



Strengthening European Food Chain Sustainability by Quality and Procurement Policy

Deliverable 3.1:

WORKING PAPER ON THE CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW FOR UNDERSTANDING THE SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT OF FQS, SFSC AND VARYING PSFP POLICIES ON AGRIFOOD CHAIN PARTICIPANTS AND RURAL TERRITORIES

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EXECUTIVE SUMMARY

- The analysis of food chain sustainability requires the development of a conceptual framework that can accommodate theories and methodological approaches useful to understand the factors that characterize FQS, SFSC and PSFP in their economic, social and environmental dimensions.
- The development of this conceptual framework has benefitted from the numerous studies that have emerged since the European Union introduced a common policy for FQS products. These works described in the literature review have gradually emphasized the role of different factors that influence and characterize the FQS, such as: the quality and its perception by the consumer; the territory in its ability to characterize, qualify and manage food production; the food value chain in its ability to deliver value added to producers.
- The interplay of these three elements, and their degree of embeddedness, is the most important condition in the definition and characterization of FQS but also of the sustainability of production chains that are linked to FQS.
- Regarding quality, this characteristic is valued by consumers according to external attributes that are intrinsic to the product. Quality is perceived as a convention. The value of quality is associated with the characteristics of the actors in the supply chain, how they relate to consumers, the production rules and the way the rules are defined. In this respect Convention Theory is the tool for understanding the qualitative contribution of FQS and how these products differ from conventional products. According to the interpretative tool of Convention Theory, quality is a two-sided concept, one aspect referring to a formal, institutional perspective (law and regulatory arrangements) and one where expectations of different types of quality emerge within an unforeseen frame, based on implicit agreements. In the first case, the regulations are well known before judgment; in the second case, there is a constant dynamism, determined by different rules, norms and conventions.
- Convention Theory allows us to understand how different collective actions arise within food chains. It is possible to assess different disputes around quality in terms of the main sets of conventions which are likely to be employed. In essence, many dimensions of quality are considered and consumers make a selection based on the information available and the environmental contexts. Quality becomes a dynamic concept related to the cultural characteristics of the users of the products offered by the chain with a FQS recognition, in individual production environments.
- The individual socio-cultural aspects of the different geographical areas are collected through the Cultural Adaptation Work (CAW) model, whose strength consists in taking into consideration the transformation of cultures, the social relationships and materiality, across time and space.
- The relationship between local production and FQS is not always explicit. For some of the Strength2Food (S2F) domains, the link with the area of production can be explicit and very strong (i.e., Geographical Indications (GI)), strong but not explicit (i.e., Short Food Supply Chains (SFSC)), subjected to the local procurement strategy (i.e., Public Sector Food Procurement (PSFP)), or absent (i.e., organic products).

- The territory is: i) the place of production which specific environmental characteristics (micro-climate and local varieties) are capable of qualitatively characterizing the products; ii) the place that, according to the presence of institutions and methods of interaction between the agents, facilitates the provision of the product, lowers transaction costs and contributes to the creation of its reputation; iii) for SFSC, it is the place of consumption; iv) the place where different supply chain management arrangements generate environmental, social and economic impacts.
- Taking into account the aforementioned characteristics, the most effective conceptualization of the place of production is represented by the Cluster or, even better, by the Industrial District which, in the case of the agro-food industry, is a Localised Agri-Food System (LAFS) or System Agroalimentaire Localisé (SYAL).
- The uniqueness of the LAFS resides in recognizing the role of the territory in terms of its social and institutional components and their ability to contribute to the creation of value within the supply chain. The specific nature of the LAFS is represented by the deep interaction between food cultures, human actions and institutions. LAFSs are the result of a process of cooperation among companies with common interests, located in an area, which organise and agree on certain production and marketing norms and rules to obtain a competitive advantage over competitors.
- Looking at the characteristics of the production area, both industrial and rural LAFSs can be defined. The former is dominated by the agri-industrial characteristics and agents of the territory, while the latter are dominated by their rural dimensions highlighting the natural and environmental features of the production process.
- The LAFS paradigm (either industrial or rural) supports an endogenous development model based on the intrinsic characteristics of the production system, intended in its broadest sense, which - in the case of rural development - takes the form of neo-endogenous rural development. It delineates an endogenous-based development in which extra-local factors are recognised and regarded as essential, while retaining a belief in the potential of local areas to shape their future. In contrast to the theoretical underpinnings of both exogenous and endogenous models of rural development, neo-endogenous rural development is based on the interplay of both local and external factors, so that the development strategy is built upon the link between local conditions and external opportunities.
- The need to embrace extra-local factors and adopt an integrated network approach is also emphasised, although control remains within the local area rather than being dictated by extra-local influences. Therefore, the focal point of neo-endogenous development is the enhancement of local institutional capacity, to mobilise local resources while exploiting external opportunities.
- The territory and its endogenous development model are complemented by a third component of the identification of a FQS: the characteristics of the value chain. The technological functions of the supply chain are combined in a more economic and managerial function. Typically, the supply chain, especially in the agri-food sector, is regarded as a tool for managing production, useful to create an appropriate product quality and develop marketing strategies aimed at creating value for all the actors of the chain.
- Food chains are characterised by efficiency and the ability to transfer (or retain) value for the benefit of agents. They are dynamic structures subject to the evolution of

structural and economic components under internal and external phenomena. These phenomena include: the evolution of the supply chain, the degree of openness to trade, the level and evolution of market demand, the evolution of the concept and perception of quality, as well as of its service components, the presence of standards and inter-organisational relationships. Additional elements include: the presence of agents and external institutions to the value chain that provide services and information, the extent of information asymmetry and the incidence of transaction costs.

- Given the characteristics of the value chain and the relationship between the agricultural and the industrial component, as well as the relationship between companies and inter-branch organisations (when present), attention must be placed on how to develop collective commercial strategies capable of increasing the value added of the product and/or the bargaining power of the enterprises that turn to large scale distribution channels. In a nutshell, a dominant model of FQS-value chain does not exist but - rather - several typologies of FQS value chains emerge, according to the combination of their structural and management features.
- However, common elements in the FQS supply chains encompass the need to comply with EU Regulations and the presence of a set of rules laid down in a code of practice, which requires establishing a system for managing the FQS (especially GI) through an organization suited to local conditions and capable of establishing a FQS strategy encompassing the whole value chain. In addition, FQS value chains feature a third party certification body which guarantees the actors' compliance with the code of practice.
- The literature shows that within value chains and LAFSs, organizations (e.g., producer organizations, inter-branch organizations and certification bodies) and local institutions operate for the benefit of all the agents. This is fuelled by a sense of belonging, by the necessity to develop chain strategies, as well as the common interests of territorial actors, and it translates into governance actions. Chain and LAFS organizations are the result of the interaction with other participating actors (e.g., companies, institutions), generating a set of dynamic forces that allows to adapt to the challenges posed by the market.
- In this framework, local institutions represent stakeholders that play key roles in the process of increasing territorial competitiveness. Their role is mainly to strengthen relationships among stakeholders, with the general aim of obtaining the production of those public goods and the creation of those positive externalities which most serve the process of development, increasing the level of competitiveness of the entire local system.
- Arguably, local institutions can be organised as hybrid organisations, since they represent the collective interest of individual producers, involved in the same food chain within the same territory. Indeed, according to the literature concerning the definition of collective action, local productions involve a wide range of stakeholders, operating within and outside the production area, although only some of them are directly involved in the value creation process.
- The interaction among LAFS stakeholders is instrumental to the evolution process of the local system, considering the link between the territory and the food chain. The possible combinations between food chains and territories lead to three different types of agri-food systems:

- Closed LAFS: local agricultural outputs are processed by local food industries (mainly Small and Medium Enterprises) and are purchased at local level (mainly by local consumers).
 - Open LAFS: agricultural outputs are not processed by local food industries and are purchased by non-local consumers (or can be purchased anywhere).
 - Mixed Systems: a coexistence of Closed and Open LAFS.
- Within the S2F project we will consider the links between the territory and the food chain, embedded in the LAFS, and the implications regarding their sustainability.
 - The LAFS concept provides the criteria to address the identification and the recognition of the boundaries of the LAFS area according to the characteristics of the FQS considered in the research activity:
 - For GI productions (PDO, PGI and TSG), the LAFS is represented by the municipalities identified in the official code of practice that is part of the EU regulation published on the DOOR database;
 - For organic products, the LAFS is not officially defined and the suggested criteria refer to the region where producers carry out their production and commercial activities;
 - For SFSC products, in the absence of a legislative reference, the definition of the LAFS refers to the region that includes the production and consumption area that, necessarily, are contiguous to each other.
 - In the real world, different FQS can overlap each other, generating a hybrid FQS framework (e.g.: organic-GI; Organic-SFSC, GI-SFSC; Organic-SFSC-GI). In this case, the dominant criterion is the presence of a Designation. When the GI is not considered, the dominant criterion is the SFSC.
 - In the S2F project, the link between quality schemes and the territory is considered as follows:
 - Closed LAFS: all the inputs come from the territory and all the output is purchased within the territory in local markets, e.g. for SFSCs and Short Food Geographical Indications (SF-GIs), in other words SF-PDOs.
 - Open LAFS: upstream and downstream elements of the chain are not bounded by the territory, as a consequence inputs can come from outside of the area as for some PGIs and Organic productions. In this cluster, most of the output is purchased in distant markets that can be “domestic” or “global” in nature (when consumers are in different regions with different market rules; i.e., extra-EU);
 - Mixed LAFS: in this cluster for some FQSs some inputs can come from others regions, as for PGIs and Organic products. Moreover, most of the output is purchased in local markets but part of the outputs is also sold in “domestic” markets (when consumers are in different regions but with the same market rules, i.e., in the EU).

- The level of embeddedness of the value chain with respect to the LAFS creates different categories of markets: local to local (i.e., the case of SFSC and some PSFP); local to domestic (i.e., the case of GIs and Organic); local to global (i.e., the case of GIs), and determines different (public and private) strategies and impacts (Vandecandelaere et al., 2010; Torres Salcido and Muchnik, 2012, Fischer, 2012).
- In this framework, GIs, Organic, SFSC and PSFP products can benefit from the LAFS environment (reputation, institutions and governance actions) and will generate impacts, affecting sustainability. Furthermore, Convention Theory and Cultural Adaptation Work represent important methodological tools useful to evaluate how quality and management systems contribute to sustainability.

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LIST OF ABBREVIATIONS AND ACRONYMS

CAW	Cultural Adaptation Work
CSA	Community Supported Agriculture
EC	European Community
EU	European Union
FAO	Food and Agricultural Organisation of the United Nations
FQS	Food Quality Schemes
GAS	Solidarity Purchase Groups
GI	Geographical Indications
GVC	Global Value Chains
ID	Industrial District
IVC	International Value Chains
LAFS	Local(ised) Agri- Food Systems
LCA	Life Cycle Assessment
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
PNAE	National School Food Programme
PSFP	Public Sector Food Procurement
QC	Queso Chontaleño
RDP	Rural Development Policy
SEM	Structural Equation Modelling
SFSC	Short Food Supply Chain
SMEs	Small and Medium Enterprises
SROI	Social Return on Investment
S2F	Strength2Food
SYAL	Systeme Agroalimentaire Localisé
TSG	Traditional Speciality Guaranteed
WTO	World Trade Organisation
WTP	Willingness to Pay

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1. INTRODUCTION

The objective of this Deliverable is to provide a conceptual framework suitable to evaluate the sustainability of all the Food Quality Schemes (FQS), i.e., Product Designation of Origin (PDO), Protected Geographical Indication (PGI), Traditional Specialty Guaranteed (TSG) and Organic produce, as well as the Public Sector Food Procurement (PSFP) schemes, with specific reference to primary school meals, and the Short Food Supply Chain(s) (SFSC) examined in the Strength2Food (S2F) project. Besides, this Deliverable collects the literature reviews on the same topics and on Consumer Research studies dealing with consumer appreciation for products carrying FQS denominations and provided as part of PSFP and SFSC schemes.

2. THEORETICAL METHODS/APPROACHES

2.1. Local Agri Food Systems in FQS: An Introduction

Sustainability is a complex concept, so the related evaluation process requires a complex approach. The FAO defines sustainability as

[...] “the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such sustainable development (in the agriculture, forestry and fisheries sectors) conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technically appropriate, economically viable and socially acceptable” (FAO Council, 1989: 65).

Sustainability is the result of a complex process that deals with different dimensions, which must be considered as a coherent system. Thus, it is important to define the most suitable framework for describing the interactions of different phenomena, considering the various dimensions (economic, social and environmental), the measurement approach (qualitative and quantitative) and the selection of indicators. In this logic, our conceptual framework will start considering that FQSs are complex concepts based on the interplay of different components, where the characteristics of the production system affect the specificity of the produce and the consumer perception of quality and value. Food production systems can be very different:

- i) Geographical Indications (GI) and Organic production (or FQS) represent the European Food Quality Schemes designated by EU regulations (EU regulation 1151/2012 and Council Regulation (EC) 834/2007);
- ii) SFSCs are considered part of the European Food Quality Schemes since they are perceived by consumers as quality products but do not have an explicit designation;
- iii) PSFP delivers benefits to consumers and to the territory by the public institutions (mainly local administrations) procuring GI, Organic or SFSC products locally.

In some cases, the territory plays a key-role, while in others it is not relevant. Similarly, the structure of the supply chain and its management can be viewed as complex entities in some instances, while may be extremely easy to characterise in others. Of course, it might happen that the sustainability of the territory affects the sustainability of the supply chain, and/or that the sustainability of the supply chain might affect the sustainability of the territory. Overall, the sustainability of FQS is affected by different components that act together on the territory and on the chain, such as:

- i) the quality dimension;
- ii) the local agri-food system (LAFS) characteristics;
- iii) the creation of public goods;
- iv) the features of the value chain;
- v) the governance model;
- vi) a Neo-Endogenous approach to Rural Development policy.

2.1.1. The Quality Dimension

A key feature of these products is the level of quality perceived by consumers that generates value along the chain and, to some extent, also contributes to the added value in the territory. Furthermore, the perceptions and understanding of quality and sustainability of food products are shaped by different spheres, depending on the perspectives of the actors (e.g., farmers, processors, distributors/retailers, consumers, regulators, public authorities). These perspectives present a common theoretical background since sustainable food products and food chains are identified by means of conventions, in different worlds of production (Salais and Storper, 1993) and the development of these products and schemes can be analysed from the perspective of Cultural Adaptation Work (CAW) (Hegnes, 2012; Hegnes, 2013).

Convention theorists link social behaviour to a constraint/limitation built on an agreement between people, more than to social facts or market interests. Boltanski and Thévenot (1991) show that different actors follow specific arguments belonging to different ‘orders of worth’ and Wagner (1999) suggests that “Each particular evaluation could thus be denounced from a number of different other viewpoints. [...] There is a possibility of compromise in which criteria from different orders are joined together in an evaluation” (Wagner, 1999:343). From this perspective, the sustainability of food chains is a concept that emerges between actors defending specific viewpoints through the justification of their discourses and their practices. The importance of actions and practices, and not only of communicative processes, is also underlined by Boltanski and Thévenot (1991) who, not only emphasize the importance of collective organization in everyday life practices, but also stress the fact that discursive justification includes material evidence and empirical performance.

The theory of conventions offers a way to understand the worlds that are related to food production, especially since it can be adapted to food markets and policy beyond the level of formal institutions and decisions. Convention theory assumes quality to be the central “point of reference” of the conventional agreement in a food market, depending on many factors and

linked to juridical, economic and political purposes. Quality is then a two-sided concept, one aspect referring to a formal, institutional perspective (law and regulatory arrangements) and, the other, where expectations of qualities emerge within an unforeseen frame, based on implicit agreements. In the first case, the regulations are well known before judgement; in the second case, there is a constant dynamism, determined by different rules, norms and conventions.

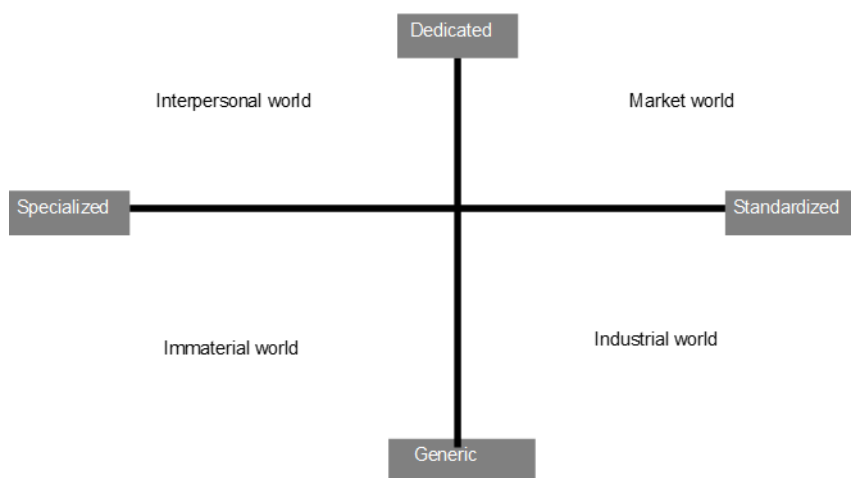
According to Salais and Storper (1992), conventions constitute a system of rules that all involved actors respect and follow, and which are either

“taken for granted and to which everybody submits without reflection, the result of an agreement (a contract), or even a founding moment (such as the Constitutional Convention). Thus convention refers to the simultaneous presence of [...] rules and spontaneous action, constructing agreements between persons and institutions in situations of collective action” (Salais and Storper, 1992:17).

Salais and Storper (1997) emphasize the dynamism of conventions, defining them as “an agreement in the sense of a common context: a set of points of reference which goes beyond the actors as individuals but which they nonetheless build and understand in the course of their actions” (Salais and Storper, 1997:16).

Salais and Storper (1993) proposed that four “possible worlds” of production explain the quality of a product, where each of them is supported by at least two types of conventions. The model is represented by two axes: one from a dedicated to a generic production and the other extending from a specialised to a standardised production.

Figure 1 The four possible worlds of production



Source: Salais and Storper (1993:16).

The model fits four different “worlds of production”:

- 1) Interpersonal world (specialised and dedicated qualities);
- 2) Market world (standardised and dedicated qualities);
- 3) Immaterial world (specialised and generic qualities);
- 4) Industrial world (standardised and generic qualities).

All the “worlds” listed above represent different social systems, where for each of them a different agreement or understanding of the shared norms and expectations exists/is developed, mediating among the actors involved. This allows for mediating among agents’ interactions/relationships (Storper and Salais, 1997). According to Murdoch et al. (2000:114), this approach ‘might be used to understand the differing formation of collective action within food chains, so it is possible to assess different disputes around quality in terms of the main sets of conventions likely to be employed’. However, a too simplistic and direct application of the four worlds of production may be problematic because sustainable food chains are associated with many different immaterial emotional quality aspects which also reflect cultural, social and political perspectives (Vittersø et al., 2005).

For the standardised and generic dimensions, the product follows a standard production process and its quality is based on control and contracts. For both the dedicated and specialised dimensions, the product is unique and its quality is more open but also uncertain (because it depends on, *inter alia*, an agreement between different actors, norms and practices). Food quality in the dedicated world of production originates from inter-subjective relations between producers and consumers. The price of dedicated and specialized food products is therefore determined by specific practices rather than standardised contracts.

The conventionist approach has been fruitfully applied in studies of food quality (e.g., Parrot et al., 2002; Callon et al., 2002; Ponte and Gibbon, 2005) which stress both the limits and the social embeddedness of different worlds. Murdoch and Miele (1999) applied such a framework to food product case studies, demonstrating that food products can evolve from one world to another (in their case from the industrialised order to the specialised one, or from a localised system to a generic one) in response to consumer demand. In another model, Tregear (2003) classifies local food products into five types based on their age and form. Stræte (2008) has pointed out that the consumer is only one actor among several and, referring to several possible worlds, he notes that “Various modes of qualities of food [...] imply the construction of quality in the relations between producer and consumer; it is not (only) a matter of what the producer does, but what the consumer perceives.” (Stræte, 2008:71). To promote sustainable food chains at the EU level, each actor in each possible world has to follow the associated given conventions (Stræte, 2008). Nevertheless, the most interesting scientific part of this approach is not in the model itself, and the construction of the different worlds, but in its dynamics, or as Boltanski and Thévenot (1991) define it, the “dialectic in between”.

A critical aspect of this approach is that the concept “convention” could be defined as a form of regulation as well. A second and more central point of criticism, is the fact that we give all worlds, and all actors, the same weight (Negri, 2003) which could be problematic because of the special cultural value of quality and sustainable food products. A third one is that although the model is good at identifying quality conventions, it is less suitable to analyse how food products and food systems in general may develop and may be transformed. For instance, what are the main drivers or barriers for change? How can different schemes and initiatives be transferred to other social and geographical contexts? This is the reason why we propose here to combine the conventional approach, as a large regulation theoretical frame, with a more empirical model called Cultural Adaptation Work (CAW).

