



HAL
open science

Italian biodistricts and French territorial food projects: how science-policy-experience interplays shape the framings of transitions towards sustainable territorial food systems

Claire Lamine, Patrizia Pugliese, Fabienne Barataud, Giaime Berti, Adanella
Rossi

► To cite this version:

Claire Lamine, Patrizia Pugliese, Fabienne Barataud, Giaime Berti, Adanella Rossi. Italian biodistricts and French territorial food projects: how science-policy-experience interplays shape the framings of transitions towards sustainable territorial food systems. *Frontiers in Sustainable Food Systems*, 2023, 7, 10.3389/fsufs.2023.1223270 . hal-04400941

HAL Id: hal-04400941

<https://hal.inrae.fr/hal-04400941>

Submitted on 7 Feb 2024

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.



Distributed under a Creative Commons Attribution 4.0 International License



OPEN ACCESS

EDITED BY

Cesare Zanasi,
University of Bologna, Italy

REVIEWED BY

Alberto Sturla,
Council for Agricultural and Economics
Research (CREA), Italy
Pytrik Reidsma,
Wageningen University and Research,
Netherlands

*CORRESPONDENCE

Claire Lamine
✉ claire.lamine@inrae.fr

RECEIVED 15 May 2023

ACCEPTED 03 October 2023

PUBLISHED 13 November 2023

CITATION

Lamine C, Pugliese P, Barataud F, Berti G and Rossi A (2023) Italian biodistricts and French territorial food projects: how science-policy-experience interplays shape the framings of transitions towards sustainable territorial food systems.

Front. Sustain. Food Syst. 7:1223270.

doi: 10.3389/fsufs.2023.1223270

COPYRIGHT

© 2023 Lamine, Pugliese, Barataud, Berti and Rossi. This is an open-access article distributed under the terms of the [Creative Commons Attribution License \(CC BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Italian biodistricts and French territorial food projects: how science-policy-experience interplays shape the framings of transitions towards sustainable territorial food systems

Claire Lamine^{1*}, Patrizia Pugliese², Fabienne Barataud³,
Giaime Berti⁴ and Adanella Rossi⁵

¹ACT Ecodéveloppement, INRAE, Avignon, France, ²CIHEAM, Bari, Italy, ³ACT ASTER, INRAE, Mirecourt, France, ⁴Institute of Management, Scuola Superiore Sant'Anna, Pisa, Italy, ⁵Department of Agriculture, Food and Environment, University of Pisa, Pisa, Italy

The territorial scale is increasingly recognised as a relevant scale for analysing, conceiving and supporting the ecological transitions of agri-food systems. France and Italy have both been pioneer countries for the valorisation of territorially-based food identity and more recently experimented innovative forms of collective and public action to support transitions to sustainable territorial food systems. In Italy, the biodistrict frame has progressively been legitimised and recently adopted as a legal framework, while in France, despite many regional experiences focused on organic agriculture, the legal framework recently established with the territorial food system policy, officially driven by the agroecological transition paradigm, leaves a very variable place to organic agriculture and its principles, depending on local features and power configurations. Our objective in this paper is to understand these processes of institutionalisation. Based on a focused review of the French and Italian literature on this issue and on the analysis of the relative place of organics in policies, experiences and debates in France and Italy over the five last decades, we show that these processes of institutionalisation result from specific interplays between science, policy and experience, where the related actors take a different role, leading to different configurations and favouring different framings.

KEYWORDS

organic districts, agroecology, food policies, collective action, ecological transition, food relocalisation, local food governance

1. Introduction

The ecological and social crises related to the global food system are widely acknowledged by scientists, citizens and governments around the world. These circumstances demand an urgent reorientation of agri-food systems towards more sustainable agricultures and healthier diets (IPES-Food, 2017; IPBES, 2019; IPCC, 2019). The search for such transitions has indeed become a priority for both academics (Hammond and Dubé, 2012; Gordon et al., 2017; Willett et al., 2019) and policymakers (UN, 2015; EC, 2020). Many of the UN Sustainable Development

Goals are substantially related to most-needed changes in our food and agricultural systems, calling for a redesign of agri-food systems that reconnects agriculture, environment, food and health, in socially inclusive ways. In this perspective, there is a growing recognition that the scale of the global food system is one of the underlying problems, and that a re-scaling is required to enable more sustainable and just food systems. Territorial approaches to tackle agri-food systems transitions have increasingly been experimented by local actors in many contexts, assessed and recognised for their potential by academics (Lamine et al., 2012; Favilli et al., 2015; Moragues-Faus and Marsden, 2017) and promoted by major international institutions (OECD, FAO, and UNCDE, 2016). A territorial approach indeed allows gathering diverse food chain actors around ecological transitions, and facilitates the construction of shared visions.

This gives way to multiple concepts, experiences, and networks dealing with organic or agroecological food systems – bioregions, ecoregions, biodistricts – that emerged and/or were (re)defined at the crossroads of the academic debate, policy and practices, often also involving consumers' and civil society movements. In the scientific literature, the two notions of bioregions or ecoregions have long been used in some disciplines, most often without any strong food system analytical lens: for some ecologists, to define a region with a particular type of natural environment and natural features, and for the bioregionalist movement, to refer to territorialised transition processes based on interdependencies among ecological, economic and community components, although with different orientations in North America and Europe (Rollet, 2019). Beyond the scientific world, as in some languages and countries the prefixes “bio” and “eco” refer to organic agriculture and food, a neologism that builds on these prefixes might refer to organics or be more inclusive in terms of the forms of ecologised agriculture and food included. In Italy, the notion of *biodistrict* of which we will trace and analyse the trajectory here, indeed focuses on organic farming. Based on this Italian experience and a network of very active protagonists, the concept of biodistrict has been suggested at the European level and then adopted in the EC organic farming policy in 2021. Meanwhile, in other countries such as France, other types of regulatory frameworks and related framings had been established.

In this paper, we will focus on the place of organic farming and food in these frameworks and framings that were, respectively, institutionalised in France and Italy to support transitions to more sustainable territorial food systems. Both countries have been pioneers in Europe for the valorisation of territorially-based food product identity and more recently experimented innovative forms of collective and public action to support such transitions. However, these pathways have taken contrasted forms. In Italy, that of biodistricts, which arose in local networks including mainly rural development actors and scientists, where they were early on codified and afterwards institutionalised by some regional laws and a national one (2017). They disseminated across the country, reaching today the number of 55 biodistricts.¹ As an effect of their increasing recognition as a space and

a tool of local governance and of promotion of sustainable rural development, they have more recently been integrated in the national law on organic farming (2022) and in rural policies. At the same time in France, the experiences that developed in many small regions since the 1990s, either focused on organics or on a larger framing of sustainable agriculture and food, have not been codified nor formalised at the national scale within such a convergent perspective as in the Italian case, and different visions coexist. More recently and within the agroecological 2014 law, the French government has established a policy frame for Territorial Food Projects (*Projet Alimentaire Territorial*, PAT), which despite the official agroecological framing, appears much more focused on food localisation and food social accessibility than on agroecological transitions. However, organic food and farming are present in the already started over 400 PATs,² as an effect of a later law on school food procurement (Egalim Law, 2018), of organic farming's increasing legitimisation and of organic networks' active commitment.

This institutionalisation of contrasted policy frameworks raises several questions: which framing and vision of transitions towards sustainable food systems at the local scale do they favour against which other possible framings? What is the place of organic farming and food in these different framings? Which mechanisms explain this process of institutionalisation of the biodistrict concept in the Italian context, and of the Territorial Food Project's one in the French context?

Spontaneous explanations might easily come to mind to explain these contrasted pathways: the different degrees of centralism of the two countries, the presence/absence of charismatic leaders or the more general choice of agroecology as an encompassing model in recent French agricultural policies. However, these processes of institutionalisation are far more complex and it is necessary to historicize them. We will show that they result from specific interplays between science, policy and experience, where the related actors take a different role, leading to different configurations. Our aim is thus to compare the way scientific debates, public policies and local experiences interact in the processes of institutionalisation of policy frameworks aimed at supporting transitions towards more sustainable territorial food systems. This will allow us to understand why and how each framework was favoured and what was the place of organic farming and food in these frameworks. For this, we rely on previous work already comparing these two countries (Stotten et al., 2018; Darnhofer et al., 2019; Lamine et al., 2019) and on the experience and knowledge acquired through our long-term commitment in certain small regions through action research.

In a first section, we present our analytical approach and materials. In the second section, we propose a focused review of the French and Italian literature dealing with transitions to more sustainable territorial food systems, which allows identifying three main framings in the orientation of the scientific debates that contribute to larger debates and processes of institutionalisation. In the third and fourth sections, we analyse the trajectories of the relative place of organics in policies, experiences and debates linked to these issues in France and Italy and the processes of institutionalisation of national policy frameworks. We finally discuss in the fifth section the specific configurations of

1 Source: INNER, https://www.google.com/maps/d/u/1/embed?mid=1WLBl0jAxvkt2Aq5Hjb_cOgui6DVkmYKY&ll=42.9893890160647%2C13.3798489989101738z=6. A ministerial census is also currently being carried out to map biodistrict initiatives that are legally recognised according the newly issued national decree or on the basis of existing regional laws.

2 Source: French Ministry of Agriculture. <https://agriculture.gouv.fr/pres-de-430-projets-alimentaires-territoriaux-pat-reconnus-par-le-ministere-au-1er-avril-2023>.

science-policy-experience interplays that lead to different public schemes to support transitions to more sustainable territorial food systems, where organic takes a different place, and suggest larger insights regarding governance innovations and some research questions raised by the extension of the biodistrict model at the European scale.

2. Conceptual framework and methods

Our conceptual framework draws on two main perspectives that, respectively, focused on the interactions of science and policy on the one hand, and policy, interest groups and social movements on the other. Social studies of sciences have long described the co-production dynamic processes by which science and society continually shape, constitute and validate one another (Jasanoff, 2004). More recently, in the field of adaptive governance, other authors have suggested the key role of science-policy-practise interface dynamics in order to create a conducive environment to sustainable development (Wyborn et al., 2023). In the field of public policy analysis, several studies have described the processes of reciprocal influence of policy, interest groups and social movements in the regulation and orientation of the agri-food sector, showing how some scientists play a key role as experts (policy advisors) or committed members of diverse networks trying to influence agricultural policies at various scales (Fouilleux and Jobert, 2017). Under the larger influence of these diverse approaches, some authors have analysed the role of the interactions between the academic sphere, social movements and public policies in the processes of legitimation and institutionalisation of specific framings at the national scale: of agroecology in France and Brazil (Petersen et al., 2013; Lamine, 2015), of organic farming in Austria, France and Italy (Darnhofer et al., 2019).

In continuity with this previous work, our aim here is to understand the role of such interactions in the legitimation of different framings and the institutionalisation of contrasted policy frameworks supporting transitions to more sustainable territorial food systems in France and Italy. For this, our analytical framework builds on the reconstruction of the two national trajectories in order to understand how the relative place of organic framing in both countries is linked to specific configurations of interactions between the academic sphere, public policies and local experiences (and networks that articulate these). The trajectory approach allows for a heuristic and nuanced understanding of the historical, social, economic, and political factors that have led to this legitimation of different framings and this institutionalisation of different policy frameworks in France and Italy.

To that end, we have processed in three iterative steps:

- First we have carried out a literature review of both national scientific productions in order to identify the main framings developed in each country to tackle transitions to more sustainable territorial food system, with special attention to the place of organics.
- Then, by adapting a method developed for the European ATTER project,³ based on the sociology of public action (Fouilleux and

Jobert, 2017; Niederle et al., 2022), we have set up an intermediary: analytical table for each country, aimed at identifying the key agricultural (or food systems related) policies, localised experiences, networks (and their composition) and the relative place of organics, over the five last decades.

- In a third step, based on a crossed discussion, we have compared the background in which the two trajectories developed (the origins, the reference framings), the actors involved in their definition and implementation, the institutionalisation processes, the governance dynamics. This allowed us to periodise the national trajectories and identify the specific configurations of interplays that lead to different visions and related policy frameworks, where organic takes a different place, as well as to discuss the further perspectives that emerge from new configurations of these interplays.

This analytical work relies, on the one hand, on previous work already comparing the framings of transitions to more sustainable territorial food systems in these two countries (Stotten et al., 2018; Lamine et al., 2019; Rossi et al., 2019) or studying territorial food systems trajectories in each country (Favilli et al., 2015; Pugliese et al., 2015; Bui et al., 2016; Fèche et al., 2021; Barataud and Coquil, 2022; Lamine et al., 2022), as well as on material gathered within recent or ongoing international and comparative research projects.⁴ On the other hand, we mobilised the larger experience and knowledge acquired through our involvement in several local and national multi-actors networks dealing with organic farming and agroecological transitions in both countries.

