LOURES:
SMART ANSWERS FOR A SMILING FUTURE

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TITLE

Loures: smart answers for a smiling future

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FOREWORD

In a changing world, international concern has been expressed on how best to develop our societies and cities to address a more sustainable common future. We do work towards a new model of growth that has to be: smart, through more effective investments in education, research and innovation; sustainable, with a decisive transition to a low-carbon economy; and inclusive, thanks to strong emphasis on job creation and poverty reduction. Whilst development of urban areas is seen as critical, rural areas represent a means for promoting structural changes where the territory and other productive and human settlement activities act together. Such linkages include a multi-sectorial model of development founded on the diversification of activities and the re-evaluation and reinvention of existing ones. This book focuses on exploring smart answers putting the emphasis on effective economic, social and environmental aspects and synergies that can support sustainable rural development. It was conceived as a support to the field visit to Loures that was organized by the Commission on the Sustainability of Rural Systems (CSRS) in the framework of the IGU Conference: "Smart Answers for a Smiling Future", that took place in Portugal between the 27th July and the 2nd August 2015. As a first step for a long journey, the field visit in Loures establishes a pathway that aims to analyze and reflect on specific aspects that in our opinion constitutes smart answers for a smiling future.

LISBON, PORTUGAL
NOVEMBER 2018

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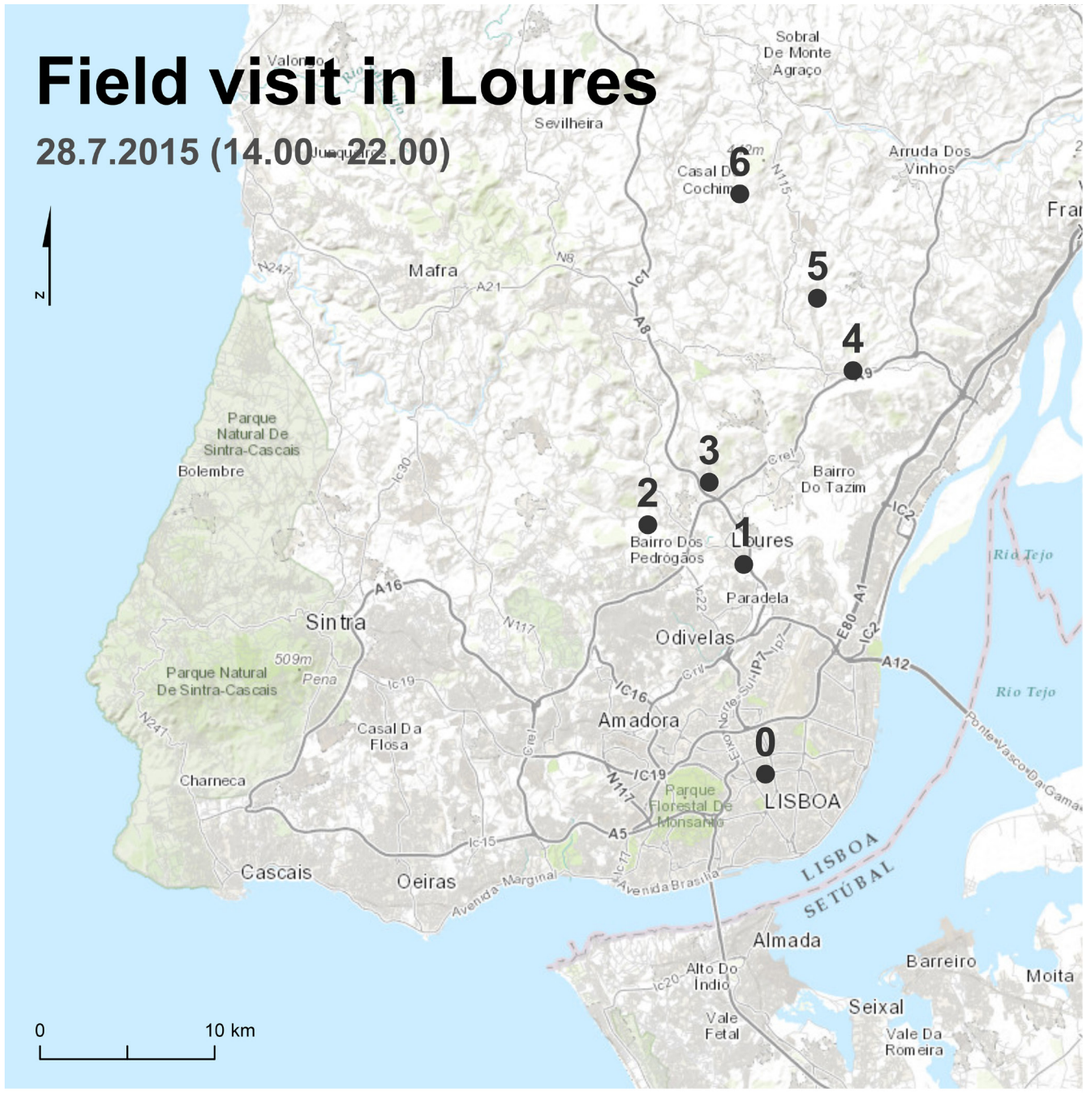

