studies have demonstrated that people have difficulties in quantifying their daily food intake due to many factors, included education on proper nutritional values that diverges from person to person (Cypel *et al.*, 1996). In North America, where serving sizes are labelled, obesity levels have not decreased—on the contrary, obesity levels continue to increase. The labelling system has, however, helped food marketing managers to present food with lower nutritional content in more appealing forms (Moorman *et al.*, 2012).

The relation between obesity and labels has been recently studied (Van der Horst *et al.*, 2019) through an evaluation of databases and scientific articles from across North America (USA and Canada) and some European countries (Austria, UK). The study concludes that consumers may misread the information in FoP and BoP labels, which could increase rates of obesity rather than counteract them (Van der Horst *et al.*, 2019).

While information is relevant in order to 'empower' consumers' choices, dietary habits are mostly driven by socio-cultural variables. For example, Mason and Lang (2017, p. 174) point out how the choice to eat healthy food is still the privilege of some EU consumers. Many others, because of their economic, and social status often rely on food with low dietary quality (Mason and Lang, 2017, pp. 174–177). As the OECD reports, 'In the EU28, women and men in the lowest income group are, respectively, 90% and 50% more likely to be obese, compared to those on the highest incomes, entrenching inequality' (OECD, 2019, p. 14). Pollan (2009, p. 17) states that Western societies often rely on nutritional information to influence consumers' behaviour, because people have forgotten how to combine natural food ingredients to prepare a healthy, affordable, sustainable meal at home.

Last but not least, the introduction of compulsory new EU FoP labelling standards may interfere with protection already granted in the EU to 'quality food'—including Geographical Indications (GIs) and organic food—that links traditional culture with geography and more sustainable practices (Sarlio, 2018). This is one of the main arguments endorsed by the Italian food sector and the Italian government, which have taken a stand against the Nutri-Score label (Wanat and Leali, 2019). The main concerns are that:

- a) the classification of foodstuff by colour and alphabetical scale could mislead the consumer and not provide the nutritional information based on daily intake as required under Regulation 1169/2011;
- b) natural, organic, traditional, and specialty guaranteed food (e.g. food certified as organic or with geographical indications) could assume a negative connotation in favour of more industrialized and highly-processed products. There could also be a contradiction among labels: for example, a GIs certified product labelled orange or red (D or E), i.e. classified as unhealthy.

On the other hand, in 2019 a group of European citizens led by a French consumer association promoted a petition at the EU Parliament named Pro-Nutri-Score. Claiming that a harmonized Union-wide nutritional information standard was necessary, they asked the European Commission to adopt simplified Nutri-Score labelling on food products in order to guarantee consumers 'quality nutritional information and to protect their health' (Musso, 2019). The petition failed to achieve the desired consensus among EU citizens, and it was withdrawn by the initiators.

Despite the claim that harmonization of FoP labels improves information transparency for all EU consumers, imposing a single official labelling system might not help to achieve this goal. The complexity and diversity of food systems and diets across the EU are severe impediments to creating a larger consensus for a mandatory single solution. Rather, the debate over FoP labels should encourage further reflection on foodways in the EU.

4. Geographical Indications in the war of labels

The topic of healthy and sustainable diets in Europe cannot be assessed without taking into consideration the EU quality schemes concerning agricultural products and foodstuffs introduced in the 1990s. The most relevant of these relate to organic agriculture (Council Regulation 834/2007) and the protection of Geographical Indications (GIs) (Regulation 2081/92). Organic agriculture has an obvious link to sustainable food systems, and as such the Farm to Fork Strategy recognizes the ‘urgent need to *reduce dependency on pesticides and anti-microbials, reduce excess fertilization, increase organic farming improve animal welfare, and reverse biodiversity loss*’. (European Commission F2F Action Plan, p. 5). With respect to GIs, the Commission will ‘strengthen the legislative framework on geographical indications (GIs) and, where appropriate, include specific sustainability criteria’ (European Commission 2020a, p. 14).⁷

Providing a uniform and clear product image to consumers is not an easy task, especially when coexisting policies do not seem to align. At the moment, a system like Nutri-Score is the solution most likely to be adopted for harmonizing all existing systems of FoP labelling in the EU. However, this approach might raise some problems alongside existing quality-assurance schemes adopted by the CAP policy, such as the Protected Designation of Origin (PDO) or Protected Geographical Indication (PGI) labels. When read next to other distinct quality labels, like organic or GIs, Nutri-Score may engender confusion. A product could, in theory, bear two labels that seemingly contradict each other: one GIs label that qualifies the product as ‘high quality’ and one Nutri-Score orange or red label alerting the consumer about its (negative) health characteristics. Parmigiano-Reggiano, which is certified as Protected Denomination of Origin (PDO), however scores low by Nutri-Score.