According to Hegnes (2012), the CAW has the fundamental aim of exploring how FQS and food practices are embedded in cultural identity practices, and the way in which cultural identity contributes to defining the innovations and development path of those products:

“Cultural adaptation work takes place in the interplay between people’s translations of language and knowledge, reorganisation of social relationships and transformation of

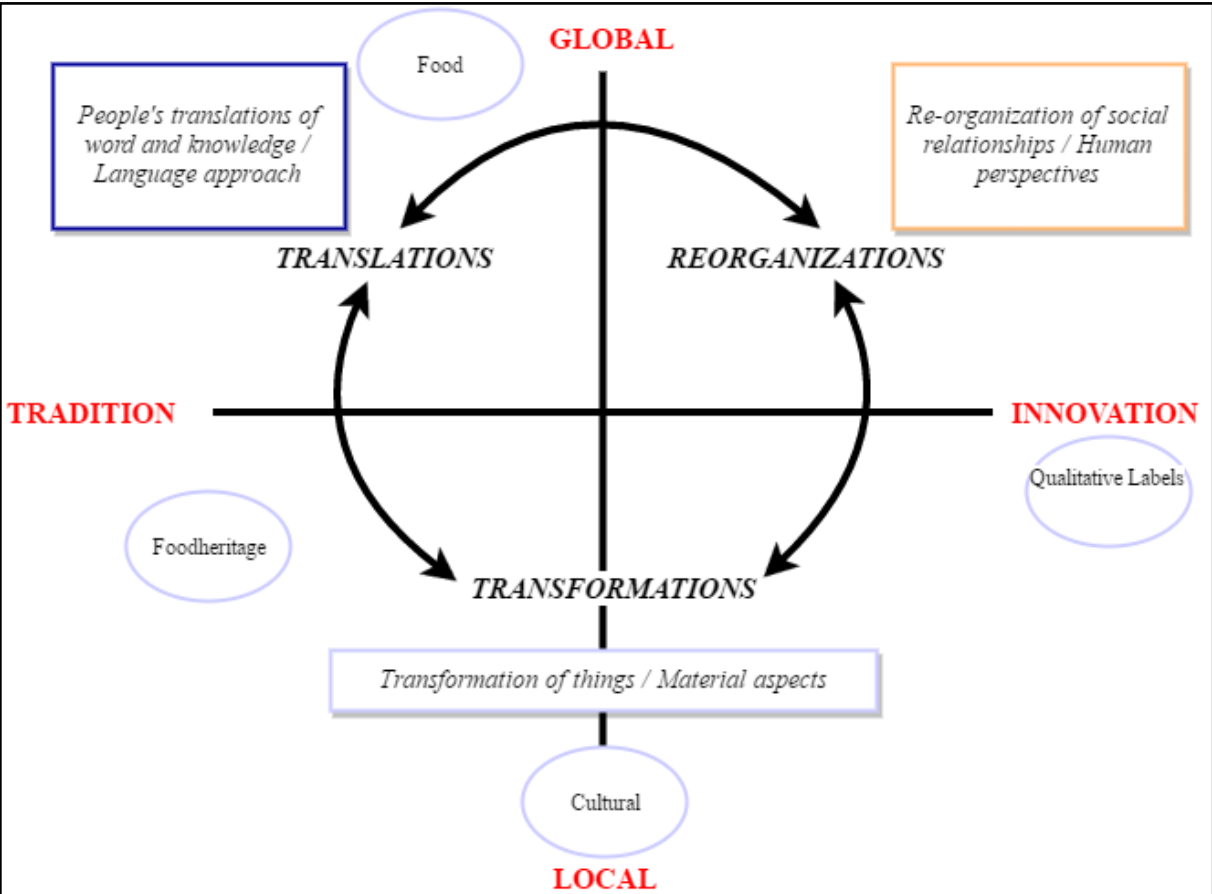
things. The interplay takes place in the tension between the global and the local, the old and the new [...] Hence, the adaptation practices have significance beyond being adaptations of language and knowledge, social relationships and the materiality.” (Hegnes, 2012:16).

The strength of the CAW model rests on taking into consideration the transformation of culture, social relationships and materiality across both time and space. Although it builds on a theoretical and empirical work from one particular country (Norway) with its specific cultural, social and historical context, we believe that the model in its general form is applicable to other social contexts and geographical places. By combining the Worlds of Production model with the CAW model the S2F project will contribute with an innovative approach to the understanding of the development of FQS, PSFP initiatives and SFSC across Europe. These theoretical models combined provide a comprehensive approach to both the comparative analysis of case studies and especially the evaluation of transferability of experiences between cases in different regions of Europe.

Hegnes (2012) (Figure 2) hinges on the empirical identification of all those adaptations necessary to turn PDO, PGI and TSG into a well-functioning food labelling system. This theoretical approach can also be employed to gain a deeper understanding of how to *strengthen European Food Chain Sustainability by Quality and Procurement Policy*, which constitutes the key objective of the S2F project. Although Hegnes (2012) hinges on a specific scheme, the CAW would help to better understand the mechanisms behind any cultural, market and social dynamics, as for traditional food products, or any other quality labelling where know-how and geographical places have a specific cultural value. The model permits to define the mutual work on the adaptation of quality food “schemes” to a given food culture, and of a given food culture to the schemes, as an example of “a” CAW (Table 1). As Hegnes (2012) pointed out:

“The various ways in which the actors (producers, consumers, eaters, politicians, etc.) adapt the given scheme to their food culture, and their food culture to the given scheme, is understood and defined as different adaptation practices. The most central of these are translations of meaning, social reorganisations and material transformations. The adaptive practices form an interplay, in which the different practices affect each other. Adapted regulations involve reorganisation of producers, who then change their products, and so on.” Hegnes (2012:16)

Figure 2 Hegnes (2013) model for dimensions and dynamics in CAW



Source: Hegnes (2013).

Table 1 Original Model from CAW

ELEMENTS IN CAW	RESEARCH QUESTIONS	RESULTS FROM NORWAY
Cultural differences	What kind of cultural differences are there?	Different meaning Different social organisation Different material conditions
Actors	Which actors are important for the adaptation work?	Public servants Producers Consultants
Knowledge and adaptation competence	What kind of knowledge and adaptation competence do the actors have?	Knowledge about the legal system Tacit knowledge Adaptation competence
Adaptation practices	What kind of adaptation practices are in play?	Translations Reorganizations Transformations
Dimensions	Which dimensions can be related to the adaptation work?	Order/disorder Global/local Tradition/innovation
Power	What kind of power relations can be found?	Power shifts
Contexts	What kind of historical, geographical and institutional contexts are relevant?	The food specialisation of Norway WTO/EU/Norway/local Law, economy, science, technology, politics

Source: Hegnes (2013).

2.1.2. The Territorial Dimension

The definition of a common theoretical framework devoted to the evaluation of sustainability for FQS, PSFP and SFSC implies the interpretation of the environmental-social-economic domains, where actors and stakeholders develop their strategies for producing, trading and consuming the products. For some of the S2F domains, the link with the area of production can be explicit and very strong (i.e., GI), strong but not explicit (i.e., SFSC), subjected to the local procurement strategy (i.e., PSFP), or absent (i.e., organic products).

Moreover, not all FQS exhibit the same features in terms of value chain, that is regarding the structure, reputation, supply volumes, organization and governance, effectiveness, price transmission mechanisms, remuneration and profitability. In fact, a situation of co-existence emerges within reference markets between FQSs produced in large volumes with industrial methods and FQSs that may be considered as being niche or ultra-niche products (Arfini and Capelli, 2011). In this context, it is essential to clarify that GI, Organic, SFSC and PSFP present a different nature in their linkages and levels of embeddedness within the territory, according to their status, and thus with different potential impacts on local producers, especially from an economic perspective.

2.1.3. *The Industrial District Concept*

The scientific debate around the role of the territory in terms of its contribution to enhancing the level of economic competitiveness often presents Industrial District (ID)¹ as the most efficient industrial organisation model. ID offers a model of production which can help small and medium sized enterprises (SMEs) to attain the same level of competitiveness as large firms and thus contribute to economic growth and social development (Sforzi and Mancini, 2012). The same concept is also useful to observe and evaluate the sustainability of the production system that, in turn, coincides with the territory.

The ID concept has also informed similar concepts such as the *systèmes productifs localisés* (Localised Production Systems) (Courlet, 2008), and hinted at the “territorial dimension” of concepts such as the cluster (Porter, 1990; Porter and Ketels, 2009). All these approaches consider the geographical proximity of the actors involved in the local production system as a valuable asset. This concept has also been borrowed by development and regional economics to interpret economic change occurring in the places where it actually originates, as a result of the joint action between local and extra-local social, economic and institutional forces (Sforzi and Mancini, 2012).

The main feature of the ID concept is the close linkage with the territory, in all its dimensions. The ID considers not only the characteristics of SMEs, but also the role played by all the actors in the territory (both economic and social), the institutions and the characteristics of the local environment. Therefore, the ID concept represents a useful instrument for analysing not only the development and the performance of the territory and the production systems, but especially the impacts generated from the economic agents inside and outside the ID and the related territory.

Furthermore, the ID concept is pivotal when promoting local development action, working along three different axes (Porter and Ketels, 2009):

- i) Endogeneity: when existing potential (material and immaterial) resources can be employed and effectively exploited through the creation of a cognitive environment;
- ii) Territoriality: when actors create a space which is instrumental to creating, and is characterised by, more intensive, constructive and effective relationships compared to those developed outside the space;
- iii) Institutionalism: where institutions contribute to creating a system of values that generates positive impacts on stakeholder relationships within the system.

The interaction of these three axes generates the conditions for building specific policies supporting the local development process. Although these policies cover different areas, they contribute to creating certain common results (Sforzi, 2003):

- exploitation of local resources;
- increased specialisation and diversification of production;
- promotion and attraction of new businesses (entrepreneurship);
- stimulation of cooperation and partnership between companies;
- organization of networks between public and private agents to increase the productivity of the local economy and to integrate and disseminate innovation (including links between the private sector and research centres, aimed at improving the local industry competitiveness).

¹ The concept of Industrial District was developed in Italy by Beccatini (1989) and it is quite close to the concept of Cluster.

Moreover, further positive outcomes can be achieved by interacting with the environment and its biodiversity and via the generation of public goods that in turn affect the sustainability of the local production system.

Therefore, local development becomes a tool for interpreting the economic changes occurring within a community of citizens and entrepreneurs, entangled in a process of cumulative knowledge in which economic agents specialize in producing a certain class of goods (or services), which satisfies the needs (or desires) of consumers, located outside the local market.

2.2. Public Good Creation

In this framework, institutions can contribute positively to local development, producing several types of externalities and, thus, specific public goods both for producers and consumers. Those for producers include immaterial goods instrumental to improving the level of skills, preserving quality, avoiding unfair competition, increasing the reputation of the FQS and/or the territory, facilitating relationships among stakeholders, reducing transaction costs, increasing the value of output by raising the profile of local products and facilitating their marketing (Muchnik, 2009; Belletti et al., 2015), eventually improving market efficiency, but also preserving local knowledge, cultural heritage and local breeds. Moreover, institutions can contribute to reducing negative externalities and increasing positive externalities especially in the environmental context. For consumers, immaterial goods are positive externalities including a reduction in information asymmetry, the possibility to increase the variety of food and to access safer food. Therefore, the scientific community recognises that

“[w]hile GIs do have some private characteristics, they are intrinsically a ‘public good’. They broadly affect the people and the resources of a region so it is critical that GI governance and legal protection are both structured to serve the greatest number and avoid capture by a few elites. GIs can thus serve as useful frameworks to drive an integrated form of market-oriented rural development that can facilitate equitable participation among all of its stakeholders” (Giovannucci et al., 2009:19).

Moreover, when agri-food systems are considered, the generation of public goods is strengthened when the local production system assumes the character of a LAFS (Muchnik, 2009). This is similar to the concept of an ID, since it is considered as a multi-dimensional concept, able to raise the competitiveness level of the territory by forging opportunities in a sustainable logic. Hence, LAFSs and IDs represent models of economic growth, social development and environmental management. Their main characteristics are the strong link with the territory in all its dimensions, including not only its environmental, social and economic aspects, but also the role played by all the typologies of territorial actors (i.e., economic and social) and their managing institutions by governance actions, local resources and specific environmental characteristics.

In a public good creation and rural development logic, the LAFS concept is a very useful instrument, since the food quality is the main economic levy. Hence, the LAFS becomes a suitable dimension for interpreting economic changes and strategies within a rural community of citizens and entrepreneurs involved in a process of cumulative knowledge, where economic actors specialize in the production of certain types of goods (or services), which satisfy the needs (or desires) of citizens and consumers inside and outside the local area, with such logic of sustainable development. Besides, unlike local development, rural development includes natural resources as active components of the production system, and their evolution should be carefully managed in order to avoid future drawbacks related to environmental issues, volume of production, quality and sustainability of the whole system.

Referring to the agri-food sector, a LAFS can take different forms, depending on the role that the natural environment, the agricultural sector and the food industries have in the production process and in managing the whole system. The way in which agri-food systems reorganise themselves, meet consumer needs, generate positive (negative) externalities and trigger spatial dynamics, is a cause, rather than an effect, of the evolution process.

2.3. The LAFS Concept

The link between the agri-food system and the ID, in a sustainable logic, might assume two different aspects:

- *LAFS or Systeme Agroalimentaire Localisé (SYAL in French terminology):*

This concept emerged in the mid-1990s and it is, at first sight, close to the cluster definition, as it refers to the geographical concentration of specialized farms, food-processing units, distribution networks and private or public entities in a given place. Nevertheless, Muchnik (2009) argues that: “the territory of a SYAL is not a continuous space. It is one of belonging, in which a combination of different activities can be carried out in areas that are often physically far apart” (Muchnik, 2009:5). Three distinctive features identify a LAFS:

- i) the place: intended in its broadest meaning, as used by the French school “*terroir*”, it covers the specific nature of natural resources, the production history and tradition and the presence of local know-how (De Sainte-Maire et al., 1995; Sylvander, 1995; Bérard and Marchenay, 1995; Barjolle et al., 1998a; Casabianca et al., 2005);
- ii) the social relationships: which consist of trust, reciprocity and co-operation among actors; they are the “glue” of local action (Zambrano, 2010) and an endogenous development mechanism can arise from the interaction with place (Boucher, 2007);
- iii) the institutions: private and public agents who promote actions regulated by formal and informal rules.

The interaction of these features have led to the first conceptualization of the LAFS:

“Production and service organizations (agricultural and agri-food production units, marketing, services and gastronomic enterprises, etc.) linked by their characteristics and operational ways to a specific place. The environment, products, people and their institutions, know-how, feeding behaviour and relationship networks combine within a territory to produce a type of agricultural and food organization in a given spatial scale” (CIRAD-SAR, 1996).

According to Torres Salcido and Muchnik (2012:103): “the specific nature of SYAL lies in the conjunction of food culture-human action-institutions”. Hence, the LAFS can be analysed as the result of a process of cooperation among companies with common interests, located in a given area, which organize themselves and agree on certain production and marketing norms and rules in order to obtain a competitive advantage over competitors. The latter can be actual or potential, from within or outside the territory, but do not adhere to those norms and rules characterising the LAFS.

Initially, the LAFS production paradigm was approached through the concept of clusters (Porter, 1990), following the idea of spatial proximity among all the actors involved in the production model. However, it was lately agreed that the specificity of the LAFS resides into the spatial features of producers, people, institutions and social relations, elements that create the linkages between food and the territory. Nowadays, researchers consider the relationship between LAFSs and the qualification processes of territorial products as the most relevant, since collective actions are developed in view of the necessity to obtain a recognition of the

product origin (Giacomini, 2013). In this regard, Muchnik (2009) identifies four elements that define a LAFS: product qualification, co-ordination of stakeholders and collective action, resource management and dynamics of knowledge. Their interaction explains the diversity of existing agri-food systems, their evolution, stability and crises.

In fact, the LAFS is also a developing category (Torres Salcido and Muchnik, 2012) which aims to capture and interpret rapid economic and social changes of local dynamics (Muchnik, 2009). In this respect, Fournier (2002), Boucher (2004), Fournier et al. (2005), Fournier and Muchnik (2010) find that LAFSs have a life cycle. Boucher (2007) defined LAFSs as processes in construction, local places constructed by a relationship with actors sharing interests linked to one or more rural agri-food sectors. Without collective processes of innovation, a LAFS is destined to disappear, as falling profits following the increase in the number of producers generate a shift of the actors to other activities (Fournier, 2002). Building a long term reputation on the basis of a quality label can provide sustainability for some LAFSs (Oyarzún, 2005; Fournier, 2008). A specific course of action is necessary for individuals and communities (Mancini, 2013) seeking to create markets or institutions that will allow them to regain control over production and trade. Thorne (1996) defines this action as “re-embeddedness”. The LAFS approach can contribute to this debate in the analysis of the degree of coordination and interaction between places, social relationships and institutions.

Recently, the increasing importance of localisation and delocalisation processes have led researchers and policy-makers to use the place as an assembly factor for different territorial activities. This gave rise to further methodological developments regarding the LAFS concept, since the organisation surrounding a local resource moves from being purely agricultural to becoming multi-functional (Rodríguez-Borray and Requier-Desjardins, 2006). Thus, the LAFS became a development model and a powerful tool for creating a public agenda in policymaking.

- Rural Districts

The concept of rural districts denotes areas which are characterized by a valuable environment and landscape condition, a small population size, low concentration levels of urban residential and productive settlements, significant incidence of protected natural areas, where agricultural production activities are predominant with respect to the local environment (Belletti and Marescotti, 2010a). The concept of the rural district was firstly introduced and interpreted as referring to the Maremma rural area in Tuscany (Italy), although it could well describe other areas as a model of:

- i) organisation of the rural economy oriented to rural development quality;
- ii) processing and management of operations of agricultural and rural policy (Belletti and Marescotti, 2007).

The rural district directly involves enterprises, institutions, other local actors and, in parallel, identifies forms of local governance (both vertical and horizontal) such that they can accompany the transition from a traditional production model to a model of modernization of rural development, where the quality valorisation of local resources is the main driver. Therefore, new local development paths based on agricultural entrepreneurship, multifunctionality, area development and all other rural activities, are strengthened and fostered (Pacciani, 2003).

Some common features characterise the industrial and rural districts, such as the specialization of each production step, the interrelation and the complementarity of some production processes, the availability of specific services within the territory, the existence of

networks supported by trust which facilitate transactions within the business community, the high flow of information and the availability of highly skilled human capital that creates a reputational capital outside the territory. Hence, the extension of the concept of district to rural areas, means that the wide variety of economic activities developed in a territory need to be taken into account. These activities are different but highly integrated and interdependent, hence competitiveness derives from their complementarity, according to the economies of scope logic. This conceptual articulation is to conceive the territory in its entirety, not only as a place that "hosts" economic activities (albeit strongly linked to it, as in the case of agricultural activities), but as a support to a set of functions and complex social and environmental impacts which contribute not only businesses but also to "non-business" (Belletti and Marescotti, 2007).

Thus, rural districts play an important role operating in upstream and downstream sectors of agriculture in the context of food chains, as well as in tourism and crafts, environmental resources and the archaeological, architectural, artistic and cultural features of an area, deriving from the contribution of tradition and farming. This concept of development also implies a transformation of all the operators, which take part throughout the process of local development. Moreover, it implies a certain sensitivity to the product or service quality, respect for the natural environment, the local culture and traditions, and thus sensitivity to the overall image of the area (Belletti and Marescotti, 2004). Therefore, rural policies should specifically aim at strengthening agricultural activities without neglecting the cultural dimension and local heritage. At present these are in fact important assets of the rural development process, since environment and natural resources play a key role as active components of the system. Governance action should be also addressed to preserve those resources that characterize the system under the economic, social and environmental dimensions.

Moreover, in those IDs where the environment and natural resources play a fundamental role, sustainability becomes a very relevant concept that can affect the future of the local system. Different criteria aim at describing the characteristics of each LAFS area/region and its possible evolution, also in terms of sustainability. This is relevant and should be considered as a driving force, both for the capacity of influencing the characteristics of the system and the evolution path in a competitive world. The logic of preserving the local system relies upon, not only, the well-being of future generations, but also upon the idea of not compromising the quality and the competitiveness of viable and existing production systems. The aforementioned criteria are based on the following aspects:

- The presence of a territory with specific natural local resources, biodiversity, history, cultural heritage and skills;
- The presence of important agricultural sectors;
- The presence of SMEs involved in agri-food sectors;
- The presence of large food companies;
- The presence of social relationships;
- The presence of local institutions;
- The presence of a reputational asset both in the agricultural and the industrial sector;
- The presence of an area of consumption and a target market for food outputs;
- The presence of an area where the governance actions generated by companies and local institutions impact on sustainability.