0. **Faculdade de Ciências Sociais e Humanas** / Faculdade de Ciências Sociais e Humanas

1. **Palácio dos Marqueses da Praia** / Marqueses da Praia Palace

2. **Quinta das Aranhas, Empresa Origem do Campo** / "Origem do Campo", Aranhas Farm

3. **Central Fotovoltaica de Malhapão** / Photovoltaic Station, Malhapão

4. **Museu do Vinho e da Vinha de Bucelas** / Museum of Wine and Vineyard in Bucelas

5. **Quinta da Murta** / Murta Farm

6. **Restaurante Cantinho d'Arruda** / Cantinho d'Arruda, Typical Restaurant

Field visit map (Source: Gonçalo Antunes, 2015); IGU logo (Source: Paulo Oliveira, 2015)

Loures: smart answers for a smiling future

Ana Firmino, FCSH/UNL

In the dawn of History

Imagine a territory with volcanoes expelling lava from their craters. It was a long time ago, about 72 million years! Today they are extinguished and most of us do not identify them, but they are present, mainly in the Northern part of Loures, such as Cabeço de Montachique (409 meters) the highest relief in the municipality, and the basalt that resulted from their activity, after millions of years of erosion, is responsible for the fertility of the soils in this part of its territory (class A soils, some of the best soils in Portugal, that in total account for only 3% of the agricultural soils in the country). Glaciation and tectonic changes may have contributed to the marine regression that originated the deposits of detritus. The marine fossils present in the area, such as the oyster internal mold shown in Figure 1, are a testimony to the past presence of the sea.

Figure 1: Oyster internal mold found in Montachique in the seventies (Foto Source: Luisa Ferreira)

As a result of the dynamics that took place in the area Loures presents today two main orographic areas: the low land (várzea) constituted by an alluvial plane, with an average altitude lower than 5 meters, resulting from the filling up of a previous lagoon that connected with the Tagus river through the Trancão river valley, and a contouring area corresponding to a higher area in amphitheater.

The lithology is constituted mainly by calcareous and basaltic substrates. The lower area presents alluvia soils laying largely on the Tertiary Basin of the Tagus. From North to South we will find a chalk spot from Jurassic followed by another from Cretacic, and the basaltic substrate from Tertiary that belongs to the Basaltic Basin of Lisbon (Figure 2).

