



# Rethinking the place of agricultural land preservation for the development of food systems in planning of peri-urban areas: Insights from two French municipalities

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## **Title**

Rethinking the place of agricultural land preservation for the development of food systems in planning of peri-urban areas: insights from two French Municipalities <sup>1</sup>

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<sup>1</sup>This study is part of the larger research project FRUGAL (*formes urbaines et gouvernance alimentaire*). FRUGAL is funded by the Rhône-Alpes region through the PSDR IV program. FRUGAL focuses on the analysis of systemic issues related to the food supply of metropolitan areas in the *Grand Ouest* ("Great West") and Rhône-Alpes regions, France. The authors reported no potential competing interest.

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***Abstract***

In peri-urban areas, agricultural land loss is a prominent issue. At the same time, the demand for local food provision is growing. As a response, local authorities are engaging in farmland preservation procedures to protect and revalorize agricultural land in order to encourage local food production. However, little is known on the impacts of farmland preservation on other development policies such as housing or employment. Therefore, we studied the impacts of a French farmland preservation procedure in two peri-urban municipalities. We conducted field interviews with the stakeholders participating to this procedure. Our results show how land preservation procedures for food systems can constrain the ambition for a sustainable territorial development, especially when accompanied by long-term land protection.

***Keywords***

Proximity framework –Agricultural Land preservation – Lock-in effects – Agri-food strategies – Peri-urban areas – Urban Planning

## Introduction

Since the mid-2000, many metropolitan food systems have arisen across the world as a result of an emerging demand for local and environmentally friendly agriculture (Jennings, 2015, Mansfield, 2013, Zasada et al., 2019). Local food policies address facets of the food system regarding practices performed by and for urban dwellers, for example sustainable agricultural practices and community food security. However, a poorly addressed facet of the food system is agricultural land management, especially in peri-urban areas (Perrin et al., 2020a).

The report "*Urban Sprawl in Europe: The Ignored Challenge*" drew attention to this issue: the loss of agricultural land around cities mainly due to urban sprawl, and the lack of public intervention to reverse this trend (Ludlow, 2006). Land preservation procedures are an essential lever for cities' food sovereignty as they secure land destination in the long-term. However, food systems add tension to allocation of rare land resources. In particular, they might collide with strategic development policies. Thus, urban food systems have become a central issue for geographers and economists (Morgan, 2009, 2013, Perrin et al., 2020a, Pothukuchi, 2017, Specht, 2014). This raises the question of the ability of local stakeholders to establish an agri-food governance seeking to reconcile re-localizing food production (Aubry et al., 2013, Mok et al., 2014) with "*a strategic plan coordinating sectoral developments within a complex system*" (Wiek et al., 2009).

In France, the rising concern for cities' food sovereignty has strengthened the need for farmland preservation (Baysse-Lainé, 2018, Brand et al., 2017). To this end, the legislator developed incentive procedures aiming at preserving agricultural land (Martin, 2013). These procedures are optional: it is the case for spatial planning documents, procedures concerning protected agricultural areas ("*Zones agricoles protégées*", more restrictive than planning documents) and land transaction watch ("*veille foncière*"). Their optional character explains why stakeholders do not systematically link land procedures to local food systems.

The *perimeters for the protection of peri-urban natural and agricultural areas* (PAEN, *périmètres de protection des espaces naturels et agricoles périurbains*), launched by the rural development law in 2005, is one of the optional procedures aiming at preserving agricultural land. PAEN identifies land as a pillar for the definition of a food system, negotiated between different stakeholders: farmers, local elected authorities and associations. Thus, PAEN can secure the use of non-urbanized land for the development of food systems. It represents a real novelty compared to existing tools as it establishes long-term preservation of agricultural land: the preserved perimeters are fixed by decree and thus difficult to change. In addition, PAEN introduces an action plan aiming at revalorizing agricultural land for food purposes (Margetic, 2014). By this action plan, PAEN displays a noticeable link between the preservation of agricultural land and local food production.

PAEN has so far met with limited success across the country, as it is optional for municipalities, departments and metropolises. The latter can take a political stand for or against it. The definition of the areas to be preserved takes place at the municipal level. Negotiations for such zonings are complex and lead sometimes to a deadlock. However, some French territories have defined their food strategy based on the PAEN as it allows them to place land issues at the center of their strategy.

A difficulty with PAEN is that it may be incompatible with other policies at the municipal level. This observation has been made in a body of literature treating issues of compatibility of policies and

their impacts on territorial development (Minner, 2016). This literature highlights issues related to the potential conflicting land uses in peri-urban areas. Olsson et al. (2016) show how in different European cities (Gothenburg, Copenhagen and Gent) tensions exist between land preservation for food purposes and for landscape and recreational purposes. In addition, Barthès et al. (2016), show how an agricultural land preservation policy in Geneva constrained urban development and required the revision of the cantonal master plan for economic projects without having the flexibility of modifying the quotas of preserved agricultural land.

The aim of our contribution is to analyze these conflicts; in particular, conflicts existing between local agri-food strategies based on land preservation and urban development strategies. A further aim of this paper is to identify levers and lock-in effects generated by a farmland preservation procedure at the municipal level through the analysis of changes brought about by PAEN. The following contribution is situated in the fields of geographical and economic research interested in farmland management in rural and peri-urban places (Bowers et al., 2019, Everingham et al. 2016, Opitz et al., 2016; Parham, 2019).

The Lyon metropolitan area is a remarkable study zone for the analysis of this topic. It allows illustrating the (in)coherence of sectoral public interventions particularly well. It preserved 49 000 hectares of agricultural land via the PAEN (Margetic, 2014), with a noticeable concentration of PAEN in some peri-urban municipalities of the administrative unit called *West of Lyon (Ouest Lyonnais*, Figure 1)<sup>2</sup>. The *West of Lyon*, historically recognized for its agricultural activity, concentrates 71.43% of the farmland preserved by the PAEN procedure in Lyon metropolitan area (UrbaLyon, 2013, 2017). Simultaneously, the territorial coherence scheme (*Schéma de cohérence territoriale, Scot*) identifies the urban edge municipalities of *West of Lyon* as a primary development pole. In this case, the *Scot* and the PAEN can have opposing objectives, namely that of land development and land preservation.

To summarize, the aim of this paper is to shed light on the means by which a farmland preservation procedure can lead to notably different impacts on territorial development. It is situated in the field of economics and geography of rural and peri-urban places. It does so by choosing to investigate two municipalities of the *West of Lyon* with a quasi-similar territorial context, Chaponost and Brignais, and the intermunicipal structure of Garon Valley (*Communauté de communes de la Vallée du Garon*, CCGV) they both belong to.