3. How the scientific debate (co)produced different framings

While the scientific production dealing with transitions to more sustainable territorial food systems has bloomed at the international scale mainly in the last decade, along with the recognition of the need for systemic and more place-based strategies in the academic and policy worlds and even more with the increasing number and diffusion of local experiences, it actually draws on previously established concepts and epistemic communities. Indeed, the notions of *foodshed* (Kloppenborg et al., 1996), *localized agrifood systems* (Muchnik et al., 2008) or *regional food systems* (Clancy and Ruhf, 2010; Kneafsey, 2010), among many others, had been suggested much sooner, and were to different extents articulated with sustainability issues. Transitions to more sustainable territorial food systems are of course framed differently by these different communities (and others). Based on a focus on the French and Italian recent literature, we identify three main “framings” of such transitions that, as we will later see, appear to be, although to different extents, in mutual processes of influence with both policies and local experiences (and related networks): a terroir/territorial development framing, an organic agriculture framing and, more recently emerged, an agroecological framing.

⁴ Such as the Healthygrowth (Core Organic Program, 2013–2016) and ATTER (2021–2025) projects.

³ <https://www6.inrae.fr/atter-rise>

3.1. The terroir/territorial development framing

The fact that Italy and France are both characterised by a longstanding importance of a local/place-based food culture and of localized food systems, territorially embedded (in cultural, social, environmental, economic terms) has generated in both countries to a wide literature, over time focusing on the specificities of the link between food products or food systems and territorial features as well as on the broader place-based dynamics of development characterising rural areas and food systems.

In France, innumerable studies have dealt with geographical indications and *terroir* dynamics for decades in cultural geography, economy, sociology and other disciplines, and some of these approaches have been articulated since the 1990s within an interdisciplinary approach and research community called SYAL (French acronym for “localized agrifood systems”), defined as “*production and service organisations (units of agricultural production, agrifood enterprises, markets and stores, restaurants, services, etc.) [that are linked] by their characteristics and by their relationship to a specific territory*” (Muchnik et al., 2008). As *terroir* products are often oriented towards distant consumers, the potential of the links between production and consumption at the local scale in supporting sustainability and especially its environmental and social dimensions is variably tackled in this framing (Lamine et al., 2019). Vivid debates over this contribution of *terroir* products and visions to sustainability have for example led some authors to develop the concept of “basket of goods” (*panier de biens*), focused on the contribution of territorial resources to a sustainable territorial development (Hirczak et al., 2008).

In Italy, also starting from the 1990s, together with a rich literature focusing on the trajectories and synergies developing at local level around the existence of production systems closely related to specific territories (Belletti et al., 2006), an intense debate on the territorial scale of the development processes of rural areas and agri-food systems has developed in the scientific circles and beyond. A special attention has in particular been paid to the extension of the ‘industrial district’ frame (Iacoponi, 1990), leading to the conceptualisation of ‘rural’- and ‘quality agri-food’ districts (Brasili and Fanfani, 2007). These were laden with multiple meanings in this literature: economic policy instruments aimed at supporting the development of local agri-food systems and rural communities; methods of governance of rural systems, based on local public-private partnership and multi-level governance (in relation to the different territorial-institutional scales); ways to implement the subsidiarity principle in the promotion of local development.

In both countries, in relation to similar trends at international level, this territorial perspective and the debate on food re-localisation have more recently led to the development of additional streams of studies concerning territorial(ised) food systems (Lamine et al., 2012; Darrot and Noel, 2018), the grassroots development of local food circuits and alternative food networks (Brunori et al., 2012; Rossi, 2017; Corsi et al., 2018), the experimentation of local/urban food strategies/policies (Lardon and Loudiyi, 2014; Dansero et al., 2019) and the redefinition of the relationships between food and space (Tecco et al., 2017; Lazzeroni et al., 2023).

3.2. The organic framing

Organic is not at the forefront of the above literature, which is often more focused on territorial (economic) development than on (ecological) sustainability. It is tackled by a different literature in both countries.

In France, in a context where organic farming was more and more considered – and from the 1980s on, legally defined – as a response to both global and local collective stakes (environmental, economic and social ones), a large number of studies have dealt with the territorial dynamics of organic agriculture (Cardona et al., 2014; Cresson and Fleury, 2014), tackled through the analysis of institutionalised but also informal or collective initiatives at the territorial scale. In link with the development of specific policies and programs devoted to organic farming in France from the 1990s on, applied at the territorial scale (linked to water quality, dealing with organic farming strategies, public procurement or other focuses), such studies have most often been carried out at the scale of small regions (French *pays*, *bassins de vie*, water basins, etc.). Some have dealt with larger, administrative regions like in the case of the Ile de France, i.e., Paris large area (Boivin and Torre, 2011) or of a whole *département* like the Gers (a leading organic area), with a study of organic farming as a “territorial innovation” and a way of “smart specialisation” (Arnaud and Triboulet, 2022).

In the Italian research, a territorially-based perspective in looking at organic farming/food systems has started to spread in the context of the broadening of the organic frame at the international scale towards a broader sustainable development model, integrating ecological, social and economic dimensions (according to IFOAM principles) and enhancing endogenous resources. This perspective has led some scholars to analyse the potential of organics in building more sustainable and equitable food systems and, more generally, in contributing to local rural development (Pugliese, 2001; Favilli et al., 2015; Stotten et al., 2018). The scientific attention to the role of organics as a structuring principle for local development has further developed hand in hand with the spontaneous setting up of ‘biodistricts’, fostered by the existing legal framework defining ‘rural districts’ and ‘quality agri-food districts’ (2001) and, afterwards, by the specific law institutionalising them (2017). This has generated to an increasing number of studies. ‘Biodistricts’ have been studied for their capacity to combine the growth of local organic agri-food value chains and endogenous and sustainable local development (Pugliese and Antonelli, 2016; RRN, 2019a; Belliggiano et al., 2020) and, over their spread, they have provided a rich material for the analysis of their characteristics and performances (Zanasi et al., 2020; Assiri et al., 2021), their potential as a tool for sustainable and participatory local development processes (RRN, 2019b) as well as their critical aspects and fragilities (RRN, 2019a, 2019b; Guareschi et al., 2020).

3.3. The agroecological framing

Studies on agroecological transitions at the territorial scale have bloomed in the 2010s in the international literature (IPES-Food, 2018), accompanying the interdependent processes of adoption of agroecology as a political banner by many international agri-food social movements (Rivera-Ferre, 2018) and of institutionalisation in some countries such as France, Brazil, Cuba and others. Agroecological

transitions are increasingly tackled at the scale of territorial food systems, through diverse conceptual frameworks: *agroecological food systems* (Vaarst et al., 2017), *agroecology territories* (Wezel et al., 2016), *agroecology-based local agri-food systems* (Molina and Lopez-Garcia, 2021).

In French research, agroecology as such has started to be widely discussed in the 2000s (Ollivier et al., 2019), first in the agricultural sciences, where the agroecological framing, until then only adopted by quite marginalised researchers and actors, has driven new research on the transition of agricultural systems not only at the farm scale, from the 2000s on, but also increasingly at the territorial scale (Duru et al., 2015). It is important to notice that the importance of the “systemic agronomy” and “agrarian sciences” currents in the French agricultural research have both eclipsed the agroecological framing as such and prepared the later agroecological turn. In the social sciences, several empirical studies have analysed the mechanisms that favour agroecological transitions and highlighted the importance of the combination of public and collective/civil society action (Lamine, 2015; Bui et al., 2016). While organics constitutes a great part of the initiatives and networks that are reported to foster and lead such agroecological transitions, the agroecological framing includes a wider diversity of ecologised agrifood models. The recent development, within the agroecological policy launched in 2012 and defined by the law in 2014, of a policy framework favouring territorial food systems projects (*Projets Alimentaires Territoriaux*), has generated to more recent studies and articles focusing on the governance dimension and highlighting the notion of food democracy and of inclusiveness and empowerment (Maréchal et al., 2018; Darrot et al., 2019; Loudiyi and Houdart, 2019).

Italian agricultural research has been dealing with agroecology for three decades, having introduced the approach first as an integration of principles of ecology and agronomy (Caporali, 1989; Vazzana, 1998). The interest has grown in the last decade and beyond the agricultural sciences, hand in hand with the spreading of the framing among academics and practitioners, both connected to the increasing involvement in agroecological networks at international level (Wezel et al., 2018; Migliorini et al., 2020). Indeed, Italian academics (like French ones) have played a crucial role in the development of the European agroecology movement over the 2010s. In their works, agroecology is analysed as an integrative framework for organic farming (Caporali, 2011; Barberi and Bocchi, 2018; Ciaccia et al., 2020; Deguine et al., 2023), sustainable agri-food systems (Barberi et al., 2017; Bocchi, 2018; Migliorini, 2018; Gargano et al., 2021), food re-territorialisation processes (Bocchi and Maggi, 2014), redefinition of knowledge systems and social mobilisation and political engagement around transition goals (Rossi, 2020; Vanni, 2020). With the growing interest in the biodistrict model in Italy, some authors have linked these two framings by assessing the performance of biodistricts on agroecological transitions (Passaro and Randelli, 2022). In recent studies, the concept of biodistrict is evolving from an organic farming framing towards a comprehensive definition of sustainability where key concepts are included such as inclusiveness, empowerment, public goods (Guareschi et al., 2023) or food citizenship (Rico Mendez et al., 2021).

This short and focused literature review shows that Italian and French literature have followed quite parallel pathways. On the other hand, the public policies dealing with this issue have been framed differently and the local concrete experiences and related networks

have taken quite different pathways. It is the specific interplays between science, policy and experiences that we will analyse here, in order to understand why different frameworks were favoured in these two pioneer countries, giving a different place to organic farming and food.

4. How in France, despite its early pioneer role, organics lost the battle of institutionalised territorial food systems

4.1. Agricultural modernisation and related resistances (1960s to the 1980s)

In France, while since the early 20th century early innovative policies and institutions have focused on food products quality, the modernisation turn of the 1960s has generated the related specialisation and concentration trends that are to be found in most western countries. The decades running from the post WW2 period to the 1980s is that of the justly coined “great transformation” of French agriculture and food system (Allaire and Boyer, 1995). The 1960 and 1962 agricultural laws set up a series of measures to foster the modernisation of French farms: incentives for aging farmers to leave their farms, creation of land offices aimed at facilitating land access, reform of the agricultural teaching system etc. Most of these measures came out of negotiations between the government and the main farmers’ union, a system of co-management (*cogestion*) that was to last for the following decades, despite the emergence of alternative unions such as the Confédération Paysanne in 1987. These laws mainly dealt with farms structures and land issues, while food issues were mainly framed in terms of food safety and fraud control on the one hand for all products (managed by the Ministry of agriculture), and quality signs on the other hand for specific products (managed by a devoted institute, the INAO for National Institute for Origin and Quality, created in 1935). Agricultural markets were from 1962 on mainly oriented by the European Common Agricultural Policy with the system of price and market support that also aimed at guaranteeing a fair income for farmers.

In this period (Figure 1), diverse farmers’ networks would resist the modernisation mantra by defending other models such as extensive grassland-based dairy systems or organic agriculture. Organic farmers were already well implanted in some regions and had gathered into pioneer organic networks as early as in the late 1950s, later reinforced by the neo-rural arrivals of the 1960s and 1970s in some regions. The national FNAB network (federation of local organic farmers’ networks) originated in 1978. These pioneer organic networks were quite diverse, most being primarily led by farmers, others structured by private organic inputs operators (such as the Lemaire Boucher network), while an organisation created in 1952 and named “*Association Française pour une Alimentation Normale*” claimed a health and nutrition lens. It is interesting to notice that scientists – with the exception of medical ones in this last case – were not really involved in these movements, in a context where some scientists’ work on “living soils,” from the 1930s on, was ignored by the scientific and public arenas (Pessis, 2020). The progressive organisation of the organic “sector” facilitated the increasing legitimisation of this agricultural model that was eventually recognised by the law in 1980.