It is also an evident contradiction that, in the EU, a PDO product receives protection and subsidies for being considered a quality product while being categorized by the NS label as unhealthy food. Through the NS label, the product is presented with a clear image that discourages consumption, but the consumer does not receive the whole picture of its nutritional value in a balanced diet nor whether or not it is a sustainable product. Consumers should be enabled to distinguish a mere suggestion for portion control on a given product from the advice to totally cut that product out of their diets, yet this distinction is not easy to communicate to consumers.

Furthermore, while nutrition-oriented labels can provide some information on health issues, sustainability is not taken into account, and the consumer does not know whether the product is both healthy and sustainable. The only information the consumer gets back from the coexistence of the two labels is that GIs food is not always equivalent to healthy and sustainable food. Plus, it enforces a concept of ‘healthy products’ that only takes medical considerations into account. Even some nutritionists object to the solely medical approach, as they turn to favour a more holistic approach to diets, which takes into account the complexity of food in everyday diet (Adam, 2015).

The protection of geographical indications was intended to valorize traditional production process and traditional products with intrinsically unique characteristics derived from the territory where they were produced. Such specialty products are deemed healthier for people and the environment—as they are derived from traditional and less chemically-intensive agricultural practices, and are also more socially and economically sustainable—while being linked to the social and cultural context in which they were developed. Agri-food products have also been protected by geographical indications because they have the potential to trigger development of the marginalized rural areas in which they are rooted, for example through agri-tourism, even though results have been contradictory in some of the EU regions (Barjolle and Sylvander, 2002; Folkesson, 2005; Fonte, 2008; Belletti and Marescotti, 2011; Réviron and Chappuis, 2011).

⁷ In the light of the announced need for revision and a legislative proposal to soon be adopted, on 15 January 2021 the Commission launched a public consultation on how to strengthen the geographical indications’ system.

According to a recent study (European Commission - DGAGRI, 2019), EU sales value of agri-food and drink products certified with GIs is equivalent to a sale value of €74.76 billion per year in 2017. GI products have higher sale prices due to their specific link to territory, environment, and collective human know-how that builds ‘product reputation’ (Allaire *et al.*, 2011). Special criteria have also been developed to qualify GIs: GIs should have a local or regional link; should be rooted in tradition, culture, and history; should reflect collective human labour as well as landscapes; and should facilitate biodiversity preservation through value chain valorization (Evaluation Expert Network, EC, 2010).

On top of the international protection granted to GIs by international treaties (Article 22.1 TRIPS 1994), on 26 February 2020, the EU signed the *Geneva Act of the Lisbon Agreement on Appellations of Origin and Geographical Indications* (former *Lisbon Agreement on Appellation of Origin 1958*, amended in 2015 to incorporate GIs). This act is significant in two main ways: 1) It demonstrates the EU’s appreciation of GIs as a tool as well as its commitment to enforcing the system both within and outside the EU, and 2) The consistent international approach allows the European Commission—a regional organization—to play a powerful role in the recognition and protection with GIs of products from outside the EU, as well as to protect its own products certified with GIs beyond the borders of the EU.

In a study conducted on the economic impacts of GIs by FAO Investment division, it is argued that GIs support the development of rural areas and a nutritious food system (Vandecandelaere *et al.*, 2018). The Continental Strategy for GIs in Africa (African Union, 2017) shows that the system of GIs is also taking root outside the EU as a sustainable tool for food and agricultural policy. In the eyes of the consumers, GIs have become a distinctive label of high-quality products that signifies the respect of social and eco-sustainable practices.

Yet, are all GIs healthy and sustainable, or should the protection of some of them be revised? The European Commission, through the FFS, seems to go still in the direction of strengthening the legislative framework on geographical indications (GIs), but only for those products that meet ‘specific sustainability criteria’ (European Commission, 2020, p. 14). Thus, the FFS statement implies that some GIs are currently lacking this requirement.

Overall, neither the sustainability nor healthiness of products certified with GIs should be taken for granted; they should be analysed case-by-case and strengthened through better and more careful application of health criteria—accompanied by economic, social, and environmentally sustainable values.