This article is structured as follows. The next section summarizes the scientific literature addressing agricultural land preservation in peri-urban areas in both economics and geography fields and develops the theoretical framework chosen for this study. Section 2 describes the material and methods as well as the study area. Section 3 develops the results: the contrasted mobilization of the PAEN at the municipal level and their impacts on agri-food strategies, the identification of levers and lock-in effects generated by a land preservation procedure at the municipal level. Section 4 discuss these results at the light of the interactions between PAEN and other development policies. Section 5 concludes.

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<sup>2</sup> The *West of Lyon* is a territorial entity responsible for defining the development policy of the 46 municipalities composing it; <http://www.rhone.gouv.fr/Politiques-publiques/Amenagement-du-territoire-urbanisme-construction-logement/Urbanisme/Documents-d-urbanisme/Schema-de-coherence-territoriale-SCOT/Les-SCOT-dans-le-departement-du-Rhone/SCOT-de-l-Ouest-Lyonnais>

## ***1. State of art and analytical framework***

The purpose of this brief literature review is to point out how our research contributes to the body of knowledge interested in agricultural land preservation and food systems in rural and peri-urban areas. Historically, agricultural land was abundant in rural places. It coexisted with the development of peri-urban areas (Heimlich et al., 2001). However, urban sprawl has added tension on agricultural resources in rural areas, as the available land for food production reduced. The fragmentation of agricultural landscape in rural areas puts a strain on farmers by adding uncertainty to the future of peri-urban farms in tension between food production and urban use (Bryant et al., 1992). Agricultural land preservation procedures have thus a long history in the context of peri-urban and rural areas studies (Bryant, 1986, Perrin et al., 2020a).

Geographical and economic literature highlights many issues related to agriculture in peri-urban and rural areas. Researchers are interested in the factors of farmland abandonment (Terres et al., 2015); the evaluation of public goods including food production (Czyzewski et al., 2021); the changes brought about by food production such as food tourism (Parham, 2019); the landscape transformations induced by population housing decisions (Egidi et al., 2021). These approaches highlight the importance of farmland preservation for local food production in peri-urban and rural places. However, little attention is given to the issue of the impacts of farmland preservation procedures on territorial development. One important aspect to highlight before exploring the challenges related to farmland preservation in peri-urban areas is the definition adopted for these areas.

### ***1.1. Farmland preservation in peri-urban areas***

The concept of ‘peri-urban areas’ is subject to multiple definitions that depends on the study area and/or the perspectives of the analysis (Olsson et al., 2016, Wandl et al., 2017). Two different lines of thought help understanding these definitions. First, peri-urban areas are identified solely by their proximity to an urban core (Meeus et al., 2008). Second, peri-urban areas embodies the strong divide between urban and rural spaces: the reference category chosen to characterize spaces is the urban category, meaning that the pressure experienced in peri-urban areas is due to the influence of urban centers (Poinsot, 2017, Von der Dunk et al., 2011). In this article, we follow this second line of thought considering that cities’ development induces progressive urbanization of the interstices between cities, and impacts actors’ strategies concerning the acceptance (or disapproval) of this urbanization and its consequences in term of housing, employment and transport infrastructures (Guisepelli, 2006). Therefore, peri-urban areas or the ‘urban fringe’ represents areas in transition between a rural reality and an urban one. They are also characterized by their actors’ strategies regarding the urbanization of their territory and its consequences not only on the urban fringe but also on the urban core (Hoggart, 2016). Urban core sustainability strongly depends on the development/preservation strategies in peri-urban areas, especially concerning food issues (Wandl et al., 2017).

Recent literature shows renewed interest in farmland preservation procedures in relation to the challenges faced by cities for their food sovereignty (Sonnino, 2019). Although the scientific community recognizes the need for farmland preservation, many researchers question the efficiency of agricultural land preservation in peri-urban areas (Bousbaine et al., 2017, Perrin et al., 2020a). One particular matter of interest is farmers’ strategies regarding farmland management and preservation.

Paniagua (2019) explores the plurality of farmers' resistance strategies to adapt to the continuous evolution of agriculture in peri-urban spaces. Bryant et al. (2011) also explored adaptation strategies of farmers to farmland preservation. There is no conclusive result on the interaction between farmers' strategies and farmland preservation procedures: some procedures help maintaining farming activity in place (Gottlieb et al., 2015), others discourage farmers to invest in further farming activities (Perrin et al., 2020b). The existing literature also highlights the limitations related to the implementation of farmland preservation procedures: the lack of control on the areas preserved; their inadequacy with planning documents; their frequent revisions; and the neglect of marginal farms leading to the preservation of land for export-oriented monocultures instead of local food production (Lynch et al., 2001, Perrin et al., 2020b).

In addition, one important aspect of agricultural land preservation procedures is that of the conflicting land uses occurring after farmland preservation (Barthes et al. 2016, Olsson et al., 2016, Sayer et al., 2013, Von der Dunk, et al. 2011). Researchers agree on the fact that the objectives of agricultural land preservation are not always displayed, which can lead to activities competing with food production. In particular, researchers show how the agenda of land preservation is dominated by non-farming priorities, in particular by priorities related to landscape issues, recreational spaces, quality of life of residents or the protection of rural economies (Bunce, 1998, Mariola et al., 2005). These studies develop a sectoral approach to identify impacts of farmland preservation policies on the farms and the agricultural activity in peri-urban areas.

Nevertheless, there have been very few studies interested in analyzing the impacts of farmland preservation policies on sustainable territorial development, in particular the interactions between its different dimensions: economic, social and environmental (Medeiros, 2020). The literature shows that farmland preservation procedures in peri-urban areas face many challenges and leads to tensions – and sometimes conflicts – on the land preserved, however little space is given to the analysis of the impacts of an agricultural land preservation procedure on other sectoral policies such as housing or employment. The objective of this paper is to explore these impacts by analyzing the PAEN procedure and its impacts on sustainable territorial development in two French municipalities. The proximity framework presented in the next subsection is of particular utility to study the impacts of farmland preservation procedures on local development as it allows contrasting farmland preservation intentions of different stakeholders with their strategies for local development.

## **1.2. The proximity framework**

Cooperation between actors involved in territorial development implies the activation of various relationships and networks. In particular, agri-food strategies involve stakeholders with different visions of their territory, resulting in different commitments in land preservation procedures (Campagne et al., 2014, Sayer et al., 2013). Such cooperation challenges sustainable territorial development.

The *proximity framework (PF)* explains how local dynamics related to specific forms of coordination between stakeholders can have different impacts on sustainable territorial development (Bellet et al., 1993; Gilly et al., 2000; Pecqueur et al., 2004, 2018). The PF helps explaining how a land preservation policy can strengthen local coordination, but can also generate territorial disparities. Defining territory as a social construct resulting from various proximities (Oinas et al., 2005), outlines how local stakeholders can engage differently in farmland preservation procedures in accordance



with their political agenda, and thus can influence in different manners peri-urban and urban sustainable development. The PF accounts for local levers and lock-ins generated by farmland preservation procedures.

