

Designing for Productive Urban Landscapes. Applying the CPUL concept in Lisbon Metropolitan Area

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Keywords: *urban agriculture, continuous productive urban landscapes, spatial planning for change, regional planning, sustainable urban cities*

Abstract

Designing for urban agriculture has been recently acknowledged as a young discipline requiring the attention of architects, urban designers and planners to promote more sustainable urban cities and continuous productive landscapes. However, how to assess such landscape proposals? How can these be evaluated in terms of their social, ecological and spatial dimensions?

Based on the Continuous Productive Urban Landscape (CPUL) tool proposed by Bohn and Vijioen (2005) this presentation exposes a framework for action which could be applied in Lisbon Metropolitan Area (LMA) in order to evaluate the spatiality of its contemporary food system and promote design solutions to improve it.

In order to do so, this paper is organized in three parts. First, it introduces the problematic under analysis and the case study. Secondly, it exposes how an analysis of the urban agriculture, more precisely along Lisbon - Vila Franca de Xira axis, contributed to expand our understanding of the productive dimension of LMA Food System and interrelates it to a morphological perspective. Finally, it introduces the CPUL concept and a possible application of it within the case study, with impact at the several stages of food system.

Introduction

SPLACH - Spatial Planning for Change research project aims at preparing a body of transformative planning policies, implementation mechanisms, and decision support systems, to guide Portuguese planning practice towards a transition to a low carbon and social inclusive urban system. Among SPLACH contributions, is the evaluation of the food system through an analysis of its spatial dimension, including its typo-morphological layers, at the several stages of the food system.

This paper exposes the contributions of an ongoing task of SPLACH project which aims to expand the analysis of the food system of LMA through the spatial dimension. To do so, it applies the concept of CPUL in the LMA while identifying for the food system different stages, both their territorial implications and morphological outputs.

The more recent issue of the Urban Morphology journal (2019) acknowledges the importance of urban green spaces as a key problem for urban morphologists. This call for greater attention to the non-built aspects of cities meets the concerns raised by the need for a sustainable transition, pressed by several policy proposals such as the 2030 Agenda for Sustainable Development (UN, 2016) and the New Urban Agenda – Habitat III (UN, 2017). The problem of urban sustainability must encompass a discussion of what types of urban green spaces are most useful for such transition. The concept of Continuous Productive Urban Landscape (CPUL), as advanced by Viljoen, Bohn and Howe (2005) is a proposal for a continuous, mostly productive, territory infrastructure, whose role must accept both natural, economic and social dimensions, including agricultural diversity. Urban morphology has an important role here, in assessing the conditions of the territory to develop a CPUL and even to propose design solutions according to such conditions.

This paper introduces the results of an ongoing morphological exercise to LMA food system. In this context, it introduces the application of CPUL, by following the results of two specific surveys previously conducted by SPLACH project. One, a survey to the urban agricultural practices in the LMA, and another one, a survey which aimed to evaluate the level of integration of the food system concerns within the planning instruments, at the municipal scale, which are in force in LMA. More recently, the latter task has been extended to the historical roots of the urban planning of the Lisbon Region, whose territory roughly corresponds today to LMA. The information contained in those two surveys constituted the main data which supported the exercise presented in this essay.

The LMA and its productive aspect

The LMA constitutes an administrative territorial area, which includes 18 municipalities: Alcochete, Almada, Amadora, Barreiro, Cascais, Lisbon, Loures, Mafra, Moita, Montijo, Odivelas, Oeiras, Palmela, Seixal, Sesimbra, Setúbal, Sintra and Vila Franca de Xira. All these, do integrate both urban and rural land, except Lisbon which is only urban. Today, the LMA is the most populated Portuguese metropolitan area, concentrating nearly 3 million inhabitants within 3000 km² (INE, 2017). The SPLACH survey conducted to the municipal planning instruments found that each of those 18 municipalities had established its own land-use system (see Figure 1). In order to ease the visualization of such land uses distribution over LMA, the SPLACH Project systematized the identified land uses into six main land-use typologies. Here we focus on only two of those typologies, namely the rural and the mixed uses (see Figure 2). This last one, mixed uses, includes areas of the territory, which do accept different kinds of activities, and that can co-exist in both urban and rural areas, and therefore these activities are not exclusive for any specific land use. Although such exercise was performed all over the LMA area, this essay will focus only in a specific area, which is Lisbon - Vila Franca de Xira, and shall be introduced further on.