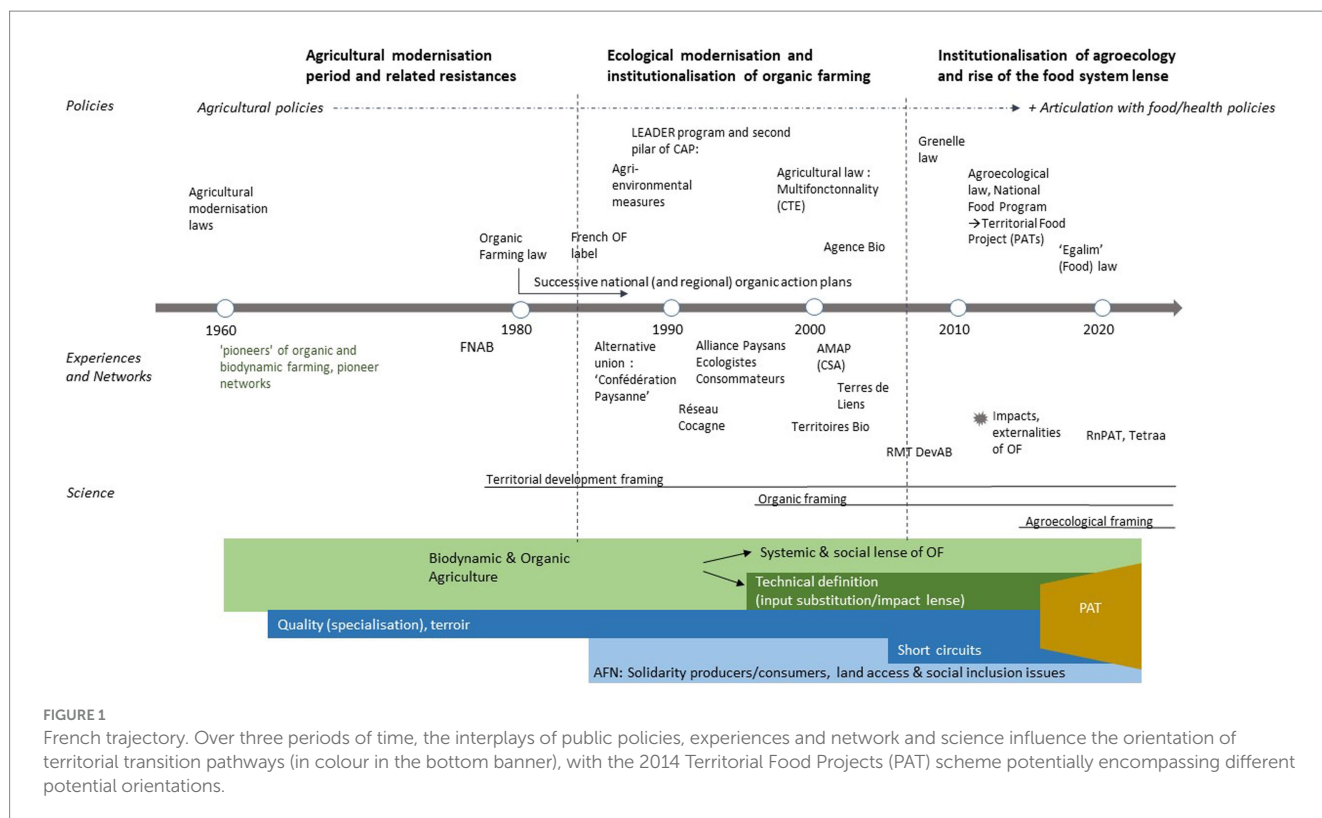


FIGURE 1

French trajectory. Over three periods of time, the interplays of public policies, experiences and network and science influence the orientation of territorial transition pathways (in colour in the bottom banner), with the 2014 Territorial Food Projects (PAT) scheme potentially encompassing different potential orientations.

France has indeed been one of the first European countries to develop a specific law and an official label for organic farming (respectively in 1980 and 1985), well before its implementation in European regulations (1991).

4.2. Ecological modernisation and the institutionalisation of organic farming (late 1980s to the 2000s)

The 1980s appear as a turning point in French policy thinking, as the decentralisation laws gave more autonomy to the *départements* and municipalities and newly created administrative regions in the definition of their own strategies. They are also a shift in European policies with the first agri-environmental measures (1985), often considered as the first sign of the progressive – although weak – ecologisation of agricultural policies (Deverre and de Marie, 2008), and a few years later with the Mac Sharry reform (1992) and the creation of second pillar of the CAP (1999). In addition, a new territorial integrated and endogenous approach to the development of rural areas emerged at EU level and led to the experimentation and then generalisation of the Leader program (1991).

The combined effects of the national decentralisation process and of the new European policy framework initiated a period of intense innovation at the scale of small regions and life basins and a renewed attention to rural dynamics. The 1999 agricultural law established the multifunctionality framework and was the first to adopt not only a systemic lens but also a territorial one, with the Territorial Farm Contracts (*Contrats Territoriaux d'Exploitation*) that fostered territorial and collective dynamics. However, these policy changes did not always go along with a strong environmental focus and for

example, France was slower than other countries to put in place agri-environmental schemes and more reluctant to use these funds to support organic farming (Darnhofer et al., 2019). From the late 1990s on, a diversity of new forms of alternative agrifood networks, bringing together farmers and consumers started to emerge all over the country, claiming for more direct links and solidarity between producers and consumers (Community-Supported Agriculture groups known in France as AMAP, starting in 2001, Alliance Paysans Ecologistes Consommateurs, created in 1991). Other organisations were more specifically focused on land access issues (Terre de Liens, created in 2003) or on social inclusion (Réseau Cocagne, created in 1991). Despite their diversity, all of them have since their early days argued in favour of more localised food systems, and most of them were strongly anchored in the organic framing, although not without internal controversies as was the case with the Amaps (Lamine, 2005).

Within organic networks, there were vivid debates over the translation of the first European Rules (1991) into French guidelines in the 1990s, as the organic sector was already ruled by an innovative and quite participatory system of producers-consumers commissions and related guidelines (Lamine, 2017, 2020). Many organic networks and actors considered the European framework was far less demanding and ecological than the previous national one and claimed for a better integration of key stakes such as the “link to the land” for animal production for example. Agricultural research started to work on organic agriculture in the 1980s in some pioneer programs and teams (Le Pape et al., 1986), and in 2000, the first organic program was launched at INRA. In 2008 a network bringing together scientists and agricultural organisations (*Réseau Mixte Technologique DevAB*) developed discussions and studies on the contribution of organic farming to territorial development (Lamine, 2011; Cresson and Fleury, 2014). The national organic network FNAB carried out diverse studies

and edited guides on this issue at least since the late 1990s. From 1997 on, successive national action plans created devoted institutions and instruments to support organic farmers as well as food chains (*Agence bio*, created in 2001, *fonds de structuration des filières* etc.). Diverse consultancy and lobbying networks also started to bloom around organic food procurement, such as Un Plus Bio, born in 2002, aimed at supporting local food policies orientation towards more organic and local products and the transformation of public canteens. This supported a strong development of organically-farmed area and between 1995 and 2010, the number of certified organic farmers raised from 3,602 to 20,604 (Agence Bio), although with a very large variability across French regions.

Along with this development of organic farming, many small regions have developed territorial development strategies focused on organic production and consumption. It is the case of Correns (a 913 inh. village turned 100% organic in terms of its agriculture, almost only vineyards/winemakers; [Cresson and Fleury, 2014](#)) and of the Drôme valley (often called *Biovallée*), which is one of the cradles of French organic farming, which has been supported by local politicians since the early 1990s in continuity and coherence with a strong concern for the river management, through devoted programs (cooperatives in the early 1990s, food logistics etc.) and with the support of various experts and scientists (through a scientific council accompanying the Biovallée project and various partnerships with researchers). This ambitious territorial strategy allowed the territory to reach 50% of land certified organic in 2021. After 2012, this organic framing was enlarged to the agroecological one, not only due to the new government policy framework, but also to the presence of agroecological experts and organisations in the region. Another case of territorial strategy oriented by the organic framing is that of the town of Mouans Sartoux. It is located in a highly urbanised coastal area and, in contrast to the two above cases, the initial focus was more food and health than agriculture as such. In the late 1990s after the mad cow disease episode, the municipality introduced organic food in school canteens. Then it created a public local and organic farm to produce vegetables for these canteens. Gradually, the municipality started to serve entirely organic and local meals. This long-term strategy was built with the support of local health associations, state services and the collaboration of researchers from different institutions (Universities, INRAE, national health agency etc.), formalised through a scientific council. It made the municipality a pioneer in the education for sustainable food consumption ([Tuscano, 2022](#)). It is important to highlight the role of transterritorial and international exchanges: these last two regions found in international networks stimulating arenas to discuss their transition pathways, sometimes in interaction with Italian actors and territories.⁵ While these three territories have adopted the organic framing, many territorial dynamics elsewhere

have been framed by terroir and territorial development visions. This is the case of Southern Ardèche, where quality signs have been developed since the 1980s while the region was also very attractive to diverse forms and networks of alternative and organic agriculture, giving way to conflicts but also combinations between the territorial development framing and the organic one – as well as more recently, the agroecological one ([Lamine et al., 2022](#)).

4.3. The institutionalisation of agroecology (late 2000s to now): an ambiguous context for the French organic sector

The late 2000s introduced a shift with the rise of water quality, biodiversity loss (Rio + 20) and climate change issues. The alternative agri-food networks and peasant farming ones gradually gained recognition and eventually started to access the Agricultural Ministry Funds from 2009 on, while the notion of short circuit was officially defined and recognised by the Ministry in 2008. The national “Grenelle debates” over environmental issues carried out in 2007 led to a new law (2009) which designated approximately 500 so-called priority catchment areas as an attempt to implement the European Water Framework Directive ([Barataud et al., 2014](#)). Organic farming was seen as a way to solve the problem of water pollution, although in most water catchment areas it mostly remained framed in terms of impact and appeared difficult to include in action programs, due to the resistance of some agricultural actors. Following regional initiatives, in 2008, a national network was initiated by the FNAB organic network around this territorial framing of water issues with the Water, Organic and Territories (*Eau, Bio et Territoires*) network, renamed *Territoires bio* in 2020, with the explicit mention of water disappearing from its acronym. These actions have structured networks of pilot sites (today called *Territoires bio pilotes*, gathering 30 local authorities and Regional Natural Parks), aiming at the development of organic farming in their areas. Some interprofessional organic networks have also supported specific schemes to foster organic farming at territorial scale, such as the Committed Organic Territories (*Territoires Bio Engagés*), in the Nouvelle Aquitaine and the Hauts de France regions (southwest and north).

While the context seemed increasingly favourable to the organic model, which could claim to be the perfect “sustainable agriculture prototype” ([Bellon and Penvern, 2014](#)), in 2012, the newly formed government announced a national policy turn towards agroecology – prepared through strong interactions with scientific circles and devoted programs and reports published in the previous years ([Lamine et al., 2019](#); [Ollivier et al., 2019](#)). Soon followed a national agroecological program, with some experimental concrete programs aimed at supporting territorial dynamics (such as the *Mobilisation Collective pour l'AgroEcologie* program, 2013),⁶ and in 2014, a new agricultural law. This law defined (although quite vaguely) agroecological practices and a new legal status for farmers' groups aimed at articulating ecological and economic stakes (GIEE). This agroecological turn was by no way consensual and soon after the launch of this new policy, in 2013, a coalition of peasant, consumers

⁵ Biovallée has since around 2013 developed exchanges with Cilento and the network of Italian biodistricts and has participated to diverse European projects, Mouans Sartoux has participated to the European URBACT programme, and coordinated the BioCanteens project, which aims to disseminate the municipality's actions in order to share experiences with other European cities. Despite its really small size (10,000 inh.), it also became in 2018 member of the “Milan Pact,” a forum that claims the key role of cities in food transition.

⁶ <https://agriculture.gouv.fr/mobilisation-collective-pour-lagro-ecologi>

and organic movements was set up to claim for a “peasant agroecology” in opposition to the governmental framing.

The 2014 law, along with other policy changes towards a “food system” rather than merely agricultural perspective (recognition of short circuits in 2008, creation of the National Food Program in 2010 etc.), also introduced a new “territorial food project” (PAT for *Projet Alimentaire Territorial*) instrument. Supported through calls for tenders since 2015 (40 to 100 K€/project for 2 to 3 years to run and facilitate a diagnostic and the definition of an action program), this new policy concerns nearly 400 territories today. A sustainable food systems lens is thus stated in the law, although the official PAT definition and the ongoing projects are much more framed by the goal of relocalisation than that of transition towards more sustainable modes of production. This sustainable food systems lens was already claimed by many civil society networks, such as the Amap networks, and later on alternative/peasant farmers networks which they joined in a larger national coalition formed in the late 2000s. This coalition was more recently articulated with that of agroecology into a peasant agroecology coalition largely as a result of their integration in transnational networks such as La *Via Campesina*.

In this period, organic farming continued to gain importance in the French agricultural landscape and controversies developed in the organic sector, leading to re-differentiation processes whereby some actors would claim a more systemic and social lens (referring or not to agroecology) against the narrow technical definition of organic farming in terms of input substitution (Lamine, 2017). Public organic research was reinforced although this remained a matter of controversies in the scientific arenas, especially when in 2013 a report was ordered by the government about the comparison of organic and conventional agriculture, which was considered by many to overlook most organic agriculture (and food) positive impacts. This gave way to an intense controversy involving not only scientists but also the organic networks (Lamine, 2020) and to new research on the externalities of organic farming (Benoît et al., 2017). Some scientists also joined the Organic Food Systems network created in 2017 at the European scale, which mainly gathers health scientists.⁷ While the territorial scale was gaining ground, numerous inter-territorial and international exchanges have also been developed since the early 2010s, within European projects and networks such as the Healthygrowth project and more recently the ATTER project. Often in articulation with researchers, Regional Natural Parks have also played a key role in the support to ecological forms of agriculture, while in the more recent period several of them also got involved in Territorial Food Projects, alongside local authorities.