2.4. Neo-Endogenous Rural Development Theory

The elements that characterize the LAFS allow to shape a new concept of rural development, known as neo-endogenous rural development, where agriculture (*per se*) is only one of the activities of the area. The concept of neo-endogenous development delineates an “endogenous-based development in which extra-local factors are recognised and regarded as essential but which retains a belief in the potential of local areas to shape their future” (Ray, 2001:4). In contrast to the theoretical underpinnings of both exogenous and endogenous models of rural development, neo-endogenous rural development is based on the interplay of both local and external factors, so that the development strategy is built upon the link between local conditions and external opportunities (Hubbard and Gorton, 2011).

A more precise and comprehensive definition of neo-endogenous rural development can be provided by decomposing this term and analysing its sub-parts. First of all, ‘rural development’ refers to both the activity that “occurs in rural areas in pursuit of socio-economic vibrancy” and the intervention, in terms of policy, “concerned with the socio-economic regeneration of territories” which are identified by certain rural characteristics (Ray, 2006:278). The ‘endogenous’ part indicates an area-based and bottom-up approach to development, where the mobilisation of resources and the application of mechanisms for development are sought at the local territorial level. This is in fierce opposition to previous top-down exogenous models. Hence, the ‘neo’ part indicates the mixed endogenous-exogenous dynamics of these locally-led approaches. In other words, neo-endogenous rural development depends on bottom-up activities that engage with external influences from the extra-local environment in support of their regeneration strategies to increase local potential (Bosworth et al., 2015; Ray, 2006). Lastly, the political-economic framework is intrinsic to the design of a coherent neo-endogenous rural development theory and for the implementation of policies consistent with the *modus operandi*.

The neo-endogenous approach offers an alternative to the dualistic ‘top-down’ or ‘bottom-up’ perspective, emphasising the notion that rural development is best achieved through a combination of both local and extra-local resources, with local action being integrated within wider networks (Bosworth et al., 2015). The principle of local control stems from purely endogenous development, so that local participation is essential in the implementation of action through the adoption of cultural, environmental and community values (Ray, 2006). This implies that any socio-economic development activity is targeted at the local territory, while utilising local physical and human resources, so that local knowledge, local resources and the engagement of local people are central to this development process (Bosworth et al., 2015). In other words, human and social capital lie at the root of the local institutional capacity. In turn, development is contextualised by the needs, capacities and perspectives of local people (Ray, 2006). Here, local actors need to share a common identity in order to interact with local structures and work together – this situation where “economic and social actions are influenced by being and feeling part of a local community” defines the concept of ‘local embeddedness’ (Bosworth and Atterton, 2012). This concept also implies a shift from pure economic benefits towards the empowerment of communities through trust and reciprocity (Ward et al., 2005).

In this framework, the need to embrace extra-local factors and adopt an integrated network approach is also emphasised (Ray, 2001), although control remains within the local area rather than being dictated by extra-local influences (Bosworth and Atterton, 2012). Therefore, the focal point of neo-endogenous development is the enhancement of local institutional capacity, to mobilise local resources while exploiting external opportunities (Hubbard and Gorton, 2011). To this purpose, a holistic approach is required, where capacity-building and

local mobilisation can be supported through both horizontal and vertical relations of governance (Shucksmith, 2010). The different agents and mechanisms that may contribute to neo-endogenous rural development comprise area-based partnerships, EU-funded LEADER groups, business support agencies, ‘Protected Food Names’ Schemes, local authorities and larger voluntary organisations (Ward et al., 2005). Although these are locally rooted they also exploit non-local resources and thus act as critical intermediaries between local and extra-local actors.

The salient features of neo-endogenous rural development are summarised in Table 2, which also provides a comparison with previous exogenous and endogenous approaches.

Table 2 Models of Rural Development: Exogenous, Endogenous and Neo-Endogenous

	Exogenous Development	Endogenous Development	Neo-Endogenous Development
Key principle	Economies of scale and concentration.	Employing local resources (natural, human and cultural capital).	Enhancement of local institutional capacity; interaction between local and extra-local forces.
Driving forces	Urban growth poles (drivers exogenous to rural areas).	Local initiatives and enterprises.	Networks of local actors connected to external influences.
Function of rural areas	Production and supply to urban economies: food, labour, land, etc.	Diverse and self-sufficient economies.	Diverse economies; participation of local actors in local and external networks.
Major rural development issues	Low productivity and relative costs of capital, land and labour; peripherality.	Limited capacity of areas/groups to participate in economic activity.	Resource allocation and competitiveness in a global environment; unbalanced communities (ageing, inequality, etc.); remoteness and isolation.
Focus for rural policy	Agricultural productivity and modernisation; encourage labour and capital mobility.	Local capacity-building (skills, institutions, infrastructure).	Holistic approach to enhance local capacity and actors’ participation, add value to local resources, promote connectivity and innovation.
Criticism	Dependent, distorted, destructive and dictated development.	Failure to address peripherality; not realistic or practical for contemporary markets (e.g. Europe).	Difficulty in stimulating effective interaction between local and extra-local forces to benefit

			peripheral economies.
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Source: Own compilation based on Lowe et al. (1998), Ward et al. (2005), Hubbard and Gorton (2011), Bosworth and Atterton (2012), Bosworth et al. (2015).

2.5. The Value Chain and its Characteristics

The production system is a very important component in the qualification process of food systems. Nevertheless, an appropriate value chain must be organised to deliver food to the consumer and create value for economic agents. The concept of value chain combines the technological functions of the supply chain with the economic and managerial function. Typically, the value chain, especially in the agri-food sector, is regarded as a production management tool useful to create appropriate product quality and develop marketing strategies aimed at creating value for all the actors of the chain.

As a discipline, agri-food economics was concerned with food chains from its foundation. Malassis and Paddilla (1986) considered the links between agents (companies and institutions) and operations (production, distribution, financing) contributing to the creation of products and to the transfer of output to the consumer, including the flows of inputs and products (Malassis and Padilla, 1986).

In food-chains there are three "areas", each of which can be characterised in consideration of: i) the state of scientific knowledge; ii) technological patterns; iii) forms of labour organizations; iv) market characteristics. More precisely, it is possible to identify: a) the space of the techniques (a sequence of operations and transformations, separable and linked by a concatenation of techniques and technologies); b) the space of the relationships (a set of commercial and financial relationships that are established at each stage of the chain); and c) the space of the strategies (a set of economic measures that accompany the enhancement of the means of production) (Mariani and Vigano, 2002).

Combining these components, food chains are characterised by efficiency and the ability to transfer (or retain) value to the benefit of agents. Value chains are dynamic structures because they are subject to the evolution of structural and economic components, internal and external phenomena to the value chain. In particular, these phenomena include: the evolution of the supply chain, the ability to market without trade barriers, the development of demand, the evolution of the quality and services, the presence of standards and inter-organisational relationships. Additional elements include: the presence of agents and external institutions to the value chain that provide services and information, the presence of information asymmetry and the presence of transaction costs.

The value chain of FQS can have very different characteristics in relation to the combination of different elements such as: the structural feature of the agents, their level of integration, the ability of agents to impose their own bargaining power, the presence of intermediaries within the supply chain and their ability to create added value.

Strategies based on the use of FQS do, however, face the challenge of securing remunerative prices on the prevalent market. In this regard, many FQS find their commercial positioning in large scale distribution, but many others have great difficulty in relating with this trade channel, preferring the direct sales or traditional distribution channels. These latter channels, in fact, by taking advantage of a domestic convention, succeed in offering consumers more and better information, while guaranteeing a larger economic return to producers.

The choice of the distribution channel is therefore a central factor in the search for a sales strategy capable of combining quality, price and communication capacity. It is no mystery

that relations with the large-scale distribution, especially for GI-FQS and Organic- FQS products, which present low production volumes and low sales, are particularly problematic. This is due to the costly market access and the difficulties encountered in meeting logistics and service requirements, but above all, the difficulty to fill the gap in term of information asymmetry that justifies a quality/price ratio judged to be satisfactory by consumers

Given the characteristics of the value chain, the relationship between the agricultural and the industrial component, as well as the relationship between companies and inter-branch organizations (when present), attention must be placed on how to develop collective commercial strategies capable of increasing the added value of the product and/or the bargaining power of the enterprises that turn to large scale distribution. In a nutshell, a dominant model of FQS-value chain does not exist but - rather - several typologies of FQS value chains emerge, according to the combination of their structural and management features. (Arfini and Capelli, 2011). In this regard, in Italy a study on 98 GI products has identified five clusters of GI-FQS, namely: i) high price markup (the cluster is distinguished by a high ratio between the consumer price in the prevalent channel and the production price), ii) traditional retail (the cluster is distinguished by extensive recourse to traditional retailing), iii) modern distribution and low price markup (the cluster contains products that rely more heavily on modern distribution), iv) direct sales (this cluster prefers the direct sales channel) and v) quality control and traditional retail (made up of dominant companies with certified products that use mainly the traditional retail channel).

However, common elements in FQS supply chains comprise the need to comply with EU Regulations and the presence of a set of rules laid down in a code of practice. This latter requires the establishment of a system for management of the FQS (especially GI) through an organization suited to local conditions and capable of managing a FQS strategy encompassing the whole value chain. In addition, FQS value chains present a third party certification body which guarantees the compliance with its role set in the code of practice.

The legal protection (for GI-FQS), the quality status (for organic-FQS) and the use of UE logos do not guarantee the market success of the product (Belletti and Marescotti, 2010b). FQS market success is reached by implementing several strategies which include setting up an organization managing the FQS value chain. This latter is vital through the marketing, traceability in compliance with the code of practice, the high degree of empowerment of producers and processors, and, lastly, for the sustainable development of the system, the capacity to incorporate a certain number of technical or management innovations able to create value for all the chain members.

2.6. LAFSs, Local Institutions and Governance

The literature shows that within value chains and LAFSs, organizations (e.g., producer organizations, inter-branch organizations and certification bodies) and local institutions should be considered as potentially positive elements (Reviron and Chapuiss, 2011). This is fuelled by the sense of belonging, by the necessity to develop chain strategies, as well as the common interests of territorial actors, which are represented by governance actions. Chain and LAFS organizations are the result of the interaction with other participating actors (e.g., companies, institutions), generating a set of dynamic forces that allows to adapt to the challenges posed by the market (Giacomini, 2013; Rallet and Torre, 2004; Torre, 2000).

Considering the supply chain, the governance action is always more relevant in managing the technological, institutional and market pressure with the aim to reduce transaction costs within the value chain (Fischer and Hartmann, 2010). Even for FQS, the governance action developed by agents of the supply chain has the following objectives: i) create, maintain and

increase a distinctive quality character with respect to the product and the producers; ii) mobilize the institutional support from local and not local institutions; iii) develop relationships among economic agents; iv) protect local producers from unfair competition.

These objectives are achieved through the ability to create a climate of trust between the agents of the value chain (i.e., producers and consumers) reducing, at the same time, the conditions of conflict. Gereffi et al. (2005) observe the coexistence of different models of value chain governance on the basis of the complexity and codification of transactions and of the competence of suppliers. These distinct types are: market, modular, relational, captive, and hierarchy. Knowledge, ability of the actors to develop relationships and trust, willingness to share information and strategies are identified as relevant factors in the management of value chains (Fischer and Hartman, 2010). From this observation emerges that the action of the value chain governance has different characteristics depending on the governance model used and the ability of agents to pursue transactions (Gereffi et al., 2005).

Evidence from recent research on GI-FQS in the processed pork meat sector shows as governance permits to preserve, safeguard or actively (re-)create distinctive quality features linked to the GI-FQS. (Oostindie et al., 2016). Oostindie et al. (2016) observed two basic analytic models: a “cooperation model” and a “competition model”. The “cooperation model” is characterized by equal relations, common interests of chain partners, and direct and open communication between chain partners to develop a clear and specific own identity that enables to share a common strategy on the market. Moreover, the “competition model” is characterized by an unequal distribution of power between chain partners (especially, a weak position of primary producers) and large companies who (try to) function as “chain-director”; i.e., there is competition within the chain.

These different “models” imply a different impact in term of sustainability for the chain and the territory, where the production systems are localized. Moreover, it is recognized that GI-FQS governance action, combined with legal protection, can serve as a useful framework to drive an integrated form of market-oriented rural development that can facilitate an equitable participation among all of its stakeholders (Giovannucci et al., 2009). In sum, for most FQS, their impact is strictly related to the territory.

Considering LAFS, Giacomini (2013) observes that organizational proximity is central to the actors’ coordination process, which develops within local boundaries or even go beyond them. The problem here is to determine to what extent the geographical proximity’s limitations can be overcome without jeopardizing the values on which the organization is based on: the sense of belonging and the common interests that the agents of the system share (Rallet, 2002).

In this framework, local institutions represent a group of stakeholders that play key roles in the process of increasing territorial competitiveness. Their role is mainly to strengthen relationships among stakeholders, with the general aim of obtaining the production of those public goods and creating positive externalities which mostly serve the process of development, increasing the level of competitiveness of the entire local system. Local institutions can be considered as all those institutions that represent at the local level groups of interest in the economic, social and political pattern (Vandecandelaere et al., 2010). They represent groups of stakeholders constantly debating about the evolution of local systems and attempting to modify development paths useful to the need of the whole local society. Their main contribution to local development is to express governance strategies (at the chain and territorial levels) that reflect the interests of the stakeholders. Their role is to contribute to higher wellbeing by managing the territory’s tangible and intangible resources. This means managing, directing and coordinating socioeconomic processes in a specific environmental

context, with local institutions and social actors (within and outside the territory) who articulate their collective action, in terms of the value appropriation of territorial resources or the expectation of wellbeing generated by valuing those resources (Torres Salcido and Muchnik, 2012).

According to Torres Salcido and Muchnik (2012), local institutions inside the LAFS develop a set of actions aimed at reaching agreements and managing the main issues related to the local development process under a number of main dimensions: institutional, social, market effectiveness, technological improvement, territorial valorisation, quality assurance, knowledge transfer, environment and sustainability (see Table 3). Hence, local institutions play a political and institutional role, which considers local production systems as a complex system relevant for the constitution and operation of both local enterprises and citizens. The LAFS, ideally, is not only self-regulating and self-managing those organizations devoted to local resources' administration, but interacts with the market, and the National Government (Giacomini, 2013), managing and conditioning the local natural environment. As previously mentioned, it develops a set of common rules aimed at obtaining a collective competitive advantage from which each actor also benefits individually (Giacomini et al., 2011a; Perrier-Cornet and Sylvander, 2000; Torre, 2000) and at preserving natural environmental resources from productive and anthropic pressure. Therefore, this model encompasses a clear process of cooperation that involves several types of actors (i.e., within and outside the boundaries of the territory) which manage the whole system.

Table 3 Areas of Intervention of the Local Institutions

Area of intervention	Objectives
Institutional	<ul style="list-style-type: none"> - Establish relationships among territorial and extra-territorial institutions - Comply with national and international regulation
Social	<ul style="list-style-type: none"> - Promote social inclusion - Promote social cohesion
Market effectiveness	<ul style="list-style-type: none"> - Establish supply chain relationships - Avoid market failure - Reduce transaction costs - Promote the legal protection of collective names - Generate collective promotion and advertisement - Promote the consumption of local products
Technological improvement	<ul style="list-style-type: none"> - Definition of code practices - Validation and introduction of new technological patterns - Respect of traditions and local heritage
Territorial valorisation	<ul style="list-style-type: none"> - Management and reproduction of local resources - Promote local marketing
Quality assurance	<ul style="list-style-type: none"> - Respect of the technological rules - Increase levels of trust in product specificity
Knowledge transfer	<ul style="list-style-type: none"> - Lower technological barriers - Maintain and spread professional skills
Environment and sustainability	<ul style="list-style-type: none"> - Generation of specific environmental actions - Generation of environmental public goods - Management of sustainable policies in rural areas

Source: Torres Salcido and Muchnik (2012)

When referring to FQS (especially GIs), the inter-branch organisations are the institutions most efficient in managing its relationship with the territory and the supply chains (Giacomini et al, 2011a; Giacomini, 2013; Arfini, 2013). Rio and Nefussi (2001), define inter-branch organizations through the following key-elements:

- i) the presence of operators engaged in branch activities, related to each other, as part of a chain;
- ii) the named chain deals with the same product (or a family of homogenous products) inside a defined territory (region or country);
- iii) common strategies democratically elaborated, expressing a common will;
- iv) a wide delegation of powers by the public authority.

Coronel and Liagre (2006) define the inter-branch organisation as a private organization, recognized by the State, which brings together upstream and downstream operators, from the same sector, with the aim of developing negotiations and contracts policies, ensuring fair relations among members and allowing them to develop the performance of the supply chain and to defend its interests. According to Giacomini (2013), in the definition of Rio and Nefussi (2001) the most interesting element, which is absent in Coronel and Liagre (2006) definition, is the reference to the territory as an essential factor for the establishment of an inter-branch organization. The lack of consideration for the territory comes from the nature of the bonds that link different actors in the supply chain, but the territorial nature is in fact necessary for the delegation of powers by the public authorities. It follows that an inter-branch organization is, although recognized by the State, an institution under private law exercising a regulatory authority having the force of public law, given the extension granted to the measures by the ensuing inter-trade agreements (Giacomini et al., 2011a). These latter are then collective agreements, formed by the different partners in the supply chain, through which the common strategy is defined, designed to regulate the production rules, the business and market conduct for all the participants, in order to achieve the inter-branch's objectives (Coronel and Liagre, 2006).

From a theoretical point of view, inter-branch organizations (Williamson, 1991; Perrier-Cornet and Sylvander, 2000) are considered as hybrid organisational forms, “*governance structures*”, managing transactions and characterised by the availability of goods held by autonomous units, without reaching the cohesion level of an integrated company (Menard, 1997). Such governance structures are based on cooperation between operators in the supply chain, defined by long-term contractual relationships which do not affect their autonomy or ownership rights. In regards to hybrid forms, relationships between the parts are regulated, or rather “governed” according to Williamson (1991), by the principle of authority, transferring part of the decision-making power to a third-party institution. In the case of many traditional products linked to the territory and bearing designation marks, this “*third party institution*” may consist of “*Groups*” (as defined by the EU Regulation 1151/2012²), such as Protected Consortia or inter-branch organisations (Perrier-Cornet and Sylvander, 2000).

² Article 3 Reg. 1151/2012: ‘Group’ means any association, irrespective of its legal form, mainly composed of producers or processors working with the same product. Their role is defined in Art. 45 of the Regulation 1151/2012 and is to: (a) contribute to ensure quality, reputation and authenticity of their products; (b) take action to ensure adequate legal protection of the protected designation of origin; (c) develop information and promote activities aimed at communicating the value-adding attributes of the product to consumers; (d) develop activities related to ensuring compliance of a product with its specification; (e) take action to improve the performance of the scheme, including developing economic expertise, carrying out economic analyses, disseminating economic

This third-party institution, responsible for the supply chain governance, acts as a mediator among the operators in the different phases of the chain and steers product quality towards compliance, according to production specification and/or by introducing payment systems based on the quality of raw materials. The aforementioned third-party organization also plays a key role in defining a “strong territorial governance”³ (Barjolle et al., 1998a; Arfini et al., 2011), given its capacity and intended objective in organising the supply chain and establishing fair relations between members, increasing their ability to protect their interests against public administration and competitors.

Arguably, local institutions can be organized as hybrid organisations, since they represent the collective interest of individual producers, involved in the same food chain within the same territory. Indeed, based on the literature concerning the implementation of collective action (Vandecandelaere et al., 2010; Reviron and Chappuis, 2011), local produces might co-operate with a wide range of stakeholders, operating within and outside the production area (see Table 4), of which only part of them are directly involved in the value creation process. The setting up of the collective action by a local institution (i.e., the so-called third party), embraces some different aspects:

- i) defining the community, or group of stakeholders, who will benefit from the right to establish the rules and will share the rights and responsibilities to respect those rules regarding the GI product;
- ii) establishing the network and the partnerships within the local production system, the territory and the external supportive actors, facilitating information and knowledge sharing;
- iii) defining the rules, that must be shared and followed by producers through the different production phases, enhancing sustainable approaches.

It is therefore straightforward to understand how collective actions, generated by inter branch organizations or by local institutions, have implications at the value chain and territorial level, where sustainable policy plays a relevant role in defining future strategies.

Table 4 Stakeholders Involved in the Value Creation Process and Territorial Relationships

	Food Chain	
	Inside the territory	Outside the territory

information on the scheme and providing advice to producers; (f) take measures to enhance the value of products and, where necessary, take steps to prevent or counter any measures which are, or risk being, detrimental to the image of those products.