Urban agriculture

The specific task of SPLACH project which consisted on a survey to current urban agricultural practices in LMA aimed to identify, at the production stage of the LMA urban food system, the location of such activities within the territory, why are they happening, how are they occurring, but also what spatial outcomes do they contain.

In Lisbon, the most recent Municipal Director Plan has classified all the land as

urban. Nevertheless, a number of significant urban agricultural practices are taking place within the city, in particular in its East-end area, named as Chelas Valley, where a considerable area of municipal allotment gardens and informal allotment gardens cover a considerable area within the Lisbon Municipality area. These allotment gardens areas, are located within the territory between Lisbon and the urban cores of Loures and Vila Franca de Xira municipalities, as can be identified in Figure 3. The number of situations present along such axis do indicate however the possibility of such territory to be analyzed as an opportunity to explore a possible East green axis for Lisbon territory, while connecting the city to its nearby surroundings municipalities, likewise had been attempted during 1930's and 1940's with the East green axis for 'Costa do Sol' (Marat-Mendes, 2009).

The Lisbon – Vila Franca de Xira axis

This paper focusses its analysis on the East axis of Lisbon - Vila Franca de Xira, as this has been least studied and explored from the green and agriculture perspective, but also because it endowers an opportunity to rethink the food system from a spatiality perspective, as identified in SPLACH project. In order to do so, we will follow first a brief historical reading of the evolution of Lisbon urban planning.

During 1930s, when the first Portuguese planning documents were created and designed (only for settlements with more than 2500 inhabitants), the regional territory of Lisbon, the capital city, was of special interest given its urban growth. Rural populations were attracted to the city but also to the nearby smaller cities. A Regional Director Plan (PDRL), would be concluded in 1964, however it failed to be approved. Yet, one can testify earlier planning attempts at the sub-regional scale. For example, the 'Plano de Urbanização da Costa do Sol' (PUCS, 1935-1947), designed by Étienne de Gröer (1881-1952), which has been already examined (Pereira, 2009). This plan, covered an area between Lisbon and Cascais, on the west end of the city, and determined the new tourist and leisure area, framed by beaches, low-rise residential areas surrounded by green spaces (rural areas, gardens and parks) which would be later converted into high-rise residential constructions (Marat-Mendes, 2009).

Yet, in 1947, Gröer was also called to create a foreground plan for the northern extension of Lisbon starting in Moscavide, a neighborhood in southern Loures, and ending in Vila Franca de Xira, which came to be approved in 1955. The plan, named as 'Anteplano de Urbanização de Moscavide a Vila Franca de Xira', can thus be considered as the first plan to establish the northern Lisbon axis. Likewise, 'Costa do Sol' axis, this new axis established a new regional sub-regional unit of Lisbon region. This it is very different from the 'Costa do Sol' sub-regional axis. While the former was predominantly touristic, this later one was significantly taken by large-scale industrial facilities, ranging from mills to concrete factories, with agriculture as another relevant activity. Particularly, in Vila Franca de Xira, agriculture extended to the Eastern riverbank, known as the Great Wetland (Grande Lezíria), and to four islets (mouchões) resulting from alluvial deposition (Rodrigues et al, 2016) on the Tagus riverbed.

Gröer's strategy was to adapt preexisting settlements and industrial facilities to the creation of the new urban units, through town-extensions and strategic use of free space while guaranteeing the protection of urban green space. As these soils were, already back then, acknowledged for their agricultural potential, even in the riverfront, the majority of space is reserved as rural area, while most urbanization is developed mostly westwards. While Gröer always placed a significant amount of free space within or around urban settlements, the zone classified as rural in this plan is only identified in the plan around these urban clusters, as a sign of protection, while the Tagus islets and Great Wetland have no land-use, perhaps due to property issues.

A municipal Masterplan for Lisbon was commissioned to Gröer in 1938, but due to technical difficulties this took nearly ten-years to be completed. The final version was only ready in 1948 and although it was approved by the Lisbon city Council, this was never approved by the Central State (Marat-Mendes & Oliveira, 2013).