The elaboration of the PAT scheme has been quite sudden and top-down. It has been influenced by rich policy/experience interplays, through the pressure of alternative networks during the discussion of the law (the PAT insertion in the law results from an amendment of a green Deputy, who was close to some alternative food networks and organic movements). Science/policy interplays appear of less importance as the framework was not primarily influenced by scientific research nor by other forms of systematisation of local experiences. It was only after the policy framework was set up that the

government services put in place, with the RNPAT (national PAT network), a network bringing together scientists, local authorities and agricultural organisations, aimed at producing and discussing analyses about local PAT experiences. Larger interplays are thus only developing in the current implementation phase. Moreover, organic farming is only part of the PAT framework, which is officially based on the agroecological paradigm, like the law that defines it, and with the same encompassing meaning as in the said law. Organic farming as an agricultural model and organic networks are thus variably present in these PATs, and when they are, it is most often in link with public procurement issues – due to the legal constraints set up in 2018 by the Egalim law which include an obligation for public canteens to include min. 25% organic products. The recent inflation period linked to the covid crisis and Ukraine war fragilised the French organic sector with consumption levels that started to drop in 2022 for the first time, and the funding for not only conversion but also “maintenance” (*maintien*) of organic farms has dropped from 2017 on, public support to organic farming remaining an issue of controversies. In short, the PAT scheme and the related networks and studies tend to appear today as the most visible ones dealing with transitions of territorial food systems, despite a diversity of networks had worked on this issue based on an organic framing for much longer.

5. How in Italy a convergence progressively emerged around the notion of biodistrict

5.1. The incomplete modernisation of Italian agriculture (1960s to the 1980s)

Italian agriculture did not undergo a homogeneous modernisation process. On the one hand, an agro-industrial system based on economies of scale, standardisation, productivity, de-territorialisation (and long supply chains) has emerged and stabilised, like in France, favoured by European, national and regional agricultural policies and by the development of a robust guidance-support apparatus (driven primarily by powerful farmers’ unions and their close integration with both agri-food structures such as cooperatives and consortia, and political forces). On the other hand, the strong diversity of the country in terms of physical characteristics, its high population density, the rigidity of the land market and the farms features have triggered more diversified trajectories than in other countries. Moreover, the presence of an agricultural tradition strongly rooted in local socio-economic systems and of different forms of integration between agriculture and other economic sectors (hence multiple family-based activities) have led to a differentiated impact of European policies and allowed farmers to maintain close ties with the territorial specificities and with society at large. Some production systems have maintained a strong territorial rootedness and defined specific models of modernisation (as is the case of some quality production sectors, e.g., wine, cheese, cured meats) and other small scale systems rooted in the territories have survived – while many also disappeared – often supported by cooperation and supply chain integration as well by EU policies and funds.

This ‘late modernisation’ gave way to an ‘early diversification’, a process that started in this phase and developed in the next (Figure 2). Hand in hand with the development in the early 1970s of a new

⁷ https://www.oneplanetnetwork.org/sites/default/files/from-crm/ofsp%2520report%2520Exec%2520Summary%2520VF_0.pdf

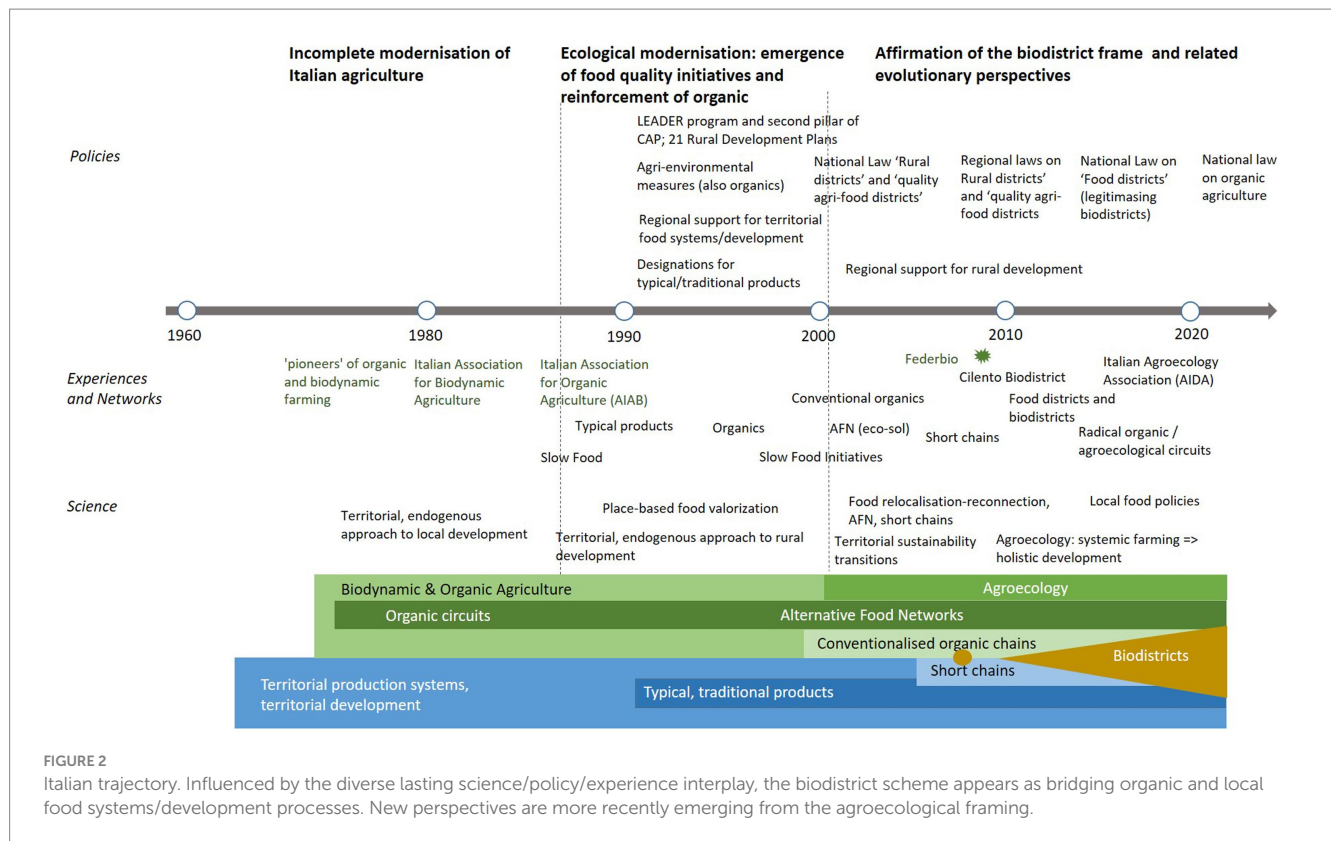


FIGURE 2

Italian trajectory. Influenced by the diverse lasting science/policy/experience interplay, the biodistrict scheme appears as bridging organic and local food systems/development processes. New perspectives are more recently emerging from the agroecological framing.

environmentalist consciousness at the international level, a growing mobilisation capacity of civil society (in particular environmental and consumer associations) around the environmental and health impacts of industrial production systems introduced important factors of change. The agro-industrial model began to be questioned and space was created for the (re)emergence of alternative production systems, focused on quality and greater environmental sustainability, and aimed at enhancing the social resources of the farm and drawing value from endogenous territorial resources. An important role in this counter-trend process has been played by the 'pioneers' of organic and biodynamic farming, farms that since the early 1970s had proposed a radical alternative to the model of modernisation, giving rise to new supply chains and spreading a new culture of farming and food. These realities consolidated during the 1980s, contributing to the development of movements with a strong identity and undertaking a process of growth on a production, economic, organisational and cultural level. Important associations were established in this period: the Italian Coordination 'Cos'è biologico?' (What is organic) (1982), the Italian Association for Biodynamic Agriculture (1982), the Italian branch of Demeter for the certification of biodynamics (1985), and the Italian Association for Organic Agriculture (AIAB) (1988).

5.2. The ecological modernisation period: emergence of food quality initiatives and reinforcement of organics (late 1980s to the 1990s)

Awareness of the criticalities of the productivist model of the agro-industrial system (surpluses, environmental impact, food crises)

became more acute and widespread, leading from the late 1980s onwards to further and diversified processes of change in farm strategies and food culture. The need for greater environmental sustainability, initially claimed exclusively by the social movements, became the subject of a broader debate involving the academic world and government institutions. With the reform of European agricultural policies, a new territorial – integrated and endogenous – approach to the development of rural areas emerged, with the Leader program and the second pillar of the CAP. These changes had a great impact in Italy, where the administrative decentralisation assigning exclusive competence on agriculture to the Regions (1992) favoured even more the adoption of a place-based, contextual approach (the rural development policies were managed through 21 regional Rural Development Plans).

Furthermore, in the 1990s, a new attention to product quality and its link with territorial contexts spread among consumers and the debate focused on new niche market opportunities for small producers and processors located in (marginal) rural areas, to be carved out by selling high-quality products characterised by a distinct place of origin and contrasted to the 'placeless' standardised foods marketed through mass retail outlets. The systems of typical products, with roots in the past and having survived the wave of modernisation, underwent an extraordinary development during the 1990s, embodying an alternative agri-food model to the standardising and de-territorialising one of industrial production and, as such, acquiring an important role in local development processes centred on the valorisation of endogenous resources. This process was reflected in and at the same time supported by new policy frameworks regarding quality food products, with two Italian specificities in addition to the EU regulations defining PDOs or PGIs (1992): the De.CO (Municipal

Designation of Origin) and the PAT (Traditional Agri-food Products). Shortly after, Slow Food, founded in 1986, launched two significant projects, combining the defence of regional traditions, good food, gastronomic pleasure with the safeguard of agrobiodiversity: the *Ark of Taste* (1996), an international catalogue of endangered heritage foods, and the *Presidia* (2000), aimed at implementing concrete actions by directly involving food producers.

These processes, including the institutional and policy reforms and the development of new markets and food movements, were accompanied and supported by academics. Within this new framework, an intense debate developed also over the translation of the concept of industrial district to agriculture, agri-food systems and rural development, which paved the way for the following institutionalisation of these concepts into the legislative initiative on the orientation and modernisation of agriculture – Decree no. 228/2001 –, by establishing the ‘rural districts’ and the ‘quality agri-food districts’.

Alongside the increasing focus on territorially-based food quality/food systems and its implications in terms of economic and cultural enhancement, interest in organic farming also grew in importance during the 1990s. The institutional recognition and the system of subsidies offered by the European policies (organic regulation of 1991, agro-environmental measures and rural policies) contributed to this. On the one hand, this process led to a consolidation of organic farming as an alternative model to conventional agriculture, with a growth in the number of small farms involved and local market circuits. In 1992, the Italian Federation for Organic Agriculture (FIAO, which became FederBio in 2005) was founded as an umbrella organisation aimed at more effectively representing the organic sector at the political level and at spreading information to the public. On the other hand, the process favoured the conversion of many conventional farms, which included farms already oriented to a quality and territorially-based farming, which saw in organics a way to improve their differentiation strategies, but also larger farms with greater operational capacity and integration into the mainstream agri-food system and its economic logics (Fonte and Agostino, 2008).

5.3. Towards the affirmation of the biodistrict frame and related evolutionary perspectives (from the 2000s on)

By the early 2000s, the growing market opportunities for organic products and a regulatory framework that had made conversion to organics quite easy, based on an approach of ‘input-substitution’ rather than of deep and radical change in practises and values, continued to foster the spread of organics. A process of intensification and specialisation at production level and increasing engagement of conventional processing industry and large retailers characterised this growth, in Italy as in other European countries (Fonte and Agostino, 2008). Several scholars have begun to speak of the ‘conventionalisation’ of organic farming (Guthman, 2004), which would no longer be an expression of an alternative way of producing, but would reflect the same interests and values as the industrial agri-food system. The growth of this ‘industrial organic’ and of the related market has triggered the development of an unfavourable context for organics as a radical alternative, being this unable to compete in terms of production costs and prices, especially considering the consumers’

‘distance’ from producers in the long supply chains. However, the emergence and spread of proximity production-consumption circuits, in parallel (and partly as a reaction) to the increasingly evident criticalities of the globalised agro-industrial system, have significantly changed the environment, making it conducive to the enhancement of smaller-scale farming/food systems. Like in France, the affirmation of these short circuits – the so called ‘short food supply chains’, expression of food re-localisation trends and policies – was often significantly supported by Regional Governments and saw the engagement of important organisations. For instance, in 2004 Slow Food launched the Earth Markets – farmers’ markets managed by Slow Food local networks, and in 2008 Coldiretti, the biggest farmers’ union, created the Campagna Amica Foundation supporting its farmers’ markets. Among these short supply chains, the ‘alternative food networks’ based on the sharing of social and environmental justice values and inspired by the principles of solidarity economy, such as GAS (Solidarity-based Purchase Groups) and peasants’ markets, which have been growing exponentially since the mid-2000s, have provided radical-small scale organics with a favourable context in terms of economic sustainability and the maintenance of a ‘political’ (rather than marketing) connotation (Brunori et al., 2012; Rossi, 2017; Corsi et al., 2018). Farmers sharing this approach are often part of peasants’ movements inspired, as in other parts of the world, by the principles of food sovereignty and thus by ideals of resistance to the dominant development model.

