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RESEARCH ARTICLE

Integrating land and food policy to transform territorial food systems in the context of coexisting agri-food models: Case studies in France

Tianzhu Liu^{1,*}, Romain Melot², and Frédéric Wallet³

Making the shift from global to territorial food systems is critical for sustainability and demands transformative, coherent, and integrated land and food policies. However, how policy integration may be achieved or hindered remains unclear, particularly in the case of coexisting agri-food models. The coexistence of conflicting models, such as specialization versus diversification and agro-industrial versus ecological practices, entails power relations that significantly influence the political agenda. Drawing on semi-structured interviews and document analysis, we focus on land-use planning and local food policies to examine how policy integration is shaped by, and reshapes, power relations in the context of coexisting agri-food models in a sample of case studies in France. Our findings show that policy integration occurs with innovative initiatives at the stage where territorial agriculture is assessed, strategies are determined, and policy instruments designed. Integration is, however, constrained by unbalanced power relations, which restrict land-based policy interventions that seek to transform food systems. Local authorities exercise caution when applying these interventions, seeking to involve major farmers' organizations while mitigating contentions. The policy integration process reshapes power relations, empowering alternative minority agri-food professionals through greater influence in the political arena. This process also helps local authorities to acquire legitimacy in agri-food matters. As one of the first studies to offer empirical evidence about land and food policy integration, this article provides insights for policymaking in terms of the crafting of enabling institutional contexts for the transformation of territorial food systems. Future research is suggested to explore contextual influences and power dynamics in policy implementation.

Keywords: Access to land, Agroecological transition, Land-use planning, Local food policy, Local food strategy, Local food system

1. Introduction

The negative impacts of global food systems, such as accelerated climate change, unfair squeezing of farmers' incomes, and inequity in access to food, have prompted consideration of the possibility of transforming to a territorial food system (Feagan, 2007; Allen, 2010; Morgan and Sonnino, 2010; Fattibene et al., 2023; Fei et al., 2023). A territorial food system is one in which there are stronger links between agri-food activities and territories in their material, identitarian, and organizational dimensions (Allen, 2010; Eriksen, 2013; Ginelli et al., 2020). Such a system has the potential to enhance social justice by empowering local farmers and reducing regional inequity, to strengthen social bonds between rural and urban areas,

to mitigate climate change through more ecological practices, and to provide citizens with healthy food (Allen, 2010; Ginelli et al., 2020; Lamine, 2020; Enthoven and Van den Broeck, 2021). Current geopolitical conflicts and events such as the Covid-19 pandemic further militate for the potential of territorial food systems to improve food security and resilience (Nemes et al., 2021; Ben Hassen and El Bilali, 2022; Fei et al., 2023). In the prevailing conditions of a globalized and industrialized food system, the shift toward a territorial food system requires transformative and integrated public policies (IPES-Food, 2017; Perrin and Baysse-Lainé, 2020; González De Molina and Lopez-Garcia, 2021). Among a wide range of agri-food related policies, 2 types of public policies are critical to such a transformation. The first type relates to the food system itself, with a systematic focus on the entire supply chain and links to territorial development. The second relates to land-use policy, as land is the essential foundation of transition in food system activities (Borras et al., 2015; Calo et al., 2021). For example, a land system that supports crop specialization in a globalized food system will not work in a territorial context, which requires

¹ Institute of Geography, University of Bern, Bern, Switzerland

² INRAE, Université Paris-Saclay, UMR SADAPT, Palaiseau, France

³ INRAE, UMR AGIR, Castanet-Tolosan, France

* Corresponding author:
Email: tianzhu.liu@unibe.ch

product diversification in order to supply local needs. Land and food policies therefore need to be coherent and strategically integrated to support a territorial food system.

This article focuses on 2 types of policies that are significant at the territorial scale: local food policy and land-use planning. Land-use planning has a long history, at least in most developed economies where land use and building rights are managed through legally binding rules. Local food policy is a more recent arrival. It focuses on developing territorial food systems and its organization varies and carries different names from one institutional context to another (e.g., “urban food strategy,” “food charter,” and “food planning”) (Sonnino, 2016; Candel, 2020). Local food policy is a strategic matter and does not necessarily encompass land issues, whereas land-use planning influences land relations through coercive regulation. Researchers argue for these 2 policies areas to be coherent and integrated in order to provide favorable conditions for building a territorial food system (Pothukuchi and Kaufman, 1999; American Planning Association, 2007; Raja et al., 2008; Brinkley, 2013; Vitiello and Brinkley, 2014).

However, coherent and integrated land and food policies do not arise in a power vacuum. They operate amid coexisting agri-food models where stakeholders have different, even conflicting, interests (Gasselin et al., 2020). There are several dimensions to this coexistence, such as ecological versus agro-industrial farming, product specialization versus diversification, and local versus global supply chains (Dumont et al., 2020; Gasselin et al., 2020; Perrin and Baysse-Lainé, 2020). Land and food policies that favor the transformation to a territorial food system imply institutional changes. Since such changes entail a redistribution of power and create winners and losers, stakeholders whose rights might be compromised by these policies may resist and oppose them (Ensminger, 1992).

Although researchers report that seemingly conflicting agri-food models coexist, they also argue that competition over resources (e.g., land) crystallizes tensions between stakeholders in these models and needs to be understood better (Gasselin et al., 2020). If food policies are primarily strategic, it may be assumed that integration with land-use planning would produce strategic food policies that are concrete in terms of the redistribution of power and would challenge the power relations around land access in the agri-food system. However, it remains unclear how local land and food policy integration occurs (or not) within power relations shaped by the coexistence of agri-food models, nor how such integration affects those power relations.

This study aims to address this gap and to increase understanding of how integration between local land-use planning and food policy is affected by and in turn (re)shapes the power relations embedded in coexisting agri-food models. Specifically, we identify where policy integration does or does not occur, how policy integration is enabled or constrained by power relations with coexisting agri-food models, what those power relations are, and how they are affected as a result of policy integration.

We chose a sample of territories in 2 French regions, Normandy and Occitania, to conduct empirical case

studies. France was selected as the focus country because a local food policy scheme (*Projet Alimentaire Territorial* or territorial food project) was developed within the framework of the national Agriculture Act in 2014. It is one of the few countries, at least in Europe, with a nationally driven target of creating a network of local food policies across the whole territory. These conditions provide an enabling environment for local territories to promote a transformation to territorial food systems (Liu et al., 2023). Numerous local food policy projects have been developing rapidly within this framework (Lamine et al., 2023), providing sufficient empirical material for this study.

The article is structured as follows. Section 2 describes the theoretical framework, followed by the presentation of the case study areas and methods in Section 3. Section 4 introduces findings about the impact of power relations on policy integration, and Section 5 covers how power relations within the coexisting agri-food models are affected by the process of land and food policy integration. The article ends with a discussion and a conclusion on how the lessons from this study of power relations based on policy integration can shed light on future policymaking around the transition to territorial food systems.

2. Theoretical framework

Our theoretical point of departure is the principal concepts of policy integration, territorial food systems, and coexisting agri-food models.

First, we employ the concept of *policy integration* to explore the relationship between land-use planning and local food policy. Policy integration “concerns the management of cross-cutting issues in policymaking that transcend the boundaries of established policy fields, and that do not correspond to the institutional responsibilities of individual (government) departments” (Stead and Meijers, 2009, p. 321). It is a key concept in understanding the complex territorial food policy issues facing the growing numbers of policy organizations engaged with a multiplicity of actions and instruments (Milhorance et al., 2022), and is important in tackling issues like food, which are cross-cutting in terms of jurisdictions, governance levels, and policy domains (Jordan and Lenschow, 2010; Candel and Biesbroek, 2016).