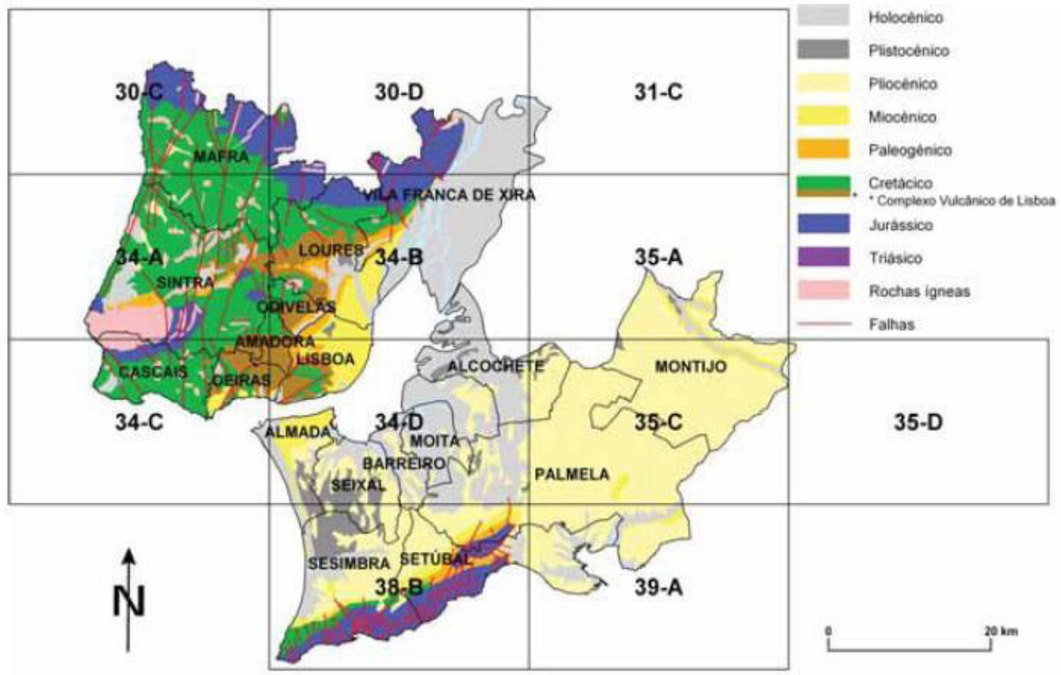

Figure 2: Geological mapping of the Metropolitan Area of Lisbon, with administrative boundaries and corresponding distribution of geological maps (1:50 000 scale) (Source: http://www.scielo.mec.pt/scielo.php?pid=S1647-581X2009000100003&script=sci_arttext)

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In climatic terms the territory is affected by a climatic pattern that follows the hypsometric variation. Thus the precipitation is higher in the Northern part, where the highest altitudes are to be found, and decreases gradually from Northwest to Southeast. The differences in the annual average temperature are not so extreme, but in the Northwestern part of the county the values registered may be 2ºC to 3ºC lower.

These climatic conditions configure an ecologic scenario favorable to agriculture (Figure 3), offering a mix of Atlantic and Mediterranean conditions typical from a transition region between the Portuguese Atlantic North and the Mediterranean South that enable the presence of a large variety of plants and crops.

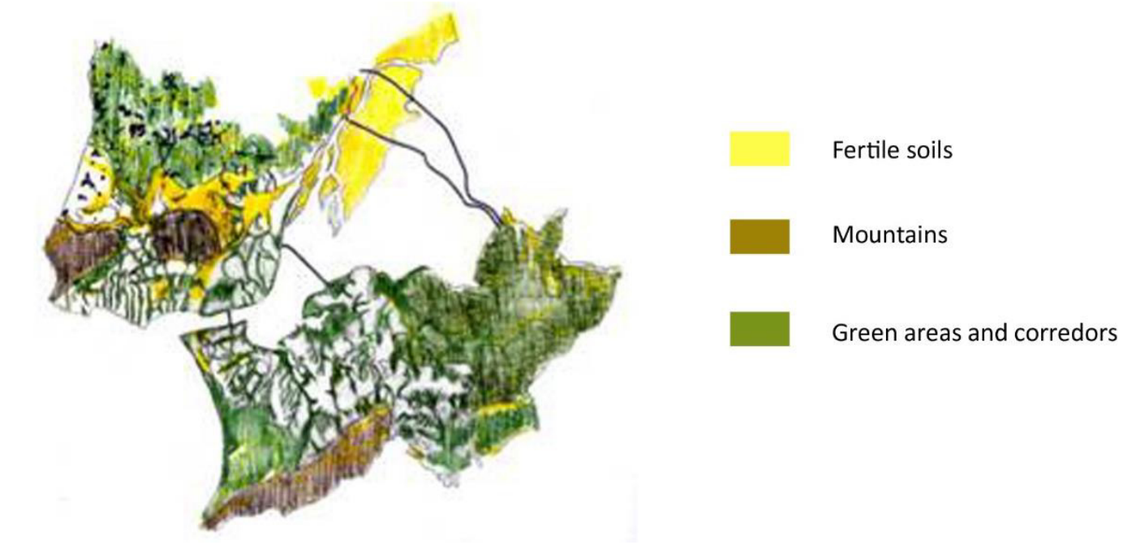


Figure 3: Schematic drawing of the ecologic structure in the Metropolitan Area of Lisbon (Source: http://www.isa.utl.pt/ceap/pvsintra/index_files/Page575.htm)

The "Saloios" Region

The area has been populated since the Plistocenic (which corresponds to Paleolithic in the evolution of human societies) as attested by the archaeological findings of Salemas caves, that were inhabited by a population of hunters-recollectors. In the same location were also found vestiges from the Neolithic period, dating from about 6000 years ago (Cardoso, 1993) and more recently researches brought to light settlements from final Neolithic in the Crasto of Lousa Bridge (Estêvão, 2000).

