



HAL
open science

Enabling and constraining drivers of local food systems: a comparative study in Mediterranean countries

Cristina de Benito, Esther Sanz Sanz, Olga Moreno-Pérez, Marian
Simon-Rojo, Carolina Yacamán Ochoa

► To cite this version:

Cristina de Benito, Esther Sanz Sanz, Olga Moreno-Pérez, Marian Simon-Rojo, Carolina Yacamán Ochoa. Enabling and constraining drivers of local food systems: a comparative study in Mediterranean countries. 14th European Farming Systems Conference (IFSA 2022), Apr 2022, Evora, Portugal. hal-04175071

HAL Id: hal-04175071

<https://hal.science/hal-04175071v1>

Submitted on 1 Aug 2023

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

IFSA 2022 Conference – Évora, Portugal

Farming Systems Facing Climate Change and Resource Challenges

FULL PAPER SUBMISSION (max. 6000 words, including tables, figures and literature)

ENABLING AND CONSTRAINING DRIVERS OF LOCAL FOOD SYSTEMS: A COMPARATIVE STUDY IN MEDITERRANEAN COUNTRIES

Cristina de Benito Morán^a, Esther Sanz Sanz^b, Olga Moreno Pérez^c, Marian Simón Rojo^d, Carolina Yacamán Ochoa^e

^a cristina.debenitomoran@gmail.com

^b INRAE, esther.sanz-sanz@inra.fr

^c Universidad Politécnica de Valencia, omoreno@esp.upv.es

^d Universidad Politécnica de Madrid, m.simon@upm.es

^e Universidad Autónoma de Madrid, carolina.yacaman@uam.es

Introduction

Nutrition and food systems are experiencing a process of rapid change, especially in the Mediterranean area (Bachta and Ghersi, 2004; HLPE, 2017). On the one hand, intensification of agriculture, climate change, urban expansion and changes in land use and land cover are bringing to light the unsustainability of hegemonic food systems tendencies, giving food security a central role in policy agendas (FAO, 2018). At the same time, we are witnessing the growth of initiatives both from civil society and from institutions that try to counteract these tendencies, experimenting different ways of creating sustainable food systems (Brand et al., 2017).

Cities are becoming central actors in food policies (Sonnino, 2016, Sanz et al 2018) and they have a powerful role in the evolution or disruption of peri-urban ecosystems (Soulard et al, 2018, Moragues-Faus, 2016), which reports many social, environmental and economic benefits that have as well a positive impact in the food security of the regions (Filippini et al.2014, Zasada et al. 2017, Sonnino, 2016).

Furthermore, the Mediterranean Basin is a relevant case study for addressing the possibilities to hone in on options to improve and increase urban food sufficiency. Even if it has a long tradition of agriculture, it is facing nowadays great environmental challenges due to urban expansion and farmland decrease and more generally to climate change (Ortiz-Miranda et al., 2013). It is expected that Mediterranean regions become drier and warmer impacting ecosystems and food security (Giorgi and Lionello, 2008). Although challenges of agricultural land facing urbanization and on the intertwined productivist and non productivist trends of Mediterranean agriculture have been tackled in literature, only a few works are addressing the diversity, dynamics and drivers of peri-urban agro-ecosystems in the Mediterranean (Soulard et al., 2018).

In this context, our research aims to contribute to understand the enabling and constraining drivers of local food systems in the Mediterranean region, by comparing seven case studies. This comparative approach highlights how local realities reflect the impact that global trends are having in the agriculture and food systems of the area, and the different initiatives (institutional and non-institutional) that are trying to deal with them.

Context and concepts

According to Sonnino (2016), a “new food equation” is emerging focusing on the reconnection of food production areas with consumption spaces, in order to increase food sufficiency. This is why, in the last years, a growing scientific literature has given space to issues such as local food systems (Kneafsey et al. 2013) and food sufficiency (Sanz Sanz, 2019; Zasada et al., 2017) from different perspectives. Local food systems could be defined as those *“in which food is produced, processed and retailed within a defined geographical area”* (Kneafsey et al. 2013: 23), while food sufficiency refers to the ability of a given geographical area to obtain required alimentation within its boundaries (Zasada et al., 2017).

However, whereas local is usually explained as the opposite of global, there is no generally accepted definition of local food. In this research, we adopt the approach that focus on geographical proximity to identify local food systems (Kneafsey et al., 2013, Simon and Duzi, 2017).

If we want to understand the changes of food systems and the possibilities to develop more sustainable local food systems, we find indispensable to identify the drivers that affect them (Ericksen, 2008; Kearney, 2010; Allen and Prosperi, 2016; HLPE, 2017).

The concept of “food system” is undergoing a rapid evolution, and there is a lack of conceptual clarity about the characteristics of a “food system driver” (Béné et al., 2019). For our purpose, we adopt the definition proposed by Béné et al. of a food system driver as the *“endogenous or exogenous processes that deliberately or unintentionally affect or influence a food system over a long enough period so that their impacts result in altering durably the activities, and subsequently the outcomes of that system”* (2019: 152).

Moreover we used the concept of “local food balance” in order to understand the proportion of local grown food that is commercialized locally (Sanz Sanz, 2018). As the local food balance increase, so will do the local food autonomy of a given region.

Materials and methods

For identifying the drivers that are both enhancing and constraining the creation of local food systems we carried out a case study in the seven Mediterranean countries that participate in the European research project DIVERCROP¹: France, Spain, Italy, Malta, Portugal, Tunisia and Algeria. We drew a comprehensive research methodology based on fieldwork, database analysis, grey literature analysis, interviews to key informants, focus groups and workshops with stakeholders

The case studies (figure 1) were chosen to respond to two criteria: 1/ Cover both northern and southern Mediterranean countries, and 2/ Cover both rural and peri-urban contexts. Each country chose one specific region for carrying out the fieldwork, where there were already established strong relationships between the research teams and local stakeholders. Each region include different municipalities, with the exception of Malta where, due to its size, the study covered the totality of the island (table 1).