Gröer worked on the Moscavide – Vila Franca de Xira axis on one plan, while for

Lisbon he designed a Masterplan at the municipal scale. However, in 1964, the Regional Director Plan (PDRL) advanced for the first time an integral plan for the region of Lisbon. The Lisbon – Vila Franca de Xira axis is still highly recognizable in this plan, not only because it had been under development throughout the 20th century, but also because of the dynamics imprinted by the Gröer's Foreplan. All the territory is classified, including the Tagus islets and Great Wetland which are classified as rural, as is a small area of Vila Franca de Xira Western bank. In the case of Loures, a great amount of agricultural space can be identified, although nearly all of it is located in the interior of the municipality, and in particular proximity to the municipalities of Mafra and Sintra, also strongly rural. Yet, even by the 1960s, riverside urbanization is visibly stronger in Loures than Vila Franca de Xira.

After Gröer's Lisbon Masterplan was rejected by the Central State, a new one was started, but would also fail to receive the Lisbon Council approval in 1959. However, with both plans, their rejection did not keep it from providing de facto guidelines for the urban growth, designed through Urbanization Plans for the involved municipalities. In Lisbon, one key area is its Eastern end, which comprehends a set of valley systems. Blocked from the riverfront by industrial facilities and largely occupied with agricultural fields and some significant slumlands, the Chelas Valley became the territory where the most ambitious social housing program for Lisbon, was applied of its time. This consisted a high-rise new town in town, as identified by Teresa Heitor 2001, which echoed some radical ideas from international urbanism debates (Borges & Marat-Mendes, 2019).

In the original plan by the Technical Housing Office (GTH) of the Lisbon Council, the 'Chelas Urbanization Plan', as this Chelas Valley urbanization plan was named, is conceived as a large-scale set of neighborhoods clustered around a specific spot of service center, which was meant to be a sort of the departing point of Lisbon – VFX industrial axis, as already identified (GTH, 1965). Given its generous dimensions, 510 ha, Chelas was urbanized in phases, with the last ones finished in the early 2000s. The delays and revisions in the plan, alongside national shifts in social housing policy, sacrificed however the original urban structure as proposed in the original GTH Plan. Therefore, today Chelas has little significative links to the sub-regional unit planned by Gröer.

Only in 2002 a new regional planning instrument was delineated. In the Regional Spatial Plan of Lisbon Metropolitan Area (PROT-AML) it is possible to determine also the above-mentioned Lisbon – VFX axis (see Figure 4). However, most interestingly it is possible identify within this axis, the presence of several dimensions of the food system, including production, transformations, distribution, consumption and recycling, that are also present in a cluster from this axis (Figure 2). In this plan can be verified a triangulation between the stages of processing (Food industry factories) and distribution from the food system. The latter one concerns both national and international importations (Logistical hub) of food products and local food products (Supply Market).

Nowadays the Lisbon – Vila Franca de Xira axis is relevant also because of its inter-regional importance (which Costa do Sol never had) establishing a relationship with the northern region of the Tagus Valley. A study (Antunes & Ferreira, 2017) of rice production in the Tagus and Sorraia River-basins concluded it is done in integrated farming (i.e. restricted chemicals), helping preserve biodiversity and ecological stability, and promoting food security. However, and despite Portuguese rice consumption being three times the European average, culture is disappearing in this area, leaving unused soils which will hardly adapt to other agricultural types, and feeding the cycle of abandonment visible also in the rice-transformation industry in the area (Antunes & Ferreira, 2017). Vila Franca de Xira occupies a special place in this context, as it is a passage from the Ribatejo to the Lisbon Region. But this very proximity also means that the agricultural land (especially if currently unused) in Vila Franca de Xira are especially seductive for non-productive activities and land-uses. This may be another instance in which, as Steel (2008) ironically suggests, green-fields are turned into scenarios for the rich. This is visible in the case of the 'Mouchão de Alhandra', on sale since 2016 by a company with veiled hints at land-use change (JE, 2016).

So, the challenge is to link what remains of agricultural production with the urban

territories, which at first seems to be difficult, considering how polarized urban and rural settings are in the LMA in general, including the Lisbon -Vila Franca de Xira axis.

The CPUL Concept

Introduced in the context of sustainable urbanism and architecture, CPUL expands the sustainability concept of Continuous Productive Urban Landscape towards a spatial dimension with the spatial which can be translated into an urban model which transforms contemporary cities towards 'an unprecedented naturalism' (Bohn & Viljoen, 2005, 11). Thus, it proposes are 'open landscapes' productive, in economical, sociological and environmental terms (Bohn & Viljoen, 2005, 11) while valuing the 'genius loci' (Viljoen & Bohn, 2005, 1). What this means is that the CPUL, despite having clearly stated spatial values, it is fundamentally programmatic, and its implementation depends on site-specific adaptations – therefore, it is strategic in the same way as Ebenezer Howard's (1899) Garden City model was.