Policy integration can be understood from the perspective of both policy outputs (policy goals and instruments) and policy inputs (a process of governing) (Nilsson and Persson, 2003; Stead and Meijers, 2009; Jordan and Lenschow, 2010; Cejudo and Michel, 2017). Policy outputs encompass both policy goals (Holden, 2012) and instruments (Howlett and del Rio, 2015). Howlett and del Rio (2015) also proposed 4 types of interaction between instruments, from weak to strong integration: (1) strong conflict, (2) weak conflict (partial complementarity), (3) full complementarity between policy instruments, and (4) synergy where adding policy instruments magnifies the impact of the combination. Regarding policy inputs, researchers emphasize that policy integration encompasses a policy decision process that targets complex

issues by involving various public bodies in a joint decision-making process (Stead and Meijers, 2009; Cejudo and Michel, 2017). Focusing on the integration of environmental policy, Lafferty and Hovden (2003) proposed an analytical framework with 2 dimensions—horizontal (cross-sectoral integration) and vertical (cross-scale integration).

Our focus in this research is land-use planning and local food policy integration, so we mainly emphasize the horizontal dimension (cross-sectoral integration), while also considering the vertical dimension (cross-scale integration). As we will show in the section on case study areas and methods, the research looks both at local food policies developed at different scales and at spatial planning at different scales. While agri-food itself does not yet constitute a fixed “sector” at the local level, it refers to the participation of decision-makers in different administrations that are responsible for the policies. We conceptualize integration both in terms of policy outputs (combined policy instruments that create synergies) and policy inputs or processes (stakeholder participation in the policymaking process).

Second, we explore the nature of policies on the *territorial food system*. The term “territorial” is used instead of “local” to indicate a dimension of territorial development rather than simply local or short supply chains. It reaches beyond the simple notion of geographical proximity between food production and consumption, and emphasizes the involvement of a diversity of actors at different links in the food supply chains in a given region (Lamine et al., 2019; Lohest et al., 2020). As Lamine et al. (2019) argued, a territorial food system refers both to an alternative food system regime and an improvement in food quality that focuses on territorial embeddedness in cultural, natural, socio-economic, and institutional specificities (Sanz Cañada and Muchnik, 2011). Hence it not only signifies a more sustainable relationship between territory and products in a highly industrialized context, but also implies territorial revitalization.

The third concept is *the coexistence of agri-food models*. This kind of coexistence has been analyzed in terms of dichotomies between different agri-food models, such as short versus global supply chains, organic versus conventional farming, small-scale versus large-scale agriculture (Renting et al., 2003; Sonnino and Marsden, 2006). Researchers stress the need to understand the coexistence and complex relations between different agri-food models at territorial level in order to comprehend territorial development (Dumont et al., 2020; Gasselin et al., 2020). Gasselin et al. (2020) have proposed 4 major elements—the tension in food systems between specialization and diversification, innovation, adaptation, and transition—on the grounds that these factors both influence and arise out of coexistence.

Embedded within coexisting agri-food models are unequal and constantly contested power relations. The trend toward food system industrialization and globalization leads to economic and political power being concentrated in the hands of a limited number of actors. These actors hold hegemonic power with respect to access to

materials, information, and political decision-making, producing an unbalanced power structure within the agri-food system (Holt-Giménez, 2011; IPES-Food, 2016; IPES-Food, 2017). Under these conditions, alternative food initiatives that promote local food supply chains, small-holder farming, and product diversification constitute a counterforce to the prevailing market economy, challenging the hegemonic power imbalance within it (Deverre and Lamine, 2010; Holt-Giménez, 2011). Williams et al. (2023) propose a typology of agri-food systems by distinguishing between agro-industrial control, multifunctional value chains, and civic food networks. They underline the different power relations embedded in these systems, arguing that “farmers’ decisions about agricultural input application (e.g., fertilizers, pesticides) are highly influenced by advice from input companies in Agro-industrial control networks, whereas farmers in Civic food networks respond more directly to consumer preferences” (Williams et al., 2023, p. 9). The coexistence of agri-food models with dominant and alternative actors leads to power relations that are dynamic and differ from one territory to another (IPES-Food, 2016; Partzsch, 2017; Gasselin et al., 2020). Moreover, the actors’ strategies can shift—for instance agro-industrial system actors may “maintain their dominance by reorienting their activities in response to societal pressures” (Williams et al., 2023, p. 9). However, research generally shows that political and institutional support for the actors with less power plays a significant role in effecting change, given the imbalance in prevailing power relations (IPES-Food, 2017; Perrin and Bayse-Lainé, 2020; González De Molina and Lopez-Garcia, 2021).

As the fundamental substrate of the food system, land crystallizes power relations. A previous study in France demonstrated how situations of coexistence can be understood through the process of public land allocation to agri-food initiatives (Perrin and Bayse-Lainé, 2020). The study depicted multiple tiers of power relations between farmers’ organizations that defend different but coexisting agri-food models. These relations can range from conflict, to collaboration, to hybridization.

Overall, this study focuses on policy integration from a cross-sectoral perspective, considering both policy inputs and outputs. We take the view that the coexistence of agri-food models is not only a fact and a context that may influence policymaking but also a consequence of policy design. Our aim, therefore, is to identify power relations in coexisting agri-food models that both influence and are influenced by policy integration. This research departs from a territorial development perspective, engaging with issues of ecological transition as well as socioeconomic development that are rooted in territorial food systems (Sonnino and Marsden, 2006; Enthoven and Van den Broeck, 2021; González De Molina and Lopez-Garcia, 2021).

3. Case study areas and methods

3.1. Policy contexts

France has a 3-tier spatial planning system: a regional plan at regional level, a master plan at the level of single or

grouped intermunicipal structures, and a local land-use plan at the scale of municipal groupings or individual municipalities. Each planning tier has its own prerogatives but must also maintain compatibility with higher level planning. In this research, we focused on inter-municipal land-use planning (*plans locaux d'urbanisme intercommunaux*, hereinafter referred to as “land-use planning”). The task of land-use planning is both to define the orientations of territorial development and to enact legally binding regulations, primarily through zoning regulation.

French local food policy is a recent creation, a product of the 2014 Agriculture Act,¹ which aims “to bring producers, processors, distributors, public authorities and consumers closer together and to develop local agriculture and improve food quality” (Article 1). Local food policy is not a statutory responsibility for any public authority, and responsibilities are not clearly defined by the laws. The state encourages local stakeholders to initiate food policy projects through annual financial programs managed by the Ministry of Agriculture. A “Call for Projects” has been issued each year to finance local initiatives and has probably promoted the development of local food policies.

As an implicit goal of transforming the territorial food system, sustainable transition is reflected in local food policies. The Agriculture Act (2014, Article 39) defined the goal of local food policy as “developing short supply chains, in particular from organic production.” The Food Act² (2018, Article 24) reinforced this goal by setting “a target of 50% for the supply of sustainable and quality products, including a target of 20% for products from organic farming” in collective catering activities.

In France, farming has long been treated as a national and international issue, represented by the Common Agricultural Policy (CAP), national policies, and regional policies, even though limited in budgetary terms (Trouvé et al., 2007). Major farmers' unions (FNSEA and JA) are the most powerful actors in the agricultural world, by comparison with minor farmers' unions (Confédération Paysanne and Coordination Rurale).³ The major farmers' unions have historically been involved in the promotion of a family farming model closely associated with agro-industrial modernization; in contrast, the minor unions defend smallholder livelihoods and alternative farming practices (Wezel and David, 2020). A farmers' support organization (*Chambre d'Agriculture*, hereinafter referred to as the “Chamber of Agriculture”) assists farmers with advisory services and plays a significant role in policymaking (e.g., as statutory actors in land-use planning

processes). Chambers of Agriculture at the level of the French *départements* work closely with local territorial authorities, and are led by the dominant farmers' unions. They therefore represent the interests of the major farmers' unions in most *départements*, although they are perceived as representing all farmers. Additionally, some alternative farmers' support organizations (e.g., ADEAR) support minority farmers' unions with alternative farming advisory services. Farmers' unions and support organizations are not equal, but in some situations advance similar interests. In this study, we use the term major/minor farmers' organizations to refer to the farmers' unions and support organizations.