Despite this growth, however, the potential of organic farming has long been interpreted reductively by policymakers, largely as an interesting market niche and only exceptionally as a reference model for sustainability transition. Even the scientific community has always been divided in the assessment of its performance and benefits. Emblematic in this sense was the long and difficult legislative path to a national law (2018–2022). The will to counter the conventionalisation and the related erosion of values, principles and goals of organic farming, as well as the constraints put by the institutionalisation, such as the excessive bureaucracy, has later led the movement to start a process of redefinition of organic farming beyond the ‘substitution approach’, similarly to the process ongoing at the international level, led by IFOAM since the 2004 (Fonte and Agostino, 2008). More recently, this has led to the emergence of initiatives of re-differentiation through new alliances among organic farmers aimed at maintaining the original approach of the movement, based on a holistic perspective and a robust value basis. An example is the establishment of Humus – “social network for the Italian bioagriculture,” a forum of diverse organisations involved in organics and in solidarity economy and linked to the international organic movement, which aims at revitalising organic agriculture, highlighting its environmental, health and solidarity connotations.

Hand in hand with this differentiation of pathways within the organic world, agroecology has become a topic of discussion in Italy. This approach has spread both among peasants’ movements, wider movements committed to consolidating an alternative to the dominant development model, and a part of the scientific world where, as early as the 1990s, a number of ‘visionaries’ had argued the need to redefine the approach to agriculture, integrating it with the principles of ecology. During the following two decades, there has been a progressive evolution from a systemic agronomic approach (as opposed to the mere application of organic techniques) to a systemic view applied to the entire food system (and its ecological

transformation), often integrated with a territorial approach. This development has been accompanied by a significant commitment to the public debate. Several Italian academics, after having actively participated in the start of the European agroecology movement, founded in 2018 the Italian Agroecology Association (AIDA), which today tries to resist the process of appropriation of the agroecology narrative by the agribusiness and gathers a large network of organisations (environmentalist, cultural, peasant, of civic engagement). The network also includes most of the organic organisations that defend a rigorous approach to organics, consistently with the evolution at the international level (IFOAM principles). This alliance aims at actively taking part to the public debate in order to support the agroecological model and, more generally, the ecological transition/transformation of food systems.

Over the 2000s, the organic sector has found additional favourable conditions within a particular strand of agricultural and rural development policies. Relying on the territorial-district approach to rural development processes, including an integrative approach to the development of local food systems, in 2001 a Legislative Decree established the 'rural districts' and the 'quality agri-food districts', seen as new specific arrangements of local governance.⁸ Almost all the Regions, in charge of identifying the districts, enacted laws on the two types of districts. In 2017, the national law no. 2015 established the 'food districts', which included the previous typologies but also other sorts of local productive systems, such as those placed in urban and periurban areas, initiatives of solidarity economy, and 'biodistricts', characterised by a significant presence of organic farming and a general orientation towards environmental sustainability goals in local development. By listing bio-districts among the different types of 'food districts', the law explicitly institutionalised them.

Biodistricts however had emerged as a promising model, able to integrate diverse sustainable development goals, even before this institutionalisation. The Cilento Bio-District in the South of Italy (Campania region), promoted by the local branch of AIAB, was the first Italian initiative of such a kind (Basile and Cuoco, 2012; Pugliese et al., 2015). It was formally set up in 2009 and its comprehensive definition soon appeared visionary. It was conceived as a tool for the market promotion of local organic products and, more generally, as an innovative mechanism for local collaborative governance to support integrated and sustainable territorial development. For its creation, a bottom-up, inclusive consultative work was combined with the search for institutional recognition, political role, and financial support.

While this pioneering experience consolidated, becoming a model for the establishment, in 2015, of INNER, the International Network of Eco Regions – which eventually contributed to the creation of GAOD, the Global Alliance of Organic Districts – similar experiments were launched across Italy. While guidelines codifying the setting up of organic districts were issued by the first promoters (AIAB, 2016; Basile et al., 2023), a significant role also emerged for Regional Authorities and Autonomous Provinces. Some of them (Liguria in 2011, Sardinia in 2014) enacted regional laws setting up criteria for the recognition of organic districts, providing the legal basis for their institutionalisation. With reference to the national decree of 2001, this regional legal recognition identified biodistricts as a hybrid, innovative category, between rural and quality agri-food districts, combining goals of promotion of local organic food systems and of rural development, and also experimenting new governance configurations (Pugliese and Antonelli, 2016; Triantafyllidis et al., 2019; Belliggiano et al., 2020).

Once biodistricts were explicitly institutionalised by the national law of 2017, they also started to benefit from funding. According to some authors' critiques (Basile, 2021), this may have fostered the creation of 'paper initiatives'. Later on, the Italian law on organic agriculture (Law n.223/2022) has further developed and completed the national regulatory framework for biodistricts. According to the rules for implementation, organics remain a central component of biodistricts. Moreover, biodistrict potential in terms of local development and as a local governance space is strongly recognised. Ten years after the creation of Cilento initiative, biodistricts in Italy have reached the 34 units, and this number significantly increased in the following years, reaching 55 initiatives in 2022. This growth dynamic unlikely to stop in the conducive environment created for their development.

In line with EU policies evolutions (EU Organic Action Plan, Long Term Vision for Rural Areas), which contributed to a favourable environment for the concept, biodistricts are also mentioned in the Italian CAP Strategic Plan and in the National Action Plan for organic food and farming as a governance arrangement able to strengthen relations along the organic value chains. They are also promoted as important initiators/partners of local food policies, innovation processes, circular economy, and energy community initiatives. Furthermore, practitioners and researchers highlight the potential of biodistricts to support pathways of agroecological transitions at the territorial level (Basile, 2017; Guareschi et al., 2020; RRN, 2021; Passaro and Randelli, 2022; FAO, Biovision Foundation, Food Policy Forum for Change, and Agroecology Coalition, 2023).

6. Discussion: different framings for territorial food system transitions linked to different configurations of science-policy-experience interplays

Italian biodistricts and French territorial food projects are two recent policy schemes aimed at favouring transitions towards more sustainable territorial food systems. While these two models have given rise to an increasing literature, so far their trajectories of institutionalisation have not been compared and discussed. Moreover, the few papers that have analysed these trajectories in France (Maréchal et al., 2018; Darrot et al., 2019) do not investigate the

⁸ No. 228/2001 on "Orientation and modernization of the agricultural sector." The rural districts are defined as "local production systems (as defined by the national law 317/1991) characterised by a homogeneous historical and territorial identity which arise from the integration between agriculture and other local activities, and they are characterised by the production of locally specific goods or services coherent with territorial traditions and natural features of the area." The quality agro-food districts are defined as "local production systems, including interregional ones, characterised by relevant economic presence and productive interrelationships and interdependences between agricultural and agri-food manufacturing enterprises, producing at least one product certified according to National or EU legislation or producing traditional or typical products."

relative place of organics in these schemes in relation to other possible visions and framings of sustainable transitions, while in the Italian literature there is a growing debate over the organic and/or the agroecological framing of biodistricts. Our analysis of the trajectories of institutionalisation of these two schemes aimed at understanding which framing and vision of transitions towards more sustainable territorial food systems were favoured in each country and why the biodistrict concept has been chosen in the Italian context, when in the French context a rather different model has been favoured by policy makers. Through the analysis of the related literature and conceptual debates, we have identified three main framings for sustainable food systems and their transitions that appear to be in mutual processes of influence with both policies and local experiences (and related networks): a terroir/territorial development framing, an organic agriculture framing and an agroecological framing. We have shown that over the three periods described above, the interplays between science, policies and experiences have supported and legitimised different framings, giving a different place to organic farming in France and in Italy, and even across different regions.

In Italy, as the extensive literature produced on the subject in a few years shows (see section 2.2), the biodistrict model has become a recognised form of governance and a methodological framework for supporting the growth of organics and pathways towards broader sustainable local development, involving ecological, social, economic and institutional dimensions. Its recognition process has found an important pre-condition in the previously established models of territorial, endogenous, integrated development of rural areas and of place-based development of food systems. In turn, these models have found a conducive environment in the support coming from a decentralised, context-specific approach in managing rural development and agri-food policies at the regional scale. Over time, this approach has favoured, in various territorial contexts, the consolidation of local actors' awareness of their local specificities, potentials and weaknesses, as well as their familiarisation with the local dimension of the implementation of policies, including the capacity to seize related opportunities. For example, the Leader program, extensively applied in the country, has significantly helped local communities to build capacities for self-representation and self-organisation, and has allowed developing an integrated approach to local development. Against this backdrop, the district model, conceptualised and institutionalised to foster the development of quality agri-food chains and rural areas, has given an additional boost to the mobilisation and cooperation of local actors around specific and situated projects. Later on, the combination of this model with that of organic farming, in the meantime spread well beyond the first radically oriented initiatives, has been crucial, giving new impetus and motivation to the adhesion to the emerging biodistrict framework. Biodistricts are increasingly recognised as a model able to combine private and public interests in enhancing local food systems, supporting broader processes of local development and valorising the territorial suitability for organics (Pugliese and Antonelli, 2016; RRN, 2019a, 2019b). This last opportunity has represented a factor of cohesion among local actors, underpinning endogenous processes of development (Belliggiano et al., 2020), providing governance spaces to support pathways towards circular economy and sustainable transformation in the agri-food sector and local food systems (Poponi et al., 2021; Passaro and Randelli,

2022), in so-doing also providing a powerful tool for territorial marketing strategies (Guareschi et al., 2023).

Due to the large set of visions, interests, opportunities and challenges involved in the establishment of a district, moreover differentiated as a biodistrict, the process requires the local actors to develop effective spaces of governance. As shown by the first experience of the model (Cilento biodistrict), translating the concept into practice needed an experimentation of innovative interactions involving private-public partnerships, aimed at giving the project both legitimisation and financial support. The further development of biodistricts represents a meaningful experience of multi-level governance. Indeed, the first grassroots promoters of the biodistrict model significantly contributed through their initiatives to its emergence, as it had not been conceived in the scientific arenas, in contrast to the other district types, nor explicitly been envisaged in the law on districts. Afterwards, they contributed to the recognition and (in a general sense) the institutionalisation of this new biodistrict model within a devoted network at international level (INNER). These pioneers also pushed other territories to undertake the initiative and public authorities to create specific legal frameworks (through regional laws). All this contributed to the following institutionalisation of biodistricts by a national law in 2017 (more generally devoted to 'food districts'), which then further legitimated and gave a larger visibility to the model. The spread of the biodistrict initiatives in the country, thanks to the favour found among local operators and administrators, and the recognition of the suitability of this model for a mutual favourable development of organics and territories, have led to its further consolidation and legitimisation at higher policy levels. Its inclusion in the European policies for the organic sector and in the new CAP, as well as in the recent Italian law for organic farming and in the regional rural development policies is emblematic in this regard. A growing scientific debate on the potential and evolution of the model has accompanied this consolidation and legitimisation. Our analysis thus shows that the affirmation of the biodistrict model in Italy is the result of a strong science-policy-experience interplay with these different spheres strongly interacting along the process of theoretical/political/experiential elaboration.