A modest CPUL proposal

It is now important to attempt a possible application of the CPUL in LMA reality. Therefore, we proposed to test it first in a specific area, such as the Lisbon - Vila Franca de Xira axis. Given its historical sub-regional value and its continued, albeit fragmentary and chaotic planning, we suggest here a modest proposal of CPUL for the Lisbon - Vila Franca de Xira axis. This is less of a proposal than an exploration of possibilities allowed by planning and morphological analysis of this axis. Furthermore, we aim to identify possible spatial clues for the food system and urban planning. Taking urban-rural connections as a key purpose and through the results of our analysis, we aim to expose a possible continuous productive territory infrastructure.

The analysis of the Lisbon - Vila Franca de Xira axis implicated the survey and identifies of the productive, transformation, distribution, consumption and recycling areas (see Figure 6). For each of these areas, our analysis aims to explore morphological, each of them in order to identify, if possible, the various typologies which make part of current food system.

So far, we have already concluded the typo-morphological analysis of the productive stage. We have identified 3 types of urban agriculture uses and 12 morphological outputs of urban allotment gardens. The typologies were defined according to the type of management and administration of the allotment, while the physical features of the site have provided the basis for the morphological analysis.

The identified typologies of allotment gardens were: the Municipal, the Associative and the Informal allotment gardens. The municipal gardens regard formal and municipal management, also they are characterized by the various programs and initiatives in which they are inserted. The associative gardens are also formal, but their management is organized by associations founded from civil society initiatives. Informal gardens are regarded as illegal in nature, as they do not result from a formality expenditure, and are not managed by any entity, but rather by the farmers themselves, mostly individually, but in cooperation with their neighbor farmers. They are also characterised by their emergence in isolated parts of the territory where socio-economic difficulties occur.

For the morphological analysis of the allotment gardens we have identified 12 possible outlines, including: orthogonal grid, orthogonal grid with the size of the variable plots, grid adapted to the terrain, regular grid adapted to existing irregular forms, grid generated by footpaths, grid adapted to stream, adapted to the ruin, narrow strips, ellipse shape, circular shape, isolated and support elements for agriculture (see Figure 5).

Most interesting is the fact that these allotment gardens are located nearby the mixed use spaces, which were identified as spaces of opportunities, within the interface between the urban and rural areas and suppresses, through the urban agriculture, the urban-rural divide.

The Lisbon -Vila Franca de Xira axis although it was originally labelled as an industrial axis in the 1950s, and later in 2002 an industrial and logistical hub, because of its contemporary agricultural presence, we believe it can be revitalized as a continuous

food system productive landscape.

Thus, our work aims to test this modest proposal and our next task will involve the typological and morphological analysis also in other dimensions of the food system, apart from the productive stage, in this particular axis, and therefore fulfil a further morphological account for future urban forms regarding the food system.