Country	SPAIN	MALTA	FRANCE	ITALY	PORTUGAL	ALGERIA	TUNIS
Area of study	Madrid region (South area)	Malta	Vaucluse	Pisa region	Algarve and Alentejo	Ziban-Souf	Haouaria
Rural Context					X	X	X
Peri-urban context	X	X	X	X			

Tabla 1. Case studies

In each case study we examined the proportion of local consumption (local food balance) of two representative products locally grown in order to identify the constraining and enabling drivers of local food systems. That is to say, the products chosen needed to fulfill at least one of the next requirements: a) a high volume of local production in the region b) to be a traditional crop in the region c) to encompass identity values for local population. Analysed food products were either fresh horticulture or orchard products (cherry in France, asparagus in Spain and tomato in Tunisia and Algeria), arable crops (potato in Malta, Tunisia and Algeria) or food products that need transformation (olive oil in France, Spain, Italy, Malta and Portugal; meat in Italy and Portugal).

For obtaining that percentage of local consumption of each product we used official statistics as well as the estimations that local stakeholders and experts gave in the interviews.

¹DIVERCROP project seeks to highlight interactions between current dynamics of agricultural practices, species diversity and local food systems at multiple spatial scales in the Western Mediterranean basin. See: <https://divercropblog.wordpress.com/>

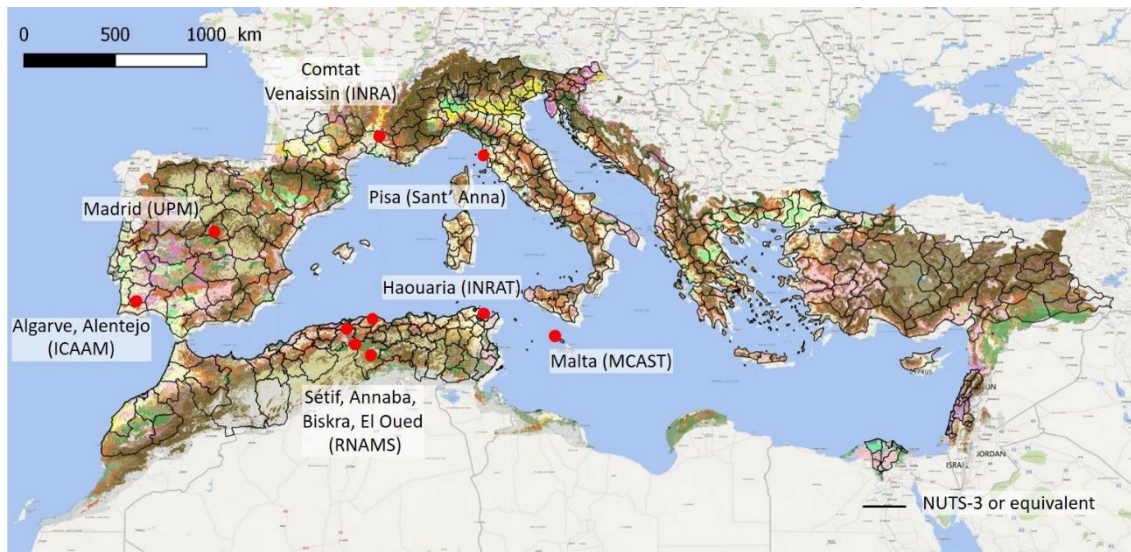


Figure 1: Study cases and research institutions in charge of them. Source: Sans Sanz et al, 2019

The next question that we needed to address was about the drivers that were influencing the high or low proportion of local food balance in each case study. Based on literature review, and in order to have a common basis for the analysis, we examined three different realms of local food systems drivers:

- *Public Policies*: drivers related to the actions of public institutions such as urban planning, food policies, financial support for farmers, or educational programs on proximity food (Soulard et.al 2018, Kneafsey, 2015, Zasada et al. 2017, Moragues Faus, 2015).
- *Technology*: drivers related to technical innovation and the implementation or lack of certain kind of technologies such as the diffusion of ICT (Cremaschi et al, 2018, Wascher et al, 2015)
- *Socio-economic context*: drivers related to social, cultural and economic characteristics of the region, such as social awareness about proximity food, changes in the diet patterns or population income (Moragues Faus, 2016, Bui et al, 2016, Soulard et al, 2018, Connell et al, 2013).

With the information that each country provided we started a qualitative analysis of the broad context of food and agriculture in every region of study seeking the changes that this sector was undergoing, and the factors that have a strong influence in those changes, as perceived by relevant stakeholders.

Then, we detailed the characteristics of production and consumption of each specific product and the drivers that were enhancing and/or constraining the development of local

food systems. We also included in this analysis what we called “opportunities”: factors that are not enough developed to be consider as drivers, but that have the potential to do it in the short and medium term (for example: the presence of young farmers oriented into organic and local markets or the interest in develop public procurement initiatives). This information allowed us as well to examine the eventual correlation between certain kind of products and certain drivers (ex: the importance of having local transformation facilities for products such as olive oil or meat), and to verify whether the same products in different countries were linked to the same kind of drivers, as occurs for instance in the case of olive oil production.

Based on this analysis we were finally able to build a classification of drivers of local food systems.

Results

Local food autonomy

Table 2 shows the different products analyzed by each team member and their estimated percentage of local consumption.