In a more recent period (711) the Moorish invaded the Iberian Pensinsula and they settled down in the hinterland of Lisbon, staying here even after this was conquered by Afonso Henriques in 1147.

They were known as "çaharoi", the people from Sahara who cultivate the land, an art for which they are conspicuous and whose fame has preserved to our times. Çaharoi would give later the word "saloio". Still today the fact that a product is said to be "saloio" (saloio cheese, bread, sausage …) is synonymous with good quality, tasty, and is preferred even if there is no certification, nor if there is a consensus about a certain way to produce or ingredients used.

They benefited from the good edafo-climatic conditions of Loures for horticulture, where in 1887, a farmer could get the second best average income per hectare in the region, right after Lisbon (360 thousand Reis, compared to 500 thousand Reis in Lisbon!) (Pereira, 1915, 119). Also the wine is prized for the importance of the culture, income and value (Pereira, 1915, 138).

Figure 4: Horticulture in Loures, (Foto Source: Firmino, 2015)

The proximity to an important market such as Lisbon played an important role to sell their products. The women carried huge bundles of clothes on their heads, which they picked up from their clients in the city and washed them in the rivers. The image of the "lavadeira" (washer) is today pictured in handicraft (Figure 5).

Figure 5: The "lavadeira" (Source: PDM Odivelas, 2003, p. 11)

Loures: a territory to be discovered

The county of Loures was created in 1886 and covers an area of 167, 24 Km2. It is integrated in the region of Lisbon and Tagus Valley - NUTII of Greater Lisbon, being part of the Metropolitan Area of Lisbon. Loures is also the name of its main town which has about 26 000 inhabitants (Figure 6).

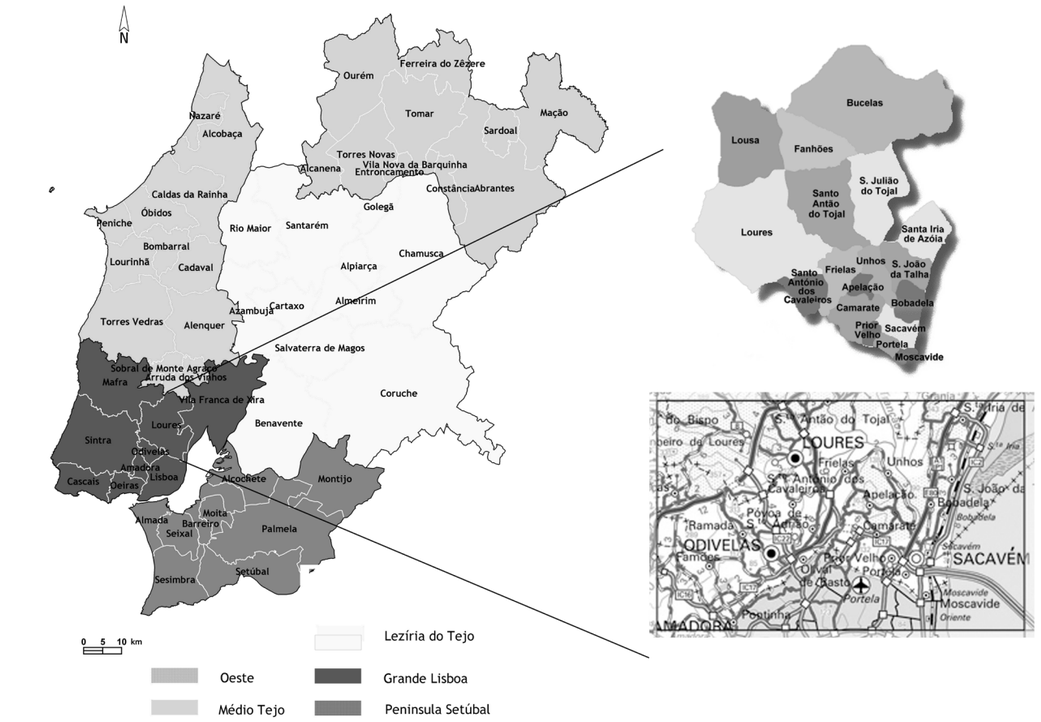


Figure 6: Lisbon and Tagus Valley Region (Source: http://www.ccdr-lvt.pt/pt/a-regiao/7279.htm; Location of Loures, Military Map, 417, IGEOE and https://www.igeoe.pt/index.php?id=186&p=1&distrito=11 &escala=1&extracto=417)

Lisbon and Tagus Valley Region presents some of the main scientific and technological, economic and political infrastructures of Portugal. About 3,7 million people live, study and work here, producing around the half of the wealth in the country. The region offers a large diversity of landscapes, activities and cultures that distinguish it as a unique region in Europe.