³ While studying different PDO production chains, Barjolle et al. (1998b) propose four types of governance systems: pure sectoral governance, PDO sectoral governance, weak territorial governance and strong territorial governance. The first system has poor relations with the demands for protection of a typical product, the second one is based on informal agreements between the supply chain stakeholders and may also involve the alternative use of the raw materials; the last two territorial governance systems, on the other hand, are based on the collective management of quality, production, promotion and research and development, in particular strong territorial governance which makes use of greater means of co-ordination.

Territory	Inside the territory	<ul style="list-style-type: none"> • Producers • Processors • Local consumers • Local citizens • Policy makers 	<ul style="list-style-type: none"> • Local public authorities • Local intermediate institutions • Research and extension • Other economic activities
	Outside the territory	<ul style="list-style-type: none"> • Other producers • Other processors • Distributors • Retailers • Consumers 	<ul style="list-style-type: none"> • Other public authorities • Other institutions • Research centres • Consumer associations

Source: Authors' elaboration on Vandecandelaere et al. (2010).

It is now clear that collective action plays a fundamental role since its strategy can be addressed to reinforce the sustainability of the whole production system, considered as the sum of the LAFS and the Supply Chain. This approach is considered at the core of the “*origin-based quality virtuous circle*” proposed by Belletti and Marescotti (2010b) and Vandercandelaere et al. (2010). This latter aims at preserving the local agricultural system and developing the supply chains of the territory, by adopting a four-phase logic:

- i) identify the quality production system;
- ii) qualify the quality-product relationship;
- iii) remunerate the quality-product nexus;
- iv) assure the sustainability and reproducibility of the quality-product.

The main feature of the quality circle approach consists in considering the area where the collective action takes place both inside and outside the region involving, by definition, many diverse actors. Producers, processors, traders and consumers share their know-how, their good practices regarding production, processing, trading, consumption and preserving the system. Furthermore, the market recognition obtained by local products reflects the collective capacity to define and efficiently manage the combination of natural and human factors. Therefore, collective rules and governance actions should not be considered as constraints but rather as conditions to ensure the sustainability and efficiency for the entire local system (Vandecandelaere et al, 2010).

The interaction among LAFS's stakeholders is then a central point when defining the evolution process of the local system considering the link between the territory and the food chain. The scheme of possible combinations between food chains and territories leads to different typologies/classes of agri-food systems:

- a) *The Closed System: local agricultural outputs are processed by local food industries (mainly SMEs), and are purchased by local consumers.*

This first typology is characterized by the strong and unique link between agricultural production and the processing phase, companies and the local consumers. This has a great impact on product quality, firm structure, market strategies and relationships with the environment. Hence, managing the local environment is the most important issue since it contributes to governing input quality and the volume of production, guaranteeing the

reproduction of natural resources and reinforcing the image and the reputation of the entire system. The characteristics of local resources become then relevant, since they are not just bonded/linked to environmental characteristics (e.g., land and water), but also to those aspects, like biodiversity, animal breeds, and local tradition, with high specific features associated with the history and the natural environmental conditions of the region. Their specificity, thus, is in contrast with standardized resources, which are “generic” and reproducible by definition (OECD, 2008), and characterizes the quality of the final product and contributes to defining the local food quality (Belletti et al., 2012).

The “*territorial reputation*” represents a further element that is, at the same time, a consequence and a distinctive factor of the LAFS production model, becoming an economic asset thanks to the characteristics of the local production system and the role of the consumption model of the local population. The definition of local food, conceived as food with strong roots in a specific geographical place, which gives the product its identity (Belletti et al., 2012), well-defines the link between local consumers and local productions systems. Reputation plays a fundamental role in the process of adding value to the raw materials, and contributes to guaranteeing an income from local resources, having a relevant role within the economic dimension of the sustainable development process.

Under a territorial approach, the process of local capital accumulation, generated by managing local resources and the production of local food, is considered a condition to establish and activate the “*virtuous circle of typical product valorization*”, and thus generates a socio-economic environment suitable for the sustainable local development process. In adopting the virtuous circle’s approach, the fundamental implication is the preservation of the agri-food system and related social networks, which contribute to the economic, socio-cultural and environmental sustainability (Belletti and Marescotti, 2010; Vandecandelaere et al, 2010)⁴.

Albeit the “closed” LAFS deals just with local resources, it may have relationships with consumers belonging to other regions/territories. Local consumers are attracted by local food because of the perceived quality, including several attributes such as: zero-mile food, organic production systems, specific intrinsic quality features, new forms of direct marketing (e.g., short food supply chains as farmers’ markets). All these systems are part of the so called convention theory and they refer to domestic quality (Boltanski and Thevenot, 1991; Sylvander et al., 2006).

In this framework, new models of purchase and consumption are defined. Food becomes a real common good and its value is no longer determined by the sole (highest) price. Food becomes a concern and it should ensure an income to the farmer, capable of securing the realization of those positive externalities (i.e., social and environmental) appreciated by consumers and citizens who belong to the same community. That is to say that the farmer, through short food supply chains, has an incentive to choose the optimal solution, within a community, capable of creating new attributes for agricultural production, improving the relationship with the environment and raising social welfare as a whole. The outcome of this path leads to rewarding those farmers operating in line with the common/shared goals, recognizing the value that has been created. This might happen when considering farmers’ markets and Community Supported Agriculture (CSA), which build horizontal networks between producers or consumers, implying also social relationships and ties that go beyond the sole trust relationship between consumer-producer. Similarly, it is the local system itself

⁴ This can be considered as an ideal-model of the process of production and reproduction of typical products in a logic of regional development, boosting the economic development of the entire system and region.

that is activated to facilitate the access to essential goods for all its members, regardless of the social class, gender, race or age groups (Sonnino and Marsden, 2006; Renting et al., 2003).

- b) *The Open System: agricultural outputs are not processed by local food industries or purchased by local consumers.*

When considering the value chain (i.e., all the stages involved in producing a certain food product, inside and outside the LAFS), for many LAFSs the downstream actors may not solely belong to the territory. This happens whenever the local demand is not able to completely absorb the output, compelling the LAFSs to look for larger markets (Becattini, 1989).

The extent and strength of the LAFS'/product's reputation determines the distance between the product and the new market. Subsequently, the higher the reputation, the farther the new markets can be. Therefore, the food chain is characterized by the presence of new agents that operate outside the territorial boundaries, together with the, already established, local actors. Outside agents deal with individual and collective strategies, including the relationship with the local environment, and raise the effectiveness of the food chain further.

The sustainable development of an open system eventually depends on the governance and management of both local resources and the interactions between the in-situ actors and the stages of the value chain operating outside the territory (Reviron and Chapuiss, 2001). Like the downstream ones, upstream production stages can be located outside the LAFS. Hence, the link between the local agricultural system and the processing industry is weak, since inputs come from outside the boundaries (e.g., PGI and organic food chains). Food industries are taking advantage of the local production system by its capacity to generate innovations and services that reinforce their competitive advantages on the global market.

Considering the concept of ID, its linkages with the territory are made explicit through the labour force, cultural heritage and skills, research activities, logistic infrastructures and the network of other enterprises involved in the same food chain. These local firms are rooted in the area, and have developed efficient and effective marketing strategies toward global markets and consumers. They have generated effective global food chains with a very effective management of both the production system and consumer relationships. Often, firms become multi-national companies, with branches spread all over the world but the headquarters remain within the territory of origin, to maintain the core of the decision-making process in the original area of production and benefit from the presence of the ID (i.e., low transaction costs, higher bargaining power with local stakeholders and policy makers concerning the decision process and, therefore, the evolution of the company).

Moreover, in “open” LAFS models, local companies might benefit from connections with local and non-local research systems, which allow them to innovate and follow new technological paths, raising their level of competitiveness without losing the link with local traditions.

- c) *The Mixed Systems: coexistence of close and open LAFS.*

These systems are characterized by the coexistence of both “closed” and “open” LAFS models. The territory at the same time has specific natural characteristics and develops strategies that are typical of both ID and rural districts. The outcome of this combination is the reinforcement of meanings of all the variables that characterize and influence the development process of local areas, including reputation. Reputation becomes an asset for all the agents involved in the food production system when associated with local products rooted in the area, bearing a geographical name related to the region of production (often recognized

as GI products). The geographical name becomes then a brand carrying a clear message of quality, from which not only the industries involved in the GI scheme benefit, but the entire food sector and, thus, local companies. Reputation affects the economic growth of a territory through the so-called “*spillover effects*” (Mayer, 2006; Giacomini et al., 2010a), generated from the stock of intangible capital created within the area (i.e., the district), as a consequence of the reputation achieved by those goods/food products particularly appreciated by consumers. The spillover effect attached to the reputation of a territory is known as the “*spillover reputation*”, and it gives a special importance to the reputation of the actors and their ability in managing and governing the development process (Mayer, 2006; Yu and Lester, 2008).

The presence of simultaneous spillover effects within the district, from one food product to another, attributable to the geographical condition and reputation, can lead to important consequences for firms’ management and strategic analysis as well as those involved in the production of local products. Territorial reputation may fall when some companies misuse the reputation and adopt unfair behaviours against their competitors in the same region (Rossi and Rovai, 1999; Yu and Lester, 2008), leading to a decline in reputation and market competitiveness. Especially in mixed LAFS, reputation might also be reduced whenever stakeholders do not consider properly the adoption of specific policies aimed to preserve the “*virtuous circle*” (Belletti and Marescotti, 2010; Vandercandelaire et al., 2010).

Reputation is a social construction by which local actors handle the link between the quality of the product and the territory, reaching a dynamic agreement in binding the product to the society (consumers and, more in general, citizens) based on certain conventional rules (Belletti et al., 2012; De Sainte-Marie et al., 1995). Therefore, reputational assets should be conceived as a local qualification process.

Open and mixed systems may embed economic disadvantages for local agricultural producers, since agricultural inputs may come from different territories, where price and quality differ and can be lower than local ones. There exist two main implications, which apply to both PGIs and organic products:

- i) farmers can suffer from price competition and are pushed to adopt more intensive production systems or introduce new genetics which, in turn, may reduce biodiversity;
- ii) food industries are more competitive when operating also in distant markets, reducing input costs, but reputational asset may decline as well, if a lower input quality affects the quality of the final product.

The level of sustainability and the variables that might influence it can be different between “closed” and “open” or “mixed” LAFS. A clear example of different strategies with implications in term of sustainability is provided by the Italian cured ham chain (Oostindie et al., 2016; Dentoni et al., 2012), where although part of the chain is represented by a PDO produce (PDO Parma Ham), processors have activated an alternative network for low quality ham affecting the economic sustainability of local farmers (Oostindie et al., 2016).

To preserve the “*virtuous circle*”, Belletti and Marescotti (2012) consider three different areas of action: technology, collective action and market failures. A good management of these three dimensions can reduce conflicts and allows for a fairer balance of power among actors, helping with the process of recognising product quality. Moreover, this prevents local resources from being under-paid, working on two levels: the consumer market (i.e., reducing the extent of information asymmetries) and the intermediate market (i.e., reducing imperfect competition that generates unfair value distribution along the supply chain). In conclusion, the development of local products through the activation and the capitalization of tangible and

intangible assets, may allow for a fair remuneration and, therefore, for the reproduction of specific local resources by encouraging the preservation of the territorial system with regards to the social, economic and environmental dynamics. On the contrary, an inappropriate remuneration of local resources, impinges on the reproduction of local resources and thus on maintaining the same quality level of the product and produces dissatisfactory economic, social and environmental outcomes.

3. LITERATURE REVIEW

This section of the Deliverable provides a brief – yet systematic – review of the post-2000 literature on FQS (i.e., PDO, PGI, TSG and Organic), PSFP, SFSC and Consumer research.

3.1. FQS: Short Literature Review

3.1.1. *Localised Agri-food System Approach*

The first approach used to investigate FQS was the LAFS. Here, four articles were reviewed: two articles, Feagan (2007) and Requier-Desjardins et al. (2003), investigate the issue of ‘place’ through a theoretical discussion, including the review of the literature on local food system but also presenting some concrete examples. The remaining two articles, Mancini (2013a) and Bowen and Zapata (2010), analyse case studies of GIs in South American countries.

Feagan (2007) focuses on the issues of ‘place’, as described in the local food system literature. Local food system movements, practices and writings pose visible structures of resistance and counter-pressure to conventional globalizing food systems. The author argues that there is strong argument for emplacing food systems, while simultaneously calling for careful circumspection and greater clarity regarding how “local” is defined and understood. The concepts of ‘local’, ‘community’, ‘place’ refer to social, cultural and ecological specificities, while also implying that people are tied to many and diverse locals around the world. Requier-Desjardins et al. (2003) review the rise of geographic concentrations of small food-processing units in rural areas of Latin America and, drawing on the literature on the development of clusters, show that these may represent a type of local productive system, namely LAFS. The authors also analyse the specific assets of these systems, drawing on some specific cases, and stress the conditions that can enable them to compete on national or even global markets in the supply of processed products. These conditions appear to be a capacity for collective action which can be enhanced by qualification processes of the products, creating common assets for the actors involved. These elements could provide a rationale in regards to the categorization of clusters according to their efficiency.

Some specific case studies are analysed by Mancini (2013a) and Bowen and Zapata (2010). Mancini (2013a) studies a localized agro-food system producing Queso Chontaleño (QC) cheese in the Chontales Department in Nicaragua and the first effects of the GI scheme, which alters the power relations between the actors of the cheese-dairy sector within the framework of global dynamics. The results show that GI introduces new competitive pressures that reinforce local elites at the expense of traditional QC actors. The case study also shows that the weak involvement of the State may prevent GIs from enhancing the development of territorialized agro-food systems. This conclusion is a recommendation to EU policy makers, as the promotion of GIs at the level of the World Trade Organization (WTO) must be accompanied by measures that can ensure stricter national legislations on GIs to protect local resources. Likewise, Bowen and Zapata (2009) analyse the case of tequila to examine the potential for GIs to contribute to socioeconomic and environmental sustainability of a LAFS. They argue that the negative effects of the agave–tequila industry on the local economy and

environment are due to the failure of the GI for tequila to value the ways in which the ‘terroir’ of tequila's region of origin have contributed to its specific properties; then they conclude by using this case to discuss more generally the relationship between the protection of place-based products and social and environmental sustainability. If GIs are to make concrete contributions to long-term environmental conservation and rural development, the specification of sustainable production practices within the legal framework of GIs is essential. Within GI supply chains, the preservation of the link to terroir is both a critical strategy for local actors and a guarantee of the diversity and specificity of the product. Thus, terroir becomes a discursive tool, in that it ensures that production stays within a particular territory and allows producers to retain control vis-à-vis extra-local actors.

3.1.2. Value Chain Theory Approach

With regards to the eight articles about Value Chain Theory, three articles introduce the general aspects of the issue: Humphrey and Memedovic (2006) analyse global value chains in the agri-food sector while Ponte and Gibbon (2005) and Trienekens (2008) focus on the role of quality standards in the dynamics of value chains. The remaining five articles (Loconto, 2010; Bowen, 2010; Loconto, 2012; Mancini, 2013b and De Rosa et al., 2014) analyse case studies about how, where and whether GI products add value to productions systems in South America, Africa and Italy.

Humphrey and Memedovic (2006) look at inter-firm linkages in a global agribusiness, thereby placing agricultural production and processing in developing countries in the context of broader agribusiness and agrifood systems. For the purpose of this review, it is interesting to focus on one of the two issues of the article, the importance of standards, which, by definition, operate at multiple points along the global value chain and are created, adopted, applied and verified by different actors. The authors make a detailed analysis of the advantages and disadvantages for farmers to take part in certification schemes, in particular for farmers in developing countries. Taking part in certification schemes may allow the enterprises of developing countries to access the international market, in Global Value Chains (GVC) or International Value Chains (IVC) dominated by industries and retailers from the developed world. But at the same time this may give rise to difficulties for them. For lower income players, standing up to dominant players may involve developing strategies based on product certification driven, for instance, by growing consumer demand for organic products or products tied to the history and culture of the place of production. GIs may thus represent an opportunity for developing countries to move into lucrative niche markets.

In Ponte and Gibbon (2005), convention theory contributes to a better understanding of the dynamics of governance in global value chain through the analysis of ‘quality’. This is particularly important as social and environmental concerns are key elements in present consumption patterns in industrialized countries and quality content becomes more complex. Authors observe that global value chains are becoming increasingly ‘buyer-driven’ even though they are characterized by different forms of coordination in different segments. According to Trienekens and Zuurbier (2008), ‘lead firms’ have been able to shape the functional division of labour along value chains even though they practice relatively ‘loose’ forms of coordination with their immediate suppliers. This has happened because lead firms have been able to embed quality information into widely accepted standards, certifications, and codification procedures. Currently, there is proliferation of standards worldwide. One first effect is associated with the difficulty in compliance with these standards, particularly for some companies in developing countries and emerging economies. Another important effect is the ever increasing marginal costs of certification and accreditation, which also put pressure

on company profits in industrialized countries. The combined impacts of these effects ask for strategies to revalue the cost/effectiveness of the certification and accreditation system.

Loconto (2010; 2012) explore how standards are used within GVCs to govern interactions among actors and to perform a multiplicity of ‘sustainabilities’. Specifically, these papers present four case studies of certified tea production in Tanzania (i.e., the Ethical Tea Partnership, Fairtrade, Organic, and Rainforest Alliance). The analyses suggest that, despite claims about the ability to change trading relationships by creating certified value chains, most of the old networks are still in place. Loconto (2010; 2012) also argues that certification systems only add additional buyers to global value chains that were already governed by highly relational and hierarchical mechanisms. This conclusion thus calls into question some of the claims made by certification schemes as to their abilities to change current practices.

Similarly, Bowen (2010) and Mancini (2013b) adopt the value chain perspective in the context of globalization to discuss whether GI systems can decrease poverty. Bowen (2010) analyses the degree to which GI protection spurs development and protects local environmental and cultural resources. Bowen (2010) concludes that this depends on the structure of the GI legislation and on the territorial context in which protection is embedded. Using a commodity-chains approach, the author compared two GI production systems, tequila in Mexico and Comté cheese in France, in order to develop a theory of the factors that contribute to more sustainable, equitable GI production systems. Mancini (2013b) argued that three key differences in the design of the GI schemes help to explain the varying effects of the two analysed cases: (1) the manner in which supply-chain actors define quality, (2) the way that the GI valorises the terroir of the region, and (3) the strength and cohesion that the collective organizing body exhibits.

Mancini (2013b) explains how GI schemes embedded in Global or International Value Chains, and implemented as a product differentiation strategy in developing countries, are able to support the technical and economic development of some rural areas but at the same time how they can contribute to the exclusion of farmers in more marginalized areas from the benefits of the initiative. First, the paper gives a theoretical framework on GI and other certifications on schemes run in Latin America countries involved in Global Value Chain; then, it analyses a specific case, that is the cheese-dairy Value Chains in Nicaragua and a GI initiative for a Nicaraguan cheese, QC, embedded in an IVC. The conclusion of this analysis is that, when traditional Value Chains tend to be isolated and lacking independent governance mechanisms, GIs, like other types of certification, can become factors of increased marginalization, unless they are supported by adequate rural policies and legislation.

Finally, De Rosa et al. (2014) discussed financial opportunities to promote value creation for GI chains. In this framework, a relevant set of opportunities is provided by the Rural Development Policy (RDP) of the EU. However, access to RDP is not easy: therefore, value creation through consumption of RDP is the result of an individual and collective entrepreneurial process within a GI area. This paper looks into different adoption strategies of RDP to promote value creation in a GI food supply chain, focusing on the case of PDO Mozzarella di Bufala. Results confirm, on the one hand, a higher aptitude to create value through RDP on behalf of farms working inside GI circuits; on the other hand, empirical analysis evidences a limited set of consumed measures by the farms. This reflects a lost opportunity.

3.1.3. Governance Models Approach

The articles reviewed under the “governance models” approach are thirteen. They analyse the role of collective organizations in supporting competitiveness of GI productions systems, the

possible threats and weaknesses coming from outside and inside the GI protection systems, the role of institutions in addressing governance and increasing the competitiveness of the GI production systems, and possible methodologies to measure the performances and the competitiveness of GI production systems.

Réviron and Chappuis (2011) analyse some successful examples of organizational models for GI production systems, which range from loose operators' coordination systems to strong collective management systems (professional associations, inter-professional associations, cooperatives). Réviron and Chappuis (2011) explain why, in a context of stronger competition for generic products in globalized markets, some European farmers, mainly in marginal areas, have built strategic alliances to coordinate the production and sales of origin food products. The importance of collective organization in the European vision of PDOs and PGIs is discussed alongside the reasons why operators may be eager or reluctant to adopt this approach. Réviron and Chappuis (2011) also address the following research question "how to launch a collective organization for GIs and how to build up this process?" and define some key points which must be properly managed to increase the competitiveness of the PDO/PGI system (e.g., the entrance of new members, the definition of the code of specification, the management of trademarks).