3.2. Case study areas in France

Case studies were chosen in 2 French regions, Normandy and Occitania. These regions were selected because they have the largest number of areas that have developed both land-use planning and local food policy (identified in September 2020). In addition, they have different agricultural characteristics. Normandy is the region in France with the highest proportion of utilized agricultural areas (Chambre d'Agriculture Normandie, 2022), while Occitania is the region with the largest number of farms (Chambre d'Agriculture Occitanie, 2022). Correspondingly, average farm size in Occitania is smaller than in Normandy (respectively 48.6 and 73.4 hectares) (Agreste, 2020), and Occitania has a larger proportion of organic farming and diverse agricultural activities associated with short supply chains (Chambre d'Agriculture Occitanie, 2022). Additionally, Occitania has a greater diversity of activities—livestock, arable, and vineyards—whereas Normandy mainly practices livestock and arable farming, with large cooperatives playing a significant role in the economy (Agreste, 2020). The purpose of choosing areas with different characteristics was not to compare the 2 regions but to cover different conditions and explore a more comprehensive landscape of land and food policies.

In both regions, we identified territories where there were both land-use planning and local food policies, as shown in **Figure 1**. The decision to use a wide range of case studies was prompted mainly by the wish to include different contexts and to arrive at a more general overview. In the territories selected, land-use planning or local food policy were either already in place or in progress.

Local food policies operate at different scales (**Figure 1**). In this article, we use “local authorities” to refer to the drivers of local policy projects. Land-use planning projects were headed by inter-municipal bodies. The entities responsible for local food policies are diverse, including not only municipalities, inter-municipal bodies, and *départements* but also public entities comprising several municipalities or inter-municipal bodies, such as rural/urban clusters and regional parks. In addition, some of the food policies studied are managed by organizations or cooperatives. Although they are not public entities, they play a public role and wield public power and are therefore treated as “local authorities” in this study.

1. Agriculture Act: Loi n 2014-1170 du 13 octobre 2014 d'avenir pour l'agriculture, l'alimentation et la forêt.

2. Food Act: Loi n 2018-938 du 30 octobre 2018 pour l'équilibre des relations commerciales dans le secteur agricole et alimentaire et une alimentation saine, durable et accessible à tous.

3. Farmers' unions are established at national level and at local levels. The major farmers' unions not only occupy a dominant position at the national level but also in most local authorities.

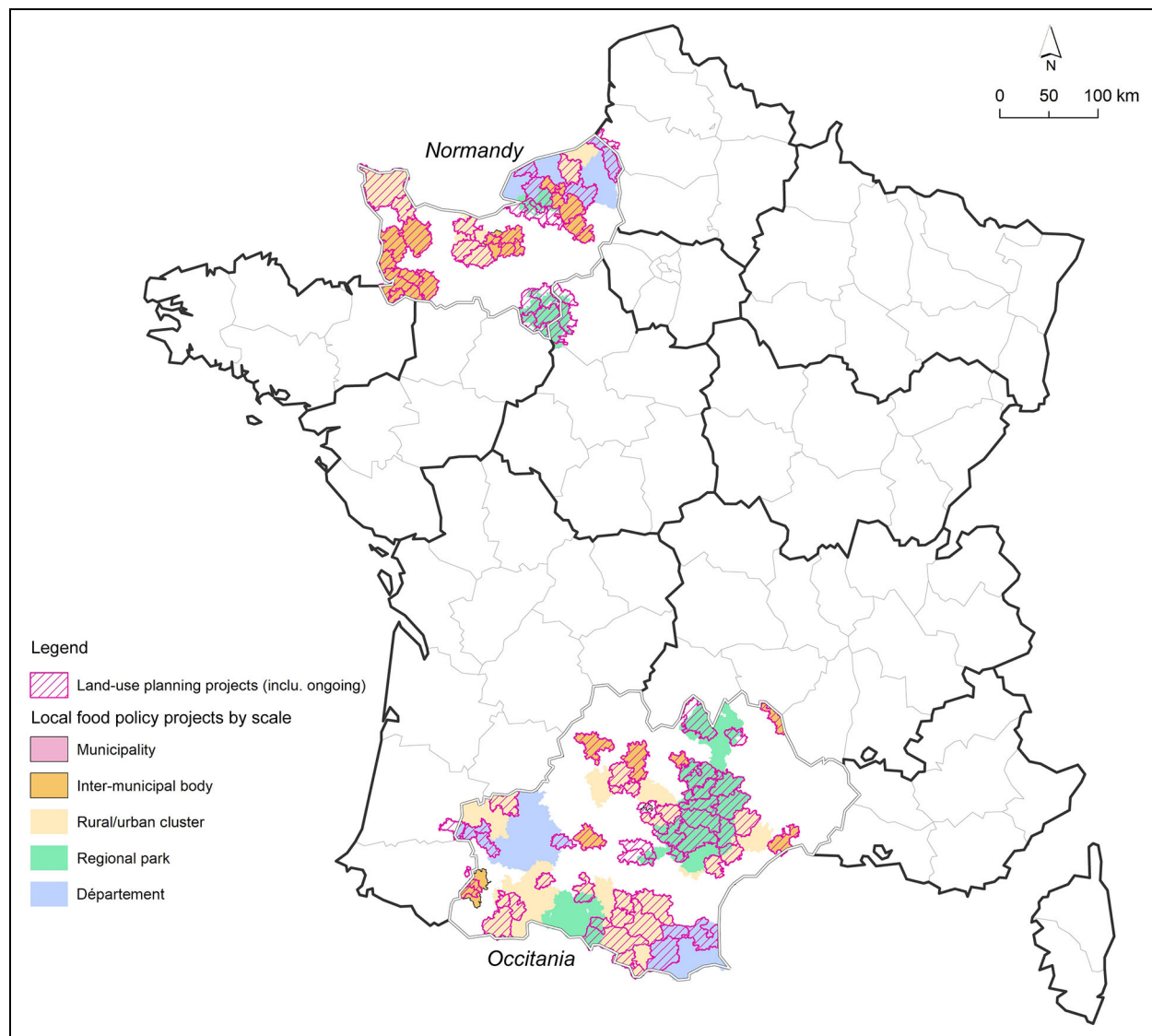


Figure 1. Case study areas. Case study areas in 2 French regions, Normandy and Occitania. The areas studied are territories where there are both land-use planning and local food policy projects. In the identified territories, land-use planning or local food policy had either been implemented or was in progress. In the cases studied, land-use planning projects are at inter-municipal scale. In contrast, local food policies are at different scales, varying from municipal scale, to inter-municipal scale, to departmental scale.

3.3. Data collection and analysis

We conducted qualitative data collection and analysis by means of semi-structured interviews and document analysis. The data collection was done through a series of semi-structured interviews ($n = 61$) conducted between January and October 2021, and the document analysis in the framework of a PhD thesis about land and food policies relating to the reterritorialization of agricultural activities. We mainly interviewed project managers responsible for land-use planning and local food policy and, on some occasions, staff working at the Chamber of Agriculture, elected officials, and consultants in related agencies, for additional information (Appendix A). Policy project managers were identified as suitable interviewees because they possess in-depth understanding of the entire policymaking process and the stakeholders involved. In addition, as technical officials they occupy a relatively neutral position. For each

territory with a local food policy, we reached out to the food policy project manager(s) and at least one land-use planning project manager (one local food policy project may cover several land-use planning areas, see **Figure 1**). We received positive responses from at least one project manager in over 90% of the areas with a local food policy (39 of 42). In the remaining 3 territories, we interviewed a Chamber of Agriculture staff member to gather relevant information; 2 other territories were excluded from the sample. The interview questions covered the following topics: (1) characteristics, challenges, and planning strategies leveraged for territorial agri-food activities, (2) participating actors and their roles in the planning project(s), and (3) (potential) interactions between land-use and food planning. Qualitative interview data were considered appropriate for this study because our aim was to gather in-depth insights into contextually based policymaking processes.