An illustrative example is *foie gras*, a PGI French product that is considered ‘part of the cultural and gastronomic patrimony protected in France and in the EU’ (Code rural, 2006). Formerly served for special events and considered a luxury-gourmet food, *foie gras* has become popular due to cheap available options on the market today—most of goose and duck livers are imported from Bulgaria and Hungary and are only processed in France (Lefigaro.fr and AFP, 2016). It is traditionally produced through *gavage* or force-feeding of ducks, that inflicts unnecessary pain on the animals (Scientific Committee on Animal Health and Animal Welfare, 1998, pp. 19; 21, 29, 33, 35). For this reason, it has been recently banned in New York City (Mays and Nierenberg, 2019).

Evidence has demonstrated that these birds have pain receptors and an elaborate pain recognition system: ‘At the end of the force-feeding procedure, the birds were less able to move and were usually panting but they still moved away from or tried to move away from the person who had force fed them.’ (Scientific Committee on Animal Health and Animal Welfare, 1998, 33). This demonstrates that force-feeding causes the animals pain, and is therefore a morally questionable practice. Not only does the production method of *foie gras* negatively impact animal welfare, but human health as well because of the percentage of saturated fats contained in this food. One could argue that this product does not respect animal welfare and contradicts the modern concept of sustainability, established by the EU Protocol on Animal Welfare (OJ C325E, 2006). As Claude Vermot-Desroches, President of oriGIIn, says: GIs need to ‘carefully look after their animals, their

plants, their land to ensure that they will be able to pass on their *savoir-faire* and farm to the next generation' (oriGIn EU, 2020).

A future all-encompassing EU FoP label will have to address the conflict with some currently protected GIs. Values of health and sustainability (including animal welfare) should be enhanced and prioritized as well as properly addressed: consumers should receive complete information on the product, its value chain, and how to incorporate it into a balanced diet.

5. Discussion and Conclusions

Through the years EU agricultural and food policies have evolved towards a whole food-system comprehensive framework for the promotion of healthy and sustainable diets. The focus has expanded from food safety to food quality, as well as sustainability of diets and the food system, with an increased role attributed to consumption and consumers.

Over the years, the concept of food quality has become more complex, incorporating new attributes and characteristics. The increasing attention paid to malnutrition and the increasing incidence of obesity as well as non-communicable diseases in Western societies underscore the strong link between diets and consumers' health. Nutrition has become a central concern of food and agricultural as well as health policies in the EU and its Member States. Quality food is now synonymous with healthy and nutritious food. Public health is a shared competence between the European Union and its Member States, according to its founding Treaties, but the links between the healthiness of food, diets, people, and the planet health, make many European Union policies, like agricultural policy, relevant for consumers' and environmental health.

While this article is not intended to exhaustively deal with the topic of EU policy on the matter, recent developments in the Farm to Fork Strategy shed light upon contradictions that emerge in protecting diverse interests and values in the food system. The EU Farm to Fork Strategy proposes a plan of action to address the challenges of sustainable food systems. Overall sustainability is a complex concept and a complex goal for policymakers. It needs to draw on multi-sectoral responses and a variety of approaches. It needs also a more equitable balance of power along the food supply chain (EUPHA, 2017), while increasing efficiency, changing consumers' behaviour, and reducing food waste.

Many potential interventions may influence the way people eat, including: regulation and legislation; fiscal measures; changing, or enabling and supporting consumer choices; education; providing information; and raising awareness. Among these actions, informing consumers through labels may seem the simplest to implement and is on the EU agenda today. The Farm to Fork Strategy proposes harmonized front-of-pack labels to inform the consumer on health standards, environmental impact, place of origin, and the overall quality of food products— so that not only nutrients but also food production, economic and social accountability principles are taken into account.

The current labelling system at the EU level is based on a mixed approach. Only few requirements are mandatory on the back of pack labels—mostly health related claims. On the FoP, GIs and organic labels and other labels are left up to the voluntary initiatives of Member States, food chains, and private firms.

As MacKendrick (2018) notes, an excessive reliance on labels as a strategy to 'empower' the consumer reflects a neoliberal ideology and assumes a very low level of intervention by the State. The 'educated' consumer should be free to choose among different products, whilst industry should inform consumers and make eco- and green-labelled products available. Ecologically minded consumers/citizens with their market choices may press highly polluting industries to go green. But what about people who cannot vote with their wallets? What about people with low income, or people who are dependent on other people's choices, like children? MacKendrick warns against the social and environmental effect of relying on the individual consumer to change the food system as an approach that leads to a two-tiered market: nutrient and sustainable products vs. poor diets and junk food.