The case studies presented by Tregear et al. (2007) reveal that different experiences can evolve under the same qualification mechanism, and also that the consequences for rural development can vary. They trace the evolution of three cases of regional food production, where local actors qualify products under EEC Regulation 2081/92. The paper investigates the factors influencing the involvement and behaviour of actors in regional food qualifications. On the one hand, the processes of interaction and debate, and setting up of interest groups can be beneficial. However, the cases presented also show that qualification can be a source of conflict between different actors, and decisions about codes of practice and exclusivity have to be made with care. With this in mind, the cases presented suggest it may be useful to conceptualise institutional involvement in qualification processes in two phases: *ex ante* and *ex post*. According to the authors, product qualification may be regarded as a mechanism for linking local and non-local actors, within the logic of the mixed exogenous/endogenous development model.

According to Skilton and Wu (2010), the structure of governance regimes impacts the effectiveness of the marketing systems associated with protected geographic indications. Two factors are used to differentiate governance regimes: the heterogeneity of producer interests and capabilities and the level of communal control over production and marketing. These two factors determine how committed producers are to participation and to what extent they coordinate their actions. Commitment and coordination in turn influence the quality and consistency of production, the effectiveness of promotion, the distribution strategies, and the availability of price premiums.

Taking the example of Ireland, for which PGI designations remain comparatively low, Conneely and Mahon (2014) explore whether the approach to providing institutional supports to the PGI scheme is influenced by top-down technocratic governance structures that pertain to food safety and quality certification. Although the regulation of food safety and quality certification are distinct remits to the administration of the PGI scheme, the Irish context use the same institutional bodies in the governance of food safety and quality certification. This case suggests that incentives to avail of the PGI scheme to realize value-added for producers are not well established because they require the development of more subjective, context-dependent processes and practices linked to geographical place and place identity.

An internal barrier that may threaten producers' opportunity of profiting from the use of established and highly recognized GIs is represented by the individual group members' heterogeneous characteristics, resources and strategies as these features impact on their level of cooperation on defining the future of GIs (Dentoni et al., 2012). By following a "grounded theory" approach, the authors combine qualitative evidence from an in-depth study on the PDO "Prosciutto di Parma" Consortium with quantitative evidence based on data collected from 94 Consortium members and analysed through path modelling. Results confirm that: (1) "Prosciutto di Parma" Consortium members have highly and increasingly heterogeneous characteristics, assets and strategies and that (2) higher heterogeneity negatively affects members' agreement on the future level of restrictiveness of "Prosciutto di Parma" PDO as GI and, therefore, the effectiveness of the collective action. These findings highlight managerial and policy implications for both "Prosciutto di Parma" Consortium members and governing bodies of other highly recognized GIs.

Sidali and Scaramuzzi (2014) also investigated the relationship between group heterogeneity and cooperation patterns in GI Consortia. Sidali and Scaramuzzi (2014) focussed on the solution of the problems of quality standardization derived by an increasing heterogeneity and free-riding behaviour among members. This work used a case-study approach and analysed the Parmigiano Reggiano Consortium in Italy. The governance patterns highlighted in this study give evidence of a high internal dynamism within GI Consortia. The study confirms how governance strategies can be implemented to reduce free riding in GI schemes and to re-establish cooperation even through the creation of formal endogenous or exogenous institutions. However, cooperation can stem among homogenous sub-groups as a resilience strategy showing how a formal institutionalization of sub-consortia within a well-established GI common may be successful.

Belletti et al. (2014) analyse, by means of two case-studies related to protected GIs in Tuscany (the PGI Sorana bean PGI and the PDO Tuscan sheep-milk cheese PDO), the strategic decisions that lead firms to decide whether and to what extent to use the protected GI for marketing their products. Results show that firms use the protected GI to attain a wide spectrum of results that are often far away from the expected ones. Besides, the way product specifications has been drawn greatly affects the effects generated by the GI protection. Much of the real use of protected GIs by firms relies on the coherence between firms' characteristics and strategies and product specification, while the different use of the protected GI by firms seems not to depend by entry-barriers linked to costs needed to comply with the product specifications.

Rodrigo et al. (2015) list some more obstacles to successful GI systems implementation in Portugal: firms do not adhere to the PDO/PGI food systems because of the economic and transactions costs of certification, the heavy bureaucracy related to the certification process and the small difference in prices between PDO/PGI products and standard products, within the same reference market. These findings contribute to highlight not only why the interviewed firms do not adhere to the PDO/PGI systems, but also why the Portuguese PDO/PGI domestic market is narrow when compared with the ones of southern EU Member States. The main goals of the EU policy, namely to encourage diverse agricultural production, to improve the income of farmers and to retain population in rural areas, are undermined.

To overcome weaknesses and obstacles to successful GI schemes, Arfini and Capelli (2011) provide a set of variables to identify the potentialities of GI systems on the market, namely production system, reputation level, role of the territory and distribution channel. They also identify clusters of Italian designations which explain what variables act on the strategies adopted and on the related development processes.

A case study on French Wine Supply Chain governance is given by Traversac et al. (2011). They explain why French wine producers venture into direct sale to customers instead of selling in bulk to wine companies. Because asset specificity in wine trade is low on average, large wine producers have an advantage over smaller ones and so are more likely to venture into direct sale of generic wines. By contrast smaller wine producers are more likely to rely on the bulk wine market, which is less risky for them. In addition, the model helps to understand the effect of the State-sponsored certification of grape and wine quality, the PDO system. All other things being equal, producers with vineyards of high reputation (PDO) are also more likely to bottle and sell their wines; this is because they wish to capture the value of the PDO reputation, i.e. the collective brand name capital owned by the farmers. Saving on transaction cost is only one side of the coin: the most educated wine producers can profitably reinvest their knowledge and capabilities into new activities.

Canada and Vazquez (2005) examine the interrelations between the establishment of territorial quality certification systems (PDOs), the diffusion of innovations through local agro-food chains, and the role of institutions overseeing geographical designations. Empirical analysis is applied to olive oil PDOs in Spain and entails a detailed case study of the "Sierra Magina" PDO in Andalusia. Making use of the neo-institutional concept of "organised proximity", and focussing specifically on the problematics of organizational quality, the article assesses characteristics that support the competitive positions of local certified-product production systems. In particular, the authors find that collective organisation and coordination between PDO agents, who are locally responsible for quality assurance and protection, can enhance local competitiveness.

Galli et al. (2011) develop a comparative evaluation of the performance of PDO cheeses: this is done through a multi-criteria ex-post analysis that compares the performance of different PDO/PGI products and evaluate the effectiveness of a number of PDOs/PGIs with respect to five EU Regulation 510/2006 and other related official documents objectives. The performance on these objectives was measured with several indicators and applied to a small pilot study of eleven Italian PDOs in the cheese sector. The results from this small sample indicate that smaller PDOs/PGIs tend to perform better than larger ones and those located in the North perform better than those in the South of Italy. Multi-criteria analysis offers a means to systematically explore the effect of multiple objectives and their weightings on the evaluation of the performance of individual PDOs/PGIs.

3.1.4. The Public Good Theory Approach

Eleven articles were reviewed on the interconnection between public goods provision and GI production systems.

Barjolle et al. (2012) list four type of justification established over the course of time in the social construction of a GI protection policy: trade and competition regulations, control of supply on agricultural markets, territorial and local development, protection of traditional know how and resources. GI protection policy relates to other and wider public policies which may be consistent or contradictory. The authors also look at the impact that GI protection policies may have so as to demonstrate the need for converging justifications in the future. Belletti et al. (2015) agree on the fact that GI schemes can contribute to the provision of public goods but they highlight that this contribution is being threatened by different failures that may occur within both valorization strategies and legal protection policies. The role of the institutions overseeing GIs is crucial in the provision of public goods and they find an important interrelation between the establishment of territorial quality certification systems (PDOs), the diffusion of innovations through local agro-food chains and public good provision, namely local sustainable development.

The case study presented by Bowen (2009) confirms this. Despite the EU has framed its position in terms of the potential for GIs to protect local cultures, to offer a quality guarantee to consumers, and to provide opportunities for value-added agriculture, the case study of GI for tequila in Mexico has shown that GIs may largely fail to benefit the local population and environment. Some conditions are necessary for a socially and environmentally sustainable GI scheme. It is necessary to recognize that the opportunities and constraints faced by producers in developing countries may be very different from the experiences of European GI producers, who benefit from much longer histories of protection. First, the absence of strong GI legislation, and the lack of state involvement in GI policy, are barriers to the development of successful GI schemes as most non-European countries have either just recently passed legislation on GIs, or are in the process of implementing GI policy. Second, more generally, the withdrawal of the state from agricultural and development policy in many developing countries is another potential obstacle.

Furthermore, the inequality, corruption, and collusion between governmental officials and local elites that characterize many developing countries may prevent farmers from developing and sustaining organizational capacity. It will be difficult, if not impossible, for GIs to evolve in a sustainable and equitable manner if farmers are not represented and given the institutional and organizational tools that they need to organize effectively. Finally, national governments should provide a minimum level of information and resources that could help farmers organize.

Bouamra and Chaaban (2013) seek to establish whether public agro-food interventions like food quality labels contribute to the promotion of rural employment. To this end, the paper uses original longitudinal firm and plant level datasets on the French cheese industry to assess the impact of the PDO label on rural employment. Results show that the PDO label has increased the equilibrium number of firms at the national level, because it has created market segmentation reducing barriers to entry. In turn, this higher number of cheese firms resulted in more employment in dairy farms and processing plants at the district level. However, the PDO label exerts pressure on farmers to abide by strict production techniques, which may cause exit due to cost increases. Estimates show that the employment benefits of this label outweigh the potential losses that might arise due to its product specification stringency.

According to Belletti and Marescotti (2015), protection of GIs cannot be considered to constitute an environmental tool *per se*, but it can potentially play a positive role in environmental conservation. GI products, due to their association with specific territories and links to specific local resources, can improve economic, social and environmental sustainability. Therefore, GIs provide the opportunity for territorialisation of environmental-friendly production rules, taking into account local specificities. The paper also argues that public policies can play a significant role in supporting the producers' initiatives towards "greener" GIs. The paper investigates the relationship between the legal protection of geographical indications and the environment, analysing the Product Specifications of the 107 olive-oil geographical indications registered in the European Union. Results indicate that environmental concerns are not considered to a great extent in the Product Specifications; they result more from the need to attain specific product qualities than from any direct interest in the environment. In any case, some relevant differences do exist between EU countries (e.g., France and Italy are characterized by the highest levels of environmental care).

Some other papers, such as Velčovská and Sadílek (2014), Verbeke et al. (2012) and Mancini (2012), deal with another issue related to the provision of public goods, that is consumer information on the characteristics of GI agri-food products. The three quality schemes (PDO, PGI, TSG) aim at providing consumers with information regarding the product origin or

specialty character, in order to enable consumers to make the best possible choices, i.e., choices in line with their preferences. To this end, Verbeke et al. (2012) analyze European consumers' awareness in six European countries (Italy, Spain, France, Belgium, Norway and Poland) and find a higher awareness of PDO as compared to PGI and TSG. In Czech Republic, a survey of 250 consumers was carried out with the purpose to identify awareness and perceived credibility of labels (Velčovská and Sadílek, 2014). Findings reveal a low awareness of labels and that credibility of labels is influenced by consumers' low familiarity with these. The main problem is lack of information. Also Mancini (2012) finds a gap between the information which PDO/PGI labels intend to communicate to consumers and the awareness of Italian consumers on them.

In the EU, legislation on GIs is based on a public, collective and geographical approach and GI are considered as a tool in promoting rural development, protecting local resources and distributing benefits to disadvantaged producers. The EU interpretations of the role of GIs legislation clashes with the US model which is based on an individual, privately owned 'sign' which does not necessarily have any territorial limitation. In other words, the developmental aspects of GIs, so central to their justification in Europe, are less prominent in the US to the extent that the private nature of the right is highlighted in the rationale of the US legislation model. Such a debate is analysed in Grote (2009), which studies the dispute among opponents of extending the use of GIs beyond wines and spirits, discussed under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of the WTO, and those who consider GIs as long-term public rights. Proponents therefore regard GIs as strong tools for protecting their national property rights providing new opportunities to develop their export markets. Opponents, however, consider GIs to be new barriers to trade that impede their export opportunities. This article clarifies these positions and pulls together some evidence on costs and benefits related to GIs versus trademarks/other labels.

3.2. Public Sector Food Procurement: Short Literature Review

What follows provides a concise review of the literature on public sector food procurement, with specific reference to primary school meals. EU policy in this area assumes a link between models of school meal procurement, children's health and nutrition, and the sustainability of agri-food supply chains. The most recent Directive (EU2014/24) gives greater provision for Member States to pursue 'alternative' school meal procurement arrangements, in particular those which encourage greater participation of small firms, and which exhibit higher standards of food quality, nutrition and sustainability. But in practice, what is the evidence that alternative models bring the assumed positive impacts? We address this question by reviewing what existing studies tell us about:

- alternative models of school meal procurement and issues with their implementation
- how alternative models and their impacts have been researched and analysed

In Appendix 1, we also list the different indicators used by existing studies to measure the health/ nutritional, environmental, economic and social impacts of alternative PSFP models, and summarise the evidence of the extent to which they actually bring positive impacts. The review is based on searches of scholarly articles on Web of Knowledge, and web-based searching of reports and related grey literature, from March-May 2016.

3.2.1. *Alternative Models of School Meal Procurement and Issues with their Adoption*

In the literature, numerous claims are made about the positive impacts of alternative models of school meals procurement, in terms of improvements to children's health and wellbeing, local economic development, community cohesion, etc. However, two important caveats are:

- **There is no commonly agreed definition of the composition and features of an alternative PSFP model.** Therefore, the literature refers to a wide range of schemes, programmes and initiatives with different scopes, goals, targets and operating mechanisms. E.g. some schemes aim to increase supply of organic food into schools (regardless of origin and/or size of supplier), while others are built on switching to more local suppliers (which may or may not include SMEs or organic food). Others have a main objective of improving the nutritional composition of school meals, with origin/organic as lesser concerns. Some schemes are based quite narrowly on a switch in procurement arrangements for meals, whilst others are multicomponent programmes embracing wide curriculum change. Therefore, we must be cautious in interpreting results of empirical studies, and avoid generalising the claimed impacts of one type of PSFP model to others with different features.
- With the exception of nutritional literature, **very few studies actually analyse the *impacts* of PSFP models** on health, environment, local economy/society, and those that do lack transparency in reporting their methodologies and data. Particularly rare are studies which assess impacts according to a baseline comparator or control condition. Instead, most empirical studies of alternative school meals models have the orientation of showcasing a successful scheme or programme, contrasting a successful case with an unsuccessful one, or describing problematic issues around the setting up or operation of a scheme or programme. Again this means results have to be interpreted with caution.

Below, we identify the themes commonly raised in the literature as salient to the adoption of alternative school meals models.

- a) **National/regional policies and regulatory frameworks.** Many studies point to this factor to explain why in some countries alternative PSFP models are more prevalent than in others. For example, Sonnino (2009) points to the Italian government's goal of increasing organic food in schools as being the stimulus for the 'revolutionary' school meal system set up in Rome (indeed, Italy is generally held up as a country where supportive policies have stimulated high adoption of alternative models (Morgan and Sonnino, 2006; Nielsen et al., 2009)). Both Soares et al. (2015) and Sidaner et al. (2013) discuss Brazil's longstanding National School Food Programme (PNAE) which since 2009 requires that at least 30% of allocated PNAE funding is used to purchase food produced by family farmers (who make up 84.4% of Brazil farm units). Triches and Schneider (2010) argue that the PNAE programme has generated new market opportunities for farmers, fostered the adoption of less environmentally harmful production techniques and had a positive influence on the healthiness of school food. In Finland, Tikkanen (2013) argues that the national government's policy to increase supply of organic and local food has stimulated shifts in provision in schools, whilst Dedina et al. (2014) contend that as there is no national minimum requirement for organic food in schools in Germany, <5% of school meals contain organic ingredients (which contrasts with >70% in Italy (Nielsen et al., 2009)).

National policies also influence the adoption of alternative models indirectly, by altering incentive structures for actors in the system. Thus in the US, Izumi et al. (2010b) and Kloppenburg et al. (2007) note that national policies which fund on a per meal basis incentivise schools towards menus that are popular and fast-food based rather than nutritionally sound. In France meanwhile, Le Velly and Brechet (2011) explain how national guidelines which proscribe a certain frequency by which meat is served in schools inhibit procurement of organic meat by municipalities, because the rule prevents them from increasing the number of ‘meat-free’ menus to save costs in order to offset the organic premiums. Similarly, the national guidelines which stipulate proportions of fruit and vegetables to be served year-round inhibit municipalities’ sourcing of local produce, because to meet the length of season requirements they must ‘import’ at certain times of the year.

- b) **Institutional and supplier practices.** A second theme in adoption of PSFP models is the extent to which the status and practices of ‘alternative’ suppliers are matched to those of municipalities/schools, and vice versa. In fact, several studies identify incongruences between the traditional preoccupations of municipality procurement functions (emphasis on efficiency, low cost, and not violating EU open competition rules) and SME practices (relatively low-volume, ineffective marketing to public sector, higher-priced, and specialised) (Donald and Blay-Palmer, 2006; Walker and Preuss, 2008). On the SME side, local suppliers are concerned about lack of infrastructure and ability to meet volume requirements (Bowden et al., 2006; Conner et al., 2012; Tikkanen, 2013), and often view PSFP as a low margin business, therefore better suited to larger suppliers with economies of scale (DTZ Piedad, 2005). On the caterer side, Izumi et al. (2010a) and Tsui et al. (2015) find the tendency of US school catering companies to participate in joint commodity buying groups entrenches their position in mainstream channels, inhibiting initiatives to work with local SMEs or alternative suppliers. Furthermore, instead of handling fresh raw produce, these catering companies only have capacity to assemble and pack pre-prepared items. As such, they look for high volumes at very low prices, whereas small local farmers have no processing capacity, produce in small volumes and look for higher margins (Kloppenburg et al., 2007). In France, Le Velly and Brechet (2011) also point out how entrenched practices of farmers and caterers militate against the development of alternative models – farmers are often geared up for ‘export’ outside local areas hence know very little about what local public caterers want, whilst caterers tend to be networked into long supply chains and have very little idea of who local farmers are. Moreover, if contracts are >4 years duration and existing contract holders are intransigent, the process to change can take a long time (Food Matters, 2014; Galli et al., 2014). Many studies imply that it is up to municipalities to trigger shifts in practice, by supporting and guiding local SMEs in the tendering process (e.g., training events, presentations, local advertising of tenders), and creatively wording award criteria (Walker and Preuss, 2008; Thatcher and Sharp, 2008; Tikkanen, 2013).
- c) **Institutional and community cultures.** Several studies convey that adoption of alternative models requires various cultural shifts on the part of municipalities, suppliers and schools. At a basic level, cultural practices may inhibit development of school meals programmes of any sort – e.g. historic preferences for cold packed lunches in Norway (based on a belief that feeding children is the responsibility of parents, not schools) mean that most schools have no on-site cooking facilities (Nielsen et al., 2009). Even in countries with a history of school meal provision, studies argue cultural shifts are needed to open up the new networks and collaborations of actors necessary for improved health and sustainability (Sonnino et

al., 2014; Mercado et al., 2016). For example, the ‘Canteen Committees’ of Italian schools, which bring together professionals and users in new ways (Morgan and Sonnino, 2006; Sonnino, 2009; Galli et al., 2014), or the School Nutrition Councils of Brazil, which have participation of representatives from local government, parents, teachers and communities (Sidaner et al., 2013). Galli et al. (2014) argue these multistakeholder groups co-produce knowledge and outcomes in ways which go beyond what municipalities would be able to do under a traditionally managed approach (provided that good governance is also present). Indeed, successful cases of alternative PSFPs are almost always characterised as having strong goodwill, commitment and trust between actors, which fosters the flexibility and reciprocity necessary to work effectively together. For example, the joint product development initiatives between school kitchen staff and local suppliers in Finland (Tikkanen, 2013), the schools that switch menus at short notice to take surplus produce from local farmers in the Midwest (Izumi et al., 2010a), the Nantes initiative which required school kitchen staff to accept greater labour implications of washing and returning ramekins supplied by a local yoghurt-maker, who in turn invested time in adapting recipes and packaging to suit the tastes of pupils (Le Velly and Brechet, 2011). Authors also convey the role actors’ identity, values and/or approach can play in the addressing of community, societal and ecological issues in PSFP. For instance, Mikkola (2009) argues that sustainability shifts in school catering depend on professional identity/approaches of relevant staff, such that front-line catering managers’ scope to effect change (e.g. increasing local, organic food, or engaging in boundary-spanning activity) is strongly shaped by school catering executives’ orientation towards sustainability. Actors’ values need not be entirely socially-oriented however: Conner et al. (2012) and Izumi et al. (2010a) find that farmers involved in alternative models have a mix of both social and market-based motivations, and in fact it is farmers with primarily market-based motivation who are more willing to shift practices to supply schools (socially motivated farmers enjoy contributing to the community but are less willing to shift their distribution practices, invest and seek to increase proportion of output to schools) (Conner et al., 2012).