Table 2. Local consumption of local production of the agricultural products analyzed per case study

Case study	Product	Local consumption from local production
Haouaria (Tunisia)	Potatoes	70-100%
	Tomatoes	70-100%
Madrid (Spain)	Asparagus	70-100%
	Olive Oil	70-100%
Pisa (Italy)	Meat	70-100%
	Olive Oil	70-100%
Malta	Olive Oil	70-100%
	Potatoes	50-70%
Vaucluse (France)	Olive Oil	70-100%
	Cherry	10-30%
Alentejo-Algarve (Portugal)	Lamb	10-30%
Ziban-Souf (Algeria)	Potatoes	0-10%
	Tomatoes	0-10%

Drivers of local food systems: states and effects

The analysis carried out showed that it was necessary to broaden the scheduled three categories of drivers to five, so the results can be grouped as follows:

Table 3. Drivers of local food systems

PUBLIC POLICIES	Public procurement Promotion and supervision of local food labels Subsidies and funding oriented to promote local food systems Training programs on innovative agricultural practices and locally oriented marketing Awareness campaigns on local food Territorial and food planning Land access policies
TECHNOLOGY	Innovative production techniques
SOCIOECONOMIC CONTEXT	Consumers, producers and distributors awareness about local and quality food Willingness of cooperation between local producers and consumers Producers' cooperation Local population income Attention paid to diet and health issues Tourism demand International markets competition Historical orientation of food marketing Lack of workforce Young farmers oriented to local markets
INFRASTRUCTURES	Storage and transformation infrastructures
LAND SYSTEMS DYNAMICS	Land abandonment Land fragmentation and urban sprawl Decrease of agricultural land Intensification and concentration of production Development of organic production

Each of these drivers may adopt different levels or “states”, which represent the condition that a driver could be in at a given time. For instance, the public procurement based on proximity food can adopt a high value or a low value in each case study. Only in the first case the creation of local food systems is enabled. In a broad sense, we could say therefore that these drivers act in a positive way when they adopt a high value, and in a negative way when they do not. However, there are some exceptions that need to be discussed and that we can call drivers with ambivalent effects.

Tables 4 to 6 display information about those values or states of the drivers in each region. Importantly, the cells marked with + indicate the positive or high state of the driver considered (e.g.: high level of awareness of different stakeholders of proximity food), and the cells marked with – indicate a negative or low state (e.g.: lack of local infrastructures). The blank cells indicate that the driver was not considered as relevant by stakeholders. And, finally, cells marked with +/- indicate an ambivalent effect of the driver considered.

These tables show that many of the drivers show a positive state in most of the regions considered for this study. This could be related with the high connection of local production with local consumption shown in Table 2. Furthermore, the regions having a strong proportion of locally grown production that is consumed locally, are the regions where more drivers adopted a positive state (Vaucluse, Pisa, Madrid). The inverse relation (weak proportion of locally grown production that is consumed locally and drivers that adopt a negative state) is also true (Alentejo-Algarve, Ziban-Souf, Malta).

Table 4: States of the drivers of local food systems in each case study: Public policies, technology and infrastructures

	DRIVERS	VAUCLUSE (France)	PISA (Italy)	MADRID (Spain)	MALTA	ALENTEJO -ALGARVE (Portugal)	ZIBAN- SOUF (Algeria)	HAOUARIA (Tunisia)
PUBLIC POLICIES	Public procurement	+	+	+	-	+		+
	Promotion and supervision of local food labels	+	+	+	+	+	-	+
	Subsidies and funding oriented to local food systems	+	+	-	-	-	+	
	Training programs on innovative agricultural practices and locally oriented marketing		+	+/-	+/-		-	
	Awareness campaigns on local food	+		-	-			
	Territorial and food planning	+/-	+/-	+	-	-		-
	Access to Land	-		-	-		+	-
TECHNOLOGY	Innovative production techniques		+	+				
INFRASTRUCTURES	Storage and transformation infrastructures	+/-	+	+	-	-	-	+

The public sector plays an active role in designing and implementing local food policies in most of the regions. Every action oriented to promote local food systems from local or regional governments are considered a necessary condition for the development of proximity food networks. Public procurement stands out in all case studies of Europe as well as in Haouaria as an action that reinforces local food systems, and the promotion of quality or territorial labels is considered as an enabling driver in all the 7 regions, in Ziban-Souf the lack of development of those labels is constraining the promotion of local food systems. The lack of land access policies is considered as an important constraining driver in almost every region with the exception of the Portuguese case.

Contrarily, as for the driver considered in the “Technology” category, there are only two regions where innovations in productive practices and marketing are found as relevant regarding local food systems, both related to olive oil production. Importantly, this driver

is only considered as an enabling factor as long as such innovations can increase the quality of the products and/or favor the entrance in niche/local markets.

Regarding the role of the infrastructures, although generally speaking they are necessary to develop local food systems, their role and importance is very much product-specific. Thus, if we are dealing with products that need transformation before being ready for final consumption -such as meat or olive oil-, the existence of local transformation infrastructures becomes fundamental. We find many cases where the lack of those infrastructures is cited as a constraining driver that will explain a low level of local consumption (e.g.: lack of slaughterhouses for lamb meat in Alentejo-Algarve).

Table 5: States of the drivers of local food systems in each case study: Socioeconomic context

	DRIVERS	VAUCLUSE (France)	PISA (Italy)	MADRID (Spain)	MALTA	ALENTEJO- ALGARVE (Portugal)	ZIBAN- SOUF (Algeria)	HAOUARIA (Tunisia)
SOCIOECONOMIC CONTEXT	Consumers, producers and distributors awareness about local/quality food	+	+	+	+	+		
	Willingness of cooperation between producers and consumers	+	+	+			-	-
	Producers cooperation	+	+	-	-	-	-	-
	Local population income	-	-		-			
	Attention paid to diet and health issues	-	+	+	-			
	Informal exchanges	+	+	+	+		-	-
	Tourism demand	+	+	+	+		+	
	Local demand	+/-	+	+	+	-	+	-
	International markets competition	+			-			-
	Historical orientation of food marketing	+/-	+	+/-	+	-	-	
	Lack of workforce			-	-		-	
	Young farmers oriented to local markets	+				+		

Table 5 shows the drivers that fall into the category of “Socioeconomic context”. Some of them have clear positive effects for the development of local food systems such as the awareness of stakeholders about local and quality food (interestingly only absence in African Mediterranean countries), the willingness of cooperation between producers and consumers, a high level of local demand or a high level of tourism demand for local products. Others, such as a low local population income are always cited as constraining the development of local food systems. It is noteworthy how cooperation between producers is cited in all the case studies as a relevant driver, but with the exception of Vaucluse and Pisa, it presents a low level (absence of cooperation), and therefore, has a negative impact in local food systems.