The interviews were transcribed and their content classified under the following main headings: (1) issues about what policy integration occurs, (2) integrated policy goals, instruments, and processes, (3) the factors contributing to (lack of) integration, with a focus on coexisting agri-food models, (4) the major stakeholders in these models, (5) the interests of these stakeholders and the role they play in policymaking, and (6) the shift in power relations associated with policy integration. We then brought together relevant official documents (land-use plans, local food policy documents) to verify specific information and fill in gaps in the interviewees' accounts relating to policy outputs.

4. Policy integration with limitations: Land and food policies in coexisting agri-food models

Two major agri-food issues were identified as highly significant in land and food policy integration. The first is the allocation of suitable land for local food activities (e.g., preserving prime land for food production). The second is the designation of land for sustainable agricultural practices. These 2 issues relate to land rights, in terms of the right of access “to which land,” for “what purpose,” and more fundamentally, “who gets to decide” (Borras et al., 2015, p. 603).

4.1. Preserving land for territorial food systems: policy integration in the context of the power relations between local authorities and major farmers' organizations

Although farmland preservation has long been a priority in land-use planning (Perrin et al., 2020), we found that the objective of developing a territorial food system (as set by local food policies) introduces an additional priority of preserving land suitable for food production and the associated local supply chain activities. From interviews, we found that there are 2 dimensions to integration: (1) inter-related strategies and territorial assessment processes, and (2) combined policy instruments.

The first dimension relates to the integrated process of territorial agri-food assessment and interrelated strategies. Interviewees often reported that agricultural assessment in land-use planning had been mobilized and reused in local food policies. This process had helped local authorities to economize on the cost of technical studies, while acquiring more consistent and more comprehensive information. Some land-use plans also referred to local food policy as a justification for farmland preservation, for example:

Saint-Lô is already involved in the development of strategic documents such as [...] local food policy [...] the land-use planning project makes it possible to align them and to translate them into regulations. (Saint-Lô Agglomération, 2019, p. 7)

Most interviewees also reported that even though integration had not yet happened, it was likely to occur in future planning revisions. The presence of integration in

strategic projects reflects direct political will to integrate land and food policies.

The second dimension of integration consists of combined policy instruments. Land-related strategies leveraged by food policies include facilitating the takeover of farm holdings, making use of fallow land, allocating public land to local farming, and purchasing land for food initiatives. Land market intervention strategies of this kind are a complement to land-use planning, which is mainly about setting regulations.

Nevertheless, the interviews revealed certain limitations on integration in both the regions studied. Interviewees frequently reported gaps between agricultural assessment, strategic goals, and land-use planning regulations on agri-food issues. They complained that, while the agriculture assessment and strategic goals on agri-food issues might be comprehensive and ambitious, they were usually not translated into land-use regulations, for example:

[Land-use planning] can be summed up very simply: many ideas, many expectations, and few results. [...] in 2016, a fairly thorough agricultural assessment was carried out, with questionnaires sent to all the farmers, meetings, presentations, and feedback on what was happening on the ground. [...] At the level of the strategic project, the goal was always extremely ambitious: to preserve the possibilities of agricultural activities. But when it came to regulation, therefore, when it came to political choices, once things had been said, once the options had been proposed and it was time for implementation, in my opinion—very little. (Civil servant, intermunicipal body of Mont Saint-Michel, Normandy, May 17, 2021)

In addition, the implementation of policy integration was patchy. In terms of integrated policy goals, only 8 of 60 available land-use plans explicitly referred to food policies in their strategic documents. With respect to combined policy instruments, allocating public land to territorial food system activities was only implemented by 12 out of 29 territories that had policy documents.

According to the interviewees' local observations, these gaps are a consequence not only of the lack of legal powers for land-use planning but also the reluctance to trigger conflicts over property rights. As regards the lack of legal powers, since the precise use of farmland cannot be specified in land-use planning, it has limited powers to translate strategic goals into regulations. Similarly, land was found to be a complicated issue when the authority responsible for food policy does not possess legal prerogatives regarding land. For example, rural clusters were found to implement fewer practical land-related strategies because they do not own land. The second question is the lack of political will to address land issues in local food policy because of the fear of upsetting landowners, either farmers or non-farmers. Local authorities were found to be hesitant to address

land issues in local food policies because land entails property rights and might attract opposition from land-owners, although they recognized that land is essential to promote changes in territorial food systems. In particular, the major farmers' organizations (including the major farmers' unions and the Chamber of Agriculture) were reported to be a serious hindrance to local authorities mobilizing land for territorial food transition. Since these organizations have long been the primary stakeholders in agricultural issues, local authorities tended to be hesitant to take these powers, as an interviewee reported:

... the agricultural lobbies are quite powerful [...] we do not have this [land] dynamic in the local authority on agricultural projects. Why? Because it is really the domain of the Chamber of Agriculture, the [major] farmers' unions, etc. (Civil servant, intermunicipal body of Coutances Mer et Bocage, Normandy, June 2, 2021)

A specific point raised by the interviewees with respect to integrated policymaking was the issue of making scientific assessments of soil quality a criterion in decisions about agricultural zoning, in other words preserving land of high agronomic quality for local production. Although many local authorities wanted to assess soil quality scientifically for land-use planning, we found that only a few of them succeeded. In the majority of cases, interviewees reported that the scientific classification of soil quality is hampered by both technical and political factors. From a technical and scientific perspective, they argued that assessing soil quality is difficult because different farming activities need different soil. From a political perspective, interviewees reported that resistance from the Chamber of Agriculture in particular prevented the use of soil quality assessment. The Chamber of Agriculture often refused soil quality classification on the grounds that it might generate inequity between farmers. Particularly, they were concerned that farmers with "bad" land would find it easier to convert their farmland into construction land. Consequently, proposals by local authorities to take soil quality classification into account were frequently abandoned in order to compromise with the Chamber of Agriculture.

In summary, the study demonstrates that, to a certain extent, food policy integration enhances farmland preservation in land-use planning with respect to work processes, strategies, and instruments. However, the limited implementation of integrated strategies and instruments reflects the power relations between local authorities and major farmers' organizations.

4.2. Cautious use of land as a lever for sustainable agricultural models: A neutral platform for food system transformation

While preserving farmland for food production constitutes a general baseline for territorial food activities, the objective of sustainable agricultural models is to use land for agri-food activities with low environmental impacts

(Duru et al., 2015). Two major dimensions of sustainable agriculture relating to land and food policy integration were identified: transition to environmentally friendly practices (e.g., organic farming, chemical-free farming, and agroforestry) and product diversification. These 2 elements are interconnected insofar as the latter contributes to the former: for example, product diversification can enhance environmental performance by introducing more species into an area and hence increasing biodiversity (Enthoven and Van den Broeck, 2021). In what follows, we discuss these 2 elements separately to better illustrate how policy integration strategies have been applied.

4.2.1. Environmentally friendly practices

The analysis demonstrated that both land-use planning and local food policies have the capacity to leverage instruments that facilitate environmentally friendly practices. According to the cases studied, land-use planning can only impact on farming practices indirectly by combining extensive farming, water and soil management, and biodiversity maintenance through the creation of ecological corridors. By classifying farmland into natural zones or agricultural zones for preservation and placing tighter restrictions on building rights, land-use planning indirectly encourages farmers to undertake extensive livestock farming. However, zoning regulations do not have the capacity to set specific restrictions (e.g., less pesticide input). As a complement to land-use planning, local food policies were found to leverage a range of instruments that promote environmentally friendly practices. These instruments included, for example, providing farmers with technical support and information, developing networks of transition-oriented producers, and organizing training and events. Some local food policies also included land strategies, such as developing environmentally friendly incubator farms on publicly owned land, setting up environmental rural leases⁴ on publicly owned land, and reclaiming fallow land to test agroecological practices. Moreover, some interviewees reported innovative integrated measures applying in particular to land with restricted uses for farming practices due to the environmentally sensitive location. For instance, in a natural park in Normandy, the local authority sought to combine land-use rules that would protect water catchment areas with support for farmers who apply environmental practices. In a rural cluster in Occitania, the authority planned to grant pre-emptive rights for the acquisition of peri-urban farmland in a water-sensitive area to farms that practice environmentally friendly farming. These measures also increase the value generated from agricultural products in these preservation areas (e.g., organic products which earn farmers more income).