In reflecting on all the above, it should be emphasised that very few studies to date give any detail of the ***costs*** of alternative models of PSFP. Although Izumi et al. (2010b) find that with commitment, skill and goodwill, alternative PSFPs may involve reduced costs (e.g. through reduced packaging, opportunistic purchasing of oversized and surplus produce at low cost), the weight of evidence points more to cost increases associated with training catering staff, upgrading or installing kitchens, as well as the extra time, skills and resources required to administer contract tendering and management. Specific concerns about cost of organic food are also evident (e.g., Bowden et al., 2006; Lancaster and Durie, 2008; Dedina et al., 2014; Mikkola, 2009). Sorensen et al. (2015) note that first steps to source more organic are usually quite straightforward – going for low premium items like milk and potatoes, but if municipalities expand supply beyond this cost increase and there is a greater sustainability trade-off from having to ‘import’ from greater distances to achieve range and longer seasons.

3.2.2. Issues in Researching Alternative PSFP Programmes and Measuring Impacts

Above we highlighted that very few empirical studies evaluate impacts of alternative schemes. With the exception of nutritional studies, those which evaluate the impacts of alternative PSFP schemes are mainly reports commissioned by the programmes’ funding agencies, and apply the Social Return on Investment (SROI) methodology (e.g., Jones et al., 2012; Kersley, 2011; Lancaster and Durie, 2008, Thatcher and Sharp, 2008). SROI analysis

involves: (i) taking key stakeholders' own perceptions of desired outcomes of the programme, (ii) converting these abstract outcomes into tangible impacts that are quantified and measured in transparent way to arrive at an SROI 'score' for the programme, (iii) taking account of 4 types of counterfactual: deadweight (what would have happened anyway without intervention of the programme), displacement (whether the beneficial impacts to certain actors are offset by losses to others), attribution (whether impacts are due specifically to the programme concerned) and drop-off (whether impacts are felt only in short or long term). Overall, the headline from SROI evaluations is that for every £1 additional investment in the school meal programmes, £3-6 is returned to stakeholders in extra value. This is comprised of gains such as cost reductions in treatment of dietary problems, increased revenues from greater uptake of meals, reduced costs of dealing with waste/packaging to landfill, reduced costs of environmental damage through CO2 emissions, greater security of business for suppliers leading to increased local employment, opportunities for new contracts and new business (which reduces costs of unemployment benefits and increases in municipal tax returns).

When researching alternative PSFP programmes, the following conceptualisation issues must be borne in mind:

- Basis of the links between procurement, health and sustainability of school meals. These should be made transparent, particularly given the lack of single definition of an 'alternative' PSFP model, and evidence that the links between promotion of *healthy* diets and *sustainable* procurement may be quite weak (Jones et al., 2012; IFR, 2011).
- Presumed beneficiaries of alternative models. Researchers should articulate who they are and why they should be targets of programmes: e.g., central governments, municipalities, small farmers, catering companies, schools, children, staff, parents. Critical reflection is also needed on where the interests of different stakeholders may be in conflict.

When researching alternative PSFP programmes, the following impact measurement issues must be borne in mind:

- Avoid tautology. For example, in relation to social impacts of alternative models, new actor networks/configurations are sometimes presented as a 'requirement' or input to alternative models, and then sometimes as a benefit/consequence of alternative models, contributing to quality of life. Directions of causality need to be carefully specified to make impact measurement intelligible.
- Avoid indicators which have yet to be defined clearly or quantified/operationalised in the literature, e.g. 'community vibrancy' (Stapleton and Garrod, 2008).
- Undertake assessments with reference to costs and a baseline/comparator condition.
- Consider that indicator selection is not a politically neutral act and should be undertaken with critical awareness of the goals of the institutions involved in the programmes/actions being evaluated (Hezri and Dovers, 2006).

3.3. SFSC: Short Literature Review

In recent years, SFSCs have gained increasing policy attention in view of the beneficial outcomes they are likely to provide for the economy, the environment and the society as a whole (EIP-AGRI, 2015; Galli and Brunori, 2013; Kneafsey et al., 2013; ECLAC-FAO-IICA, 2015). SFSCs are often seen as 'alternatives' to the long and conventional food systems and as key drivers of sustainable development (EIP-AGRI, 2015; Galli and Brunori, 2013).

Despite the significant body of research in this field, it is often the positive elements that are highlighted (Mundler and Laughrea, 2016; Kneafsey et al., 2013). However, the limited and inconclusive empirical evidence on the potential benefits of SFSCs suggests that a more rigorous assessment is required to evaluate their impact on the rural territory and on different agri-food chain actors. Against this background, this brief literature review provides state-of-the-art insights on SFSCs, with the purpose of highlighting the social, economic and environmental impacts of SFSCs. In order to facilitate the impact assessment exercise, which will be carried out in Work Package 7 of the S2F project, the commonly used indicators in the literature also need to be identified.

3.3.1. Definitions and Method

SFSCs cover a whole range of different schemes and initiatives in the value chain which can be seen as an alternative type of governance and organizational structure to the conventional sales of food. Due to the numerous types of SFSCs, a unique and universally agreed definition of SFSCs does not exist (Tregear, 2011; Kneafsey et al., 2013). According to the European Rural Development Regulation (1305/2013) a ‘short supply chain’ is a “supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers” (EIP-AGRI, 2015:5). More generally, SFSCs are normally intended as of those food systems characterised by a direct (or close) relationship between production and consumption, whereby such link is embedded in the local territory⁵.

The term ‘short’ is intrinsic to the definition of SFSCs and presumes a certain proximity, from both a physical and a social perspective. Physical closeness takes into account the travel distance of the product from where it has been produced to where it is ultimately purchased by the end user, with geographical proximity often expressed in terms of food miles⁶. On the other hand, social closeness is reflected in the number of intermediaries involved and which, in sharp contrast to conventional supply chains, is assumed to be minimal (with zero or very few intermediaries). This social proximity reflects the close/direct contact between producer and consumer to interact and exchange information about the product, its origin, the production method and its quality features, but also concerning the ethical and social dimensions of the process, and the cultural identity associated with the region/territory involved (Galli and Brunori, 2013).

Among the most familiar models of SFSCs there are farmers’ markets, direct on-farm sales, consumer cooperatives, box schemes, local farm shops/collective selling outlets, direct internet sales, community supported agriculture, community gardening, direct farm pick-up or pick up your own, ‘grow your own’ initiatives, on-farm consumption, local festivals (agri-tourism) (EIP-AGRI, 2015; Galli and Brunori, 2013; Kneafsey et al., 2013; ECLAC-FAO-IICA, 2015; Italian NRN, 2011). The great variety of SFSCs implies that various classification criteria can be developed, taking to account the number of intermediaries involved, the physical distance / locality and various governance and organisational arrangements (Galli and Brunori, 2013). Based on previous typologies being derived (see Kneafsey et al., 2013; Marsden et al., 2000; Ilbery and May, 2006), the S2F project will demarcate and define three categories of SFSCs, specifically:

⁵ It is due to this reason that, inaccurately, local food systems and SFSCs have often been used interchangeably. However, it is important to bear in mind that ‘short’ may not necessarily be linked to ‘local’, such as in the case of some fair trade schemes (Galli and Brunori, 2013).

⁶ Due to the wide diversity of food systems, there is no optimal physical distance of SFSCs, although for some initiatives a territorial boundary or well-defined geographical area is used as benchmark (Galli and Brunori, 2013).

- a) ‘face-to-face’ systems: producers have direct contact with consumers without any intermediaries (e.g. on-farm direct sales, farmers’ markets, community-supported agriculture, some farm shops);
- b) ‘proximate’ systems: delivery occurs through one intermediary (e.g. box schemes, farm to institution/collective catering system: schools, hospitals, etc.);
- c) ‘local’ systems: more than one intermediary is involved in the transaction (e.g. processed fish sold to local consumers from a local shop).

For the purpose of this literature review we have not attempted to cover all the different typologies of SFSCs, rather the main objective has been to cover the key literature that addresses their impact along the social, economic and environmental dimensions. This literature review was conducted during the period April to June 2016 and consists mainly of peer reviewed journals and ‘grey literature’ including EU-reports, policy briefs, etc. The search is, with some exceptions, limited back in time to the year 2000, but with an emphasis on the years after 2010. We have mainly concentrated the search for studies from Europe, but also retracted relevant contributions from other non-European countries, mainly the US and Canada. For journal articles, we have used search in the databases of Social Web of Science, Science Direct and Google Scholar. In addition to search in the databases, scientists in S2F with good knowledge of the area helped to identify key of journal articles and other non-academic reports. For this deliverable we have also relied on previous reviews of the literature on SFSCs, more specifically Mundler and Laughrea (2016), Kneafsey et al. (2013), Galli and Brunori (2013).

As there is no clear definition of SFSCs and the term covers a whole range of different schemes, we have used a variety of search terms including Short Food Supply Chains, Local Food Systems/Networks, Alternative Food Systems/Networks, Direct Sales. These keywords were in turn combined with terms related to indicators in the three key dimensions covered by the S2F project. For instance, for the social dimension we have searched for ‘social capital’, for the economic dimension: ‘local multipliers’ and ‘value added’, and for the environmental dimensions: ‘carbon footprint’ and ‘food miles’.

3.3.2. *Limitations and Challenges in Studying the Impacts of SFSCs*

Previous literature reviews highlight the lack of a systematic and comparative impact assessment of SFSCs at different scales and contexts (EIP-AGRI, 2015). As suggested by Sonnino and Marsden (2006), one of the key challenges is the inability to access sufficient data which, in turn, prevents a comprehensive assessment of the benefits assigned to SFSCs. Following Kneafsey et al. (2013), the existence of reliable qualitative and quantitative indicators on the impacts of SFSCs is “somewhat patchy”. This is coupled with the lack of longitudinal studies which establish baseline data. Moreover, the extant empirical evidence is mostly based on single case studies, without the comparison to suited conventional counterparts, and generally focuses on one single sustainability dimension instead of assessing the social, economic, environmental (and nutritional) impacts as a whole (Galli and Brunori, 2013; Vecchio, 2010).

In this respect, Mundler and Laughrea (2016) point to the hybridity of SFSCs and the fact that actors may engage in both SFSCs and conventional food chains simultaneously. The authors also stress that it is complicated to assess the different impacts on the economic, social and environmental dimensions because actors will benefit differently within the supply chain. For example, shall the economic impacts be assessed by the benefits they provide for farmers or by the cost paid by consumers? Moreover, research on SFSCs is often based on case studies

that are restricted to a particular region, with only few drawing comparisons between different countries or sectors. Also different environmental benefits associated with SFSCs have generally been analysed in isolation from each other, and with very few studies attempting to characterise them as a whole in a systemic fashion (Mundler and Laughrea, 2016).

It is clear that a rigorous impact assessment necessitates appropriate indicators. Nonetheless, studies on the economic benefits of SFSCs often rely on qualitative survey methods, such as questionnaires completed by farmers or other agri-food chain actors, which capture their own perceptions of economic benefits and motivations rather than an actual measurement of economic performance of the farm or the local business (Kneafsey et al., 2013; Galli et al., 2015). Moreover, several studies of environmental impacts of SFSCs use Life Cycle Assessment (LCA) which rarely are valid outside the system of study (Mundler and Laughrea, 2016). This is because LCA usually focuses on single products rather than the whole farming and distribution system. Moreover, the validity of LCA depends much on the functional unit and boundaries of the system investigated which must be taken into consideration when comparing different types of food production and consumption (Edwards-Jones et al., 2008). Thus interpretation of any analysis needs to take into account which components of the food system (e.g., production, processing, transport, storage, retail, consumption) have been included and excluded.

In order to draw robust conclusions regarding the impacts of SFSCs a systematic assessment should be carried out to unravel the complexity and diversity of different food systems. These should be examined in a comparative framework (short versus conventional food supply chains), ideally over a longer time span. Moreover, different dimensions of sustainability may not necessarily be complementary, so that a trade-off between different priorities and conflicting interests may exist. Lastly, the degree of impact will vary among different types of SFSCs, their products and locations, and the impact on different agri-food actors may not be homogenous (Galli and Brunori, 2013). Therefore, it is clear that a rigorous evaluation of the different impacts of SFSCs remains a challenging task.

3.3.3. What are the Potential Positive Impacts of SFSCs on the Territory?

As previously mentioned, the literature tends to highlight the numerous and positive benefits of SFSCs, as they would contribute to a greater sustainability of the local territory (at the individual, community and regional level) and in all its dimensions: social, economic, environmental and nutritional (Kneafsey et al., 2013; Galli and Brunori, 2013; EIP-AGRI, 2015; EC, 2014). In particular, SFSCs would:

- i) improve the market access of small producers;
- ii) increase the returns to local producers;
- iii) provide consumers with more healthy and nutritious food;
- iv) strengthen regional identities;
- v) stimulate cooperation, trust and fairness between different agri-food actors;
- vi) 'green' the entire food system

In this sense, SFSC can be perceived as drivers of sustainable development, producing added value in the territory and fostering job creation. The different impacts across different dimensions are thus discussed in the following sub-sections.

3.3.4. Social Impacts: Social Capital, Territorial Cohesion, Governance and Power Relations

Kneafsey et al. (2013) report a range of positive social benefits associated with retained local control of the economic activity (endogenous development) based on cooperative, fair and

ethical principles. SFSCs are often considered to increase transparency and trust and are characterised by the socially embedded relations between the different actors. Fairness goes beyond the notion of a ‘fair’ price as it also implies the recognition and appreciation of farmers’ work (Galli and Brunori, 2013). As suggested by Galli and Brunori (2013) the close interaction between producers and consumers brings about intangible benefits such as

“[...] mutual knowledge and respect of each other; trust; solidarity and compromise between producer and consumer; acknowledgment of the quality features of the food product and the conditions of production; ethics and values; (re)connection with traditions and identities; collective civic engagement in the local food system; intensity and directionality of information flows; balance of power between the actors.” Galli and Brunori (2013:5).

For instance, the evidence suggests that in many cases, due to increased trust from consumers, the need for quality certificates and labels may also be reduced (Lamine, 2005). Within SFSCs the evaluations of food quality and justifications of prices are based on direct, face-to-face or proximity (one or few intermediaries) exchanges between producers and consumers (Ponte, 2016; Renting et al., 2003; Holloway et al., 2007). Thus, values such as mutual trust and respect are essential in these types of relations (Kneafsey et al., 2013; Hinrichs, 2000; Kirwan, 2006; Mount, 2012; Sage, 2003; Tregear, 2011). The importance of SFSCs on citizen mobilization (Terragni et al., 2009), the reconnection/new relationships between consumers and producers as well as consumer education (Torjusen et al., 2008) are all emphasised. Nonetheless, following Tregear (2011), the consumer perspective is often neglected in studies on SFSCs or alternative food networks, which generally tend to focus on the production/supply side.

Moreover, fairer power relations generally characterize SFSCs in contrast to conventional food systems, whereby passive and subordinated producers regain active control over the valorisation of the distinctive quality of their products and become governors and equal owners of the food chain (Schermer et al., 2011; Galli and Brunori, 2013). The minimal number of intermediaries involved in SFSCs imply that producers can enjoy a higher degree of independence in production and marketing decisions (Wittman et al., 2012; Schermer et al., 2011).

In the context of social impacts, a key concept is that of social capital, which is often used to highlight how SFSCs foster a sense of community. Social capital is developed through the creation of new networks in local communities engaging both farmers and non-farmers, in rural and (peri-) urban areas (Mundler and Laughrea 2016; Sharp and Smith, 2003; Wiskerke, 2009). Moreover, it has been suggested that SFSCs encourage inclusion and equality. For instance, SFSCs are seen to benefit and support small farm development. Some studies indicate that small farms are more engaged in direct sales than are medium and large farms (Mundler and Laughrea, 2016). Moreover, SFSCs seem to promote gender balance by attracting women in farm employment while contributing to women’s independence in contrast to industrial agriculture, where women generally tend to be excluded. Similarly, women also have a strong presence in the marketing activities within SFSCs (Mundler and Laughrea, 2016) and from the consumer side (Vittersø and Jervell, 2011). Nonetheless, this mainly reflects the traditional role of women inside the household, as they are normally responsible for the food purchases within the family.

Recent literature point to the fact that successful regions are best described by so-called neo-endogenous development meaning that they are not solely relying on resources within the region, but also exploit non-local resources (Hubbard and Gorton, 2011). SFSCs are often seen as important initiatives fostering or contributing to this type of rural development

(Wiskerke, 2009). The impact on territorial and social cohesion is also crucial in this context, as SFSCs are expected to develop and strengthen cooperation between different actors in the local territory/region, including local farms, consumers, and the tourist industry (EC, 2014), and thus foster rural-urban linkages. These, in turn, have the benefit of supporting the knowledge and skills of many small farmers and SMEs, increasing the education and awareness of consumers, eventually strengthening their cultural/regional identity and sense of security (Galli and Brunori, 2013). In this sense, SFSCs can help revitalise and empower the local community, instilling a sense of pride and belonging to a certain area and community (Peters, 2012).

Nonetheless, one major critique is that most of the studies often emphasise the positive valuations from SFSCs participants, while having a blind spot for negative impacts (Hinrichs, 2000). However, more recent studies seem to undertake a more critical and nuanced approach to the pros and cons of SFSCs related to the social dimension. For instance, SFSCs are not free from asymmetrical power relations between consumers and producers. Although some SFSCs arrangements have specific social aims such as food security for urban low-income dwellers, several studies have emphasised the rather elitist nature of such arrangements where the participants, both farmers and consumers, often belong to the same socio-economic category, i.e. sharing the same values and coming from a generally well-educated/middle class background (Hinrichs, 2000; Mundler and Laughrea, 2016). Moreover, the ethical dimensions of any food system are not always attributable to the scale at which it operates, and there appears to be little.

3.3.5. *Economic Impacts: Value Added and Local Multiplier Effects*

In terms of economic impacts, Mundler and Laughrea (2016) and Kneafsey et al. (2013) list several potential benefits for the farmer/producer from participating in SFSCs, such as a better redistribution of the value added and less sensitivity to market risks, through the reduction in the number of intermediaries, increased sources of income, product diversification, and a better control of prices. This particularly concerns small and medium farms as, generally, they do not have easy access to conventional food chains (Gorton et al., 2014), due to high costs of production (as they lack economies of scale), stringent requirements (e.g., in terms of volume, quality and safety standards, continuity in delivery, logistics), and other organizational barriers. It is in this sense that it has been suggested that a fair access to the market would improve the economic viability of many small scale producers.

More generally, the economic value added for the farmer/producer involved in SFSCs results from the possibility to gain price premiums on the produce which is sold directly to the consumer (Wittman et al., 2012). Whereas some studies point to a conflict between value added for the producer and costs for consumers (Brown and Miller, 2008), other studies show that SFSCs may in fact lower the prices for consumers while adding value to the producer at the same time (Kneafsey et al., 2008). Mundler and Laughrea (2016) conducted price surveys for ten products in three different territories (in Quebec), and found that prices in SFSCs are not higher than prices in conventional stores when comparing products of the same quality. Following Kneafsey et al. (2013) there is limited evidence on whether SFSCs increase or decrease farm incomes. Some studies suggest that the majority of farms participating in SFSCs are also parts of longer value chains (Brown and Miller, 2008). Often, it is the participation in conventional supply chains that supports the activity directed to the SFSCs or, in some cases, the farmer depends on other sources of income outside the farm (Mundler and Laughrea, 2016). Therefore it also becomes problematic to define SFSCs as alternatives to the conventional food system, because actors may be involved in both (Tregear, 2011; Vittersø et al., 2005).

The value added from participating in SFSCs is, sometimes, often more related to other personal and social values than the monetary revenues stemming from the sale of products through SFSCs. Some authors even suggest that participating in SFSCs is, for some farmers, a matter of ‘self-exploitation’, to stress the fact that the prices received do not adequately compensate the efforts invested (Mundler and Laughrea, 2016). Nonetheless, certain types of SFSCs benefit from a long-term commitment from consumers. This would contribute to reduce the economic uncertainty resulting from variations in production and sales volumes (Galli and Brunori, 2013). For instance, for some box schemes, such as the Solidarity-based Purchase Groups (GAS) in Italy, consumers are committed to advanced payments which ensure that producers sell their produce at a given pre-arranged price (Brunori et al., 2011).