Three types of proximities are usually identified in literature (Table 1). *Geographical proximity* is here considered to be contextual information related to the specific location of the municipalities analyzed<sup>3</sup>. *Organizational proximity* is related to the way interactions are organized between actors. In other words, organizational proximity represents the joint space of actors' relations (Torre, 2009). Organizational proximity can here be seen as the coordination between actors of the same organization or/and the coordination between actors of different organizations. *Institutional proximity* is defined as the synergies existing between actors sharing a set of formal and informal rules, codes and norms (Talbot et al., 2005). It relies on two fundamental components: membership decision or logic of belonging (Pecqueur et al., 2004). Institutional proximity is characterized by a boundary separating agents who have made the choice to belong to a collective group and agents who have chosen not to belong to that group or who were excluded from that group. To this classical triptych of proximities, Boschma (2005) adds the *cognitive proximity* that sheds light on the impact of social learning on developing local coordination. Cognitive proximity can facilitate communication and knowledge sharing between stakeholders.

The interactions between local actors rely on the hybridization of institutional and organizational proximities (Pecqueur et al., 2004). In other words, proximity types are strongly interconnected. Proximities pave the way to coordination between actors and lead to institutional arrangements materialized by the development of shared projects.

However, a lack of flexibility or/and openness in any type of proximity can lead in some cases to what Boschma (2005) calls a **lock-in situation** (Table 1). Lock-in situations represent the undesirable aspects of proximities as far as confinement in any type of proximity is a barrier to the achievement of the potential of a local policy, and more broadly to sustainable territorial development (Detchenique et al., 2016). Lock-in situations intensify enclosure phenomena. Table 1 presents the potential lock-in effects held by each proximity type.

This being said, the PF makes it possible to consider local procedures or policies from a perspective covering their positive and negative implications on sustainable territorial development. In this paper, the PF will be applied to the PAEN in order to illustrate how a specific procedure can contribute in different manners to sustainable territorial development, depending on different types of proximities activated and/or reinforced between local stakeholders.

## **2. Materials, methods and study area**

First, we analyzed the master plans of the municipalities studied as they define agricultural zoning and agri-food orientations. In addition, we analyzed the supra-municipal planning document of the *West of Lyon* (Territorial Coherence Scheme, *Scot*) also covering these municipalities. We based our analysis on a keywords search on agriculture, food, PAEN, development objectives (population growth, housing and job creation). We then proceeded to a comparative reading of these topics to

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<sup>3</sup> There is an ongoing debate on the importance of geographical proximity in the proximity theory (Torre, 2009; Pecqueur, 2018). We do not take part in this debate knowing that governance of land resources is strongly associated with the geographical and historical context of an area.

assess their compatibility. We completed our analysis with the local housing program of the CCVG, as this program sets out objectives for urban development. We then performed a quantitative analysis of the study area: agricultural land loss level, agricultural surface, types of production, number of farmers and PAEN. For this, we used statistical reports of the Lyon Urban Planning Authority (UrbaLyon), as well the Ministry of Agriculture and the 2010 agricultural census. We also used a mapping tool for a comparative analysis (*Corine Land Cover*, 2018).

For the second type of data search, we conducted 21 in-depth semi-structured interviews with local elected officials, UrbaLyon technician, members of the chambers of agriculture and consulting firms accompanying the master plans of the towns in our study area (Table 2). The interviews covered the following themes:

- The history of the interviewee intervention in agri-food strategies and the recent evolutions, the place of land management in these strategies
- The current implication of the interviewee in PAEN
- The advantages and limits of the PAEN
- The articulation of the objectives PAEN with the agricultural objectives of planning documents
- The negotiations and trade-offs made between preservation and development objectives in planning documents and if it was taken into account when voting for PAEN
- The expected impacts of PAEN on urban forms on the short and long run

We used the *snowball effect* sampling method to complete our sample and be as exhaustive as possible regarding the key players to be met. The aim was not to produce generalizable results but to explore the knowledge and expertise of the participants in much greater depth than can be achieved through quantitative methods.

### ***2.1.A comparative analysis of the implementation of the PAEN in the municipalities of Chaponost and Brignais***

The choice of Chaponost and Brignais is justified by their proximity to the metropolis of Lyon and the urban pressure they are experiencing as a result (Figure 1). In addition, the municipality level is relevant to our analysis because the definition of land uses is carried out at this level. The commitment of Chaponost and Brignais to PAEN is quite contrasted (Table 3).

Chaponost and Brignais both aim to support short food supply chains in response to growing local demand. Chaponost agreed to take part in collective agricultural infrastructures within the Agricultural Action Plan 2030 of the CCVG. It set up a collective washing area for agricultural equipment and a methanisation unit within its perimeter. The agricultural and natural surface available in Brignais is smaller compared to Chaponost as its central location makes it the urban core of the CCVG.

To visualize the strategies of each municipality concerning its PAEN, the perimeters were superimposed with the respective master plans<sup>4</sup>. The master plan delineates different land uses to be respected within each municipality: agricultural and natural lands (A/N on the map); perimeters to be urbanized (AU) and urbanized perimeters (U)<sup>5</sup>. The blue shaded areas are the superimposed PAEN perimeters.

The superposition of the town's master plan and the PAEN (Figure 2) shows the margins that the local authorities of Brignais have kept for future economic and residential development: many agricultural (A) and natural zones (N) are not covered by PAEN. This reveals the intention of local authorities to maintain the possibility of urbanizing agricultural land when needed. Chaponost, on the other hand, has reinforced its agricultural identity by the preservation of a higher percentage of agricultural land through the PAEN. The overlay of the aforementioned maps (Figure 3) shows the restricted area reserved for economic and urban development. Urban zones are concentrated at the core of the municipality contrary to Brignais that has a more diffuse model of urbanization.

## **2.2. The West of Lyon context**

The territorial coherence scheme (*Scot*) of the *West of Lyon* prioritizes the preservation of the rural identity of its municipalities. It does so by promoting a development model based on the concept of *densified village*: the economic and residential densification of a central urban core surrounded by preserved agricultural and natural areas. The *Scot of West of Lyon* also guides its municipalities to define an agricultural project based on their common territorial history. This led the local elected officials of Chaponost and then the intermunicipal community of Garon Valley (CCVG) to initiate an agri-food strategy by joining the PAEN procedure in 2016. The CCVG started to take a deeper interest in its agricultural sector only in 2015, whereas the other neighboring structures did so much earlier.