The Farm to Fork Strategy proposes extending mandatory FoP labels in order to harmonize labels that often engender confusion across Member States. Various labelling schemes, mainly related to information on the nutritional content of the food products, are currently considered to be or proposed as the most fit to inform and ‘empower’ the consumer. But actually, FoP labels will contribute to a ‘fair, healthy and environmentally-friendly food system’ (European Commission, 2020a) only if they report full and transparent information on nutrition *and* the sustainability of the production process.

In the EU dietary guidelines of 2017, sustainability issues are often only implicitly incorporated, as it is assumed that the promotion of fruit and vegetable intake would in itself improve the sustainability of food system, no matter how fruit and vegetables are produced. Nutrition-oriented strategies for FoP labelling may be not very different from a ‘free-from’ strategy, as they aim at discouraging the consumption of food with high contents of ingredients deemed unhealthy, like fat and sugar. They may also represent a backward shift—from an approach to quality based on the production process, to one based on the product characteristics.

Consumer protection is an EU fundamental right; however, it is unclear how consumers will responsibly participate in the design of the EU dietary regime. FoP labels can orient consumers, but age, socio-economic status, and education influence consumers’ choices independently from information given on the FoP (Grunert and Aachmann, 2016). Leaving it to consumers to choose which food to buy based on some nutrition-based information is not necessarily equal to ‘empowering’ them.

An additional point of concern is that FoP labels could create some conflicts with already established EU food quality policies and labels, as those regarding the protection of geographical indications and organic agriculture. In particular, PGIs and PDO products are perceived in EU and international markets as products with a distinctive quality deriving from the territory and the social context in which they are produced. The introduction of mandatory FoP labels, like Nutri-Score, may generate confusion when the GIs symbol appears side by side with a negative health score. It could be difficult for the consumer to calculate the overall nutritional value of the PDO or PGI and evaluate how much of the product should be consumed as part of their diet. In the long run, the consumer may be discouraged from buying a product that scores poorly from a nutritional point of view, leading to the disappearance of traditional products that are important for revitalizing the marginalized rural economies of some EU Member States.

An additional consideration is the respect of ethical values, like workers’ rights or animal welfare, in the production of established quality products like PGIs and PDOs. Traditional culture and traditional knowledge are resources to be valued, as they are often linked to national and communal identities as well as rural territories. Nonetheless, the best way to preserve traditions is to innovate while respecting their histories. Quality products like GIs should be compatible with fair methods of production, respect of animal and plant biodiversity, and they should not run counter to basic universal principles and rights. The case of *foie gras*, a French PGIs product, shows that controversies can emerge from traditional production practices.

Any eventual all-encompassing EU FoP label will have to address the conflict created by GIs products that may run counter to health and sustainability (including animal welfare) criteria: consumers should be provided with the most complete information on the product, its value chain, and how to incorporate it in a balanced diet.

The EU Green Deal is causing debate on the role of GIs products and their relationship with the environment. It has been shown that not only the territory’s characteristics, but also different environmental conditions and production practices (climate and human factor, e.g. the use of pesticides) contribute to GIs’ quality attributes (Ricchieri *et al.*, 2007, p. 48).

Consumer demands for healthy and environmentally-friendly products—as well as the necessity of adapting some agricultural species to climate change—call for stronger sustainability requirements in GIs. Tradition alone is not a guarantee of quality (Marescotti *et al.*, 2020).

The original CAP protection of GIs responded mainly to economic concerns: revitalizing remote and mostly abandoned agricultural lands while boosting the EU agri-food economy. Traditional *terroir* products could thus obtain a premium price in a niche market (Belletti *et al.*, 2007). The recognition of GIs ‘clear added-value to producers and consumers alike’ (European Commission, 2017) needs to be re-shifted towards a new paradigm oriented less to the market and more to consumers and environmental concerns. The new CAP should surely reflect this trend, where market rules are not only blended with sustainability rules but also with demands created by new consumers’ needs and biodiversity/social constraints.

The difficulties of conveying all the necessary information on back and front-of-pack labels are behind the Slow Food project of the ‘narrative label’ (Slow Food, n.d.) which does not substitute, but complement, official labels through information on varieties, breeds, techniques of cultivation as well as production, the processes of transformation, the territory of provenance, animal welfare, and other relevant information.

Another reflection about all-encompassing nutrition-oriented labelling is that is difficult to apply uniform dietary criteria that would work for Northern as well as Southern European countries. Every country should have the opportunity to maintain its traditional diet, as different diets have been proven to be appropriate for different climatic conditions and geographical regions (EFSA, 2010). Thus, dietary guidelines should take into account multiple models and consider diverse categories of consumers, geography, social and cultural values as well as environmental impact. FoP labels should be able to convey to consumer’s diversified information so that they can grasp what is applicable to their various needs.