Loures currently has a population of about 208 450 habitants, meaning an average population density of 1246 habitants per km2. However the population distribution is quite uneven in the territory, since the Southern part, next to Lisbon is most densely populated, followed by an intermediate area and the Northern part is less populated and presents a more rural character.

The municipality registered a huge increase in the urbanized areas during the seventies and eighties, which affected some fertile soils that were lost since at the time there was not so much awareness of the protection of the environment and instruments such as the RAN (National Agricultural Reserve) and REN (National Ecological Reserve) were only created in 1983. According to the Building Statistics (CML, accessed 12.7.2004) about 5000 new buildings were built in the period between 1961 and 1970 (18% of the total buildings) about 7500 in the following decade (1971 – 1980, representing 28% of the total buildings) and 6250 in 1981-1990.

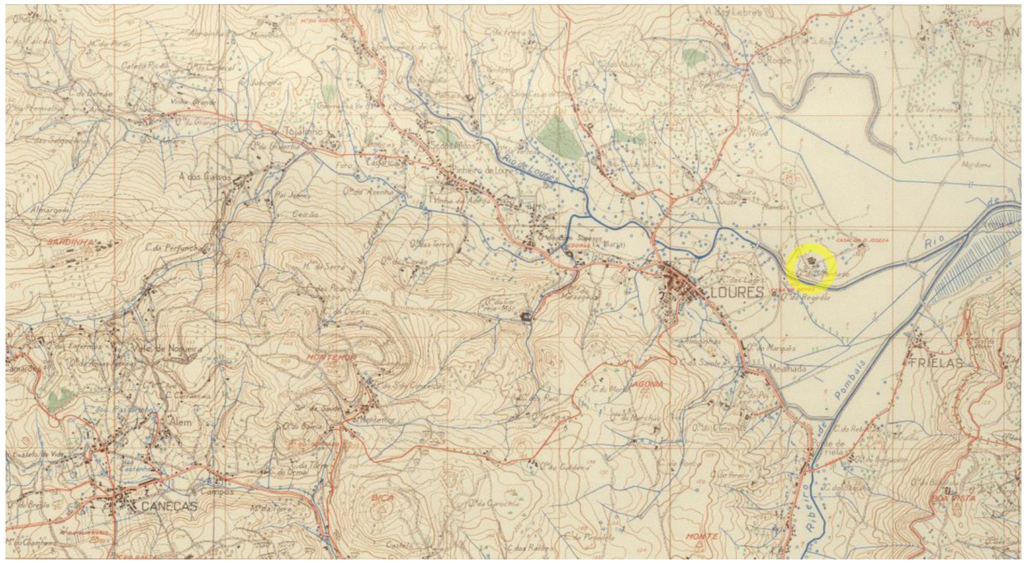
The fact that about 40% of the territory of Loures is constituted by agricultural land and there are several sites of importance to the environment, it is a challenge to achieve a sustainable development without creating conflicts with the ecological structure.

One of these conflicts arose with the construction of the A8 motorway that crosses the valley, and was considered by the “father” of RAN and REN, Ribeiro Telles, as the “motorway of nonsense”(Figure 7).