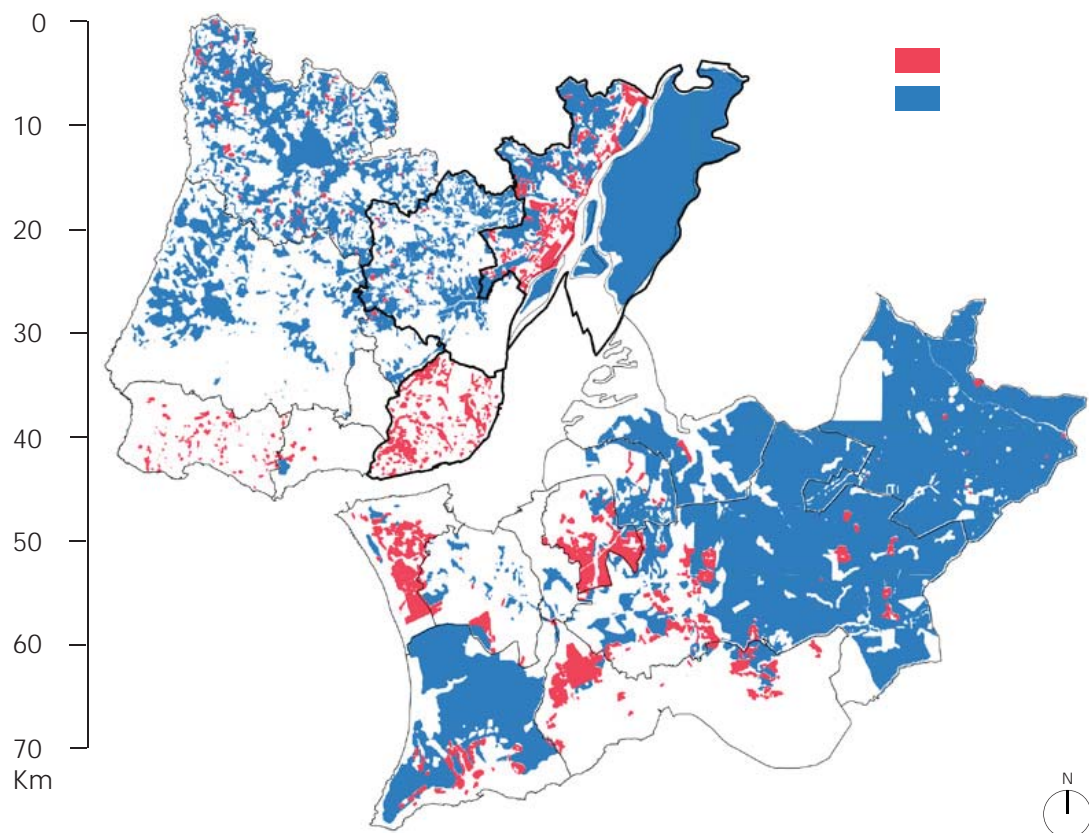
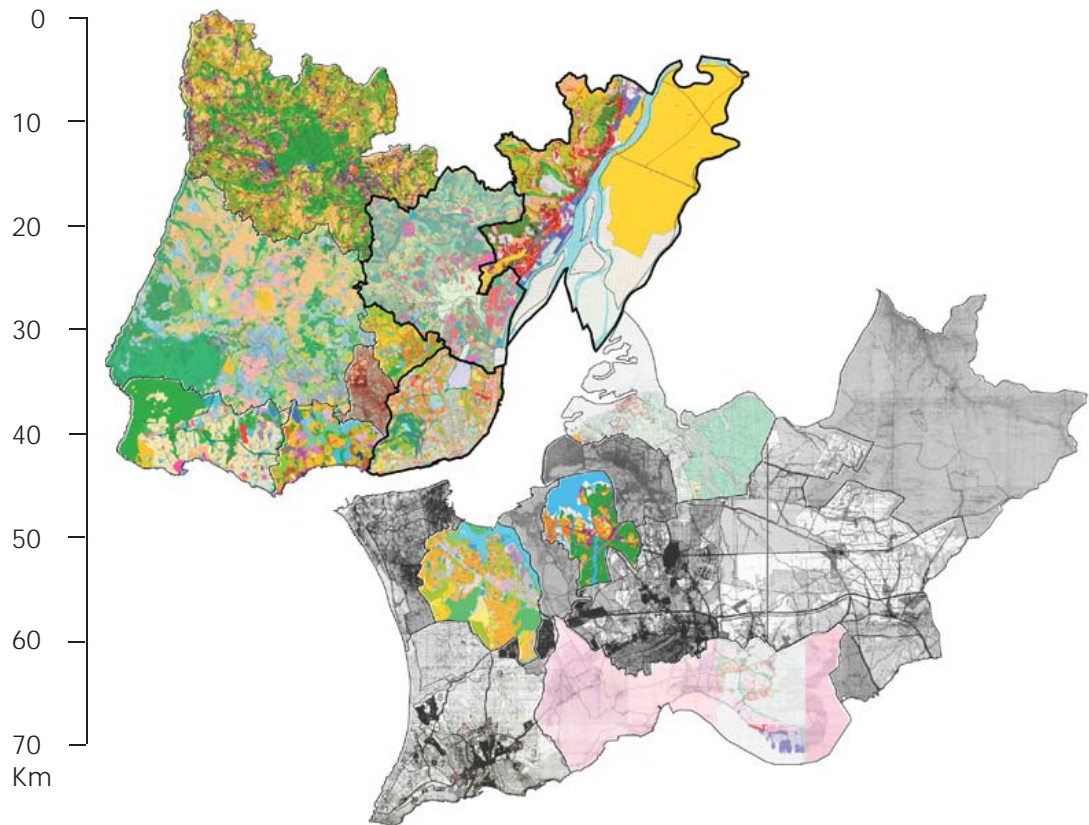


Figure 1. LMA Municipality's development plan (PDM) Land-uses;
Figure 2. LMA Land-uses: Mixed land use (red) and rural (blue).