Finally, providing consumers with complete health and sustainability information about the product is not enough. In identifying possible ways forward, all stakeholders in the production chain should be involved and commit themselves to the values of healthy and sustainable food. Structural reforms as well as stronger policy interventions are necessary to rebalance power in the food system and to involve consumers and other weaker and under-represented actors (small farmers, land workers, etc.) in decision-making processes, through an alliance that brings together environmental, social, economic, and nutritional/health concerns. As much of the literature on civic food networks has demonstrated, reconnecting consumers to producers is an important step towards the promotion of healthy diets from sustainable food systems.

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References

- ADAM, M. (2015) *Food love family: a practical guide to child nutrition*. San Diego, CA: Cognella Academic Publishing.
- AFRICAN UNION (2017) *Continental strategy for GIs in Africa (2018–2023)*.
- ALLAIRE G., CASABIANCA, F. and THEVENOD-MOTTET, E. (2011) ‘Geographical origin: a complex feature of agro-food products’, in Barham, E. and Sylvander, B. (eds) *Labels of origin for food: local development, global recognition*. Wallingford, Oxfordshire: CABI, pp. 1–12.
- APUZZO, M. and GEBREKIDAN, S. (2019) ‘Who keeps Europe’s farm billions flowing? Often, those who benefit’, *The New York Times*, 11 December. Available at: <https://www.nytimes.com/2019/12/11/world/europe/eu-farm-subsidy-lobbying.html> (Accessed: 6 February 2020).
- BARJOLLE, D. and SYLVANDER, B. (2002) ‘Some factors of success for origin labelled products in agri-food supply chains in Europe: market, internal resources and institutions’, *Économies et Sociétés* 25(9), pp. 1–31.

- BARLING D., LANG, T., and CARAHER, M. (2002) 'Joined-up food policy? The trials of governance, public policy and the food system', *Social Policy and Administration* 36(6), pp. 556–574.
- BELLETTI, G. and MARESCOTTI, A. (2011) 'Origin products, geographical indications and rural development', in Barham, E. and Sylvander, B. (eds) *Labels of origin for food: local development, global recognition*. Wallingford, Oxfordshire: CABI, pp. 75–91.
- BELLETTI, G., BURGASSI, T., MARESCOTTI, A., and SCARAMUZZI, S. (2007) 'The effects of certification costs on the success of a PDO/PGI', in Theuvsen, L., Spiller, A., Peupert, M., and Jahn, G. (eds) *Quality management in food chains*. Wageningen, Netherlands: Wageningen Academic Publishers, pp. 107–12.
- BOWEN, G.A. (2009) 'Document analysis as a qualitative research method', *Qualitative Research Journal* 9(2), pp. 27–40.
- BRUNORI, G., MALANDRIN, V., and ROSSI, A. (2013) 'Trade-off or convergence? The role of food security in the evolution of food discourse in Italy', *Journal of Rural Studies* 29, pp. 19–29.
- CARREÑO, I. and VERGANO, P. (2014) 'Uses and potential abuses of “negative claims” in the EU: the urgent need for better regulation', *European Journal of Risk Regulation* 5(4), pp. 469–490.
- CECCHINI, M. and WARIN, L. (2016) 'Impact of food labelling systems on food choices and eating behaviours', *Obesity Reviews* 17(3), pp. 201–210.
- CODE RURAL ET DE LA PECHE MARITIME-FOIE GRAS (2006). Code rural et de la pêche maritime, 2006–1. Available at: <https://www.legifrance.gouv.fr> (Accessed: 10 March 2020).
- COSTATO, L. and ALBISINI, F. (eds) (2012) *European food law*. Milan: CEDAM.
- European Economic and Social Committee (2017) *Civil society's contribution to the development of a comprehensive food policy in the EU (own-initiative opinion)*. Brussels: EESC. Available at: <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/civil-societys-contribution-development-comprehensive-food-policy-eu-own-initiative-opinion> (Accessed: 10 February 2020).
- EUROPEAN ECONOMIC AND SOCIAL COMMITTEE (2019) *Promoting healthy and sustainable diets in the EU (own-initiative opinion)*. Brussels: EESC. Available at: <https://www.eesc.europa.eu/en/our-work/opinions-information-reports/opinions/promoting-healthy-and-sustainable-diets-eu-own-initiative-opinion> (Accessed: 23 March 2020).
- EUROPEAN FOOD SAFETY AUTHORITY (2010) 'Scientific opinion on establishing food-based dietary guidelines', *EFSA Journal* 8(3), pp. 1460–1502. Available at: <https://www.efsa.europa.eu/en/efsajournal/pub/1460> (Accessed: 7 February 2020).
- EUROPEAN COMMISSION (2012) *Strategy for the Protection and Welfare of Animals 2012-2015*. Brussels: European Commission. Available at: https://ec.europa.eu/food/sites/food/files/animals/docs/aw_eu_strategy_19012012_en.pdf (Accessed: 10 February 2020).
- EUROPEAN COMMISSION (2014) *EU Action Plan on Childhood Obesity 2014-2020*. Brussels: European Commission. Available at: https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/childhoodobesity_actionplan_2014_2020_en.pdf (Accessed: date)
- EUROPEAN COMMISSION (2017) 'Future of CAP: protecting our traditions', *NEWS*, 30 October. Available at: https://ec.europa.eu/info/news/future-cap-protecting-our-traditions_en (Accessed: 20 February 2020).
- EUROPEAN COMMISSION (2019) *From farm to fork: the European Green Deal*. Brussels: Publication Office of the EU. Available at: https://op.europa.eu/publication/manifestation_identifier/PUB_NA0219960ENN (Accessed: 26 March 2020).
- EUROPEAN COMMISSION (2019) Study on economic value of EU quality schemes, geographical indications (GIs) and traditional specialities guaranteed (TSGs): executive summary. Brussels. Publications Office of the E U. https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cmef/products-and-markets/economic-value-eu-quality-schemes-geographical-indications-gis-and-traditional-specialities-guaranteed-tsgs_en