At the same time, the *Scot of West of Lyon* attributed different development objectives<sup>6</sup> to its municipalities, to be achieved by 2020. Chaponost and Brignais were both assigned a level 1 development objective in the *Scot's* guidelines (*Scot of West of Lyon*, 2011). Municipalities in level 1 have economic and residential development goals to achieve. It is therefore interesting to compare their development strategy in the light of the PAEN.

It should be noted that it took six years for local officials of Lyon to define their PAEN and action plan. This shows the complexity of the procedure, which involves a significant amount of time for negotiation between stakeholders. In this context, municipalities that embarked on the procedure at a later time, such as Chaponost and Brignais, benefited from proximities activated at an earlier stage (Table 4).

## **3. Results**

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<sup>4</sup> The Rhone department created PAEN maps for each municipality included in the procedure: [https://www.rhone.fr/cg69\\_site/developpement\\_innovation/environnement/les\\_penap](https://www.rhone.fr/cg69_site/developpement_innovation/environnement/les_penap)

<sup>5</sup> The other colors present on each map are not of interest for our analysis.

<sup>6</sup> The development objective applied to a municipality depends on the size of the population, public transport, level of services and economic activities. There are 4 levels that can be attributed to municipalities, starting with the most urban municipalities (level 1) and moving towards the most rural (level 4).

Unlike other procedures, PAEN fosters coordination between local actors through the action plan it requires; municipal elected officials and agricultural professionals also need to agree on the perimeter of the land to be preserved. The action plans exclusively fund collective projects initiated by a group of local farmers. The department and the region share the financing of these plans. Collective action modeled around agricultural land resources have a positive influence on the proximity between local actors (Table 4). Actors participate in the debate over land use without necessarily having official competencies at this level. Thus, the PAEN announces a strong ambition to foster coordination for a local agri-food strategy.

### ***3.1.A contrasted mobilization of the PAEN at the municipal level and its impacts on agri-food strategies***

The PAEN activated and reinforced different types of proximities in the study area (Table 5). Chaponost called upon its intermunicipal structure (CCVG) to elaborate an intermunicipal agri-food strategy. Local officials of Chaponost considered that *“working alone at the municipality level on such a strategic and economic topic could be of little use”* (quote, CCVG technician). Hence, Chaponost generated a social learning process at the CCVG level to carry out a collective food strategy, activating a cognitive proximity.

This municipal request for an agri-food strategy was made within a territorial context conducive to learning. The surrounding intermunicipal structures were already engaged in PAEN. Moreover, the problems encountered by the CCVG farmers, notably the difficulty of transferring farmland, encouraged the CCVG to launch this procedure.

It should also be noted that the enhanced cognitive proximity in the PAEN has a clear limit. In fact, many local decision-makers did not measure the difficulty of changing the perimeters in the long term. According to a technician of the Scot of West Lyon, *“The longevity of the PAEN was something less real; they did not see their long term viability. We tried to alert them. They thought they had time to reconsider their assumptions or to leave enough space for development.”*

The cognitive proximity activated by Chaponost led the CCVG to bring together local stakeholders knowledgeable of the agri-food sector to develop its strategy. The CCVG involved stakeholders competent in different domains – land, agriculture, food, environment – creating a certain organizational proximity. Indeed, organizational proximity is a key issue for the success of an agri-food strategy. Analysis of the San Francisco and Toronto Food strategies shows the necessity of partnerships between stakeholders for food policies to succeed (Mansfield et al., 2013). In both, Chaponost and Brignais, the organizational proximity activated by the PAEN paved the way for a successful agri-food strategy.

Moreover, the choice of the CCVG to bring together this broad range of actors reveals - at an institutional level - its recognition and acceptance of the importance of land conservation issues for food systems. In fact, the CCVG's agri-food strategy includes a strong land component aiming at promoting new forms of land sharing for agri-food purposes. The CCVG aims to develop a land support fund (30,000 € per year) to build an intermunicipal farm with *in situ* accommodation. In this light, the PAEN paved the way for an evolution of the property rights institution. The local authorities of Chaponost and Brignais tend to perceive agricultural land as a collective good (Coriat, 2015) in

need of preservation (Table 5). The PAEN helps perceiving land property as a bundle of rights in which local actors gain the right of organizing the land resources and owners lose exclusion rights (Schlager et al., 1992).

PAEN perimeters are defined at the municipal level. Brignais and Chaponost involved associations of agricultural professionals and environmentalists in this process. The negotiations allowed environmental and agricultural stakeholders to adjust their perimeter preferences in the light of each other's concerns. However, this organizational proximity reinforced by PAEN was not entirely inclusive. Local authorities deliberately excluded landowners from the perimeters delineation: *"We had asked ourselves if we should collaborate with land owners. If we did, it would be a real waste because we could have anticipated the reactions they would have had"* (Quote, a local official). Not only did landowners not participate in the procedure, but they also lost their right to control the nature of the activity carried out on their own property.

The analysis of the changes brought by the PAEN procedure shows strong links between the different types of proximities identified. It is also worthwhile to mention the horizontal and vertical dimensions of territorial proximities activated by the PAEN: vertical between Chaponost and the CCVG and horizontal between different local actors at the municipality level. However, this same dynamic might have lock-in effects when confronted with development policies.

### **3.2. Lock-in effects generated by PAEN as a barrier to sustainable territorial development**

As mentioned above, PAEN tends to transform coordination between actors of the agri-food sector. It establishes an institutional setting for the development of collective actions. The activated proximities have inter-territorial benefits: PAEN paved the way for the development of an inter-territorial food strategy. This shows that national regulations like PAEN can encourage local coordination through the development of more participative and inclusive procedures.

However, PAEN raises a question of the interconnection of food strategies with other local policies, all the more so when sectoral procedure aim to achieve sustainable territorial development. When approaching territorial development as a system of interacting policies, the question of the impacts of the PAEN on the orientations of planning documents of *West of Lyon* in terms of development objectives arises.

The spatial proximity of Chaponost and Brignais to the Lyon metropolis (Figure 1), explains their classification as level 1 in the *Scot*. However, PAEN has activated institutional proximity in different ways. Their choices regarding agricultural land preservation has been dissimilar, revealing certain lock-in effects through their different political objectives.

Both Chaponost and Brignais have residential objectives to be met by 2020: the *Scot* called for an increase of residential offer by 1000 housing units in Brignais and 840 in Chaponost. By 2015, only 62% of the *Scot* objectives had been met in Chaponost and Brignais (CCVG Local Habitat Program, 2017). The PAEN represents a strategic opportunity for local authorities because it allows jointly for compliance with the *Scot* agricultural guidelines while limiting other objectives related to housing guidelines.