Particularly important in terms of economic impacts are the local multiplier effects. In other words, SFSCs may be beneficial for the local community as that the circulation of money remains local (Mundler and Laughrea, 2016; Wittman et al., 2012; Peters, 2012). Kneafsey et al. (2013) report that measurements of multiplier effects to the local community of SFSCs are more studied in North America rather than in a European context. Studies of US farmers markets have shown an economic multiplier effect between 1.58 – 1.78 (Otto and Varner, 2005; Henneberry et al., 2009). The same studies show a local multiplier effect on employment between 1.41 – 1.45, meaning that for every full-time equivalent job created at farmers’ markets, a further half of a full-time equivalent job was supported in other sectors of the economy, predominantly in agriculture and the retail sector. Other studies also suggest that SFSCs may contribute to multiplier effects through supporting other businesses and activities, not least tourism.

However, whether SFSCs activities are drivers for – or a result of – positive rural development remains an empirical question (Kneafsey et al., 2013). Moreover, the main criticism emerging from the literature underscores the failure to obtain reliable data, because of the many localised case studies, and thus provide generalizable conclusions (Kneafsey et al., 2013; Galli et al., 2015; Vecchio, 2010).

3.3.6. *Environmental Impacts: Packaging, Transportation, CO₂ Emissions, Energy Consumption, Food Waste*

Turning to the environmental dimension, SFSCs are expected to have numerous positive impacts, among which, reducing the use of fossil fuel, chemicals and other polluting methods in production, the intensive methods of production affecting biodiversity, the amount of packaging, CO₂ emissions, energy for storage, food losses and waste (Galli and Brunori, 2013; EC, 2014; Friends of the Earth Europe, 2016). However, for a comprehensive assessment these specific impacts should be considered at each stage of the supply chain, namely production, processing, packaging, distribution, cooling, transport and waste (Galli and Brunori, 2013). For instance, the close proximity between producer and consumer in SFSCs would imply a short transport distance for the product, although this may not always be the case due to, *inter alia*, logistics and lack of facilities such as storage, processing plants, retail outlets (Galli and Brunori, 2013).

Overall, the empirical evidence provides limited support for these claims with relatively few papers reporting on the environmental impacts of SFSCs. Food miles and carbon footprint are among the most common environmental indicators for impact assessment and are often mentioned to define the sustainability of a food system. Nonetheless, it has been argued that the concept of food miles, which measures the transport distance, may not be an adequate indicator, as some local products may have greater carbon footprints than products imported from abroad. Hence, more recent studies have shifted to carbon footprint or energy use as main indicators, which are most commonly measured through LCA. This technique allows for

the assessment of environmental impacts associated with a product life cycle, i.e. from ‘cradle to cradle’, i.e. including all stages within the chain such as production, processing, storage, distribution, consumption and waste handling. However, due to extensive data requirements this is not always possible, so that food products are often only evaluated from ‘cradle to gate’, and thus before being transported to the end user.

Other key factors considered in the literature include the following: the amount of non-renewable resources used for processing, transport and storage; the biodiversity of the landscape; the adoption of chemical inputs; the use of packaging and other food waste (King et al., 2010; Mundler and Laughrea, 2016; Galli and Brunori, 2013). For instance, it is widely recognised that many SFSCs use less packaging than supermarkets. Bread, fruit and vegetables are commonly sold without any packaging and other products, such as dairy, drinks and beverages can be sold in reusable glass containers or through ‘bring your own container’ initiatives. Less packaging and the reduced use of food processing for SFSCs also save energy and resources.

Mundler and Laughrea (2016) emphasise the little agreement in the literature over the environmental impacts of SFSCs. The complexity in providing a real picture on the environmental dimension of SFSCs can be a consequence of the trade-offs among different priorities. For instance, packaging has a function to protect and preserve the perishable food products and thus avoid further food waste. Moreover, consumers’ driving activity to and from the local retail outlet or pick-up point (box scheme) can be more “carbon intensive” compared to the ordinary shopping. In this respect, the organization of distribution within the SFSCs is thus critical for the environmental impact in terms of CO₂ emissions (Mundler and Laughrea, 2016). Overall, a more holistic approach using a wide range of different indicators should be employed to provide a clear picture on the environmental dimension.

3.3.7. *Nutritional Impacts and Quality Perceptions*

Although the S2F project focuses specifically on the social, economic and environmental impacts of SFSCs, for completeness it is also worth discussing nutritional impacts and quality management considerations, which are particularly important for a better understanding of the demand side, in terms of consumer behaviour, dietary choices and other food-related health issues. Based on the literature review from Galli and Brunori (2013), SFSCs are often regarded as superior to conventional food system, in terms of food quality, since they provide: a healthier and safer composition of the food content with higher quality ingredients (e.g., less saturated fatty acids), less additives and preservatives; more flavour and taste; lower utilization of chemical inputs (e.g., herbicides and pesticides); good quality management practices (e.g., traditional, extensive, organic). With respect to good quality management practices, and with ethical and social considerations aside, highly intensified production systems have received particular criticism from a food safety perspective, especially following major foodborne disease outbreaks.

The fact that products in SFSCs (often) travel shorter distances, imply that they are fresher, riper and entail less needs to contain preservatives or be extensively processed, implying superior nutritional benefits. However, there seems to be insufficient empirical evidence in support of this claim (Galli and Brunori, 2013). However, it cannot be neglected that traceability can be more efficiently monitored in SFSCs which has increased consumer awareness and concerns towards more sustainable food choices and healthy diets.

Some studies based on consumers’ perceptions find that customers participating in SFSCs first and foremost are taken up with the freshness and taste and other intrinsic and visible qualities of the products, rather than credence qualities such as local, organic or animal-

friendly production. In this respect these consumers do not stand out from customers in ordinary supermarkets (Vittersø and Jervell, 2011; Wheatherell et al., 2003). On the other hand, consumers participating in SFSC schemes, to a greater extent, also value the ‘social’ experience of visiting a farm or a farmers’ market, and the possibility to get information directly from the producer as well as having the direct opportunity to supporting local produce. Thus, SFSC schemes are often seen as “hybrid” consumption spaces serving a multitude of purposes for the consumers in comparison to conventional food stores (Sonnino and Madsen, 2006; Vittersø and Jervell, 2011). Other studies show that these different qualities, the physical, intrinsic and credence aspects, may not be separated, but are regarded in relation to each other and form a coherent set of conventions for both consumers and producers (Murdoch & Miele, 1999).

3.4. Consumer Studies: Short Literature Review

3.4.1. Selection of Studies

We have conducted a literature review relating consumer perception, response to information, and willingness to pay (WTP) with respect to food quality labelling schemes. The review covers studies which identify market segmentation of consumers buying and willing to buy food that is promoted in relation to a multiplicity of existing FQS. In many of these studies the underlying questions of “who are these consumers”, “why do they buy certain products” and “which barriers appear to prevent respective purchasing decisions” are quantitatively investigated. At EU level, FQS refer to the certification of regional quality assurance in the European food industry (Council Regulations (EEC) 2081/92 and (EEC) 2082/92) and the framework for organic farming (Council Regulation (EEC) 2092/91). However, in addition to EU schemes, local, national and international food quality certification schemes exist (e.g., Fair Trade at the International level; various animal welfare and local/regional labels at the national and regional level). The relatively large number of existing consumer focused studies, investigating FQS using various methodologies and relating these at times within well-structured paradigms, appears to be progressing fruitfully towards discovery of convergent claims.

This review is limited to studies published since the year 2000 and to the following four categories of FQS: fair-trade, animal welfare, organic and regional/local. The latter includes studies focusing on the EU-labels PDO, PGI and TSG but also labels at the national and regional level.

We used the following selection criteria for the literature to be included in this review. First, in relation to studies considering promotion by quality labelling schemes since 2000, we conducted a search in Google Scholar with combinations of the words fair-trade, animal welfare, organic, regional, local, PGI, PDO, TSG, quality food with one of the following terms behaviour, perception and WTP and with the term consumer. Second, we then checked the abstracts to narrow down the research to those focusing on the FQS areas previously identified (fair-trade, animal welfare, organic and regional/local), eliminating those studies that dealt with associated topics such as GMO. In a third step we checked the reference list of the studies to identify additional research in the area. Table 5 provides a detailed overview on the theory, method, products and country coverage as well as the main results of each study but also the limitations and research needs identified in the various studies.

3.4.2. Country and Product Coverage

Table 5 shows that although some differences exist depending on the food quality domain that is analysed, most studies focus geographically on one or several EU countries, followed by studies from other developed markets, especially the US and Canada (e.g., Lee et al. (2013))

and in a few cases also research from emerging markets (e.g., Paul and Rana (2012)). The fact that the majority of studies concentrate on European countries reveals that the topic of FQS from the consumer perspective seems to be especially relevant in Europe.

Product coverage reveals a heterogeneous picture in the research of this review. Consumer studies investigating food promoted by fair trade labels concentrate on a very narrow product range with coffee being the products investigated in most studies. This is not surprising as coffee has the largest relevance in the fair trade market. Studies on animal welfare, by nature, refer to animal based products, but are in most cases not specific in that they do not focus on one or several specific products. The product range considered in organic and regional consumer studies is much broader, though especially many of the earlier studies consider unprocessed products.

3.4.3. *Data and Methods Used*

Table 5 provides an overview regarding data acquisition and analytical methods used in the studies included in the literature review. The table reveals that for the areas of food quality animal welfare and organic production two review articles, respectively, have been published with one (animal welfare) being based on a meta-analysis. Table 5 also reveals that most consumer research studies around food quality are based on primary data indicating on the one hand the relative ease regarding data acquisition and on the other hand the difficulty in relying on secondary data, that are in general not optimal suited for the own research question. Consumer studies in the area of food quality schemes have been primarily based on quantitative research. Only eight of the 63 publications considered in this review rely on qualitative research, such as focus group discussions (3), in depth interviews with consumers (2), workshops (1) and expert interviews (1). In fact, there exist no qualitative study with the focus on the local/regional dimension or fair trade.

Quantitative studies make primarily use of face to face surveys followed by online surveys. The latter seem to have gained greater relevance in recent years. However, we can also observe considerable differences depending on the quality area analysed, e.g., standalone face to face surveys play no role in the consumer studies focusing on animal welfare issues. Table 5 also indicates that the analytic method applied determines to some extent the survey method. Online and mail surveys which allow for a greater ease in acquiring larger sample sizes are more often used in combination with mathematical modelling procedures such as Structural Equation Modelling (SEM).

The studies considered in this review use a range of different empirical methodologies (see Table 5) with most of the methods being applied in all quality areas investigated. Naturally, no unifying theory for the sustainability construct exists in consumer behaviour, and critical focus is often given to objectifiable claims regarding information content, presentation, price, or some categorical sub-feature of the investigated promotion domain or regional aspect of study. Nevertheless, some differences in these general applications can be stressed: it appears for example that the individually differentiated domains are differently advanced in their measures, given perhaps natural features of the domains themselves. In relation to fair-trade, it has already been noted that coffee is a well-studied product, and it also seems that there is a greater convergence towards operationalized constructs compared to some of the other domains such as animal welfare or regional products.

Table 5 Overview of Consumer Studies

		Food quality area discussed in paper			
Type of research	Analytic methods applied	Animal Welfare n=17	Organic n=18	Local/ Regional n=17	Fair-Trade n=11
Secondary Data					
Review Articles	Total of which applying - Meta Analysis - Other methods	2 Lagerkvist and Hess (2011) Napolitano et al. (2010)	2 Yiridoe et al. (2005); Hughner et al. (2007)		
Surveys	Total of which applying - Regression Analysis - Other methods	2 Verbeke (2009); Martelli (2009)	0	1 Grunert and Aachmann (2016)	0 0 0
Primary Data					
Qualitative Research					
Focus group discussions	Total of which applying - Content Analysis - Other methods	2 Harper and Henson (2001) Bennett et al. (2002)	1 Aarset et al. (2004) 0	0 0	0 0

In depth interviews with consumers	Total of which applying - Content Analysis	2 Harper and Henson (2001); Schröder and McEachern (2004)	0 0	0 0	0 0
Workshop	Total of which applying - Content Analysis	1 Harper and Henson (2001)	1 Hamm et al. (2011)	0	0
Expert interviews	Total of which applying - Content Analysis	1 Franz et al. (2010)	0 0	0 0	0 0
Primary Data					
Quantitative Research					
Online Survey	Total of which applying - Factor Analysis - Cluster Analysis - Regression Analysis - SEM - Contingent Valuation - Other methods	6 0 Vanhonacker et al. (2007) 0 0 Nocella et al. (2010); Kehlbacher et al. (2012) 0 Vanhonacker et al. (2007); Grunert et al.	1 0 0 0 0 Hamm et al. (2011)	4 Lorenz et al. (2015) 0 0 Lorenz et al. (2015) 0 Lorenz et al. (2015); Nessel (2011)	4 0 De Pelsmacker et al. (2005) Grunert et al. (2014) Balderjahn and Peyer (2012) 0 Franz et al. (2010)

		(2014); Weinrich et al. (2014)			
Online survey incl. experiment	Total of which applying - Conjoint Analysis - Discrete Choice Analysis	1 0 Lagerkvist et al. (2006)	0 0 0	0 0 0	3 Balderjahn and Peyer (2012); De Pelsmacker et al. (2005) Basu and Hicks (2008)
Mail Survey	Total of which applying - Factor Analysis - Cluster Analysis - Regression Analysis - SEM - Contingent Valuation - Other methods	1 0 0 0 0 Kehlbacher et al. (2012) 0	5 Shepherd et al. (2005) 0 Shepherd et al. (2005) Honkanen et al. (2006) 0 Honkanen et al. (2006); Magnusson et al. (2001)	1 0 0 0 0 0 Brown (2003)	4 De Pelsmacker and Janssens (2007) De Pelsmacker et al. (2005) 0 De Pelsmacker and Janssens (2007) 0 De Pelsmacker and Janssens (2007)
Mail survey incl. experiment	Total of which applying - Conjoint Analysis - Discrete Choice Analysis	0 0 0	0 0 0	0 0 0	1 De Pelsmacker et al. (2005) 0

Telephone Survey	Total of which applying - Factor Analysis - Cluster Analysis - Regression Analysis - SEM - Contingent Valuation - Other methods	2 0 0 0 0 Kehlbacher et al. (2012) Mayfield et al. (2007)	1 0 0 Didier and Lucie (2008) 0 0 0	1 0 0 Jekanowski et al. (2000) 0 0 0	1 0 0 Didier and Lucie (2008) 0 0 0
Telephone survey incl. experiment	Total of which applying - Conjoint Analysis - Discrete Choice Analysis	0 0 0	0 0 0	0 0 0	0 0 0
Face to face Survey	Total of which applying - Factor Analysis - Cluster Analysis - Regression Analysis - SEM - Contingent Valuation - Other methods	0 0 0 0 0 0 0	13 Paul and Rana (2012) Paul and Rana (2012); Janssen et al. (2009) Batte et al. (2007); Didier and Lucie (2008); Paul and Rana (2012); Müller and Gaus (2015) Skuras and Vakrou (2002) Conner and Christy (2004) Fotopoulos and Krystallis (2002); Janssen et al. (2009); Lee et al. (2013); Müller and Gaus (2015)	14 Klößner et al. (2013) 0 Burchardi et al. (2005); Klößner et al. (2013); Loureiro and McCluskey (2000); Van der Lans et al. (2001) Van Ittersum et al. (2007) Basu and Hicks (2008); Burchardi et al. (2005); Klößner et al. (2013); Loureiro and Hine (2002) Burchardi et al. (2005); Darby et al. (2006); Klößner et al. (2013); Loureiro	8 Van Loo et al. (2015) 0 Didier and Lucie (2008); Hainmueller et al. (2014) 0 Loureiro and Lotade (2005) Arnot et al. (2006); Langen and Adenauer (2013); Batte et al.

				and McCluskey (2000)	(2007); Conner and Christy (2004)
Face to face survey incl. experiment	Total	0	2	4	2
	of which applying				
	- Conjoint Analysis	0	0	Van der Lans et al. (2001)	0
	- Discrete Choice Analysis	0	Loureiro et al. (2001); Janssen et al. (2009)	Darby et al. (2006); Menapace et al. (2011); Profeta et al. (2012)	Van Loo et al. (2015)
- Eyetracking	0	0	0	Van Loo et al. (2015)	
Auction Experiment	Total	2	1	3	0
	of which applying				
	- Descriptive Analysis	Napolitano et al. (2008)	0	Umberger (2003)	0
	- Regression Analysis	0	0	Umberger (2003); Mabisio et al. (2005)	0
- CV Analysis	Gracia et al. (2011)	Conner and Christy (2004)	0	0	

Source: authors' elaboration

3.4.4. *Thematic Issues Emphasised*

The studies considered in this review generally attempt to map measures of consumer perception and knowledge of food quality products to a WTP. Often the role of information, but also demographic criteria are considered critical elements of the mapping, showing significant statistical correlations to how consumers report on their behaviour and preferences. WTP is the most commonly investigated construct in the different studies (animal welfare: 9 studies; organic: 6 studies; local/regional: 8 studies; and fair trade: 6 studies), often being identified through random utility theory in the applied measure. With respect to specific EU labels the PGI is the single label most frequently investigated.

3.4.5. *Main Findings*

The review shows that consumers are concerned about various dimensions covered by food quality labels, and also that this concern is in general not a priority in their food choice. Results reveal that consumers' interest in food quality labels is moderate compared to other product attributes, such as food safety, quality, healthiness and taste, leading perhaps also to discrepancies between reported measures and actual behaviour, given priorities may invoke relegation of interests during actual purchasing decisions. In addition, there is a lack of knowledge (e.g., Grunert et al. (2014), Yiridoe et al. (2005), Conner and Christy (2004), Hamm et al. (2011), Harper and Henson (2001), Weinrich et al. (2014)) and many consumers are confused given the large number of food quality labels in the market and the difficulty in differentiating between those. In addition, the lack of trust is a barrier with respect to choosing quality labelled products (e.g., Müller and Gaus (2015), Weinrich et al. (2014)). Several studies identify different segments of consumers, with some groups showing more knowledge, interest and a higher WTP for quality labelled products (e.g., Aarset et al. (2004), De Pelsmacker et al. (2005), Vanhonacker et al. (2007)).

3.4.6. *Future Research Needs*

The review reveals a lack of qualitative research on consumption practices that might provide additional insights about the role and meaning of quality labelled products for consumers in everyday household routines. In this respect, it is worth noting that pertaining to system analysis, the categories "fair trade, animal welfare, organic, regional/local" are not singularly identifiable, and that among the significant challenges of research is that of identifying specific meaningful relations between concepts that are believed intuitively or representatively related and qualitative system descriptions. Ethnographical studies and multi-dimensional study designs as planned in the proposal may be of particular use in this respect.

Only few studies so far provide a cross-country comparison to investigate cultural differences in the perception and behaviour regarding food labelled by FQS. Understanding cultural factors could provide information to what extent 'success stories' in one region/country can or cannot be reproduced in others.

Because it is likely true that many of the criteria applying to sustainable consumption have counterparts in the individual domains being studied, it is therefore perhaps also reasoned that differences in constituency of who are the representative consumers in each domain is conceptually entwined with the question of "how do we identify subjective reasons for behaviour?". In this respect a perhaps fruitful path for further development in the combination of multiple measurement domains, e.g. through experiments under inclusion of neurophysiological measurement, extensive qualitative inquiry alongside with diverse quantitative measures, which is central to the proposal that accompanies the review.

4. CONCEPTUAL APPROACH FOR STRENGTH2FOOD

Preserving and developing local production systems for FQSs means also adopting a sustainable logic that, in turn, complies with the “virtuous circle” approach by sharing the same objectives and areas of intervention among all the stakeholders involved. A similar “virtuous cycle” can be promoted directly by public institutions arranging suitable tenders for the public procurement of food items, over the territory they administer. Furthermore, consumer interest in more sustainable food (systems) has spurred interest and (volume and value) growth in Short Food Supply Chains, which return larger shares of income to the farmers.

Links with the S2F project are represented by considering the territory and the bounded value food chain (i.e., supply chain) as LAFS and by sharing the implication of this concept in terms of sustainability and of possible intervention mechanisms. The LAFS concept provides the logical tools for addressing the identification and demarcation/definition of the area of interest, in which research activities will be carried out. Following the aforementioned criteria, each FQS will be defined as:

- For GI products (i.e., PDO, PGI and TSG), the LAFS is represented by the municipalities defined by the official code of practice, that is part of the EU regulation published on the DOOR database;
- For organic products, the LAFS is not officially defined and the adopted criteria refers to the region where producers carry out their marketing activities;
- For SFSC products, in the absence of any legislative reference, the definition of LAFS refers to the region that includes the area of production and consumption that are, necessarily, contiguous.

In the real world, different FQS can converge, generating a hybrid FQS framework (e.g., Organic-GI; Organic-SFSC, GI-SFSC; Organic-SFSC-GI). When this happens, the dominant criterion is to define the LAFS according to the GI products. When the latter is not present in the hybrid FQS, identification will be based on the SFSC.