On the other hand, the role of other drivers could be considered as ambivalent. This is the case for instance of international markets competition. In the case of Vaucluse, it is explained that foreign competition for fruits and vegetables encouraged farmers to commercialize locally and through shorter food chains for a better valorization of their products. However, in Malta the drop of the price of potatoes due to the competition with imported potatoes from Northern African countries, is linked to the decrease of local production and consumption.

We find in this realm some drivers related to the structure of food chains such as producers-consumers cooperation (short chains) or “historical orientation of food production”. In this last case, we can find, first, what stakeholders call a “locally rooted sector”, meaning a tradition of local production and consumption of the product, the existence of the necessary infrastructures and chains for a local market, and a sort of local attachment to the product. This will act in a positive way for the development of local food systems. Second, we can find traditionally export-oriented sectors with long commercialization chains, as found in the case of cherry production of Vaucluse or in Malta potatoes. This orientation of food production acts normally as a constraining factor for local food systems. However, in the regions of the North of Africa the implications of the historical orientation of food production are found to be different. In Haouaria the existence of export-oriented food chains is cited as an enabling driver for local food systems, and stakeholders in Ziban-Souf mention the inability to export as a constraining factor for the development of local food systems.

We need to pay attention also to drivers that are directly pointing to the labor market. In many case studies (Vaucluse, Madrid, Pisa), even in the rural areas such as Alentejo-Algarve case, lack of workforce and ageing of farmers is highlighted as a general constraining factor for agriculture sector and development of local food systems. On the contrary, a high presence of young farmers is related to a high level of local consumption due to their common orientation to proximity food (ex: Vaucluse, Malta). This factor is evidently related to the existence of land access policies as discussed early.

It is remarkable the abundance of negative and blank cells in the case of Ziban-Souf, Alentejo-Algarve and Haouaria where local production is massively consumed out of the region. This fact shows on the one hand a big contrast between northern and southern Mediterranean countries and also between rural and peri-urban regions.

Table 6. States of the drivers of local food systems in each case study: Land Systems Dynamics

	DRIVERS	VAUCLUSE (France)	PISA (Italy)	MADRID (Spain)	MALTA	ALENTEJO- ALGARVE (Portugal)	ZIBAN- SOUF (Algeria)	HAOUARIA (Tunisia)
LAND SYSTEM DYNAMICS	Land abandonment	-	-		-	-		
	Land fragmentation/ urban sprawl	+/-	+/-	+/-	+/-		-	
	Decrease of agricultural land	-	-	-				-
	Intensification/ concentration/ specialization of production	-	-	-	-	-	-	-
	Organic production development		+	+			+	+
	Inputs and cost of production			+	+		-	-

Finally, Table 6 show the states of the drivers gathered in the category of “Land system dynamics”. They are factors that influence the agricultural production in general and therefore have an indirect impact in the creation of local food systems. Unlike the other categories, many of these drivers are expected to act as constraining factor as it means that the possibilities of maintaining agriculture land uses are hindered (e.g. land abandonment, decrease of agricultural land). In the case of specialization of production tendencies, they can act as a constraining factor for local food systems as it happens in the Vaucluse region. Regarding the urban sprawl, although normally it is considered a constraining factor as it reduces the agricultural land, it may have also some positive influence on food relocalization as it increases the local demand in peri-urban regions. The exigence and cost of production is considered as an enabling driver when it is low (as in the production of Malta potatoes) and as a constraining driver when it is high (as in tomato production in Ziban-Souf).

Discussion: Enabling patterns of drivers for local food systems

The majority of drivers do not enhance local food systems by themselves but in close relationship with other ones. For instance, the existence of coordination between farmers is cited as an enabling factor in all case studies. But this coordination by itself can be linked both to a high or a low local food balance, as we can see in the cases where local farmers cooperatives are used as a way of joining resources for making possible the orientation towards exportation and long commercialization channels (e.g.: Alentejo-Algarve or Vaucluse cases). It is only when farmers’ cooperation act together with other drivers such as willingness of stakeholders, availability of local infrastructures or facilitating public policies when it becomes an enabling driver.

We can therefore state that local food systems are created by a relationship of drivers acting together. We use the term enabling pattern of drivers to refer to the different social phenomenon that emerge from a certain combination of drivers and that have a positive impact in the strengthen local food systems.

We have identified four different enabling patterns related to a high local food balance². Three of them are based on the valorization of local products and local food systems: high quality markets; social innovations and informal exchanges; while the other one lies in conventional food chains.

Table 7 Enabling patterns for local food systems

CASE STUDY	High Quality Markets	Social innovations	Informal exchanges	Conventional food chains
Vaucluse cherry	X			
Vacluse olive oil	X	X	X	
Madrid asparagus	X	X	X	X
Madrid olive oil	X	X	X	
Pisa meat	X	X		
Pisa olive oil	X		X	
Malta potatoes				X
Malta olive oil	X		X	

Enabling patterns based on the valorization of local food products

a. High quality markets

The first combination of drivers focusses on the creation of markets where local products acquire an added value in terms of their origin and quality. We can see this structure of drivers in all olive oil cases as well as in niche products such as asparagus in Madrid or cherry in Vaucluse. The drivers involved in this reality and their relationships are shown in figure 1.