In France, diverse transitions pathways had developed in many small regions since the 1990s, some with a focus on organics, others rather inspired by the *terroir* and territorial development framing. Like in Italy, such diverse pathways developed as a result of different configurations of interplays between policy making and concrete experiences and networks (anchored in the farming world and/or in the local civil society) at the territorial scale, sometimes also involving the academic sphere. However, in contrast to the Italian case, the pioneer territorial dynamics anchored in an organic farming framing have not given way to any codification nor formalisation at the national scale. In a context where French national organic organisations and networks have long focused more on technical issues, food chain coordination and water issues than on food systems perspectives, no strong national network has until now emerged, that would define an explicit "organic-based" vision of territorial food systems transitions, despite the actual diversity of local experiences. Moreover, although French policies had been pioneer in adopting a territorial perspective for supporting sustainable agriculture with the multifunctionality framework (agricultural law of 1999), this territorial perspective to sustainable

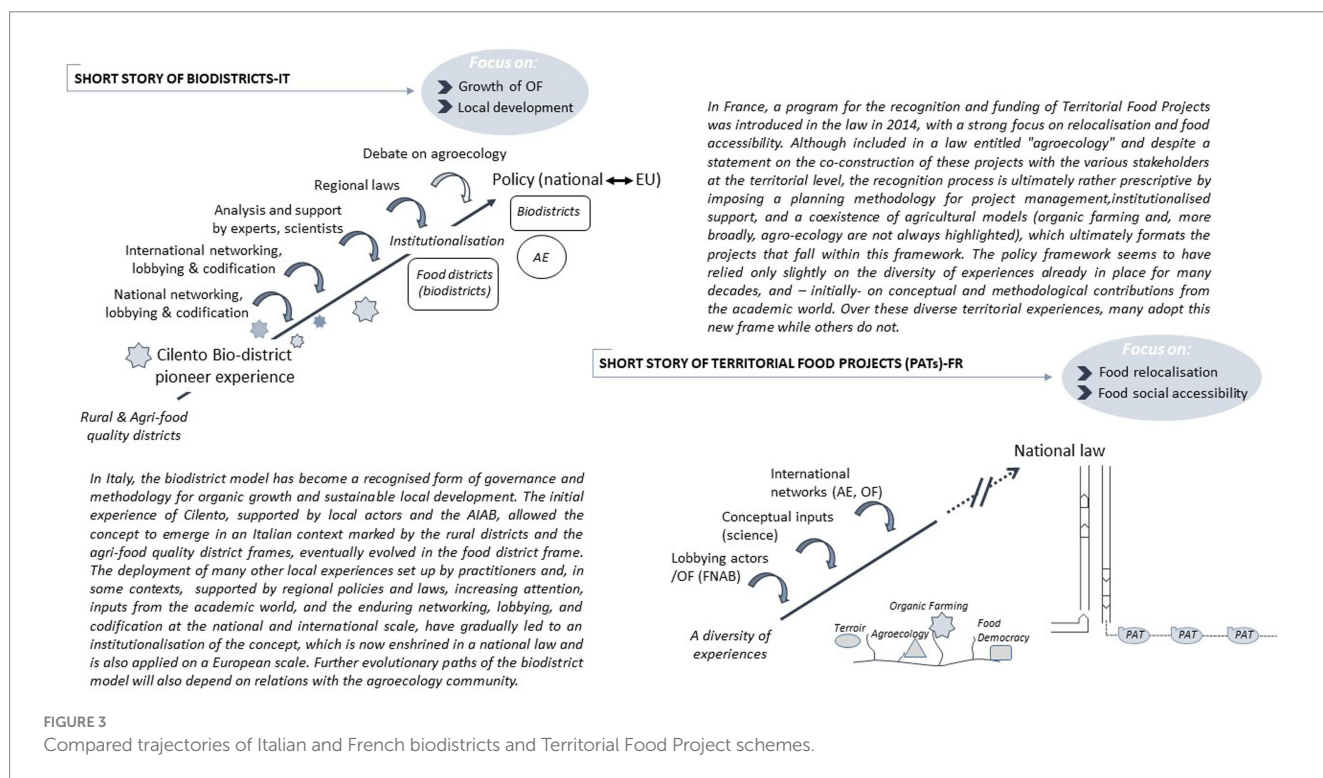
transitions has long remained focused on agricultural practises, (specialised) food chains or water quality issues.

In this context, the process of elaboration of the first French policy concept and national scheme devoted to territorial food systems transition, with the PAT framework, largely ignored this diversity of experiences and the analyses carried out on them. This may be explained by the fact that rather than by a long process of legitimisation and institutionalisation like in the case of the Italian biodistrict model, the PAT scheme has been elaborated in a rather closed way and over a relatively short period of time, which did not give room to the rich interplays across science, policy and experience observed in Italy. Another difference with the Italian case is that, in France, there was no pre-existing institutionalised model at the territorial scale that could have inspired an organic declination, like was the case with the district framework in Italy, inspired by the pre-existing district model. While the PAT framing is precisely addressing the territorial food systems scale, it is much more focused on the relocation of production and food and on food social accessibility than on its agroecological and/or organic transition. This focus on food relocation and procurement leads to overlook the agricultural models that should be favoured, despite the inscription in a larger agroecological policy framework. This is indeed raising critics over the low ecologisation potential of the scheme. The way these critics might in the future lead to a reorientation of the scheme (through the call for tenders and the action of the decentralised government services in charge of supporting local actors to set up their projects) will have to be monitored in the next years.

Like the Italian biodistricts, French PAT are potentially promising local governance tools. In its definition, the PAT framework claims to set up an innovative governance process aimed at co-constructing a territorial project with the various concerned stakeholders. However, the policy framework (in the law and in the calls for projects) loosely

defines the appropriate governance. The effectiveness of PATs as potential democratic spheres for the collective definition of sustainability transition pathways will depend, like for the Italian biodistricts, on what actors locally do of this model. On the ground, governance is very often defined in continuity with previous or ongoing projects and practises of the local institutions leading these PAT, for example with two instances that are, on the one hand, a technical committee and, on the other, a steering committee composed of the decision makers. Many also create lasting working groups or commissions involving local actors (often in a “multi-stakeholder” perspective whereby representative rather than concerned actors are involved) or organise occasional meetings aimed at debating with a wider diversity of actors and even inhabitants. More diverse governance innovations are however emerging on the ground, sometimes as the result of situated policy/science/experience interplays, such as local food councils that may not only play a key role in terms of discussion, concrete experimentation and collective scrutiny over key issues such as agrifood justice and territorial equity, but also foster exchanges across PAT projects (Lamine et al., 2022). This raises the issue of the arenas that may favour the interplay across policy makers, experts, and local networks and actors, at different scales, in order to bring to open discussion these key issues as well as the place of organics (and of other forms of ecological production and consumption) and the governance itself.

In short, the Italian biodistrict concept was elaborated through lasting, iterative interplays between policy, science, and experience and along a patient experimentation and codification process. In contrast, the elaboration of the PAT concept in France appears much more as a technocratic and political ‘sudden’ invention, although it was genuinely inspired by the discussions and lobbying of actors involved in alternative food networks and territorial food strategies (Figure 3). On the other hand, the two schemes share



some commonalities, such as their links to strong decentralisation and regionalisation processes. In both countries, these experiences have been supported by the decentralisation process, which gave more autonomy to local actors in the identification of their own resources and specificities and in the definition of their development strategies, and by some European policies such as the Leader Program. Their potential as local governance tool is also shared by both schemes.

Finally, in both contexts, they present shortcomings and raise critics. The strong investment in the biodistrict model (in terms of recognised role and relative financial support) and the importance it has been assuming as a business and territorial marketing tool have triggered the emergence of possible shortcomings, which could weaken its innovative potential (Basile, 2021). Moreover, biodistricts are less present in more agroindustrial/specialised regions, despite in a few regions they were mobilised as a way to develop a resistance against intensive agriculture (Zollet and Maharjan, 2021). In this regard, PAT appear as more adaptable tools in terms of the types of regions to be concerned. However, the capacity of this tool to foster a real ecological transition of territorial food systems is strongly debated. While such critics are formulated in both countries, other trajectories seem to emerge from more radical view of organics and/or agroecology, with different situations. In France, in a context where agroecology has become the national policy frame, organic farming is often perceived as more ecological, although this gives way to permanent re-differentiation processes (Lamine, 2017). In Italy, agroecology is perceived as a systemic and more coherent model to pursue sustainability transition than “merely” organic farming. Several operators of the organic sector wary of the possible instrumentalisation of organic farming for marketing purposes; some organisations involved in ecological transition and an increasing number of scientists are converging on these more radical approaches, showing an alternative pathway of development. In an international context where a growing attention is being given to the place-based application of the agroecology model⁹ (FAO, Biovision Foundation, Food Policy Forum for Change, and Agroecology Coalition, 2023), biodistricts are seen as powerful tools for supporting pathways of agroecological transitions at the territorial level (Basile, 2017; RRN, 2021). At present, however, Italian public actors do not appear as interested in this potential evolution, probably because of the will to concentrate resources, the supposedly less inclusiveness of the agroecological model and its potentially more difficult institutionalisation. However, future science/policy/experience interplays could favour the integration of the biodistrict model into a broader agroecological approach for territorial development.

In both countries, it will indeed be in local contexts, within the spaces of governance and policy implementation where private and public interests as well as different visions of transitions will confront each other, that the future trajectories of biodistricts and territorial food projects will be delineated. In this sense, the

effectiveness of these tools as potential democratic spheres of self-organisation of sustainability transition pathways will depend on the capacity and responsibility of local governance systems and have to be carefully and critically monitored in the near future.

7. Conclusion

Italian biodistricts and French territorial food projects (PAT) appear as two different ways to favour and support transitions to more sustainable territorial food systems, one focused on extending the organic agriculture choice to a broader model of sustainable territorial development, integrating ecological, economic and institutional components; the other one focused on production/consumption reconnection and food social accessibility, within an encompassing agroecological framework. Despite these differences, the two trajectories share a key feature: they are to be implemented through participatory local governance. The biodistrict guidelines, established and transformed as a co-production of the rich science/policy/experience interplays described above, have influenced the legal framework as a result of larger interactions, both at the national (Italian) scale and at the European one. This poses a further challenge. Which (future) adaptation of the recent European adoption of the biodistrict concept may be expected in diverse contexts, in other countries? The European organic action plan defines a biodistrict as “a geographical area where farmers, the public, tourist operators, associations and public authorities enter into an agreement for the sustainable management of local resources, based on organic principles and practises”.¹⁰ As we have showed through our analysis of the two trajectories, the specificity of past and ongoing science/policy/experience interplays in different national contexts will have to be taken into account in future processes of adoption (a concept which emerged in the specific Italian context is likely not to be appropriable in every other contexts). However, in a context where European, national and local governments are significantly investing in the integration of a perspective of food relocalisation in food policies, biodistricts may represent a governance space where local actors can fruitfully interact to define and implement local policies that articulate the two issues of food relocalisation and sustainable management of local resources. A key issue for further research is the type of governance the biodistrict scheme will favour in the countries and contexts where it will be adopted, and the way it will foster a sustainability transition of local food systems through the experimentation with new, broader forms of food democracy able to give room to all actors and perspectives, knowing the importance of power relations in the agri-food sector. Both Italian and French experiences show the need to ensure an effective interaction among institutional, civil society and economic stakeholders, but also of including directly local farmers, consumers and inhabitants. The overcoming of some well-known limitations of multi-stakeholderism and the

⁹ The ATTER project, in which the discussion leading to this article took place, provides many examples in this regard.

¹⁰ https://www.ecoregion.info/wp-content/uploads/2021/04/com2021_141-organic-action-plan_en.pdf, p.15.

development of really inclusive and integrative approaches will be crucial in this regard.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

CL, PP, AR, and FB contributed to the initial conception of the study. CL wrote the first draft of the manuscript. PP, AR, FB, and GB wrote sections of the manuscript. All authors contributed to the article and approved the submitted version.