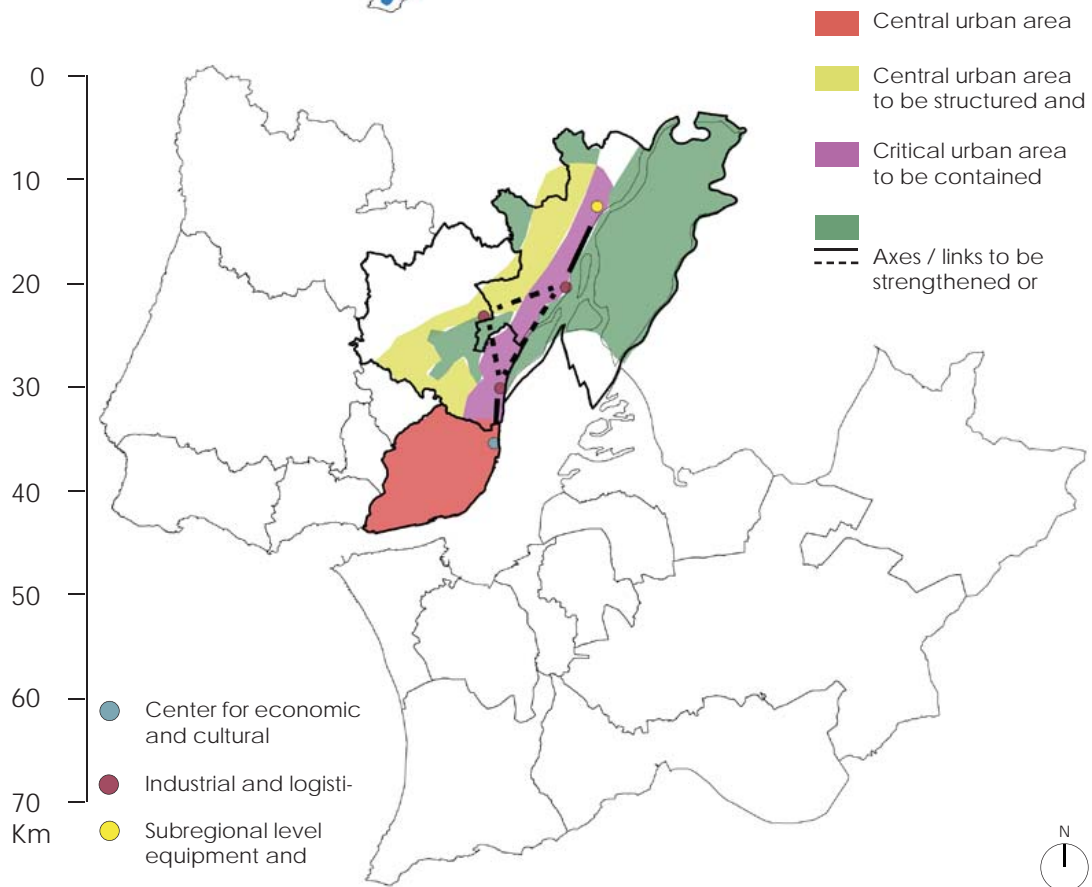
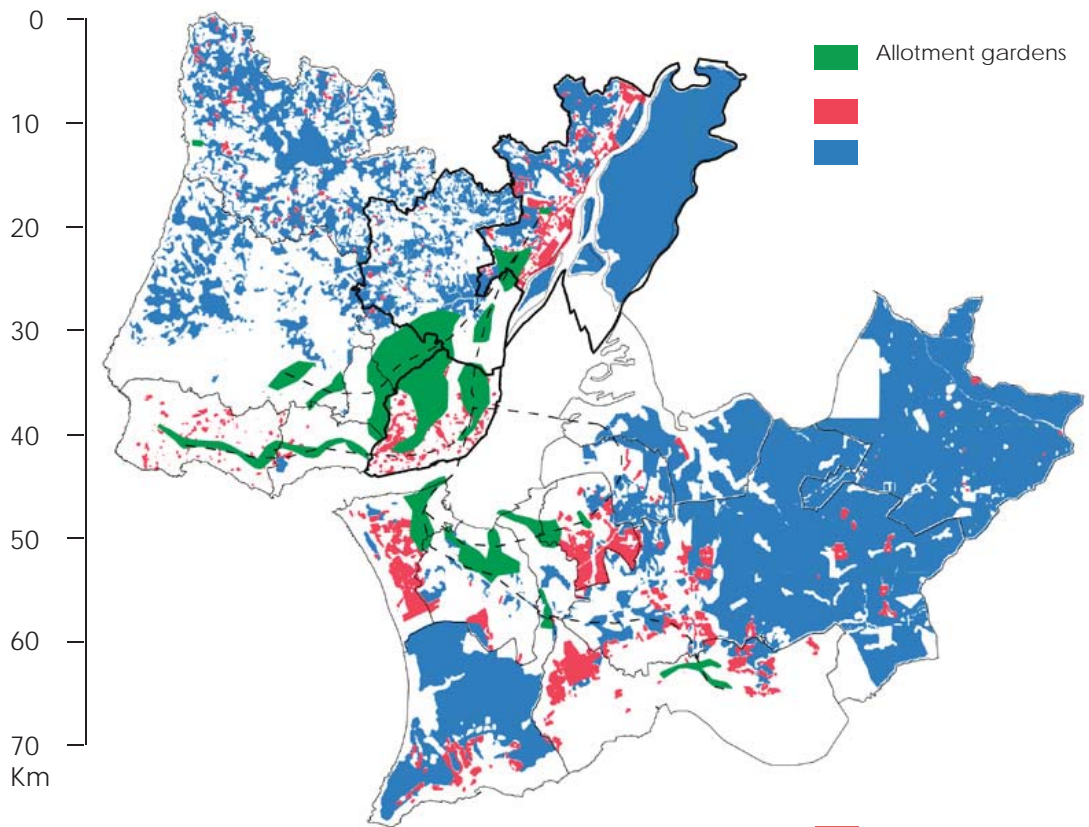