Since the 1980s, in the frame of what Harvey (2005) called the flexible accumulation regime of capitalism, the strategies of commercialization of food companies begin to rely on the identification of specific niche markets and the diversification of production in relation to them. Authors as Guthman (2004) and Roseberry (1996) have described this phenomenon of food segmentation in depth, the first one in relation to organic products and the second one in relation to coffee market.

²For the identification of enabling patterns for local food systems we will only consider the cases where there is a high presence of local food balance (at least 50%), with the exception of Vaucluse cherry given its interest for our thesis.

These strategies of diversification are linked to the necessity of finding new ways of valorization of products in a market characterized by saturation and inelasticity of demand.

Traditional local products can fit in this dynamic of niche markets creation. Indeed, the logics of international markets competition are cited sometimes as an enabling driver for the creation of this sort of markets for local products, as they allow them to obtain a special value in terms of quality and origin (ex: Vaucluse)³. In addition, for some specific products, the search of quality has gained a particular significance, as we can see in the case of Pisa meat, where they explain that the concern of food safety after the different disease scandals related to intensive meat production, has generated a space for a high quality local meat market.

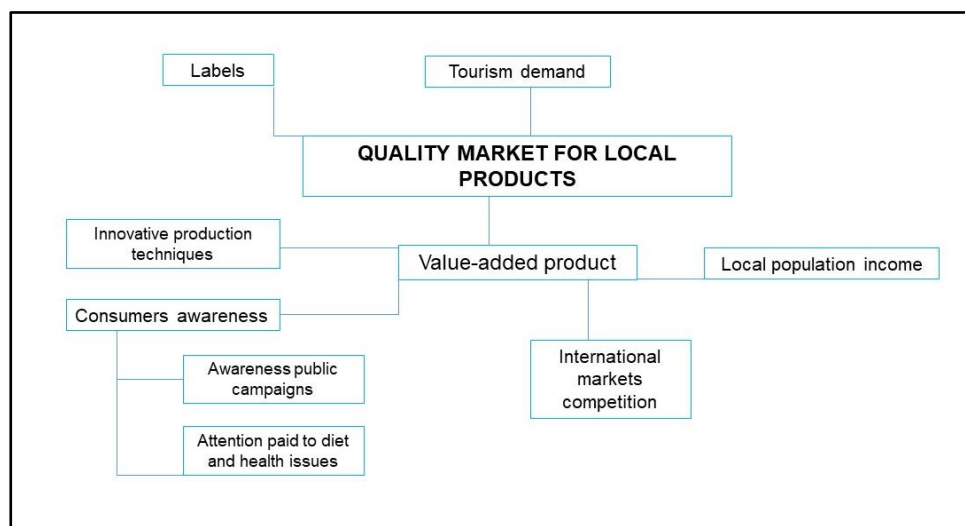


Figure 1 Enabling pattern: Quality market

Local stakeholders affirm as well that the participation in these high quality markets can be a way of increasing benefits for farmers, as their economic benefits tend to be higher than in conventional food markets.

Technological innovation seems to acquire a great importance in the creation of these high quality markets. In particular, innovation in production techniques is cited as an enabling driver related to those markets, as we can see especially in olive oil cases. In Pisa, stakeholders state that improvements in pressing techniques and pruning methods are improving conditions for growth and harvest of olives that allows to commercialize olive oil as a quality product. A similar description can be found in the case of Madrid,

³Nonetheless, in other cases as Malta, international market competition is cited as a constraining driver for the development of local food systems.

where the improvement of methods of production and extraction has allowed a production of olive oil distributed in small labelled containers as a quality product.

In fact, labelling plays a central role in these markets, as a way to certificate the origin and quality of the products. However, stakeholders question the impact on relocalization of food systems that labels may have, due to the high amount of them (Alentejo-Algarve), the ignorance of those labels by consumers (Madrid) and the economic and technical difficulties to obtain them (Malta). Nevertheless, it is interesting to notice how in other case studies such as Ziban-Souf, the lack of a labelling system is explicitly cited as a constraining driver for reinforcing local food systems, which make us think about the existence of some sort of threshold that, once exceeded, changes the value of the influence of the driver (if there are not any label it acts as constraining but if there are too many it also acts as constraining).

Anyway, given that, in this enabling combination of drivers, commercialization chains are less based on a direct relationship between producers and consumers than in the following ones, it is understandable the importance that labelling acquires. A very illustrative example can be found when we examine the relationship between tourism and high quality markets. In Pisa, Malta or Vaucluse case studies, this social phenomenon is cited as an important enabling driver because it would contribute to a high demand for local quality traditional products sold in small souvenir shops. Origin and quality labels are fundamental to certify those characteristics that tourists are looking for.

But tourists are not the only social agent that sustain these local high quality markets. Local population awareness of the importance of supporting local agricultural practices and food safety concerns contribute as well to the rise of a high local demand for quality products. This awareness can be facilitated by public institutions through campaigns promoting local food products as well as by civil society organizations supporting food sovereignty and food security.

The biggest problem associated to high quality markets as a way to reinforce local food systems relies on the possible increase of price of the products, which will act as a barrier for low incomes local population. This possible contradiction is well described in the case of Vaucluse local cherry, where it acquires such a high price that the average local population cannot afford the product and therefore the local consumption percentage remains very low (around 10%). The local consumption of local cherry is mainly explained by tourist demand. On the other hand, in Pisa case study, the high level of

unemployment and the social consequences of the economic crisis of 2007 is also cited as a powerful constraining driver for local consumption, because local products prices are sometimes much higher than imported ones. Hence, the driver “local population income” plays a key role, as there is a risk of *elitization* of local food products, which would not finally contribute to food security.

b. Social innovation and proximity chains

The second enabling combination of drivers is based on what we could define as social innovations, that is to say “*innovations that emerge from the bottom up as a means of helping to ensure more environmentally and socially sustainable systems of food provision*” (Kirwan et al, 2013; Klerkx et al, 2010). We can find it mainly in the case of Pisa meat and olive oil of Pisa, Madrid and Vacluse. The drivers involved in this reality and their relationships are shown in figure 2.