Regarding the S2F project, one can distinguish the link between quality schemes and territory as follows:

- Closed LAFS: all the inputs come from within the territory and all the output is purchased/distributed within the LAFS through local markets. This is the case for SFSC and Short Food Geographical Indications (SFSC-GIs), in other words SFSC-PDOs.
- Mixed LAFS: i) the inputs-buying process is not confined within the territory, while the downstream stage is (GIs-Organic) ii) the upstream stage is bounded within the area, whereas the downstream is not. In this case we have PDOs and SFSCs. Under this system, most of the output is purchased via local markets but part of it is also sold on “domestic” markets (i.e., when consumers are in different regions but with the same market rules, as the EU)
- Open LAFS: neither the upstream nor the downstream stages are bounded, as for PGIs, large-PDOs and Organic production. Most of the output is purchased in distant markets, “domestic” or “global” (i.e., when consumers are in different regions with different market rules, as extra-EU).

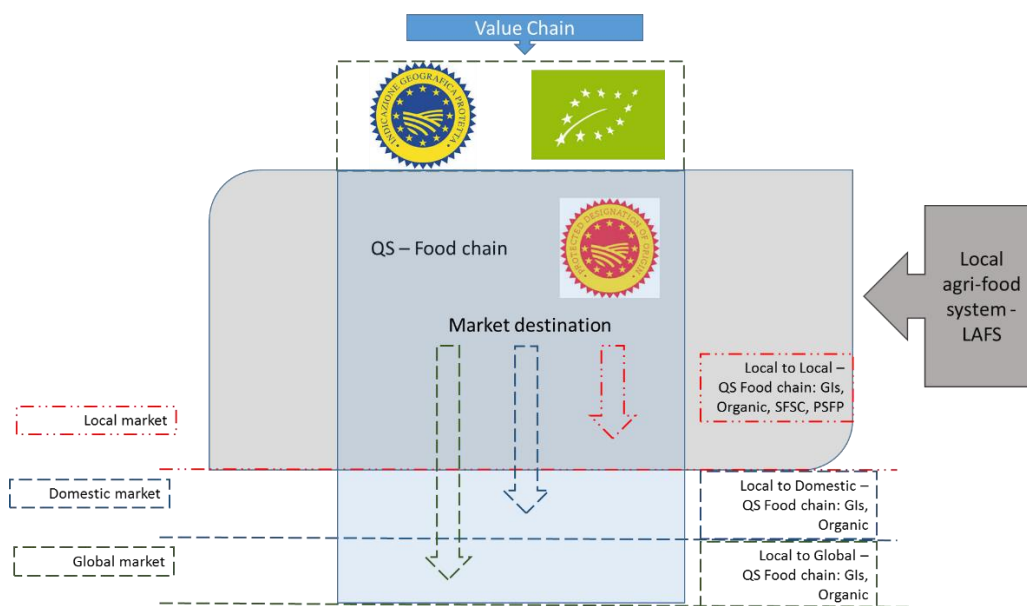
The level of embeddedness of the value chain with respect to the LAFS creates different categories of markets: local to local (i.e., SFSC and some PSFP); local to domestic (i.e., GIs and Organic); local to global (i.e., GIs), allowing for different public and private strategies and different impacts on the territory (Vandecandelaere et al., 2010; Torres Salcido and Muchnik, 2012; Fischer, 2012).

In this framework, GIs, Organic, SFSC and PSFP products can benefit from the LAFS environment (i.e., reputation, institutions and governance actions), as well generate impacts that affect sustainability (see Figure 3). Furthermore, Convention theory and CAW represent important methodological tools, useful to evaluate how quality and management systems contribute to sustainability.

The theoretical approach applied in S2F is already discussed in the literature (Reviron and Chappuis, 2011), and it considers the space generated from the overlapping of two dimensions: i) the territory of the production – observed as LAFS - and the ii) the value chain of the product.

The framework is then suitable for being applied to all FQS considered by S2F. For some GIs, SFSC and Organic products, the value chain will be totally embedded into the “local-to-local” dimension, while for other products the value chain responds to the domestic or global market. Local-to-local value chains require employing different social and natural resources, as well as management strategies when compared to local-to-domestic or local-to-global value chains. Besides, the impacts of the three different value chains on sustainability of the respective local production system will vary considering the type of FQS and products (i.e., fruit and vegetable or processed animal products) and the type of technology. Accordingly, factors that might impact the sustainability of different production systems can be different, depending on the strategies that local actors will adopt for managing economic, social and environmental conditions.

Figure 3 Conceptual Framework for Assessing the Impacts of FQSs



Source: Authors' elaboration on Vandecandelaere et al. (2010).

The same theoretical framework can also be applied for analysing PSFP strategies, where three systems can be defined:

- Closed system: when all the inputs for meal preparation originate from the local production system;
- Mixed system: where only part of the inputs for meal preparation originate from the local production system;
- Open system: where all the inputs originate from domestic and global sources (i.e., outside the LAFS boundaries).

For all the three systems, no matter if they refer to GIs, Organic products or SFSC, their sustainability as well as local producers' economic return, will be affected by marketing strategies and governance actions deployed by local stakeholders and institutions.

The purpose of developing a European quality policy based on GIs and Organic production aims to: i) generate public goods by means of preserving natural resources and the use of traditional and sustainable techniques; ii) provide a better economic return to producers, often SMEs, strengthening the sustainability of the supply chain. Therefore, the more the FQS creates value for the consumer and the whole local production systems, the greater will be the social benefit for all stakeholders, encouraging and strengthening the rural development process (especially in remote areas).

In this context, the objective to “identify the determinants of the sustainability, and variations in the impacts, of different FQS at the food chain and rural area” (Task 5.1) is reached by developing a set of quantitative and qualitative indicators able to capturing the environmental, social and economic impact. Much of the same methodology will be employed to evaluate the impacts of new forms of public procurement and meal provision in selected elementary schools in the countries of interest (Task 6.3) and, with some further adaptations, to evaluate the impacts of SFSC on rural territories while identifying the factors that support or deter their development (Tasks 7.1-7.2). This evaluation will consider the structure of the LAFSs and the related value chains, differentiating whether it is comprised (i.e., the supply chain) within the given territory and, thus, in the market. Quantitative data will guarantee the possibility to observe the magnitude of the variables in different contexts and over time, but, most importantly, will allow for comparing the indicators according to their specific framework (i.e., quality scheme/territory/food chain). Quantitative indicators are defined by using both primary and secondary data, with the latter being collected using existing database(s) that refer(s) to the territorial dimension and, when possible, to the food chain. Primary data will be collected by direct interviews with agents in the chain, when necessary. Both data collection procedures will follow the “index card” approach developed for each indicator and collected in the Methodological Handbook (Deliverable 3.2).

Considering the strong relationships between the territory and food value chain, the analysis - specifically for WP5 - will entail the following steps:

- i) the definition and description of the territory of production (i.e., the LAFS), its structural, institutional and dynamic characteristics related to social, economic and environmental assets;
- ii) the specification of the product and its quality attributes as well as appropriate tools for identifying, protecting and making all these characteristics recognizable (labels);
- iii) the description of the structure, organization and management of the food chain, including the role of intermediate institutions (e.g., producer associations, producer organization, inter-branch organization, consortia);
- iv) the description of the value chain considering those economic elements that characterise the capacity of the chain to generate value and to share revenue among economic agents inside and outside the LAFS.

While the information at steps i) and ii) refer to the territorial level, the economic information entailed in steps iii) and iv) concerns the whole chain.

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APPENDIX 1: EVIDENCE OF IMPACTS OF ALTERNATIVE PSFP MODELS

This Appendix summarises the main indicators existing studies have referred to when assessing the impact of PSFP models. As mentioned earlier, as PSFP models are funded at least partly by public money, their impacts should be calculated against the costs to the public purse. Yet, it is noteworthy that hardly any evaluation studies to date detail costs/expenditure data, or include such data in estimations of impact. Where it is mentioned, this is brief and without any breakdown (e.g., Food Matters, 2014; Bowden et al., 2006; Kimberlee et al.,

2013; Nielsen et al., 2009), although the impression is given that switching to alternative models *does* increase meal costs, Belot and James (2009) is a rare example of a study which does report cost data. It estimates that Greenwich Council spent £1.2m over 5 years (2002-2007) as part of the ‘Feed Me Better’ campaign to improve meals for academic attainment (extra spending on training, equipment, food, parent liaison), for 28k children. Belot and James (2009) say this represented a cost of <£43 per child, concluding that it compared very favourably with other campaigns to achieve similar attainment outcomes. Related to cost is uptake of school meals, as uptake represents revenue generation for schools/municipalities, either directly from parents, or via per-meal subsidies from central government funds. Evaluations generally find alternative models do result in increased uptake of meals, normally of c2% magnitude (Teeman et al., 2011; Lancaster and Durie, 2008; Bowden et al., 2006; Kimberlee et al., 2013), though sometimes higher rates are found (e.g., Food Matters, 2014). Finally, also related to costs is plate waste, another measure that existing studies rarely take into account even though rates may be as high as 40% (Nielsen et al., 2009).

a) Health/Nutritional Impact of Alternative PSFP Models

Colic Baric et al. (2015) point out there are many approaches to measuring health/nutritional impacts including 24hr dietary recall, food frequency questionnaires, and food composition tables. Niebylski et al. (2014) review 19 evaluations of school healthy eating programmes, and their conclusion is that such programmes are successful in reducing consumption of fat, salt, sugar, etc., and increasing consumption of f+v, a finding also supported by Joshi et al. (2008) and Teeman et al. (2011). Impacts seem to be increased where programmes are multicomponent, featuring educational dimensions. However, few studies use biophysical measures of impact (BMI, weight, blood pressure, etc.), and those that do find little link between healthy eating programmes and obesity reduction, suggesting 1-year intervention period is not long enough (Colic Baric et al., 2015). Taking a different approach under SROI methodology, Lancaster and Durie (2008) evaluation of Food For Life in East Ayrshire estimates medical treatment cost savings from having more children at a healthy weight, and treatment cost savings for subsequent reductions in cancer, CHD and strokes. They also calculate the value of an alternative PSFP model as a health promotion campaign.

Table 6 Review of the Most Relevant Methodologies for Measuring Health and Nutritional impacts

Indicators	Example studies
Rates of f+v consumption of pupils, staff and parents	Joshi et al. (2008), Teeman et al. (2011), Jones et al. (2012), studies reviewed in Niebylski et al. (2014)
Perceptions of freshness, quality of food	Bowden et al. (2006)
Food awareness and knowledge of pupils, staff and parents	Joshi et al. (2008), Teeman et al. (2011), Jones et al. (2012), studies reviewed in Niebylski et al. (2014), Ruge and Mikkelsen (2013)
Biophysical measures (e.g. BMI, blood pressure, weight)	Studies reviewed in Niebylski et al. (2014)
Pupil behaviour and attainment	Belot and James (2009), Ruge and Mikkelsen (2013)
Pupil absenteeism	Belot and James (2009)
Treatment cost savings from reductions in diet-	Lancaster and Durie (2008)

related illnesses	
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Source: Authors' personal elaboration

b) Environmental Impacts of Alternative PSFP Models

Empirical studies often mention environmental impacts of alternative models, but then do not analyse or quantify them specifically. For example, Lehtinen (2012) study of a local potato supplier in northern Finland implies that upstream, the inputs and outputs of this potato production system are very similar to other suppliers. However, because the local supplier is more responsive and flexible when comes to ordering, this means less waste and so more environmental benefit (though no attempt to quantify this).

Using SROI methodology, Lancaster and Durie (2008) undertake a detailed estimation of the environmental impacts of an alternative PSFP model in the UK, compared with a conventional model. Overall, they find schools in the alternative model have better outcomes, specifically, the environmental costs, in £s, of the conventional model schools are 3 times those of alternative model schools. Primarily this is due to reduced transport-related CO₂ emissions linked to more local sourcing. The authors find that switching to organic sourcing in the alternative model constitutes only a very small environmental advantage, though they argue it would be much greater if organic meat was sourced (which wasn't part of the model at the time of the evaluation). Bowden et al. (2006) also find environmental advantages come primarily from sourcing local rather than sourcing organic.

Table 7 Review of the Most Relevant Methodologies for Measuring Environmental Impacts

Indicators	Example Studies
Transport-related CO ₂ emissions from switch to local sourcing	Lancaster and Durie (2008), Kersley (2011)
CO ₂ emissions from switch from conventional to organic sourcing	Lancaster and Durie (2008)
Self-reported food miles estimates by school/council	Bowden et al. (2006)
Self-reported packaging waste estimates by school/council	Bowden et al. (2006), Tikkanen (2013)

Source: Authors' personal elaboration

c) Social Impacts of Alternative PSFP Models

Maas and Liket (2011) define social impact as “the (socially related) portion of the total outcome (of e.g., a programme, policy) that happened as a result of the activity *above and beyond what would have happened anyway*”. It is typically regarded as more difficult to undertake than economic or environmental impact. Some approaches measure social impacts using ‘direct’ indicators, others measure by converting social phenomena into monetary values.

In evaluations of PSFP models, social impacts have been measured both directly and indirectly. In a direct approach, Kimberlee et al. (2013) measure catering staff job satisfaction, comparing self-reported ratings before and 18 months after involvement in an alternative programme. The authors find satisfaction ratings *did not* increase: those who were content at the start stayed so, and vice versa. However, they did find evidence that catering staff were networking more, and felt more involved in decision-making, in food education and informal

interactions with pupils: all of which were important sources of job satisfaction. In an indirect approach, Lancaster and Durie (2008) measure catering staff absence rates as a proxy for job satisfaction, under the argument that the training, upskilling and morale boosting effect of engagement in an alternative model leads to a greater sense of ownership and commitment amongst catering staff, resulting in fewer absences. They find absences were 1.8% lower in alternative model schools than conventional. This study also uses indicators of reputational enhancement of school, and of suppliers, through being involved in the alternative model. The cost of a commercially run promotional campaign to fulfil a similar outcome is used as a proxy to estimate the value of enhanced school reputation, whilst the total reported value of new business won through publicity is the proxy used to estimate reputational value to suppliers.

Table 8 Review of the Most Relevant Methodologies for Measuring Social Impacts

Indicators	Example Studies
Catering staff job satisfaction (leading to impact on staff absences)	Kimberlee et al. (2013), Lancaster and Durie (2008)
Community reputation (leading to new business opps for suppliers, reputation enhancement for school)	Lancaster and Durie (2008)
Inequality amongst social groups	IFR (2011)
Working conditions (employment conditions and worker safety)	IFR (2011)
Cultural health (community cohesion, education)	IFR (2011)
Community cohesion (links between farmers and schools)	Joshi et al. (2008), Tikkanen (2013)

Source: Authors' personal elaboration

d) Economic Impacts of Alternative PSFP Models

PSFP studies often claim alternative models bring economic benefits. Often, this is argued on the basis of local multiplier effects, with some studies referring to the LM3 concept, which involves measuring (i) direct income of unit of analysis (e.g. municipality school food budget) (ii) local spending of the unit of analysis (e.g. amount municipality spends on contracts with local caterers/suppliers) (iii) local spending by local recipients of spending in (ii) (e.g. amount local caterers/suppliers spend in local area). The local multiplier is the sum of these three divided by the first. Using LM3 specifically to evaluate multiplier effects of an alternative PSFP programme in Cornwall, England, Thatcher and Sharp (2008) find a multiplier effect of 1.8. SROI evaluations often use LM3 methodology to evaluate economic impacts, and the whole approach is based on a similar premise: to estimate the economic return to stakeholders of involvement in a particular programme. Hence, in SROI evaluations of alternative PSFP models, Kersley (2011) finds for every £1 spent on local ingredients by municipalities in two regions in England, the local economies gain £3. Lancaster and Durie (2008) evaluation of an alternative model in East Ayrshire, Scotland, claims a 3÷6-fold magnitude of effect.

However, studies of economic impact of alternative models should be interpreted with caution. Often they are focused on economic benefits to local suppliers, without taking account of displacement effects, and sample sizes are very small. Moreover, the extent to which local farmers receive economic gains from alternative models is dependent on the

proportion of their business it comprises – when it is very low (e. g., <10%), the economic impact is negligible (Joshi et al., 2008, Kersley, 2011; Conner et al., 2012; Izumi et al., 2010a; Thatcher and Sharp, 2008). Finally, most studies conduct analysis only on an alternative model without comparing economic performance in a comparable conventional model, or against regional/national averages. Hence, deadweight effects are not assessed.

Table 9 Review of the Most Important Methodologies for Measuring Economic Impacts

Indicators	Example Studies
For suppliers: gross profit margins	Lancaster and Durie (2008)
For councils: value of additional employment, local economic impact of contract, value of new land brought into organic production	Lancaster and Durie (2008) Thatcher and Sharp (2008)
For suppliers: local employment	Bowden et al (2006), Tikkanen (2013)
For suppliers: security of income, opportunities for business expansion, enhanced reputation	Kersley (2011), Thatcher and Sharp (2008)
For councils: increased local employment, employee wellbeing and job satisfaction, costs per meal, cost savings of reduced unemployment, LM3 effects	Kersley (2011), Thatcher and Sharp (2008)
For central government: reduced costs of unemployment on society	Kersley (2011)
For schools: cost per meal, number of catering staff employed and hours worked	Kimberlee et al. (2013)

Source: Authors' personal elaboration

e) Integrated Assessment of Social, Economic and Environmental Impacts of alternative PSFP Models

Goggin and Rau (2016) recently proposed FOODSCALE, a new sustainability measurement tool, which attempts to treat environmental, economic and social sustainability issues as interrelated aspects of the food system. Developed to challenge the traditionally narrow environmental focus of some existing food sustainability concepts and measurement tools, FOODSCALE is proposed as a more comprehensive method of capturing alternative model features which may be linked to health and sustainability impacts. The table below lists the features. Each feature has a weighting attached which reflects its importance to sustainability impact. Evaluators use the scale to systematically score a model or programme across the range of features ('indicators'), arriving at a total from 0-100. The total score represents the model's overall performance. Although FOODSCALE is not a method for measuring *impact*, the list of features it contains may be useful in the development of impact indicators/proxies, or to categorise types of model.

Table 10 Features of the FOODSCALE Methodology

Categories	Indicators
1. Organic (10 points)	a. % of total food organic certified b. % of fruit and vegetables organic certified
2. Seasonality (5 points)	c. Changing menus to suit seasons d. Displaying a seasonal food calendar for

	the region e. Growing own herbs/vegetables
3. Fairly Traded produce (5 points)	f. Using fairly traded coffee, tea and bananas
4. Meat (15 points)	g. % of total food and drink budget spent on meat h. % of total meat budget spent on red meat i. Animal welfare certification for meat products j. % of main course dishes containing meat
5. Sustainably sourced seafood (5 points)	k. Seafood sourced from recognised accredited scheme with incorporates sustainability
6. Eggs (5 points)	l. Types of eggs used (e.g. organic; free range; regular; bottled) m. Traceability and quality assurance
7. Water (5 points)	n. Source available for customers (e.g. filtered water; free of charge; tap water; bottled water only) o. Origin of bottled water
8. Food Waste (10 points)	p. Staff trained in waste minimisation q. Separate composting for organic material r. Donating edible unused food s. Using cooking techniques that minimise quantities of oils and fats used t. Other waste reduction initiatives
9. Origin of Food (20 points)	u. Provenance of 5 key foods to local, regional, national or international origin v. Number of intermediaries between producer and consumer
10. Consumer Engagement (10 points)	w. Nutrition information on menus x. Health/Sustainability promotion initiatives y. Customer surveys z. Menu information re food provenance aa. Good choice of allergen free dishes and options
11. Engaging with smaller producers and local communities (10 points)	bb. Hosting information events (re. Tendering) for small and local producers cc. Activities to promote local food dd. Staff training in product information (i.e. origin, environmental and social quality of products)

Source: Goggin and Rau (2016)



The Strength2Food project in a nutshell

Strength2Food is a five-year, €6.9 million project to improve the effectiveness of EU food quality schemes (FQS), public sector food procurement (PSFP) and to stimulate Short Food Supply Chains (SFSC) through research, innovation and demonstration activities. The 30-partner consortium representing 11 EU and four non-EU countries combines academic, communication, SMEs and stakeholder organisations to ensure a multi-actor approach. It will undertake case study-based quantitative research to measure economic, environmental and social impacts of FQS, PSFP and SFSC. The impact of PSFP policies on nutrition in school meals will also be assessed. Primary research will be complemented by econometric analysis of existing datasets to determine impacts of FQS and SFSC participation on farm performance, as well as understand price transmission and trade patterns. Consumer knowledge, confidence in, valuation and use of FQS labels and products will be assessed via survey, ethnographic and virtual supermarket-based research. Lessons from the research will be applied and verified in 6 pilot initiatives which bring together academic and non-academic partners. Impact will be maximised through a knowledge exchange platform, hybrid forums, educational resources and a Massive Open Online Course.

www.strength2food.eu