- EUROPEAN COMMISSION (2020) *Farm to Fork Strategy*. Brussels: European Commission. Available at: https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf (Accessed: 20 May 2020).
- EUROPEAN COMMISSION (2020) *EU Biodiversity Strategy for 2030: bringing nature back into our lives*. Brussels: European Commission. Available at: https://eur-lex.europa.eu/resource.html?uri=cellar:a3c806a6-9ab3-11ea-9d2d-01aa75ed71a1.0001.02/DOC_1&format=PDF (Accessed: 22 June 2020).
- EUROPEAN COMMISSION (2000) *Communication from the European Commission on the Precautionary Principle*. Brussels: Publication Office of the EU. Available at: <https://op.europa.eu/en/publication-detail/-/publication/21676661-a79f-4153-b984-aeb28f07c80a/language-en> (Accessed: 22 February 2020).
- EUROPEAN COMMISSION'S DG SANTE (2019) [Twitter] 11 December. Available at: (https://twitter.com/food_eu/status/1204759708747390976) (Accessed: 22 May 2020).
- EUROPEAN EVALUATION NETWORK FOR RURAL DEVELOPMENT (2010) *Recommending methods of measurement and impact indicators*. Brussels: European Community. Available at: https://www.reterurale.it/downloads/documenti/monitoraggio/WP-Impacts_final_friendly.pdf (Accessed: 16 January 2020).
- EUROPEAN UNION (2006) 'Treaty establishing the European Community (consolidated version) D. Protocols annexed to the Treaty establishing the European Community Protocol (No 33) on protection and welfare of animals (1997)', *Official Journal of the European Union* 49, p.314.
- FOOD AND AGRICULTURAL ORGANIZATION OF THE UNITED NATIONS, WORLD HEALTH ORGANIZATION (n.d.) *Codex alimentarius: international food standards*. Available at: <http://www.fao.org/fao-who-codexalimentarius/about-codex/faq/faq-detail/en/c/454750/> (Accessed: 2 February 2020).
- FINKELSTEIN, E., ANG, F., DOBLE, B., WONG, W., and VAN DAM, R. (2019) 'A randomized controlled trial evaluating the relative effectiveness of the multiple traffic light and Nutri-Score front of package nutrition labels'. *Nutrients* 11(9), pp. 2236–2266.
- FOLKESON, C. (2005) *Geographical indications and rural development in the EU*. Master's Thesis. Lund University. Available at: <http://lup.lub.lu.se/student-papers/record/1334511> (Accessed: 18 February 2020).
- FONTE, M. (2008) 'Knowledge, food and place. A way of producing, a way of knowing'. *Sociologia Ruralis* 48(3), pp. 200–222.
- GOODMAN, D. (2003) 'The quality "turn" and alternative food practices: reflections and agenda'. *Journal of Rural Studies* 19(1), pp. 1–7.
- GRUNERT, K. G. and AACHMANN, K. (2016) 'Consumer reactions to the use of EU quality labels on food products: a review of the literature'. *Food Control* 59, pp. 178–187.
- HAGMANN, D. and SIEGRIST, M. (2020) 'Nutri-Score, multiple traffic light and incomplete nutrition labelling on food packages: effects on consumers' accuracy in identifying healthier snack options'. *Food Quality and Preference* 83, 103894.
- ITALIAN REPUBLIC (2020) 'Forma di presentazione e condizioni di utilizzo del logo nutrizionale facoltativo complementare alla dichiarazione nutrizionale in applicazione dell'articolo 35 del regolamento (UE) 1169/2011'. *Gazzetta Ufficiale della Repubblica Italiana*, 7 December pp. 42–45. Available at: <https://www.gazzettaufficiale.it/eli/gu/2020/12/07/304/sg/pdf> (Accessed: February 12 2021).
- JACOBY, J., CHESTNUT, R., and SILBERMAN, W. (1977) Consumer use and comprehension of nutrition information. *Journal of Consumer Research* 4(2), pp. 119–128.
- KAFATOS, A. and CODRINGTON, C. A. (1999) 'Nutrition and diet for healthy lifestyles in Europe: the "Eurodiet" Project'. *Public Health Nutrition* 2(3a), pp. 327–328.
- KÖNIG, A. (2007) 'Democratizing decision-making on food safety in the EU: closing gaps between principles of governance and practice. *Minerva* 45, pp. 275–294.
- LANG, T. (2006) 'What is food and farming for? – The (re)emergence of health as a key policy driver', in Buttel, F. H., and McMichael, P. (eds) *New Directions in the Sociology of Global Development (Research in Rural Sociology and Development, vol. 11)*. Bingley: Emerald, pp. 123–144.
- LEFIGARO.FR AND AGENCE FRANCE-PRESSE (2016) 'Les foies gras bulgares et hongrois à l'assaut du monde'. *Le Figaro*, 21 December. Available at:

- eco/2016/12/21/97002-20161221FILWWW00019-les-foies-gras-bulgares-et-hongrois-a-l-assaut-du-monde.php (Accessed: 17 March 2020).
- LEVIDOW, L. and CARR, S. (2007) 'Europeanising advisory expertise: the role of "independent, objective, and transparent" scientific advice in agri-biotech regulation. *Environment and Planning C: Government and Policy* 25(6), pp. 880–895.
- MACKENDRICK, N. (2018) *Better safe than sorry: how consumers navigate exposure to everyday toxics*. Oakland, California: University of California Press.
- MARESCOTTI, A., QUIÑONES-RUIZ, X. F., EDELMANN, H., BELLETTI, G., BROSCA, K., ALTENBUCHNER, C., PENKER, M., and SCARAMUZZI, S. (2020) 'Are protected geographical indications evolving due to environmentally related justifications? An analysis of amendments in the fruit and vegetable sector in the European Union. *Sustainability* 12(9), 3571.
- MASON, P. and LANG, T. (2017) *Sustainable Diets: How Ecological Nutrition Can Transform Consumption and the Food System*. Abingdon, UK: Routledge
- MAYS, J. C. and NIERENBERG, A. (2019) 'Foie gras, served in 1,000 restaurants in New York City, is banned' *New York Times*, 30 October. Available at: <https://www.nytimes.com/2019/10/30/nyregion/foie-gras-ban-nyc.html> (Accessed: 17 February 2020).
- MURDOCH, J., MARSDEN, T., and BANKS, J. (2009) 'Quality, nature, and embeddedness: some theoretical considerations in the context of the food sector'. *Economic Geography* 76(2), pp. 107–125.
- MUSSO, C. (2019) *European citizens' initiative pro-Nutri-Score*. European Union. Available at: https://europa.eu/citizens-initiative/initiatives/details/2019/000008_en (Accessed: 23 May 2020).
- NESTLE, M. (2018) *Unsavory truth: how food companies skew the science of what we eat*. New York: Basic Books.
- NUFFIELD COUNCIL ON BIOETHICS (2007) *Public health: ethical issues*. Cambridge, UK: Cambridge Publishers.
- ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (2019) *The heavy burden of obesity: the economics of prevention*. Paris: OECD Publishing.
- ORIGIN EU (2020) European GI producers welcome the publication of the Farm to Fork and biodiversity strategies. oriGI in EU. Available at: https://www.origin-gi.com/images/stories/PDFs/English/OriGI_publications/Press_releases/20_05_2020_European_GI_producers_welcome_the_publication_of_the_Farm_to_Fork_and_biodiversity_strategies.pdf (Accessed: 20 May 2020).
- POLLAN, M. (2009) *Food rules: an eater's manual*. New York: Penguin Books.
- RENTING, H., SCHERMER, M. and ROSSI, A. (2012) Building food democracy: exploring civic food networks and newly emerging forms of food citizenship. *International Journal of Sociology of Agriculture and Food* 19, pp. 289–307.
- RÉVIRON, S. and CHAPPUIS, J. M. (2011) 'Geographical indications: Collective organization and management', in Barham, E. and Sylvander, B. (eds) *Labels of origin for food: local development, global recognition*. Wallingford, Oxfordshire: CABI, pp. 45–65.
- RICCHERI, M., GÖRLACH, B., SCHLEGEL, S., KEEFE, H., and LEIPPRAND, A. (2007) *Assessing the applicability of geographical indications as a means to improve environmental quality in affected ecosystems and the competitiveness of agricultural products*. Paris: IPDEV. Available at: https://www.ecologic.eu/sites/files/download/projekte/1800-1849/1802/wp3_final_report.pdf (Accessed: 5 February 2020).
- RUBIN, R. (2020) 'Backlash over meat dietary recommendations raises questions about corporate ties to nutrition scientists'. *JAMA* 323(5), pp. 401–405.
- SANTE PUBLIQUE FRANCE (2021) *Nutri-Score frequently asked questions*. Available at: https://www.santepubliquefrance.fr/content/download/150263/file/QR_scientifique_technique_EN_12052020.pdf (Accessed: 26 March 2020).
- SARLIO, S. (2018) *Towards healthy and sustainable diets*. New York: Springer.
- Scientific Committee on Animal Health and Animal Welfare (1998) *Welfare Aspects of the Production of Foie Gras in Ducks and Geese*. European Commission. Available at: https://ec.europa.eu/food/sites/food/files/safety/docs/sci-com_scah_out17_en.pdf (Accessed: 20 May 2020).