Nevertheless, integration was not widely practiced in the areas studied in the 2 regions. In particular, environmentally friendly practices, especially organic farming,

4. Environmental rural lease (le bail rural environnemental): a type of agricultural lease specifying that farmers should implement certain types of environmentally friendly practices.

were hardly a central priority in local food policies. Moreover, the food policy instruments used were largely informational or sometimes financial, but rarely regulatory. Land strategies were also only adopted in a few food policies and were restricted to small surface areas.

Interviewees generally reported that local authorities deliberately chose not to prioritize environmentally friendly practices or to employ coercive instruments to that end (e.g., binding regulations) in local food policies. Authorities tended to avoid confrontation between agricultural stakeholders and to maintain a broad territorial mix, that is, conventional farmers as well as those committed to sustainable agriculture. According to the people interviewed, the goal of better environmentally friendly practices was usually perceived as a threat to established, conventional farmers. The result is that the authorities are careful to be inclusive in their treatment of the different stakeholders in local farming systems, and to avoid a radical emphasis on transition. According to one interviewee:

If we said, “we want to change the agricultural model now”, the project would be buried. We are still very cautious. Here, agriculture, in terms of the surface area, represents almost 74.4% of the territory. It is a very rural area, very agricultural, with a real dominance of monoculture. [...] We have modes of production that are globally rather polluting, which rely heavily on [...] chemical inputs. But we cannot force it. It is more like a nudge process, we have to gently encourage a change in practices. (Civil servant, Pays d'Armagnac rural cluster, Occitania, June 17, 2021)

4.2.2. Product diversification

Another target of policy integration was product diversification, with the promotion of market gardening being a representative theme in both regions. Policy integration was pursued through 2 mutually reinforcing instruments: land-use zoning designed to facilitate market gardening and land strategies to support it in local food policy. Local food policies promoted product diversification by shaping supply chains for diversified production. They usually included informational and technical support, local authorities helping new market gardeners to find land, and persuading existing livestock farmers to diversify. In some food policies, land resources were also leveraged to promote product diversification, for example designating public land for (future) market gardeners and facilitating the establishment of collective market gardens to tackle unaffordable land prices. In addition, in some land-use planning projects this activity was supported by designating specific zones for market gardening. In some cases, the land-use plans set regulations to restrict construction in these zones to market gardening activities, while others did not. Interviewees reported that the location of these zones typically aligned with existing

market gardens, suggesting an intention to preserve existing practices.

However, in both regions there were significant limitations in the implementation of policy integration for product diversification. With respect to local food policy, one obstacle identified was the reluctance of mainstream sectors to make a transition, “because we are dealing with serious economic matters” (civil servant, Haut Languedoc et Vignoble rural cluster, Occitania, September 22, 2021). As a result, there are obstacles to leveraging land for product diversification. One interviewee described a typical situation:

On the plains the wine growers are not at all in favor of diversification, because they don't want to lose hectares and consequently volume. In addition, most winegrowers are very happy with the system where they bring their grapes. They have an income that comes in every month, because it is the cooperative winery that pays their salary, they have an activity that is more or less economically viable... So, why should they bother to grow vegetables, fruit, and...? (Employee, coopérative Maison Paysanne, Pays Haute Vallée de l'Aude local food policy, Occitania, September 28, 2021)

In areas where local food policy used publicly owned land to facilitate transition-oriented farming, interviewees indicated that the land parcels were generally small in size. They gave 3 reasons. First, public land might be unavailable or unsuitable for the target activities. For instance, publicly owned pasture might not be suitable for market gardening. Second, public investment in product diversification was usually limited so that it could only support small-scale market gardens. The prevalence of support for market gardening rather than other activities (e.g., livestock) might also be deliberate, because market gardening demands much less land and investment. Third, local authorities tended to be cautious about intervening on land allocation, because they did not want to upset the farming sector by introducing coercive rules or by investing materially to encourage certain types of farming.

Similarly, the use of land-use planning instrument to create market gardening zones was only found in a few areas in Occitania. In the other areas, several planning officials claimed that it was not the task or prerogative of land-use planning to engage with issues relating to farming practices. They referred to the Planning Code, which states that “planning regulations govern the use of land, except for agricultural production.”⁵ In consequence, this approach was not even considered as a possible instrument of land-use planning. In several other territories, local authorities did propose this measure, but met opposition from the major farmers' organizations, which employed the same argument from the Planning Code.

5. Planning Code, L. 101-3. Authors' translation from original texts in French.

According to the interviewees, the primary objectives of the major farmers' organizations were to avoid restricting farmers' freedom and to prevent conflict between them. One interviewee gave a concrete example:

We tried—in 2008 we had written requirements concerning food [in the master plan]. And we had several consultation meetings with the Chamber of Agriculture. But the Chamber's elected officials refused these requirements, telling us that this was not the role of the urban planning document. (Civil servant, Caen urban cluster, Normandy, January 4, 2021)

In addition to limited policy integration, we also identified policy conflicts when land-use planning imposed excessively strict limitations on the right to build housing on market gardening land. Although the Planning Code states that agricultural zones can only authorize “necessary” buildings for farming, the exact definition of “necessary” remains ambiguous and leaves room for local interpretations. At local level, Agriculture and Planning Charters⁶ formulated at the departmental scale may specify the definition of “necessary” on-farm buildings, with different interpretations (**Figure 2**). Some charters only authorize on-site housing for livestock farms, some also authorize on-site housing when there are greenhouses, some simply authorize it where on-site supervision is necessary without specifying farming types, others do not clarify the requirements. In the *départements* where the Charters do not clarify detailed requirements, some interviewees reported that the “necessity of on-site presence” was interpreted locally as livestock farming.

The restrictive interpretation of “necessary” farm buildings was identified as posing particular challenges for new market gardeners in terms of obtaining on-farm house building rights. According to the interviewees, although these newcomers might find somewhere to live in nearby villages, this was not usually what they wanted. They explained that new market gardeners enter the profession not only to make a living but also for a particular lifestyle, in which on-site housing is often a vital factor. Another solution could be to extend existing farm buildings, which was allowed in most land-use plans. However, the interviewees noted that this solution does not work for collective market gardening projects, which are promoted in some local food policies. While an existing building could be a solution for an individual, it might be problematic for collective market garden operations.

Overall, there were constraints and conflicts associated with adopting combined policy instruments for sustainable agricultural models in land-use planning and food policies. These constraints and conflicts demonstrate the confrontation in the coexisting agri-food models between

environmentally friendly and agro-industrial farming, and between diversification and specialization. They also illustrate the neutral stance adopted by local authorities, which act strategically in engaging with stakeholders in divergent agri-food models, in the belief that transition also depends on bringing the major conventional stakeholders on board. This “neutrality” is, on the one hand, a weakness in that it fails to promote a common vision and, on the other hand, an opportunity for flexible compromises as it keeps stakeholders in divergent agri-food models together around the table.

5. Reshaping stakeholder power relations with land and food policy integration?

While the previous section showed how land and food policy integration strategies and their limitations are influenced by the relations between stakeholders, this section will present how, in turn, policy integration leads to a change in power relations. Three major stakeholders were identified as significant in this change: local authorities, major farmers' organizations, and minor alternative farmers' organizations.