Funding

This work was realized within the ATTER (Agroecological Transitions for Territorial Food Systems) project, funded by the European Union's Horizon 2020 Research and Innovation

References

- AIAB (2016). Linee guida Bio-distretti, Modello italiano di eccellenza. Available at: <https://aiab.it/wp-content/uploads/2021/10/disciplinare-marchio-bio-distretto-aiab.pdf> (Accessed May 6 2023).
- Allaire, G., and Boyer, R. (1995). *La Grande Transformation de L'agriculture: Lectures Conventionnalistes et Régulationnistes*. Paris, INRA: Quae.
- Arnaud, C., and Triboulet, P. (2022). *L'Agriculture Biologique, Une Innovation Territoriale au Service du Développement Rural: Le Cas du Gers* Revue d'Économie Régionale & Urbaine, 183–208.
- Assiri, M., Barone, V., Silvestri, F., and Tassinari, M. (2021). Planning sustainable development of local productive systems: a methodological approach for the analytical identification of ecoregions. *J. Clean. Prod.* 287, 125006–125013. doi: 10.1016/j.jclepro.2020.125006
- Barataud, F., and Coquil, X. (2022). TEASER-Lab: faire l'expérience d'une transition agri-alimentaire par la coopération autour d'actions fédératrices. *Géocarrefour* 96. doi: 10.4000/geocarrefour.20420
- Barataud, F., Durpoix, A., and Mignolet, C. (2014). Broad analysis of French priority catchment areas: a step toward adaptation of the water framework directive? *Land Use Policy* 36, 427–440. doi: 10.1016/j.landusepol.2013.09.010
- Barberi, P., and Bocchi, S. (2018). 'Agroecology and Organic Agriculture: Opportunities for Innovative Agronomic Research', Proceedings of 47th Conference of Italian Society for Agronomy (SIA), Marsala (TP), Italy, 12th–14th September 2018.
- Barberi, P., Canali, S., Ciaccia, C., Colombo, L., and Migliorini, P. (2017) 'Agroecologia e Agricoltura Biologica', In RRN (Eds.) BIOREPORT 2016. L'agricoltura Biologica in Italia, Roma. Available at: <https://www.reterurale.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/16935> (Accessed May 6 2023).
- Basile, S. (2017). 52 Profiles on Agroecology: La Experiencia de Los Bio-distritos En Italia, FAO—Food and Agriculture Organization of the United Nations: Rome, Italy. Available at: <http://www.fao.org/agroecology/database/detail/es/c/1073217/> (Accessed May 10, 2021).
- Basile, S. (2021). Report on Organic Districts (or Eco-Regions or Bio-Districts) in Europe, Output 1 EducEcoRegions Project Foster the Ecological Transition of Territories and Communities through Innovative Training Agreement. Available at: https://www.ecoregion.info/wp-content/uploads/2021/11/O1-A1_Organic_Districts_in_Europe.pdf (Accessed May 06, 2023).
- Basile, S., and Cuoco, E. (2012). Territorial Bio-districts to Boost Organic Production. IDEASS; Italia. Available at: <http://www.ideassonline.org/public/pdf/BrochureBiodistretti-EN.pdf> (Accessed May 6 2023).
- Basile, S., Hertwig, J., and Zanasi, C. (2023). Organic Districts. An Introduction and Tool Kit to support the start-up of new and the management of existing Organic Districts, © I.N.N.E.R. – International Network of Eco Regions.
- Belliggiano, A., Sturla, A., Vassallo, M., and Viganò, L. (2020). Neo-endogenous rural development in favor of organic farming: two case studies from Italian fragile areas. *Eur. Countryside* 12, 1–29. doi: 10.2478/euco-2020-0001
- Belletti, G., Brunori, G., Marescotti, A., Pacciani, A., and Rossi, A. (2006). 'Il processo di valorizzazione delle produzioni agro-alimentari tipiche', In: *Tipicamente buono. Prodotti tipici, percezioni di qualità lungo la filiera e possibilità di sviluppo del mercato*. Eds. B. Rocchi and D. Romano. Milano: Franco Angeli. 175–198.
- Bellon, S., and Penvern, S. (2014). "Organic food and farming as a prototype for sustainable agricultures" in *Organic Farming, Prototype for Sustainable Agricultures: Prototype for Sustainable Agricultures*. eds. S. Bellon and S. Penvern (Dordrecht, Netherlands: Springer), 1–19.
- Benoit, M., Tchamitchian, M., Penvern, S., Savini, I., and Bellon, S. (2017). Potentialités, questionnements et besoins de recherche de l'agriculture biologique face aux enjeux sociétaux. *Écon. Rurale* 361:49. doi: 10.4000/economierurale.5309
- Bocchi, S. (2018). *Agroecologia per Nuovi Paradigmi Distrettuali Integrati*, Scienze del Territorio, 6, Firenze: Firenze University Press, 77–84.
- Bocchi, S., and Maggi, M. (2014). *Agroecologia, Sistemi Agro-Alimentari Locali Sostenibili, Nuovi Equilibri Campagna-Città*, Scienze del Territorio, 2, Firenze: Firenze University Press, 95–100.
- Boivin, N., and Torre, A. (2011). 'Gouvernance participative et agriculture biologique en Île-de-France', Territoire en mouvement Revue de géographie et aménagement. *Territory Mov. J. Geogr. Plan.* 11, 82–95. Available at: doi: 10.4000/tem.1255
- Brasil, C., and Fanfani, R. (2007). A Mosaic Type of Development – The Agri-Food Districts Experience in Italy. 103rd Seminar, April 23–25, 2007, Barcelona, Spain 9404. European Association of Agricultural Economists. Available at: <https://econpapers.repec.org/paper/ageaa103/9404.htm> (Accessed July 20, 2023).
- Brunori, G., Rossi, A., and Guidi, F. (2012). On the new social relations around and beyond food. Analysing consumers' role and action in Gruppi di Acquisto Solidale (solidarity purchasing groups). *Sociol. Rural.* 52, 1–30. Available at: doi: 10.1111/j.1467-9523.2011.00552.x
- Bui, S., Cardona, A., Lamine, C., and Cerf, M. (2016). Sustainability transitions: insights on processes of niche-regime interaction and regime reconfiguration in Agri-food systems. *J. Rural. Stud.* 48, 92–103. Available at: doi: 10.1016/j.jrurstud.2016.10.003
- Caporali, F. (1989). Concepts to sustain a change in farm performance evaluation. *Agric. Ecosyst. Environ.* 27, 579–595. doi: 10.1016/0167-8809(89)90119-9
- Caporali, F. (2011). Agroecology and sustainable agriculture. *Ital. J. Agron.* 2:71. doi: 10.4081/ija.2007.71
- Cardona, A., Chrétien, F., Leroux, B., Ripoll, F., and Thivet, D. (2014). *Dynamiques des Agricultures Biologiques: Effets de Contexte et Appropriations*. Dijon-Versailles: Editions Quae.

Programme under the Marie Skłodowska-Curie grant agreement no. 101007755.

Acknowledgments

We are grateful to the reviewers and the Special Feature editors for their constructive critics.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

- Ciacchia, C., Ceccarelli, D., Antichi, D., and Canali, A. (2020). "Chapter 10: Long-term experiments on agroecology and organic farming: the Italian long-term experiment network" in *Long-Term Farming Systems Research*, Eds. G. Bhullar and A. Riar 2020 (Cambridge, Massachusetts: Ensuring Food Security in Changing Scenarios), 183–196. doi: 10.1016/C2018-0-03386-1
- Clancy, K., and Ruhf, K. (2010). Is local enough? Some arguments for regional food systems. *Choices* 25:5. doi: 10.22004/ag.econ.93827
- Corsi, A., Barbera, F., Dansero, E., and Peano, C. (Eds.) *Alternative Food Networks*. An Interdisciplinary Assessment; Palgrave Macmillan: Cham, Switzerland, (2018).
- Cresson, C., and Fleury, P. P. (2014) AB et Développement Local: Conduire un Projet de Territoire. Un Ensemble de Fiches Pour L'animateur et le Formateur Issu des Projets ABILE et EMOTIONS. ITAB; ISARA-Lyon. Available at: <https://hal-isara.archives-ouvertes.fr/hal-03671710> (Accessed February 22, 2023).
- Darnhofer, I., D'Amico, S., and Fouilleux, E. (2019). A relational perspective on the dynamics of the organic sector in Austria, Italy, and France. *J. Rural. Stud.* 68, 200–212. doi: 10.1016/j.jrurstud.2018.12.002
- Dansero, E., Marino, D., Mazzocchi, G., and Nicolarea, Y. (2019). Lo spazio delle politiche locali del cibo: temi, esperienze e prospettive. Celid: Torino.
- Darrot, C., Maréchal, G., and Bréger, T. (2019) 'Rapport Sur les Projets Alimentaires Territoriaux (P.A.T.) en France: Etat des Lieux et Analyse', p. 89.
- Darrot, C., and Noel, J. (2018) 'Vers des Solidarités Alimentaires Territorialisées. Retour sur la recherche-action SOLALTER menée en Bretagne', *Anthropology of Food*. Available at: <https://journals.openedition.org/aof/8271> (Accessed May 02, 2023).
- Deguine, J. P., Aubertot, J. N., Bellon, S., Côte, F., Lauri, P. E., Lescourret, F., et al. (2023). Agroecological crop protection for sustainable agriculture. *Adv. Agron.* 178, 1–59. doi: 10.1016/bs.agron.2022.11.002
- Deverre, C., and de Marie, C. S. (2008). L'écologisation de la politique agricole européenne. Verdissement ou refondation des systèmes agro-alimentaires. *Rev. Agric. Environ. Stud* 89:83.
- Duru, M., Therond, O., and Fares, M. (2015). Designing agroecological transitions; a review. *Agron. Sustain. Dev.* 35, 1237–1257. doi: 10.1007/s13593-015-0318-x
- EC (2020). FOOD2030 pathways for action. Available at: <https://op.europa.eu/en/publication-detail/-/publication/86e31158-2563-11eb-9d7e-01aa75ed71a1/language-en> (Accessed October 15, 2023).
- FAO, Biovision Foundation, Food Policy Forum for Change, and Agroecology Coalition (2023). 'The Interface Between Agroecology and Territorial Approaches for Food Systems Transformation', *Agroecology Dialogue Series: Outcome Brief n°1, January 2023*. Rome, FAO.
- Favilli, E., Rossi, A., and Brunori, G. (2015). Food networks: collective action and local development. The role of organic farming as boundary object. *Org. Agric.* 5, 235–243. doi: 10.1007/s13165-015-0118-2
- Fêche, R., Noûs, C., and Barataud, F. (2021). Building a transformative initiative for a territorialized Agri-food system: constructing a living-lab and confronting norms? A case study from Mirecourt (Vosges, France). *J. Rural. Stud.* 88, 400–409. Available at: doi: 10.1016/j.jrurstud.2021.07.026
- Fonte, M., and Agostino, M. (2008). Principi, valori e standard: il movimento biologico di fronte alle sfide della crescita. *Agriregionieuropa Anno* 4:12.
- Fouilleux, E., and Jobert, B. (2017). Le cheminement des controverses dans la globalisation néo-libérale. *Gouvernement et Action Publique* 6, 9–36. doi: 10.3917/gap.173.0009
- Gargano, G., Licciardo, F., Verrascina, M., and Zanetti, B. (2021). The Agroecological approach as a model for multifunctional agriculture and farming towards the European green Deal 2030—some evidence from the Italian experience. *Sustainability* 13:2215. doi: 10.3390/su13042215
- Gordon, L. J., Bignet, V., Crona, B., Henriksson, P. J. G., van Holt, T., Jonell, M., et al. (2017). Rewiring food systems to enhance human health and biosphere stewardship. *Environ. Res. Lett.* 12:100201. doi: 10.1088/1748-9326/aa81dc
- Guareschi, M., Maccari, M., Sciarano, J. P., Arfini, F., and Pronti, A. (2020). A methodological approach to upscale toward an agroecology system in EU-LAFSS: the case of the Parma Bio District. *Sustainability* 12:5398. doi: 10.3390/su12135398
- Guareschi, M., Mancini, M. C., Lottici, C., and Arfini, F. (2023). Strategies for the valorization of sustainable productions through an organic district model. *Agroecol. Sustain. Food Syst.* 47, 100–125. doi: 10.1080/21683565.2022.2134270
- Guthman, J. (2004). The trouble with "organic lite" in California: a rejoinder to the "conventionalisation" debate. *Sociol. Rural.* 44, 301–316. doi: 10.1111/j.1467-9523.2004.00277.x
- Hammond, R. A., and Dubé, L. (2012). A systems science perspective and transdisciplinary models for food and nutrition security. *Proc. Natl. Acad. Sci.* 109, 12356–12363. doi: 10.1073/pnas.0913003109
- Hirczak, M., Moalla, M., Mollard, A., Pecqueur, B., Rambonilaza, M., and Vollet, D. (2008). Le modèle du panier de biens, économie rurale. *Agricultures Alimentations Territoires* 308, 55–70. doi: 10.4000/economierurale.366
- Iacoponi, L. (1990). Distretto industriale marshalliano e forme di organizzazione delle imprese in agricoltura. *Riv. Econ. Agrar.* 45, 712–734.
- IPBES (2019) *Summary for Policymakers of the Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn: IPBES Secretariat
- IPCC (2019) Summary for Policymakers. In *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*.
- IPES-Food (2017). *Unravelling the Food–Health Nexus: Addressing Practices, Political Economy, and Power Relations to Build Healthier Food Systems*. The Global Alliance for the Future of Food and IPES-Food, 120.
- IPES-Food (2018). *Breaking Away from Industrial Food and Farming Systems: Seven Case Studies of Agroecological Transition*, 110. Available at: https://www.ipes-food.org/_img/upload/files/CS2_web.pdf.
- Janoff, S. (2004). *States of Knowledge: The Co-Production of Science and the Social Order*. London: Routledge.
- Kloppenburg, J., Hendrickson, J., and Stenenson, G. (1996). Coming into the foodshed. *Agric. Hum. Values* 13, 33–42. doi: 10.1007/BF01538225
- Kneafsey, M. (2010). The region in food—important or irrelevant?. *Cambridge J. Reg. Econ. Soc. CAMB J REG ECON SOC* 3, 177–190. doi: 10.1093/cjres/rsq012
- Lamine, C. (2005). Settling shared uncertainties: local partnerships between producers and consumers. *Sociol. Rural.* 45, 324–345. doi: 10.1111/j.1467-9523.2005.00308.x
- Lamine, C. (2011). Transitions vers l'agriculture biologique à l'échelle des systèmes agri-alimentaires territoriaux. *Pour* 212, 129–136. doi: 10.3917/pour.212.0129
- Lamine, C. (2015). Sustainability and resilience in Agrifood systems: reconnecting agriculture, food and the environment. *Sociol. Rural.* 55, 41–61. Available at: doi: 10.1111/soru.12061
- Lamine, C. (2017). *La Fabrique Sociale de L'écologisation de L'agriculture*. La Discussion. Marseille.
- Lamine, C. (2020). *Sustainable Agri-Food Systems: Case Studies in Transitions Towards Sustainability from France and Brazil*. London: Bloomsbury Publishing.
- Lamine, C., Dodet, F., Demené, C., Rotival, D., Latré, L., Sabot, N., et al. (2022). Transformations du système agri-alimentaire territorial en sud Ardèche: co-construire une périodisation du passé... qui fasse sens pour l'avenir. *Géocarrefour* 96:3. doi: 10.4000/geocarrefour.20864
- Lamine, C., Garçon, L., and Brunori, G. (2019). Territorial agrifood systems: a Franco-Italian contribution to the debates over alternative food networks in rural areas. *J. Rural. Stud.* 68, 159–170. Available at: doi: 10.1016/j.jrurstud.2018.11.007
- Lamine, C., Niederle, P. A., and Ollivier, G. (2019). Alliances et controverses dans la mise en politique de l'agroécologie au Brésil et en France. *Nat. Sci. Soc.* 27, 6–19. doi: 10.1051/nss/2019015
- Lamine, C., Renting, H., Rossi, A., Wiskerke, J. S. C., and Brunori, G. (2012). "Agri-food systems and territorial development: innovations, new dynamics and changing governance mechanisms" in *Farming Systems Research Into the 21st Century: The New Dynamic*. eds. I. Darnhofer, D. Gibbon and B. Dedieu (Dordrecht, Netherlands: Springer), 229–256.
- Lardon, S., and Loudiyi, S. (2014). Agriculture et alimentation urbaines: entre politiques publiques et initiatives locales. *Géocarrefour* 89, 3–10. doi: 10.4000/geocarrefour.9362
- Lazzeroni, M., Berti, G., Bruno, R., and Rossi, A. (2023). 'Le Regioni del Cibo: Processi, Politiche, Narrazioni'. *Rivista Geografica Italiana* (Under Publication).
- Le Pape, Y., Rémy, J., and Jollivet, M. (1986) *Agriculture Biologique: Unité et Diversité*. Colloque: Diversification des Modeles de Developpement Rural. L'Harmattan.
- Loudiyi, S., and Houdart, M. (2019). L'alimentation comme levier de développement territorial? Réflexions tirées de l'analyse processuelle de deux démarches territoriales. *Econ. Rurale* 367, 29–44. doi: 10.4000/economierurale.6463
- Maréchal, G., Noël, J., and Wallet, F. (2018). Les projets alimentaires territoriaux (PAT): entre rupture, transition et immobilisme? *Pour* 234-235, 261–270. doi: 10.3917/pour.234.0261
- Migliorini, P. (2018). "Sustainability assessment of agri-food systems" in *A Sustainable Food Systems Guide*. ed. C. Strassner, 30–34. (Accessed May 6 2023).
- Migliorini, P., Barberi, P., Bellon, S., Tommaso, G., Gkisakis, V. D., Peeters, A., et al. (2020). Controversial topics in agroecology: a European perspective. *Ciencia e Investigación Agraria: Revista Latinoamericana de Ciencias de la Agricultura* 47, 159–173. doi: 10.7764/ijanr.v47i3.2265
- Molina, M. G. D., and Lopez-Garcia, D. (2021). Principles for designing agroecology-based local (territorial) Agri-food systems: a critical revision. *Agroecol. Sustain. Food Syst.* 45, 1050–1082. doi: 10.1080/21683565.2021.1913690
- Moragues-Faus, A., and Marsden, T. (2017). The political ecology of food: carving "spaces of possibility" in a new research agenda. *J. Rural. Stud.* 55, 275–288. Available at: doi: 10.1016/j.jrurstud.2017.08.016
- Muchnik, J., Cañada, J. S., and Salcido, G. T. (2008). Systèmes agroalimentaires localisés: état des recherches et perspectives. *Cahiers Agricultures* 17, 513–519. doi: 10.1684/agr.2008.0251