- SENIOR NELLO, S. and PIERANI, P. (eds) (2014) *International trade, consumer interests and reform of the common agricultural policy* (Routledge Studies in the European Economy, vol. 22). Abingdon, UK: Routledge.
- SLOW FOOD FOUNDATION (n.d.) *What is the Narrative Label?* Available at: <https://www.fondazione Slow Food.com/en/what-we-do/what-is-the-narrative-label/> (Accessed: 25 May 2020).
- TEICHOLZ, N. (2014) *The big fat surprise: why butter, meat, and cheese belong in a healthy diet*. New York: Simon & Schuster.
- VANDECANDELAERE, E., TEYSSIER, C., BARJOLLE, D., JEANNEAUX, P., FOURNIER, S., & BEUCHERIE, O. (2018). *Strengthening sustainable food systems through geographical indications: An analysis of economic impacts*. Food and Agriculture Organization of the United Nations. <http://www.fao.org/3/I8737EN/i8737en.pdf> (Accessed: 18 February 2020).
- VAN DER HORST, K., BUCHER, T., DUNCANSON, K., MURAWSKI, B., and LABBE, D. (2019) 'Consumer understanding, perception and interpretation of serving size information on food labels: a scoping review. *Nutrients* 11(9), 2189.
- VAN DOOREN C, DOUMA A, AIKING H, and VELLINGA, P. (2017) 'Proposing a novel index reflecting both climate impact and nutritional impact of food products'. *Ecological Economics* 131, pp. 389–398.
- VAN SCHAREN, H., HOLLAND, N., and PIGEON, M. (2020) 'ARC European Food Forum: industry's brand new "lobby platform" in the European Parliament', 27 April. Available at <https://www.arc2020.eu/european-food-forum-industrys-brand-new-lobby-platform-european-parliament/> (Accessed: 22 May 2020).
- VOGEL, D. (2012) *The politics of precaution: regulating health, safety, and environmental risks in Europe and the United States*. Princeton, NJ: Princeton University Press.
- WANAT, Z., LEALI, G. (2019) *Italy sees red over food labels*. Politico. Available at: <https://www.politico.eu/article/italy-sees-red-over-food-labels/> (Accessed: 25 June 2020).
- WILLETT, W., ROCKSTRÖM, J., LOKEN, B., *et al.* (2019) Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems. *Lancet* 393(10170), pp. 447–492.