Figure 3. LMA Urban agriculture: Land-uses and urban productive clusters;
Figure 4. LMA Strategic axis and land uses from Regional Spatial Plan (PROT 2002).



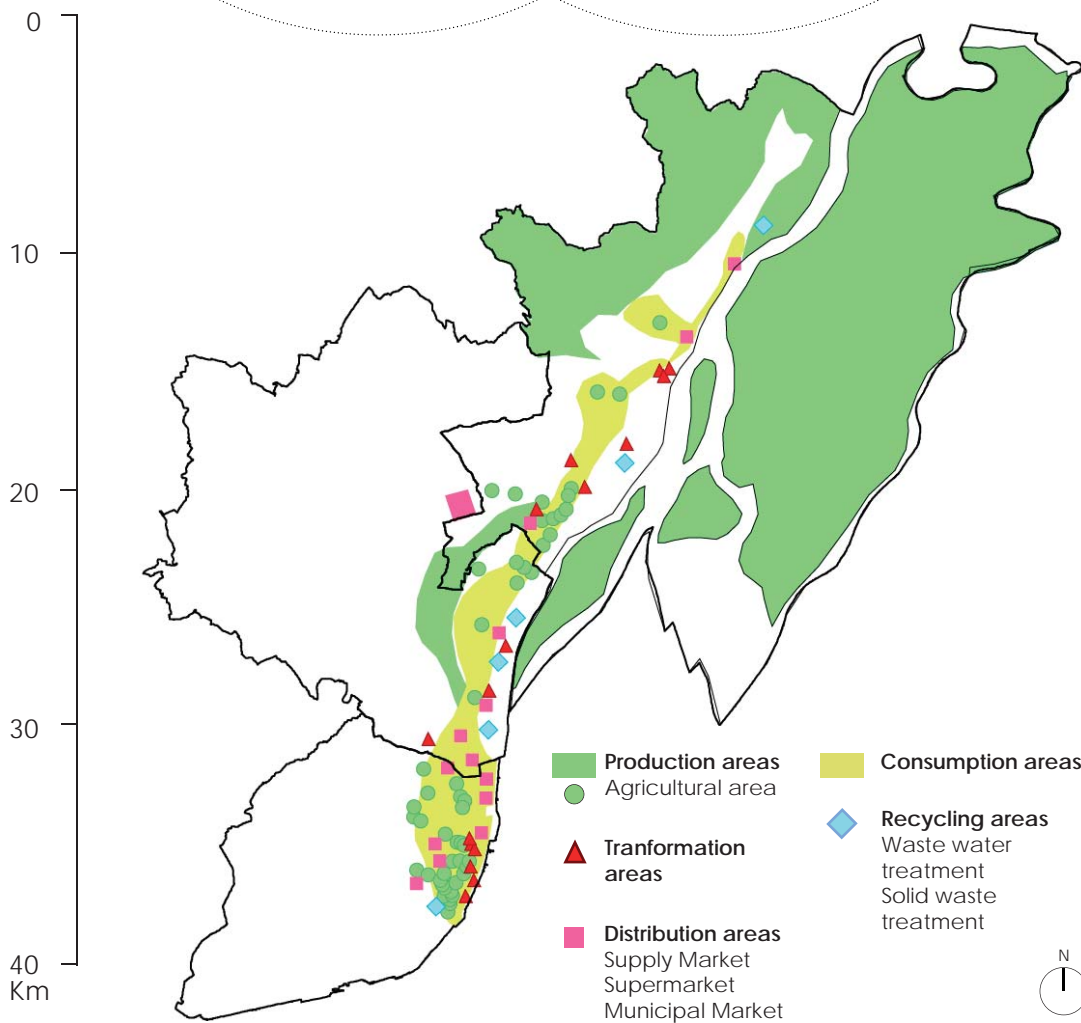
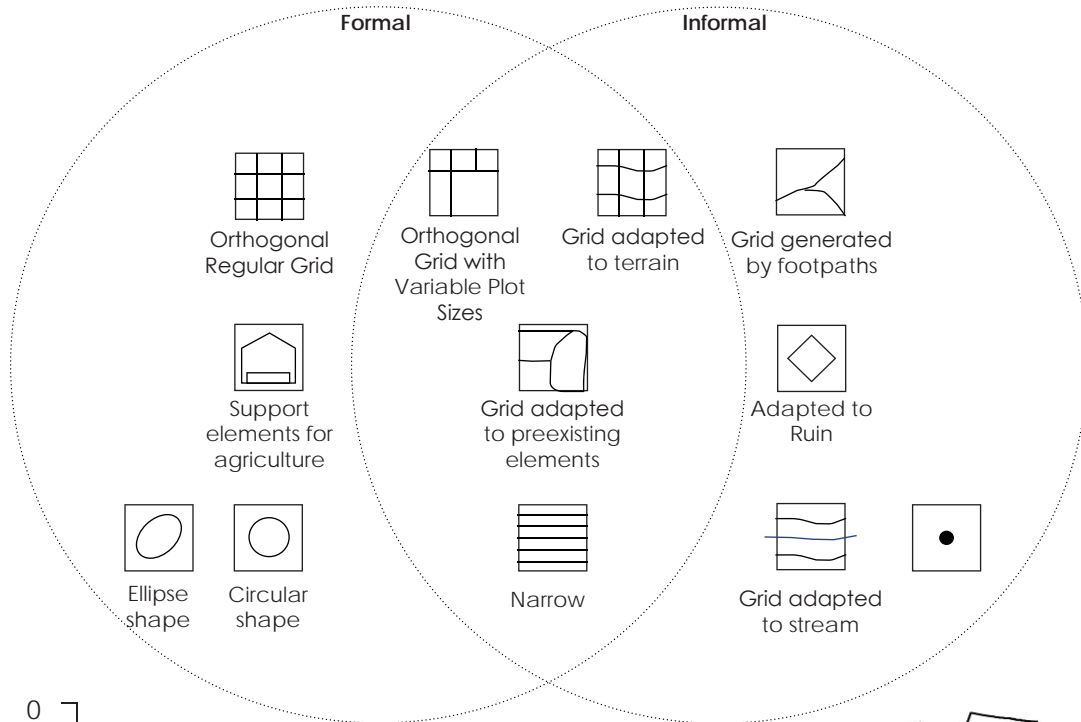


Figure 5. Morphologies of allotment gardens in LMA; **Figure 6.** Food System survey on the axis, proposed as agricultural axis, Chelas - Vila Franca de Xira.

Captions

Fig.1 - LMA Municipality's development plan (PDM) Land-uses.

Fig.2 - LMA Land-uses: Mixed land use (red) and rural (blue).

Fig.3 - LMA Urban agriculture: Land-uses and urban productive clusters.

Fig.4 - LMA Strategic axis and land uses from Regional Spatial Plan (PROT 2002).

Fig.5 - Morphologies of allotment gardens in LMA.

Fig.6 - Food System survey on the axis, proposed as agricultural axis, Chelas - Vila Franca de Xira.

Source for figures in this paper: SPLACH Project.

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