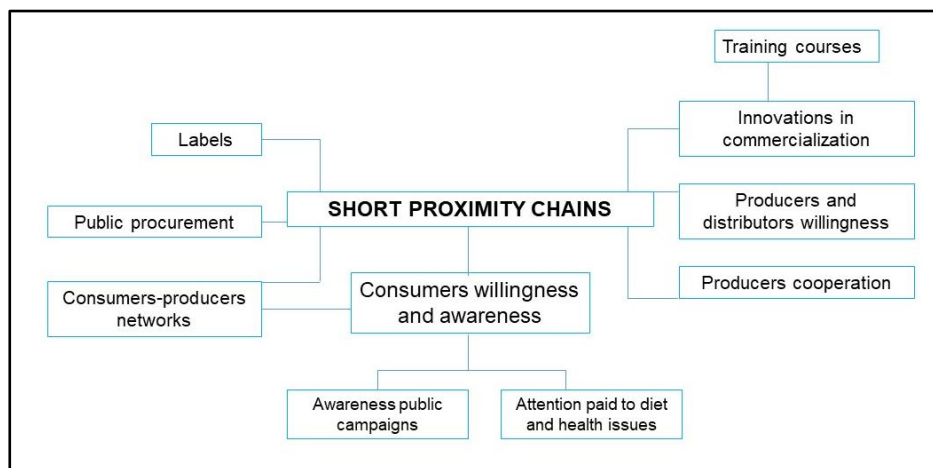


Figure 2 Enabling pattern: Social innovation and proximity chains

Although it is difficult to trace a defined border between this combination of drivers and the previous one, we think that is necessary to do an analytical distinction because this enabling pattern gives more importance to social relationships of production and consumption than to the quality of the product itself. The support of local farmers and the creation of alternative food networks defined as the different initiatives that point to the construction of food production, distribution and consumption systems that overcome the problems associated to the hegemonic agrifood system (Goodman, Dupuis and Goodman, 2012) is the central point in this pattern.

As in last years there has been a growing academic interest in these kind of networks (Kirwan et al, 2013; Kneafsey, 2015; Wascher et al, 2015; Goodman et al., 2012; Wald and Hill, 2016; Forssell and Lankoski, 2015), we are going to do only a brief description of this enabling combination of drivers.

In the first place, direct sale through consumers groups, cooperatives and street markets is a defining characteristic of this reality. That is to say the innovation in commercialization channels linked to the promotion of short and proximity chains is one of the main drivers that support the relocalization of food systems. For this reason, even if labelling can play a role, it is not found as important as in the previous case. Something that has been pointed out by authors as Filippini et al. (2014) or Kneafsey et al. (2013).

By contrast, the cooperation and willingness of stakeholders is a central driver for the development of alternative food networks. This is why the lack of it is cited in Malta, Madrid, Alentejo-Algarve and Haouaria as constraining the development of them, and therefore, of a local food system.

Cooperation between producers helps to create and share production and distribution infrastructures as well as to gain capacity of decision in commercialization channels. Once these networks are created it is easier that other farmers not oriented to short proximity chains begin to distribute part of their production through them. But, as we have pointed out, farmers' cooperatives and networks can be also used as a way of enhancing long commercialization channels. Hence, producer's cooperation needs to be joint to the willingness of promoting local food systems to be considered as an enabling driver. In this sense, it is interesting that in different case studies the presence of young new farmers oriented to alternative food networks is also cited as an enabling driver for the promotion of local food systems. This fact was signaled by Monllor and Fuller (2016) in a recent study on the features of newcomer farmers in Europe in which she identified an agrosocial profile of young farmers related to the enhancement of social and environmental innovations in food systems.

The main stakeholders that sustain the creation of this kind of local markets cited in the case studies are consumers, producers and distributors (such as local restaurants and stores), together with social movements and non-governmental organizations to the extent that they can increase the awareness of the positive impacts of those local networks in ecological and social terms. An outstanding example is found in the case of asparagus in Madrid, where an environmental cooperative is working with the local administration in order to strengthen local short food chains by creating a local label and an association of young farmers.

But institutional stakeholders could also have central role, by means of the public procurement, in enabling the relocation of food systems (Soninno and McWilliam, 2011;

Kneafsey, 2015), although by the time being public procurement is not consolidated in the study cases that have been analyzed. Other actions from public institutions that stakeholders demand to local governments are the launch of training courses for farmers on marketing and distribution innovations oriented to reinforce local food networks, and the creation and regulation of street markets where local farmers can sell their production.

c. Informal exchanges

Informal exchanges have been considered an important peri-urban dynamic that contributes to food systems relocalization. In all the regions where olive oil was analyzed, stakeholders state that a part of the total local production follows is informally exchanged. There is a typical profile of producers involved in these informal exchanges: small producers which are part-time or hobby farmers (e.g. Pisa, Malta, Vaucluse) that decide to grow olive trees and to produce oil mainly for self-consumption and exchanges with relatives, friends and neighbors.