5.1. Between legality and legitimacy: A process of local authority power acquisition in the agri-food system

While agri-food questions have long been handled as a sectoral issue by central government and the dominant agricultural players, we found that local authorities are gaining power in agri-food matters through the establishment of local food policies, which are then reinforced by the inclusion of land-use planning. Since powers in agri-food matters are not clearly defined, local authorities have to explore their prerogatives and justify their legitimacy when dealing with agri-food issues. **Figure 3** presents an example of how local authorities have leveraged the competences of different administrative sectors to establish local food policy. Land-use planning and associated policy instruments are one element, and the integration of land-use planning is a way for local authorities to reinforce their political legitimacy in agri-food issues.

In addition, the interviewees believed that local food policies could provide justification for land-use planning over agri-food issues. They argued that food could provide a means for local authorities to reinforce political commitment to farmland preservation and facilitate the consolidation of land-use planning in order to drive the transition to territorial food systems. One interviewee notably made this argument:

Local food policy is a way of getting people to accept the idea that it will be necessary to plan and to implement restrictive rules. Because if, for example, I manage to convince all the local elected officials in my intermunicipal structure that it is important to be able to install farmers; that to install them, land is needed; that to have land, we must stop urban sprawl; and that to stop urban sprawl, we have to

6. The Charters are usually based on negotiation between state representatives, major farmers' organizations, and mayors at the level of *départements* (Perrin and Nougaredes, 2022).

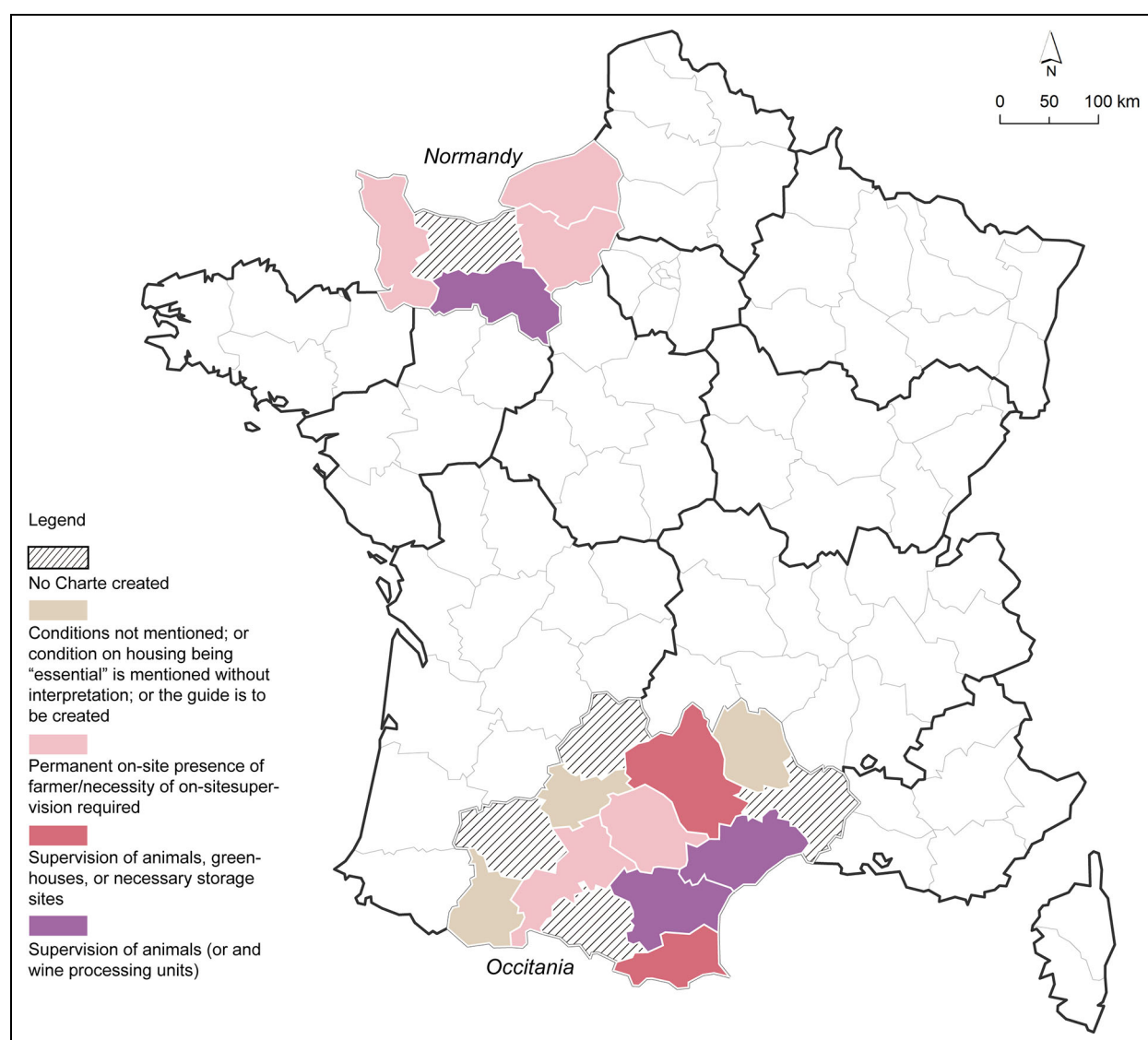


Figure 2. Interpretation of on-farm residential building permit requirements in the negotiated Charters.

Agriculture and Planning Charters formulated at the departmental scale that may specify the definition of “necessary” on-farm buildings. The figure shows that these Charters applied different interpretations: some only authorize on-site housing on livestock farms; some also authorize on-site housing when there are greenhouses; some only generally describe the necessity of on-site monitoring without specifying farm types; others do not clarify requirements. In the *départements* where the Charters do not specify detailed requirements, some interviewees claimed that in practice the “necessity of on-site presence” was interpreted locally as livestock farming. These local interpretations affect on-farm building rights for market garden operations and might hinder the implementation of local food policies intended to improve market gardening. Sources: Charte départementale d’urbanisme en Aveyron, 2012. Charte pour une gestion économe et partagée de l’espace rural, 2017. Charte Agriculture Urbanisme Territoires des Hautes-Pyrénées, 2013. Table 3, interpretation of the Urban Renewal law (2000) concerning residential building permits in agricultural zones, as stated in the charters negotiated in 38 *départements* (2011) by Perrin and Nougaredes (2022).

apply the regulations [...] So if all this is put together to convince people that it is in the collective interest of the area, the local population, and the elected officials, to make it easier to stabilize or preserve land, etc., to act legally, in particular through land-use planning, this is an argument that has legs. (Civil servant, the Occitania Regional Directorate for Food, Agriculture and Forestry, June 24, 2021)

Consequently, our study showed that land and food policies have the potential to reinforce each other’s political legitimacy. One exemplary case is a rural cluster where there were close interactions between the master plan and local food policy, with the 2 project managers working closely together and in frequent dialogue. One interviewee stressed that this policy integration helps to guarantee policy coherence as well as provide justification for elected officials to implement coherent measures:

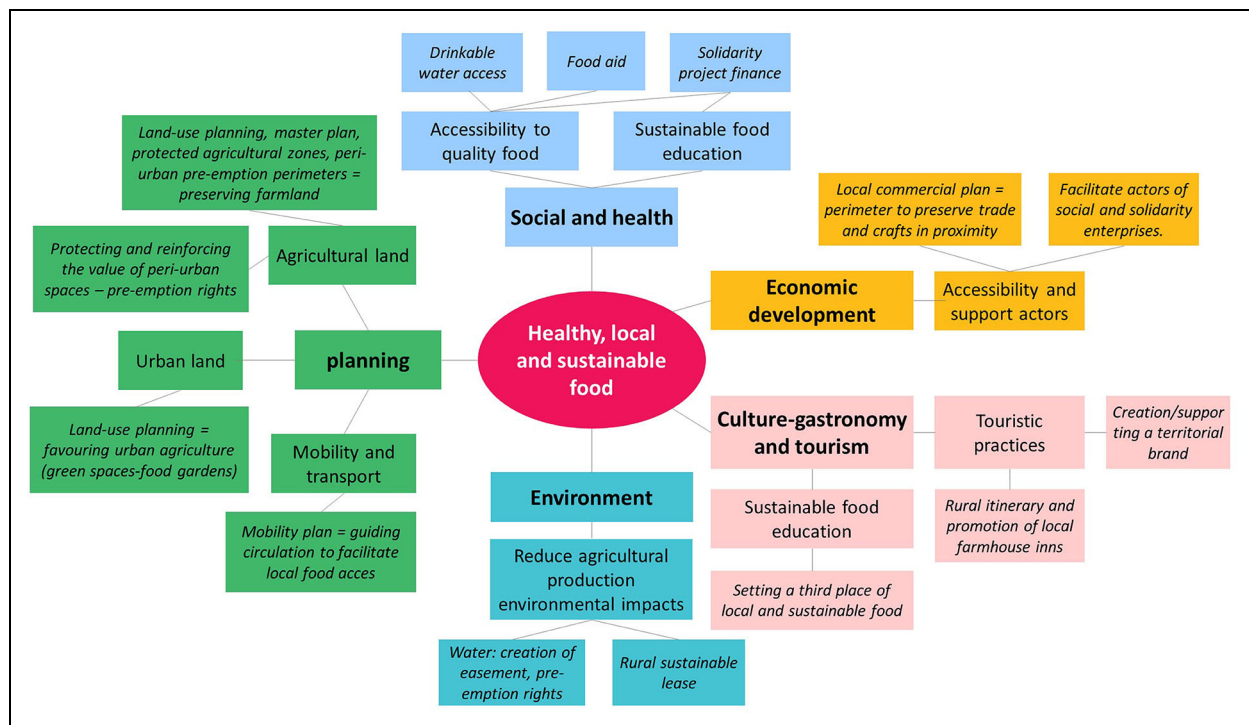


Figure 3. Local food policy-related prerogatives and instruments in the different administrative sectors. The figure presents an example of how local authorities could leverage the competences of different administrative sectors to establish food policies. These include land-use planning and associated policy instruments. On this basis, integrated land-use planning is a way for local authorities to reinforce their political legitimacy in the agri-food sector. Sources: Food policy website of the Mont Saint-Michel inter-municipal committee. <https://www.msm-normandie.fr/fr/prospective-grands-projets/pat>. Accessed October 4, 2022.

[integrating the master plan and food policy] is also an argument vis-à-vis elected officials, because it also enables us to justify certain proposals. We can tell them “yes, but this proposal [...] is consistent with the territory’s established food policy that we have been pursuing for several years, so it would be difficult to see how we could exercise a provision that runs counter to it.” So, in fact it also allows us to justify these elements. It reinforces public policies with the same orientations. (Civil servant, Midi Quercy rural cluster, Occitania, June 29, 2021)

By acquiring legitimacy in agri-food issues, local authorities could act as intermediaries between the major and minor farmers’ unions. The relationship between these different organizations is another issue affected by policy integration.

5.2. Opening the dialogue between opposed stakeholders in the political debate over land-use issues

Another effect of policy integration that we identified is that land and food policy integration could help to open a dialogue between opposed stakeholders in the political arena of land-use debate. When we compared the participation of farming-related stakeholders in land-use planning and local food policy, we found big

differences in the involvement of civil society stakeholders, both among professionals (e.g., farmers’ organizations) and nonprofessionals (e.g., nongovernmental organizations). Land-use planning was found to be dominated solely by the voice of the Chamber of Agriculture, whereas local food policies often brought in a greater diversity of stakeholders, including minority organizations representing alternative farmers. In this respect, a few pioneering cases showed that policy integration does indeed bring together opposed agri-food stakeholders, provide them with a platform for discussion, and subtly reshapes their power relations in the policymaking processes.

The master plan of the Midi Quercy rural cluster is again an example. A number of stakeholders in the territorial food system, though not statutory actors, were introduced into the master plan process as a result of the close interaction between land and local food policy projects. The food policy project manager helped to identify stakeholders associated with territorial food system transition, and thereby significantly increased the number of participants in the master plan process (**Table 1**). As a result, the master plan priorities contained a variety of non-statutory aspects of the territorial food system. For example, sustainable agriculture became a significant element, along with the diversification of agricultural activities, and agri-food processing activities became a requirement of the plan (i.e., a statutory aspect of land-use planning). These policy outputs reflect how policy integration can increase

Table 1. Participants in an agriculture workshop on the Midi Quercy master plan

Category	Stakeholder(s)	Shared Expertise on the Workshop
Local public authorities	Elected officials and civil servants from the territory of the rural cluster's master plan, inter-municipal bodies, and municipalities	Food planning and food security
Outside expert	An expert in food security	
Central government	Central government's planning service at the level of <i>département</i>	Fallow land reclamation
Supra-scale authority	Region	—
Farmers' support organizations	Chamber of Agriculture	Farm holding transfer and establishment
	Peasant farmer support organization (ADEAR)	Land instruments for local authorities to facilitate farmer establishment
	Campagnes Vivantes and CIVAM Semaines (for sustainable agriculture)	—
Minority farmers' union	Peasant Confederation	—
Resource management agency	Rural Land Agency (SAFER)	Land instruments and farmland preservation
	Water agency	Water and climate change adaptation
Master plan Consultant	Planning enterprise	—
Civil society group	Territorial development council	—

Sources: Based on an interview with the Midi Quercy master plan project manager and Midi Quercy Master plan website: The meeting note of SCoT agriculture workshop, December 15, 2020. <https://paysmidiquercy.fr/projet-de-scot-retour-sur-latelier-agriculture-du-15-decembre/>. Accessed October 2022.

the power of the minority farmers' organizations in land-use planning.

The above model was not, however, widespread in the cases studied. It was still rare to find minority farmers' organizations involved in the land-use planning process, showing that such power relations have only been reshaped to a limited extent.

6. Discussion and conclusion

In this study, we examined policy integration between land-use planning and territorial food projects through in-depth investigations of a sample of French cases, addressing the issues arising from the coexistence of agri-food models. We found that policy integration occurred in innovative initiatives, although with constraints induced by the trade-offs between stakeholders supporting different agri-food models. Local authorities were found to be cautious in promoting the transition to a territorial food system because of the need to bring the major conventional farmers' organizations on board. Also, power imbalances (i.e., between sustainable agricultural and agro-industrial models, and between diversification and specialization) restricted policy interventions intended to promote the transition to sustainable agriculture. This study also shows that the policy integration process helps to reshape the power relations between

stakeholders, resulting in increased power for local authorities and a new power balance between majority and alternative minority agri-food professionals. However, the limited extent of the impact on such power relations indicates a need for institutional changes to facilitate a fundamental transformation to a territorial food system.

First, this study reveals that land and food policy integration has indeed occurred in terms of shared territorial assessment, coherent strategies, and complementary instruments. Notably, our findings on complementary land-associated instruments illustrate the capacity of local authorities to mobilize diverse and innovative land strategies within the framework of food system transformation. van Dijk and van der Vlist (2015, p. 1900) have argued that local authorities play a dual role in active land policy by intervening in land markets as “referees” via land-use planning regulations and as “players” via active control as public landowners. Our study reveals that in the context of local food policies, local authorities are not only “players,” but also act as “facilitators” if they do not have enough public land or are afraid to trigger conflict in the agricultural world by intervening directly in land issues. These multiple roles also fit the category concluded by previous research regarding the roles of authorities in land

access issues (Martin-Prével et al., n.d.). Combining policy instruments is essential because it not only facilitates farmland preservation but also promotes farming activities (Perrin et al., 2020). A central issue, we suggest, is to make the role of “referee,” “player,” and “facilitator” coherent, and thereby to avoid conflicts and generate complementarities as well as synergies.