In particular, Chaponost displayed the will to limit its urban development in the revision of its master plan. In fact, the former elected officials of Chaponost had strengthened its densification by building 70 to 80 housing units per hectare (ha). The current municipal team was elected with the objective of limiting this densification and thus diminished this number to 50 housing units per ha. PAEN helps reinforcing this shared vision between local authorities as it allows limiting the arrival of new populations. This makes it difficult to achieve the development objective assigned by Scot. Here, the local authorities of Chaponost engendered a lock-in situation by bypassing the Scot orientations through their strong engagement in PAEN.

This lock-in situation is also in line with its citizens' institutional proximity. The involvement of local officials in the PAEN is in response to the local demand to limit the arrival of new inhabitants. The long-term agricultural preservation can prevent the urbanization of agricultural and natural land, limiting thus the arrival of the latter: *"At the time we told them [the local officials] that through the PAEN, economic and urban development were very constrained. It was a political will strongly asserted by local authorities. We have reminded them that they are level 1 in the Scot."* (Quote director of the Scot).

The response of each municipality to the mandatory level of social housing (SH) to be achieved locally reinforces this argument. Indeed, the issue of municipal development does not exclusively depend on the Scot guidelines. The Solidarity and Urban Renewal Act (SRU= *Loi de solidarité et de renouvellement urbain de 2000*) sets a target of 25% of SH<sup>7</sup>, to be achieved by 2025. In 2016, Brignais had reached 19.46% and Chaponost 13.19%.

In Brignais, the objective of 25% SH will be achieved through the renovation of a district set apart for this purpose. However, in Chaponost, theoretically 112% of the new residential supply would have to be built as SH to reach the 25% set by the SRU bearing in mind that the new municipal team was elected with the intent of controlling the municipality's urbanization level. The revised master plan of Chaponost has set the objective of building 40% of new housing as SH knowing that if this figure is respected the municipality will achieve 18% SH in 2028.

In this case, the PAEN reinforced the tacit norm shared by Chaponost local authorities that is their willingness to control urban development. Thus, the PAEN risks reinforcing social exclusion. According to a local official in Chaponost *"Brignais has always had the political will to have a large population. This has never been the case in Chaponost, except for the last municipal officials who were overthrown because they wanted to be on the same level as Brignais. It was not accepted by the inhabitants of Chaponost and they were not re-elected"*.

Moreover, there is a political will at the CCVG level to be a territorial entity separate from the Lyon metropolis (Table 5). According to a local representative from the Rhône department, *"What helped them to accept the PAEN is that for years they have been betting on not being associated with the Lyon metropolis. At first, it was a default choice but not anymore. As they have set up the procedure, there must now be projects behind it. [...]. At first, it was that but now they are caught at their own game. But initially, we thought it was a defensive tool against Lyon"*. Thus, the CCVG tends to limit its

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<sup>7</sup> Social housing is housing intended for people on modest incomes who have difficulty finding housing on the private market.

urbanization and its transportation infrastructure. In this context, the institutional proximity bringing together the municipalities of the CCVG reinforced their acceptability and commitment in the PAEN.

Hence, the development of procedures addressing local food supply also serves various local interests, such as limiting residential growth or taking a political stance against public infrastructure (Epstein, 2003). The potential for function creep is noteworthy.

Thus, the PF has allowed us to study the links and coherence of local development policies. The dynamics between different proximity types show that it is possible to engage in an agri-food strategy while respecting the conditions for a sustainable territorial development. However, in Chaponost the institutional proximity strongly unites local officials and generates lock-in effects by the exclusion of potential newcomers, which compromises a sustainable municipal development. The impact of land preservation strategies on territorial development highly depends on the nature of the institutional proximity connecting local stakeholders.

#### 4. Discussion

Our study has shown the lack of integration between agri-food strategies and development policies. Other studies in the French territory confirm our findings. Authors studying Perpignan municipality observe that food policies are not a transversal domain of urban policy (Perrin et al., 2014). This means that the development of a local food strategy, in particular its land component, must be defined in concert with development policies. Food strategies should be integrated into land use planning for the achievement of a sustainable territorial development.

The implications of the PAEN discussed above underline the importance of coherence between development policies when drawing up an agri-food strategy. The activated proximities contribute to the reinforcement of partnerships between different stakeholders. However, the institutional lock-in identified at Chaponost level cautions against restricting development objectives, especially the arrival of new inhabitants. Furthermore, farmland preservation decisions in Chaponost and Brignais will shape urban forms.

The PAEN will influence housing forms. Individual housing will decrease in favor of collective housing that uses available space more efficiently. The PAEN will reinforce this phenomenon. Between 2009 and 2014 the construction of houses increased by 4.47% in Brignais whereas apartments increased by 8.48%. In Chaponost the construction of houses increased by 6.46% compared to a 27.38% increase in the number of apartments (INSEE, 2014). According to a representative of the Rhone Department *"PAEN raises the problem of housing within the next 30 years"*. Moreover, the PAEN encourage using less ground space, which will influence building heights, inevitably disrupting urban forms. The concern of Chaponost local officials to maintain a pleasant living environment for its inhabitants will thus become a landscape issue.

In addition, the *West of Lyon Scot* promotes an increase in local employment initiatives including the creation of 12 000 jobs by 2020 (Scot of West Lyon, 2011). However, PAEN might change the nature of local employment. According to the director of the Scot, *"We face difficulties finding areas to develop economic activity. When we ask the question of where to find these areas, there is only one answer: agricultural land. Development requires creating local employment opportunities. (...). There will clearly be a change in the urban form of economic zones, especially in Chaponost. This may*

*involve the creation of other types of jobs from the tertiary sector. It would require buildings and offices, which are more likely to house services”.*

Lock-in effects reinforced by the PAEN have an impact on the equilibrium of municipal and intermunicipal territory. Municipal strategies resulting in spatial constraints undermine the guidelines of the *Scot of West of Lyon*. Land use arbitration includes these spatial antagonisms related to different political priorities.

In addition, the risks related to locked-in municipal strategies - as seen with Chaponost - are the redistribution of urban pressure on geographically close areas (Zasada, 2011). The potential for leapfrogging is strong. Robinson (2014) argued that this was the case with the development of the Green Belts where limits to growth changed. This means that political intervention for agricultural protection should be backed by system harmonization at the intermunicipal level. Land compensations should be found between municipalities, meaning that an extraterritorial equilibrium should be found between different municipalities with specific development objectives. In the case of Chaponost and Brignais, for example, level 1 should be attributed to Brignais with a diminishment of its preservation objectives, while the level of Chaponost should be changed with an augmentation of its preservation objectives.

To conclude, system thinking requires the balanced activation of proximities beyond the municipal level. Food strategies should be based on extra municipal bodies able to harmonize development on a larger territorial scale. Territorial development must be considered beyond the administrative limits of municipalities. An interesting example in this context is the French territorial food project (*Projet alimentaire territorial*, PAT). The decision-making structure created for this project is composed of different territorial entities (metropolis, municipalities, intermunicipal structures, regional natural parks) working towards the construction of a common food system. Arbitrations take place at this level and go beyond the regulatory territorial boundaries.