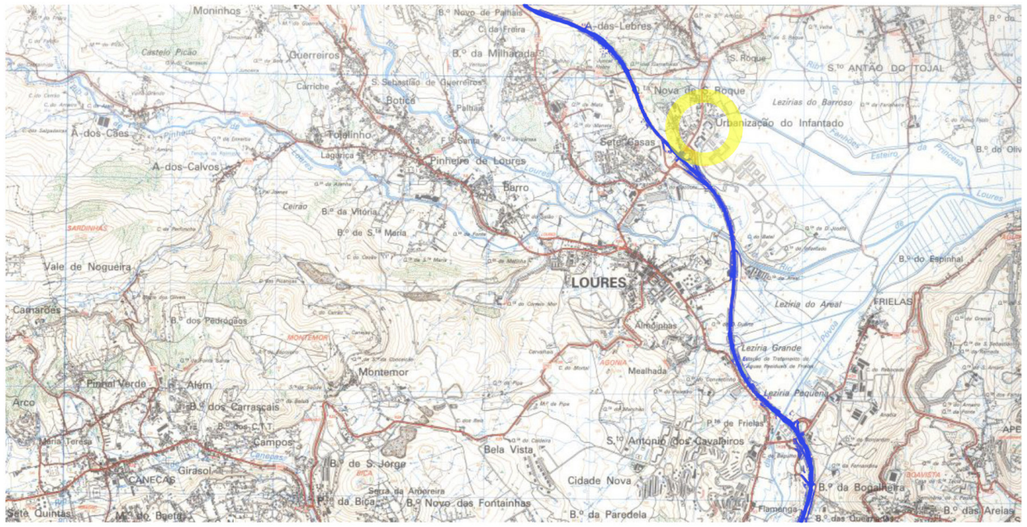
In two of his publications, both recalling back to a text published in the journal “A Capital”, on 15 May 1979, he criticizes this work of art for creating more problems than those that it was supposed to solve, since it would make the area accessible and thus induce an “urban explosion”. He argues that to solve the problems affecting the region of Loures better than the motorway it would be to improve the roads already existent; to protect the fertile soils from urbanization; control the expansion of the urbanization; create jobs in the county to avoid pendular displacements and, for those needing to travel to Lisbon every day, create a surface underground (Telles, 2003, 301 – 303; Telles, 1985, 77-82).

Figure 7: Loures, the "motorway of nonsense", (Foto Source: Firmino, 2015)

In Figure 8, corresponding to the Military Map 417, of the Loures area, in 1946 and 1993 respectively, it is possible to identify the proliferation of construction, the change in the toponymy, that denounces the land use change (for instance Infantado Farm, in 1946, appears as Infantado Urbanization in 1993) and the presence of the motorway that was absent in the first map.



1946 Military Map, sheet 417, 1: 25 000



1993 Military Map, sheet 417, 1: 25 000

Figure 8: Comparison of Loures region in 1946 (Infantado Farm in yellow) and 1993 (Infantado Urbanization, in yellow, and A8 motorway in dark blue)

Later, the building of a shopping center (Loureshopping) in Infantado quarter, would open a new front of urbanization into the direction of the fertile valley soils, that was stopped by the crisis, but the streets are there, already built, as to show that the area is irremediably compromised, just awaiting for a new economic breath!

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The Food System in Loures and the new Master Plan as an opportunity

Maria do Rosário Oliveira, FCSH/UNL

Globalization influenced drastically the way traditional food systems work and supply the cities, with all the consequences for the environment, economy, health, social wellbeing and cultural identity that are known. The current global crisis is the recognition that in the next decades, the world population will be predominantly urban, i.e. new demands will be generated as well as the search for new approaches to the food system planning.

An Urban Food System consists of a food production chain, i.e. the food production itself, its more or less processing, distribution and marketing, until the final consumption, that is organized in such a way that food safety is guaranteed now and for the future generations in terms of quantity and quality, promoting a healthy environment and contributing to an economic dynamic, social cohesion and public health.

The pertinence of this topic in Portugal is justified by the deep changes operated in the food system in the last decades, with clear impacts on the loss of urban-rural dynamics and progressive economic and socio-cultural impoverishing of the rural areas compared to the urban, which contribute to the lack of territorial cohesion evidenced by the socio-economic indicators of Census 2011, and confirms the tendency demonstrated by other statistical and spatial sources at the level of the territorial dynamics.

The identification of more consistent approaches to deal with these new challenges is absolutely necessary, to tackle the economic and energetic efficiency, environmental quality, food safety, jobs creation and urban development. In the last years, according to the national and international agendas the strategies defined for food safety in Metropolitan areas, either in Europe and abroad, emphasize the need to relocate the production-distribution-consumption systems, through shorter and more efficient trading cycles, as a way to promote sustainable urban development.

The Metropolitan Area of Lisbon (AML) shows characteristics that justify a strategic land use planning and management, which may be able to promote the relocation of its Food System in a sustainable way.

The municipality of Loures is relevant not only for the large agricultural area that occupies, but also for the initiatives that have been boosting the creation of productive activities, a joint effort that has been undertaken by the municipality, associations and private enterprises.