Second, policy integration was found to exist, but with limitations. Generally, there is a gap between ambitious agri-food goals and limited regulation of land-use planning, which results in insufficient implementation. Land-related strategies were found to be limited in scale, particularly with respect to the transition to sustainable agriculture. This finding resonates with earlier findings from a survey in Belgium, where the authors found that public land allocation for food exists but on a small scale (Vandermaelen et al., 2022). Finally, the incoherence of the policy instruments identified for market gardening reveal obstacles to the transition to a territorial food system. We identified barriers in land-use regulation around the construction of farm housing for collective farmers, an innovative food policy strategy that has also been found in other Global North contexts (Wittman et al., 2017; Calo et al., 2021). Our findings suggest that land use policies should be adjusted to avoid hindering the food transition.

We argue that small-scale interventions are nevertheless not trivial, because they deliver a political signal to the stakeholders about public support for a territorial food system. Innovative interventions such as the creation of market gardening zones and the establishment of ecological incubator farms may be insufficient to trigger immediate significant change, may even be symbolic and legally fragile, but could have a pragmatic impact in expressing political will (Lascoumes and Le Gales, 2007).

Although this study does not systematically compare the 2 regions, some distinctions were evident amid the general similarities in policy integration. Our findings show that territories in Occitania have employed more direct strategies to promote sustainable practices than those in Normandy. This difference might be attributed to the higher proportion of organic production and the longer history of local food policies in Occitania. Moreover, in Occitania, local networks of farmers involved in sustainable agriculture have been a driving force in food planning initiatives and have subsequently obtained support from local bodies. In Normandy, where sustainable agricultural models are less developed and conventional products still profitable (e.g., because of geographical quality indicators), local bodies have had to play a leading role in triggering reterritorialization. Moreover, only in Occitania did we find some territories that designate specific market gardening zones in their land-use plans. This is likely to reflect local power relations in the coexisting agri-food models, namely the stance of the major farmers' organizations on sustainable and territorial agri-food systems. Future research dedicated to in-depth comparisons between

territories with different agri-food characteristics could enhance understanding of the power dynamics.

Third, our findings highlight that stakeholder power relations in coexisting agri-food models are responsible for constraints on policy integration. In particular, the case studies reveal the dominant influence of the major farmers' organizations, with local authorities playing an intermediary role. The major farmers' organizations tend to defend agro-industrial (vs. environmentally friendly) and specialization-oriented (vs. diversification-oriented) farming practices. They also defend the freedom of farmers and seek to avoid constraints on that freedom as a result of public intervention. Local authorities use newly established local food policies and regulatory land-use plans as tools to address agri-food issues, but exercise caution in order to avoid conflict with the major farmers' organizations.

In these circumstances, we found that local authorities play the role of mediators in land and food policy-making to ensure a broader range of stakeholders. On the one hand, they tend to favor the transition to short local supply chains, an issue over which political consensus is possible (e.g., compared with agro-industrial vs. environmentally friendly farming practices). A possible explanation is that there is agreement between the stakeholders over the economic benefits of short local food chains. This differs from previous studies that have contrasted farmers engaged in short local supply chains with those involved in the global market with long supply chains (e.g., Perrin and Baysse-Lainé, 2020). On the other hand, the intermediary position that the local authorities adopt comes at the cost of promoting radical transition toward ecology and sustainability. Challenges to ecological transition were identified in the relative weakness of the minority alternative farmers, in a context that facilitates productivist farming models over ecological transition and favors territorial specialization over diversification (Gasselin et al., 2020).

Our findings highlight that policy integration is constrained not only by political but also by legal factors. The French Planning Code erects a legal barrier against the implementation of land-use planning to integrate farming practices. In consequence, it is easy for the major farmers' organizations to oppose innovative land-use regulations by citing the Planning Code.

We argue that these legal and political constraints are interrelated, as political power relations affect the local interpretation of legal rules. This is particularly instantiated in the local design of land-use planning regulations for market gardening. Our study reveals that the Chamber of Agriculture usually prevents the creation of market gardening zones in land-use planning by arguing that the latter is not entitled to regulate agricultural production. However, they themselves intervene in agricultural production through local Agriculture and Urbanism Charters. So on the one hand, the major farmers' unions contribute to establishing a local Charter to prioritize certain types of production where on-farm presence is required, while on the other hand they oppose extending the equivalent planning measures to market gardening. Ultimately, these

contradictions in the interpretation of legal rules reflect the inequity engendered by the imbalance in political power and the inequity between producers in the territory, an observation that resonates with previous findings (Perrin and Nougaredes, 2022).

Fourth, our findings illustrate how power relations can be reshaped by policy integration. On the one hand, it was found that local authorities are exploring their prerogatives in agri-food matters. Although they have no explicit legal competences in this domain, there tends to be strong political will among local authorities to use land-use planning as an opportunity to demonstrate their legitimacy in agri-food issues. Local authority intervention in agri-food issues also acts as a balancing factor between opposed farmers' organizations. On the other hand, pioneering cases show that an integrated policy process could help to bring a more diverse range of agri-food stakeholders into the political debate, which has been principally dominated by the major farmers' organizations. Alternative minority farmers' organizations and associated stakeholders that support the transformation to a territorial food system are thus gaining a stronger presence in the political arena. We argue that this process opens a dialogue between the different stakeholders. Although stakeholders may defend diverse and even conflicting interests, this dialogue is an opportunity for them to learn from each other (Campbell, 2004; Bassarab et al., 2019).

In conclusion, while the literature has revealed the need for territorial food and land policy to be coherent and the impact on policymaking of power relations within coexisting agri-food models, the mutual interactions between them remain poorly understood. Our work makes it possible not only to identify the presence of policy integration between land-use planning and territorial food projects, along with its integrative aspects and constraints, but also to analyze the drivers and impacts from the perspective of power relations. Our empirical approach, based on in-depth investigations, drew on a diverse sample of cases, and therefore provides a more comprehensive overview while describing specific cases of innovation.

While this study was based on French case studies, it could have general implications for policymaking around the transformation to territorial food systems in other contexts. Territories should be encouraged to pursue land and food policy integration, which has been identified as a facilitating factor in altering the imbalance in power relations between agri-food models. Local authorities have been found to play an important but restricted role, as they are new actors in the political arena of agri-food issues. On the one hand, we recommend training to help local project managers and planners to obtain skills in land and food issues, as well as to develop the capacity to deal with complex governance issues. On the other hand, we suggest more clearly defined legal powers to reinforce their legitimacy. Finally, considering the constraints on policy integration that arise from the unbalanced power relations between the major and minor farmers' organizations,

we argue that institutional change is needed if a radical transition is desired. One route would be to increase the political power of stakeholders that favor the transformation to a territorial food system, for example, or their status in land-use planning processes.

While this research examined power relations using qualitative data from interviews with project managers, future research with quantitative survey information from stakeholders will also advance our understanding of power dynamics in the policymaking process. Insight into integrated land-use and food policies within coexisting agri-food models could be enriched by future research on contextual factors. Power relations in coexisting agri-food models are not homogenous but are linked to local conditions. Contextual factors such as geographical setting (urban, peri-urban, or rural), political background, and regional characteristics, would be worth investigating. Our case studies encompass local food policies at different scales. The integration of multi-scale food policies, municipal and regional, national and international (e.g., CAP) is an issue that has not yet been specifically studied and merits in-depth research. While food policies are still in a development phase and land-use planning is gradually beginning to take account of agri-food issues, the analysis of more established food policies would provide greater insight into policy integration.

Supplemental files

The supplemental files for this article can be found as follows:

Appendix A. Interview details. Docx

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Author contributions

Contributed to conception and design: TL, RM, FW.

Contributed to acquisition of data: TL, RM, FW.

Contributed to analysis and interpretation of data: TL, RM, FW.

Drafted and/or revised the article: TL, RM, FW.

Approved the version submitted for publication: TL, RM, FW.

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