## **5. Conclusion**

The aim of this paper was to provide a comprehensive overview on the ways by which an agricultural land preservation procedure can lead to notably different impacts on territorial development. We did so by choosing to investigate two municipalities of the *West of Lyon*, Chaponost and Brignais, and the intermunicipal structure of Garon Valley they both belong to. The proximity framework allowed us to reveal contradictory aspects related to land management in areas under urban pressure. The PAEN constrains existing planning system: it influences housing forms, the nature of local employments, and more broadly, the fulfillment of the development objectives set by the supra-municipal planning document (the territorial coherence scheme, *Scot*). What is needed is a procedure that intervenes further upstream of the decision processes in land management.

Our analysis contributes to the theoretical field of rural and peri-urban studies. It allows rethinking rural resources governance at the light of externalities related to geographical proximity with urban cores (for example, rapid population growth in peri-urban spaces that does not have the adequate infrastructure to welcome them). In particular, peri-urban areas are seen as extension of urban cores, specifically “used” to alleviate pressure on urban areas. However, some peri-urban places refuse this “commodification” and enter defensive strategies to be dissociated from urban spaces as seen in Chaponost. Agricultural spaces in these areas are thus on the borderline between



deterioration and revalorization for food systems, hence the importance of farmland preservation procedures. Farmland protection procedures can favor defensive strategies and should thus be integrated at an earlier stage in planning along with local food strategies, in order to reconsider the nature of potential exchanges between urban and rural areas.

Given the sanitary crisis the world is currently experiencing, the issue of local food systems will become more prominent. The Covid-19 crisis is revealing the dependence of food systems on international production and the supply shortages that might occur the longer the supply chain. The political will expressed by many European leaders to reclaim their national food production will raise the issue of land management in peri-urban areas. Thus, the question of the pertinent territorial scale for elaborating land preservation policies for food systems is a challenge that will be faced by every European city wishing to reconsider its food sovereignty.

To prepare for future (sanitary or other) crises, food systems should rely on greater institutional proximities between local authorities, allowing them to consider a planning system that integrates food issues from the outset of the planning process. Food systems should not be annexed to planning documents; they should be an integral part of it, included in upstream decision processes. Farmland preservation should be neither an *ad hoc* response to urban sprawl nor a reaction to a planning system favoring urban growth. The role of peri-urban areas in food relocation is to be recognized in planning processes. The “*cross-cutting nature of food policies*” (Morgan, 2008) allows many urban development challenges to be addressed in planning. A comprehensive planning process linking food planning and land use issues should be discussed in depth at all planning levels concerned.

While providing additional knowledge on the relation between land preservation, local food systems and planning, this analysis has the limitation of not expanding the panel of municipalities studied. Furthermore, it would have been interesting to compare urban and peri-urban municipalities to illustrate their different approaches concerning land preservation for food systems. In addition, identifying municipalities where the PAEN procedure did not lead to agricultural land preservation, could have provided additional material for the analysis of the role of proximities in the success of agricultural land preservation for local food systems. These avenues are left for future research.

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Table 1 : Components of each proximity type and the potential lock-in situations it can generate, adapted from Boschma (2005).

<b>Types of Proximity</b>	<b>Definition</b>	<b>Components</b>	<b>Potential lock-in situations</b>
<b>Geographical</b>	Actors' spatial localization.	Physical distance separating local actors.	Lack of exchanges with other spatial entities.
<b>Institutional</b>	Synergies existing between actors sharing a set of formal and informal rules (Talbot et al., 2005).	Shared logic of belonging, rules and norms between actors.  Trust.	Institutional rigidity.  Exclusion of newcomers.  Inertia.
<b>Organizational</b>	Affiliation of local actors within the same organization (Boschma, 2005).	Coordination between actors of the same organization or/and the coordination between actors of different organizations.	Constraining relationships between stakeholders.  Power of each stakeholder in decision-making processes.
<b>Cognitive</b>	Capacity of local actors to engage in new public devices that require some expertise (Boschma, 2005).	Impact of social learning on developing local policies (Boschma, 2005).	Competency trap (Noteboom, 2000)

Table 2: List of interviewees and their positions

<b>Institution</b>	<b>Position of the participant</b>
Chamber of agriculture of West of Lyon	Project manager in charge of Agriculture/Forest/Environment- Facilitator in charge of PAEN in West of Lyon
Chamber of agriculture of West of Lyon	Facilitator who participated in PAEN procedure
Chamber of agriculture of Rhone department	Facilitator who participated in PAEN procedure
Urban Planning Agency	Agriculture and food consultant
Land development and rural establishment society ( <i>Sociétés d'aménagement foncier et d'établissement rural- SAFER</i> )	Departmental director of SAFER
Land development and rural establishment society ( <i>Sociétés d'aménagement foncier et d'établissement rural- SAFER</i> )	Land negotiator and facilitator
Lyon Metropolis	PAEN project manager
Rhone department	Retired elected official in charge of PAEN procedure in the Rhone department
Municipality of Chaponost	Deputy mayor in charge of urban planning and water policy
Municipality of Chaponost	Project manager in charge of agriculture
Municipality of Brignais	Head of the Urban Planning and Development service
Municipality of Brignais	Project manager in charge of agriculture
West of Lyon Scot	Director of the Scot
Grenoble Alpes University	Researcher interested in land management issues
Intermunicipal community of Garon Valley (CCVG)	Head of Planning and territorial development service
Intermunicipal community of Garon Valley	President of the CCVG
Intermunicipal community of Garon Valley	Officer in charge of planning and land rights
Consultancy firm in charge of Brignais town master plan	Planner in charge of the town master plan
Consultancy firm in charge of Chaponost town master plan	Director of the firm
Consultancy firm in charge of Chaponost town master plan	Planner in charge of the town master plan
Association in charge of land transmission	Responsible of the farm incubators' experiences

Table 3: PAEN areas in Chaponost and Brignais (Source: CCVG, 2017)

Municipality	Agricultural and natural land (ha)	PAEN areas (ha)	PAEN area as % of agricultural and natural land	PAEN area as % of the total municipal area
Brignais	466.2	350	75.07	33.98
Chaponost	1161.48	1152	99.18	71.10



Table 4: The effects of the PAEN on different stakeholders seen through the proximity framework.