- Niederle, P., Petersen, P., Coudel, E., Grisa, C., Schmitt, C., Sabourin, E., et al. (2022). Ruptures in the agroecological transitions: institutional change and policy dismantling in Brazil. *J. Peasant Stud.* 50, 931–953. doi: 10.1080/03066150.2022.2055468
- OECD, FAO, and UNCDF (2016). Adopting a Territorial Approach to Food Security and Nutrition Policy. OECD Publishing. http://www.oecd-ilibrary.org/urban-rural-and-regional-development/adopting-a-territorial-approach-to-food-security-and-nutrition-policy_9789264257108-en. (Accessed May 6 2023).
- Olivier, G., Bellon, S., Deane de Abreu Sá, T., and Magda, D. (2019). The boundaries of agroecology. Research policies of two public agricultural institutes in France and Brazil. *Nat. Sci. Soc.* 27, 20–38. doi: 10.1051/nss/2019017
- Passaro, A., and Randelli, F. (2022). Spaces of sustainable transformation at territorial level: an analysis of biodistricts and their role for agroecological transitions. *Agroecol. Sustain. Food Syst.* 46, 1198–1223. Available at: doi: 10.1080/21683565.2022.2104421
- Pessis, C. (2020). 'Histoire Des « Sols Vivants »', *Revue D'anthropologie des Connaissances*. 14:4. doi: 10.4000/rac.12437
- Petersen, P., Mussoi, E. M., and Dal Soglio, F. (2013). Institutionalization of the Agroecological approach in Brazil: advances and challenges. *Agroecol. Sustain. Food Syst.* 37, 121005074109006–121005074109114. doi: 10.1080/10440046.2012.735632
- Poponi, S., Arcese, G., Mosconi, E. M., Pacchera, F., Martucci, O., and Elmo, G. C. (2021). Multi-actor governance for a circular economy in the Agri-food sector: bio-districts. *Sustainability* 13:4718. Available at: doi: 10.3390/su13094718
- Pugliese, P., Antonelli, A., and Basile, S. (2015) Full case study report. Italy: Bio-Distretto Cilento. Available at: <https://orgprints.org/id/eprint/29252/> (Accessed May 6, 2023).
- Pugliese, P. (2001). Organic farming and sustainable rural development: a multifaceted and promising convergence. *Sociol. Rural.* 41, 112–130. Available at: doi: 10.1111/1467-9523.00172
- Pugliese, P., and Antonelli, A. (2016). 'L'agricoltura Biologica in Chiave Territoriale. L'esperienza dei Biodistretti in Italia', *Rapporto Finale Progetto DIMECOBIO "Progetto per la Definizione delle Dimensioni Economiche del Settore Dell'agricoltura Biologica ai Diversi Livelli Della Filiera"* CIHEAM Bari.
- Rico Mendez, G., Pappalardo, G., and Farrell, B. (2021). Practicing fair and sustainable local food systems: elements of food citizenship in the Simeto River valley. *Agriculture* 11:56. doi: 10.3390/agriculture11010056
- Rivera-Ferre, M. G. (2018). The resignification process of agroecology: competing narratives from governments, civil society and intergovernmental organizations. *Agroecol. Sustain. Food Syst.* 42, 666–685. Available at: doi: 10.1080/21683565.2018.1437498
- Rollot, M. (2019). Le biorégionalisme américain. Un outil pour repenser nos territoires. *Eco Rev* 47, 85–95. doi: 10.3917/ecorev.047.0085
- Rossi, A. (2017). Beyond food provisioning: the transformative potential of grassroots innovation around food. *Agriculture* 7:6. Available at: doi: 10.3390/agriculture7010006
- Rossi, A. (2020). From co-learning to shared commitment to agroecology. Some insights from initiatives aimed at reintroducing agrobiodiversity. *Sustainability* 12:7766. doi: 10.3390/su12187766
- Rossi, A., Bui, S., and Marsden, T. (2019). Redefining power relations in agrifood systems. *J. Rural. Stud.* 68, 147–158. Available at: doi: 10.1016/j.jrurstud.2019.01.002
- RRN (2019a) *L'agricoltura Biologica per lo Sviluppo Territoriale. L'esperienza dei Distretti Biologici*. CREA PB, Roma.
- RRN (2019b) *Distretti Biologici e Sviluppo Locale. Linee Guida per la Programmazione 2021–2027*. Available at: <https://www.reterurale.it/biodistretti> (Accessed May 6 2023).
- RRN (2021). *Approccio Agroecologico e Biodistretti. Analisi di due Casi di Studio*. Rete Rurale Nazionale 2014-20-CREA PB, Roma
- Stotten, R., Bui, S., Pugliese, P., Schermer, M., and Lamine, C. (2018). Organic values-based supply chains as a tool for territorial development: a comparative analysis of three European organic regions. *Int. J. Sociol. Agric. Food* 24, 135–154. doi: 10.48416/ijfaf.v24i1.120
- Tecco, N., Bagliani, M., Dansero, E., and Peano, C. (2017). Toward the local territorial food system: spaces of analysis and action. *Boll. Soc. Geogr. Ital.* X, 23–42.
- Triantafyllidis, A., Pietromarchi, A., and Colombo, L. (2019) *Veicolazione Delle Esperienze di Biodistretti Italiani. I Modelli di Governance e le Buone Pratiche dei Biodistretti*. Available at: <https://www.territorio.it/wp-content/uploads/2019/06/Studio-governance-Biodistretti.pdf> (Accessed May 06, 2023).
- Tuscano, M. (2022). *L'alimentation au défi de L'écologisation. Une Analyse Sociologique de L'action Publique et de L'action Collective dans Deux Territoires de Provence-Alpes-Côte d'Azur*. Marseille: EHESS.
- UN (2015). Resolution Adopted by the General Assembly on 25 September 2015, p. 35. Available at: http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E (Accessed May 6 2023).
- Vaarst, M., Escudero, A. G., Chappell, M. J., Brinkley, C., Nijbroek, R., Arraes, N. A. M., et al. (2017). Exploring the concept of agroecological food systems in a city-region context. *Agroecol. Sustain. Food Syst.* 42, 686–711. doi: 10.1080/21683565.2017.1365321
- Vanni, F. (2020). "Agroecologia" in *Agroecologia e PAC Un'analisi degli Strumenti della Programmazione Post 2022*. eds. F. Vanni and L. Viganò (Roma: Rete Rurale Nazionale 2014-20-CREA PB)
- Vazzana, C. (1998). *Ecologia Vegetale Agraria, Scienza e Tecniche delle Produz. Vegetali*, Ed. Bologna: Pàtron, 394.
- Wezel, A., Brives, H., Casagrande, M., Clément, C., Dufour, A., Vandembroucke, P., et al. (2016). Agroecology territories: places for sustainable agricultural and food systems and biodiversity conservation. *Agroecology and Sustainable Food Systems*. 40, 132–144. doi: 10.1080/21683565.2015.1115799
- Wezel, A., Goris, M., Bruil, J., Félix, G., Peeters, A., Bàrberi, P., et al. (2018). Challenges and action points to amplify agroecology in Europe. *Sustainability* 10:1598. doi: 10.3390/su10051598
- Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., et al. (2019). Food in the Anthropocene: the EAT–lancet commission on healthy diets from sustainable food systems. *Lancet* 393, 447–492. doi: 10.1016/S0140-6736(18)31788-4
- Wyborn, C., Montana, J., Datta, A., and Louder, E. (2023). "Conceptualising the science-policy-practice interface of adaptive governance" in *Handbook on Adaptive Governance*. Ed S. Juhola (Cheltenham: Edward Elgar Publishing), 54–74.
- Zanasi, C., Basile, S., Paoletti, F., Pugliese, P., and Rota, C. (2020). Design of a monitoring tool for eco-regions. *Front. Sustain. Food Syst.* 4:536392. doi: 10.3389/fsufs.2020.536392
- Zollet, S., and Maharjan, K. L. (2021). Resisting the vineyard invasion: anti-pesticide movements as a vehicle for territorial food democracy and just sustainability transitions. *J. Rural. Stud.* 86, 318–329. doi: 10.1016/j.jrurstud.2021.06.020