From agricultural production to the landscape multifunctionality

Some indicators related to the production sector in the municipality of Loures (Instituto Nacional de Estatística, 2009-2011, and Recenseamento Geral da Agricultura, 2009) show how important its contribution is to the food supply of the Lisbon region although this role has been more relevant in the past than it is today. Thus, in 2009, 18% of its soils were classified as National Agricultural Reserve; 285 enterprises belonged to the primary sector, representing 235 individual producers and 50 societies. In this regard, the size of farms are in general between 1 and 5 ha. In terms of specialization temporary crops predominate. Among the permanent crops vineyards are the most represented followed by olive groves. In what concerns the temporary crops fodder and horticulture are those that occupy a larger area. However only 0,5% of the active population in the municipality works in the primary sector, and they have been getting older and older.

Integration of the food system in the territorial management

In spite of the significant decrease of the Agricultural Area in the last decade (16,5% less) corresponding to an agricultural abandonment, in many areas of the Loures municipality this cultural mosaic corresponds to a rural character of the landscape that should be the basis for the management of the territory oriented to the multifunctionality of the urban food system, mainly its productive component, but also for the supply of ecosystem services that may induce an urban-rural dynamic promoting the development and quality of life.

This opportunity should be considered at the level of the integration of productive areas, at least those that may contribute to a relevant environmental quality of the Metropolitan Ecological Structure. The operationalization of these concepts is now taken into consideration in the revised Master Plan, in particular the implementation of a Municipal Ecologic Structure.

Thus in order to promote the environmental and socio-economic qualification it shall be noted the following Goals and Strategies of the Municipal Master Plan (Art. 2):

a) To value the natural and cultural components of the municipal territory as main county's resources, integrating them in operative units of planning and management, as structuring elements of territorial qualification, structuration and restructuration;

b) To revalue the rural areas and the primary sector, protecting the rural land from non-planned urban expansions, from the loss of productive soil and destruction of landscapes, through integrated planning and management of the rural areas, in order to improve the territorial and economic value;

c) To establish development opportunities for the touristic sector and its recreational and leisure functions, adjusted to the county's territorial diversity, that may contribute to the rehabilitation or conservation of the territorial resources, namely cultural and natural;

On the other hand, in regard to the agricultural and afforested areas (CAP III) in Section I the multiple uses of areas are defined, whose goals establish that:

1) The areas of multiple uses include less intensive agricultural systems, traditional agricultural systems, other areas for agricultural and forest use and complementary areas.

2) The goal is to value the agricultural and forest activity in these areas, as well as to privilege the traditional production systems, contributing to a good achievement of the agricultural and forest production.

In short there are conditions, both of territorial nature and of management instruments, so that planning an urban food system in the municipality of Loures continue to be an innovative approach in the Metropolitan Area of Lisbon, recuperating the prominent role played in the past in the food supply of Lisbon, but now according to a systemic territorial vision.

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Agriculture and Sustainability

Marlene Marques, CML

"In fact, the supply of healthy food products to meet the increasing world population, the improvement of the respective income levels and the fight against hunger in the world, will imply, according to the latest forecasts, growth of plant and animal production of about 70% by 2050. One of the main challenges that mankind will be confronted with on a global scale over the next decades will be to be able to reconcile the security of food supplies to environmental sustainability. "[1]

In response to global challenges, on different spatial scales there is the emerging need to encourage the rural world enhancement through the promotion of sustainable agriculture, geared to the market, by establishing local, national and international level partnerships, between public and private entities, leveraging resources and knowledge through innovation, disseminating best practices, promoting employment, supporting fair and healthy lifestyles.

The concept of sustainable agriculture has evolved in the past decades. In 1990, Pearce et al. identified "more than 24 different definitions." To the US Congress in 1990, the concept of sustainable agriculture consisted of "an integrated system of plant and animal production practices having a specific application to each site that in the long term: satisfy human food and fiber needs; improve environmental quality and the natural resource base, on which the agricultural economy depends; make the most efficient use of nonrenewable resources and the resources of the holding itself and integrate, where appropriate, natural biological cycles; maintain the economic viability of agricultural activities; and, improve the quality of life and society as a whole ". In 1992 the definition proposed by FAO states that "a durable agriculture, forestry and fisheries development must preserve the land, water and plant and animal genetic resources, not degrade the environment and must be technically appropriate, economically viable and socially acceptable "(O'Connell, 1991). The OECD, in 1995, stated that the "durability notion implies natural and human resource meeting current needs, without compromising the ability of future generations to meet their own basic needs." According to Ikerd (1993), sustainable agriculture must be able to "indefinitely maintain their productivity and usefulness to society. Such agriculture should use farming systems that conserve resources, protect the environment, produce efficiently, compete commercially and improve quality of life of farmers and the society as a whole. "