	Effects of PAENs on agri-food strategies
Organizational proximity	<ol style="list-style-type: none"> <li>1. A <i>horizontal process of decision making</i>:               <ol style="list-style-type: none"> <li>a. local elected representatives, environmentalist associations and representatives of the agricultural sector (amongst others) vote for PAEN,</li> <li>b. the definition of the action plan involves technicians from the Chambers of agriculture, the Lyon Urban Planning Authority and local farmers,</li> </ol> </li> <li>2. Creation of <i>instances for decision making</i> such as steering committees,</li> <li>3. Reinforcement of cooperation between different decision-making levels.</li> </ol>
Institutional proximity	<ol style="list-style-type: none"> <li>1. Establishment of a <i>more participative decision making</i> body beyond exclusive regulatory consultation.</li> <li>2. <i>More efficient information transfer</i>. Identification of improved ways/means of channeling information.</li> <li>3. A <i>better knowledge of land procedures</i>.</li> <li>4. A <i>common food project put forward</i>. Neutralization of political views on agriculture-related issues between agricultural unions.</li> <li>5. <i>Evolution of property rights</i> with regard to land resources.</li> </ol>
Cognitive proximity	<ol style="list-style-type: none"> <li>1. A <i>complex learning process</i> of the proper procedures.</li> <li>2. Mobilization of tools for local food production after the preservation of farmland via PAEN: farm incubators (<i>espace-test</i>), agricultural land groups (<i>association foncière agricole</i>) and intermunicipal farms (<i>ferme intercommunale</i>)</li> </ol>

Table 5: Proximities activated and reinforced by the PAEN.

Proximities activated and reinforced by the PAEN as a driver for defining a food strategy			
	CCVG	Chaponost	Brignais
Organizational proximity	<p>Definition of the agricultural strategy in a joint working group of local actors.</p> <p>Elaboration of participative thematic workshops for the final approval of the action plan.</p>	<p>Selection of protection perimeters made at the municipal level.</p>	<p>Selection of protection perimeters made at the municipal level.</p>
Institutional proximity	<p>Means to align land and food systems.</p> <p>Common measures to implement the PAEN action plan at a local level.</p> <p>Strengthening the rules of communication and information.</p> <p>PAEN reinforce the territorial entity of the CCVG separated from Lyon's metropolis.</p>	<p>Chaponost urged the CCVG to engage in the definition of an agricultural strategy.</p> <p>The municipality defined most of its agricultural land as PAEN perimeters.</p>	<p>Brignais focused on protecting its natural zones but also keep areas for economic development.</p>
Cognitive proximity	<p>The territorial context of West Lyon was favorable for learning:</p> <ul style="list-style-type: none"> <li>- The CCVG learned from the experience made by intermunicipal structures of <i>West Lyon</i> that engaged earlier in PAEN.</li> <li>- The CCVG sought to acquire expertise in land preservation.</li> </ul>	<p>Chaponost was a driving force for the definition of an agricultural strategy at the level of the CCVG. The municipality initiated a collective learning process at the CCVG level.</p>	<p>Brignais engaged in a passive learning process concerning the PAEN. It limited its intervention to what was the least restrictive.</p>