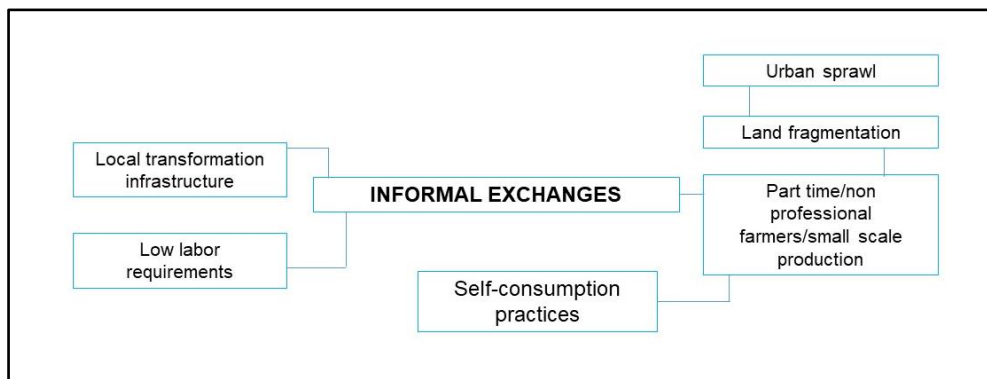


Figure 3. Enabling pattern: Informal exchanges

There are several factors that contribute to this dynamic (Figure 3). On the one hand, land fragmentation and urban sprawl increase the number of people that have small arable lands close to their urban residences. On the other hand, the low exigence of workforce of olive growing make it perfectly compatible with other gainful activities. For example, in the case of Malta, where olive oil production is growing, farmers explain: *“olive trees are a good option to those farmers that have inherited fields and may not want to carry out intensive farming because they don’t need so much labor, they are resistant to drought and can be harvested once a year”*. Precisely in Malta it is interesting to compare olive oil production with potato production. Both are subjected to same tendencies of land fragmentation, but while olive production is increasing, potato production is decreasing because of the high costs and requirements of production in comparison with other cultures, deriving in the need of imports.

An enabling factor for this kind of non-market exchanges of olive oil is the existence of local oil mills. A representative example is the case of Vaucluse olive oil, where 90% of production of farmers who own traditional oil mills is destined to local consumption. This connects to the importance of existence of local infrastructures as a driver for local food systems when dealing with products that require any kind of transformation before being ready for final consumption. The contra-example will be the case of lamb in Alentejo-Algarve, where the lack of local slaughterhouses is directly related to the low level of local consumption of the product (around 10%).

Informal exchanges as a vector of food systems relocalization is also cited in other cases as asparagus in Madrid or tomato in Haouaria. In all these cases it is explained that informal selling in the streets is part of a traditional activity that allow non professional farmers to share their harvest and earn some extra money.

Enabling patterns not based on the valorization of local food products: conventional food chains

We finally pay attention to two meaningful cases: Malta potatoes and Madrid asparagus. In both cases we find what we can consider a high level of local consumption of the product (66% and almost 100%), but in contrast with the examples displayed in the former subsections, the commercialization of these products is based on conventional channels where they lose their origin value.

Although in the case of Malta, part of potato production is sold in street markets, the main part of production is commercialized through local supermarkets and stores. In the case of Madrid, asparagus are sold mainly through the main distribution platform of the city (MercaMadrid) to local supermarkets and stores. In contrast to the kind of commercialization that other close municipalities use, promoting local asparagus as a traditional quality product, in this case they do not specify its origin and keep out from quality markets.

These cases are interesting because they break the idea that local food systems are always connected to either alternative food networks or high quality markets in which the value of "local" becomes a central element. In these cases, the high proportion of local consumption is more connected to the traditional structure of commercialization channels and the proximity of the cities than to awareness and willingness of

stakeholders of promoting local food systems or high quality local and sustainable products.

Conclusion

The identification of local food system drivers is a necessary step in order to be able to develop and implement food policies oriented to build sustainable food systems (Viljoen and Wiskerke, 2012). Our results show that those drivers are very similar to those found by Béné et al. (2019) in their revision, despite to the fact that we focus on local food systems in the Western Mediterranean Basin, while they do it in food systems in general. As one could expect, in our set of drivers less attention is paid to global issues such as climate change or the evolution of world population.

However, we find some difficulties to upscale results from local study cases to Mediterranean or global level. First of all, as we have seen, the local food balance of the same products vary in the case studies (e.g.: meat in Alentejo-Algarve and in Pisa). This may have a link with the different land systems involved in each case study, even if they focus on the same products, as well as to the fact that we are dealing with different sociopolitical contexts (rural and peri-urban; northern and southern Mediterranean countries).

Secondly, we cannot forget that the percentage of local consumption of local production has been inferred from the estimation that key informants did.

Furthermore, through this paper, we have seen how instead of focusing on isolated local food systems drivers it is more convenient to pay attention to the different combinations of drivers that are enabling the creation of local food systems in the analyzed regions. Under this regard we have been able to identify four patterns shared in different case studies that reveal some of the most significant tendencies upon which sustainable local food systems are being built in the Mediterranean area.

References

- Allen, T., Prosperi, P. (2016). Modeling sustainable food systems. *Environmental Manage* 57: 956–975. <https://doi.org/10.1007/s00267-016-0664-8>
- Béné, C., Prager, S., Achicanoy, H., Alvarez, P. et al (2019) Understanding food systems drivers: a critical review of the literature, *Global Food Security* 23: 149-159 <https://doi.org/10.1016/j.gfs.2019.04.009>
- Bui, S., Cardona, A., Lamine, C. and Cerf, M. (2016): Sustainability transitions: insights on processes of niche regime interaction and regime reconfiguration in agrifood systems. *Journal of Rural Studies* 48: 92-103. <https://doi.org/10.1016/j.jrurstud.2016.10.003>
- Connell, D., Bryant, C., Caldwell, W., Churchyard, A., Cameron, G., Johnston, T., Margulis, M., Ramsey, D., & Marois, C. (2013): Food Sovereignty and Agricultural Land Use Planning: The need to integrate public priorities across jurisdictions. *Journal of Agriculture, Food Systems, and Community Development*, 3(4), 117–124. <https://doi.org/10.5304/jafscd.2013.034.011>