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Figure 1 : Study area

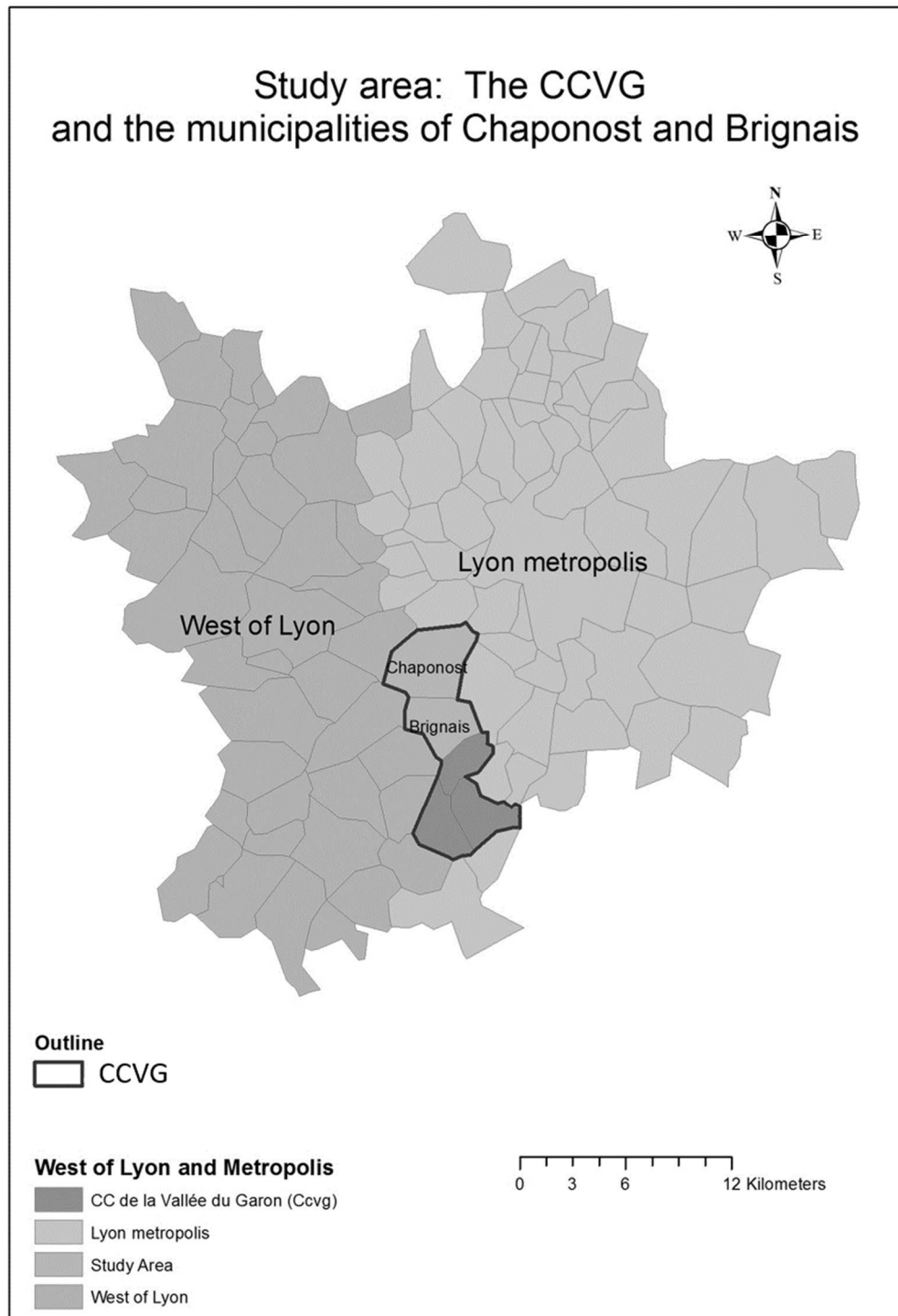
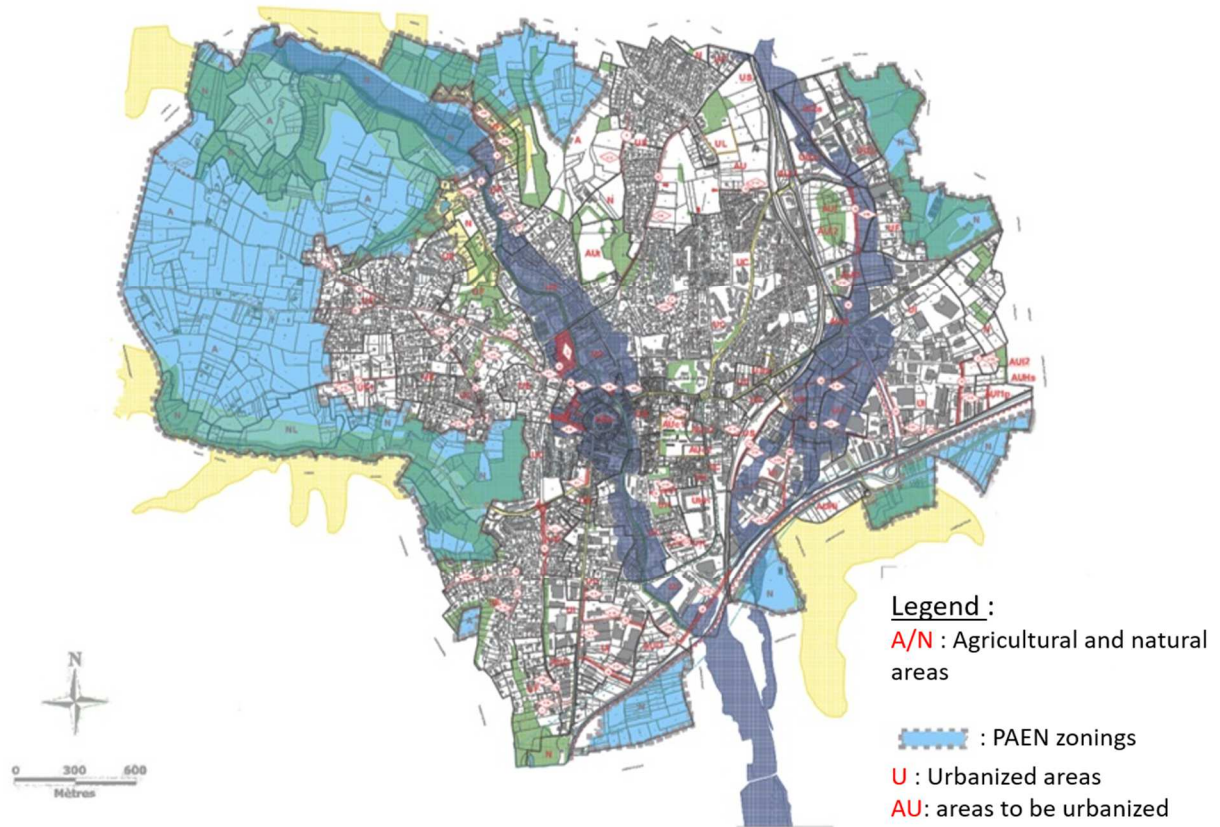
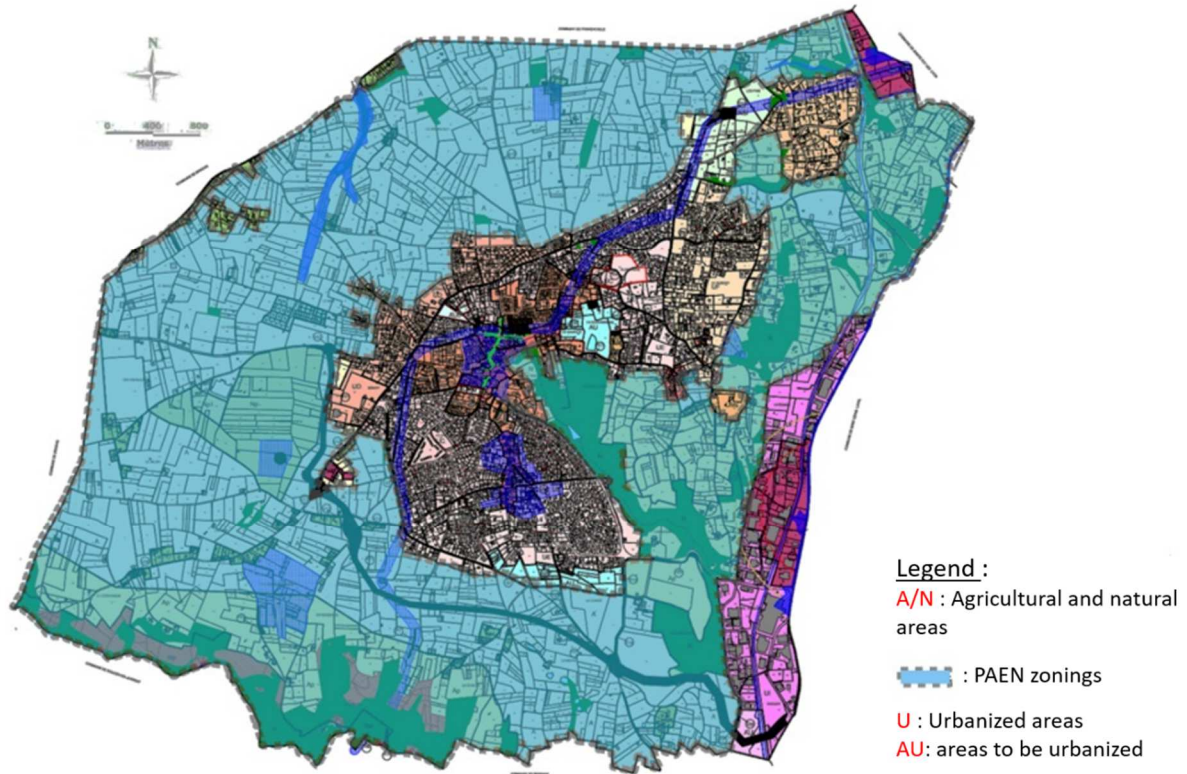


Figure 2 : Superposition of the PAEN zonings and the master plan of Brignais showing the numerous agricultural and natural lands not protected by PAEN\*



\* This map is to be presented in colors

Figure 3 : Superposition of the PAEN zoning and the master plan of Chaponost showing the considerable use of PAEN perimeters\*



\* This map is to be presented in colors

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***Declaration of interest statement***

The authors declare that they have no known personal relationships or other financial interests that could have appeared to influence the work reported in this paper.