- Ericksen, P.J., (2008) Conceptualizing food systems for global environmental change research. *Global Environmental Change* 18, 234–245 <https://doi.org/10.1016/j.gloenvcha.2007.09.002>
- Filippini, R., Marraccini, E., Bonari, E., Lardon, S. (2014) Understanding networks in local food system: which contribution from peri-urban farming system?
- Forsell, S. & Lankoski, L. (2015) The sustainability promise of alternative food networks: an examination through “alternative” characteristics. *Agriculture and Human Values* 32 (1): 63-75. <https://doi.org/10.1007/s10460-014-9516-4>
- Giorgi, F., & Lionello, P. (2008). Climate change projections for the Mediterranean region. *Global Planet Change* 63: 90-104. <https://doi.org/10.1016/j.gloplacha.2007.09.005>
- Goodman, D., Dupuis, M. and Goodman, M. (2012) *Alternative food networks. Knowledge, practice and politics*. London: Routledge
- Guthman, J. (2004) *Agrarian dreams. The paradox of organic farming in California*. Paperback: Berkeley
- Harvey, D. (2005) *Spaces of Neoliberalization: Towards a Theory of Uneven Geographical Development*. Stuttgart: Franz Steiner Verlag.
- HLPE, 2017. Nutrition and food systems. In: A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.
- Kearney, J., (2010). Food consumption trends and drivers. *Phil. Trans. Royal Soc. Biol. Sci.* 365: 2793–2807.
- Kirwan, J., Ilbery, B., Maye, D., Carey, J. (2013) Grassroots social innovations and food localization: an investigation of the local food program in England *Global environmental change* 23: 830-837
- Klerkx, L., Aarts, N., Leeuwis, C., (2010) Adaptive management in agricultural innovation systems: The interactions between innovation networks and their environment. *Agricultural Systems* 103: 390–400. <https://doi.org/10.1016/j.agsy.2010.03.012>
- Kneafsey, M., Venn, L., Schmutz, B., Trenchard, L. et al. (2013) Short food supply chains and local food systems in the EU. A state of play of their economic characteristics. Report. European Commission, Joint Research Centre.
- Kneafsey, M. (2015) EIP-AGRI Focus Group on Innovative Short Food Supply Chain Management: Final report.
- Monllor, N. and Fuller, A. (2016) Newcomers to farming: towards a new rurality in Europe, *Documents D'Anàlisi Geogràfica* 62 (3): 531-551. <https://doi.org/10.5565/rev/dag.376>
- Moragues Faus, A (2016) “Revisiting food studies from a political ecology perspective: lessons from the Mediterranean Agri-food systems”, in Ioris, A (ed.) *Agriculture, environment and development*. Springer International Publishing, pp.59-90.
- Ortiz Miranda, D., Moragues Faus, A. and Arnalte, E. (2013) “Reframing agriculture in Mediterranean Europe”, in Ortiz Miranda, D., Moragues Faus, A. and Arnalte, E. (eds.) *Research in Rural Sociology and Development*. Emerald Group Publishing Limited, pp. 1-8.
- Roseberry, W. (1996) The Rise of Yuppie Coffees and the Reimagination of Class in the United States, *American Anthropologist* 98 (4): 762-775.
- Sanz, E., Martinetti, D. and Napoléone, C. (2018) Operational modelling of periurban farmland for public action in Mediterranean context, *Land Use Policy* 75: 757-771. <https://doi.org/10.1016/j.landusepol.2018.04.003>
- Sanz Sanz, E. (2018) Assessing food balance of Mediterranean city-regions. A multi-level methodology to highlight interactions between land system and food systems.
- Sanz Sanz, E. et al. (2019) A homogeneous database at Mediterranean basin scale and machine learning analysis to understand the potential representativeness variables.
- Sonnino, R. (2016) The new geography of food security: exploring the potential of urban food strategies. *The Geographical Journal* 182:190-200. <https://doi.org/10.1111/geoj.12129>
- Sonnino, R. and McWilliam, S. (2011) Food waste, catering practices and public procurement: A case study of hospital food systems in Wales, *Food Policy* 36 (6): 823-829 <https://doi.org/10.1016/j.foodpol.2011.09.003>
- Soulard C-T., Valette E., Perrin C., Abrantes P., Anthopoulou T., Benjaballah O., Bouchemal S., Dugué P., El Amrani M., Lardon S., Marraccini E., Mousselin G., Napoleone C., Paoli JC. (2018) Peri-urban Agroecosystems in the Mediterranean: diversity, dynamics and drivers. *Regional Environmental Change* 18(3): 651-662 <https://doi.org/10.1007/s10113-017-1102-z>
- Wald, N. & Hill, D.P. (2016) Rescaling alternative food systems: from food security to food sovereignty. *Agriculture and Human Values* 33 (1): 203-213. <https://doi.org/10.1007/s10460-015-9623-x>

Wascher, D., Keafsey, M., Pintar, M and Piorr, A. (2015) Synthesis report: FOODMETRES project. Food, planning and innovations for sustainable metropolitan regions

Zasada, I., Schmutz, U., Wascher, D., Keafsey, M., Corsi, S. et al (2017) Food beyond the city. Analyzing foodsheds and self-sufficiency for different food system scenarios in European metropolitan regions. *City, Culture and Society* 16: 25-35
<https://doi.org/10.1016/j.ccs.2017.06.002>

Zurek, M., Ingram, J., Zimmermann, A., Garrone, M., et al., (2016) A Conceptual Framework for Assessing and Devising Policy for Sustainable Food and Nutrition Security in the EU: the SUSFANS Conceptual Framework. Public Report: Sustainable Food and Nutrition Security through Evidence Based EU Agro-Food Policy.

Submissions: <https://sge.uevora.pt/eventos/ver/593>