[1] A agricultura portuguesa e o futuro da PAC pós-2013, Documento elaborado pelo Grupo de Peritos criado pelo Despacho n.º 7164/2010 do Ministro da Agricultura, do Desenvolvimento Rural e das Pescas, 4 de Outubro de 2010

"The European Union is moving towards promoting sustainable agriculture, which occupies a central place in the domestic and foreign policies. Gradually, European agriculture is becoming more environmentally friendly, so that scarce resources can be managed more effectively. We believe that growth must be based on sustainable productivity in order to ensure the continuity of our production base" (European Union, 2012).

In the European Union, successive CAP (Common Agriculture Policy) reforms tend to imply an adoption of more environmentally friendly farming methods. It is now recognized that farmers beyond the production of food we eat play an essential role in land management and development of the local economy and are important in relation to the protection of biodiversity and natural habitats, water resources management and measures to tackle climate change.

Sustainability in rural areas depends on sustainable agriculture development, multifunctionality of its products and services, the establishment of collaborative networks and the ability of citizens to undertake and develop the territories they inhabit.

Agriculture at Loures

There has been a great soil diversity corresponding to the lithological and morphological diversity of the territory and as a result of continued human action over the centuries, as documented by the map of soils in the municipality of Loures published in Master Plan, approved in 2015.

The higher hardeness of lithological formations can be found to the north and west of the Loures Floodplain: marl, sandstone and calco sandstones of the Jurassic and Cretaceous and tuffs, basaltic rocks of the Lisbon Volcanic Complex. The bland and medium hardness of lithological formations predominate in the Eastern highlands: limestone, clay, sand and areolas from Miocene; and in Loures Floodplain: mudslides. (ISA, CML, 2002).

This diversity combined with the climate and region history results in the fact that the Loures territory has been, always, a place for diversified agricultural production. "It is only with the Roman occupation that the rural occupation records appear more concrete. Thanks to the proximity to Lisbon, the region has undergone a significant rural settlement, through the

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implementation of villae rusticae and small agricultural farms. The purpose of the installation of this settlement would be the establishment of a polyculture system - cereal, vineyard, orchard, olive grove and vegetable garden - whose surpluses, if from Loures, would be distributed in Olisipo markets. (....). Romans also introduced pond and bog drainage techniques, increasing the cultivable area ..."

Loures Floodplain has very fertile land, dominated by red clay and limestone brown soils, and that is where the biggest farms in the county area are located. The floodplain is an enclosed area which is the HYDRO-AGRICULTURAL UTILIZATION OF LOURES FLOODPLAIN, with 737 ha, whose works began in the 30s of the twentieth century and are managed, since 1947, by the Association of Loures Floodplain of Beneficiaries.

The tradition of agricultural practice has a long historical expression at Loures County. Even today, its horticultural production has a significant representation in national production. The primary sector is one of the options for the development of the local economy mainly in the parishes of the north of the County: Bucelas and Lousa, Loures, Santo Antão and S. Julião do Tojal. However, Frielas, Unhos and Apelação also have importance for agricultural production in the region.

Loures continues to assert itself as a vegetable and wine products production and sale center, especially at the Supply Market of the Lisbon Region and the Demarcated Region of Bucelas Arinto wine.

According to the Master Plan 2015, 42% of the territory has soil with agricultural potential, as mentioned in the map presented in Figure 9. According to the Agricultural Census 2009 (INE, 2009), there exist in Loures county 389 agricultural enterprises and 593 individual farmers.

Currently, a generation of new and young farmers is emerging, more trained and with more skills for the introduction of new techniques and cultures and application of more sustainable agricultural practices, in addition to traditional knowledge, which is a potential for change and economic development in the territory.

There are now in Loures municipality organic farmers growing vegetables and soft fruits for commercial purposes and modern farms using techniques such as hydroponics and certified with different certification schemes applied to agricultural production such as the organic farming and integrated pest management (IPM) and the Global GAP certification.

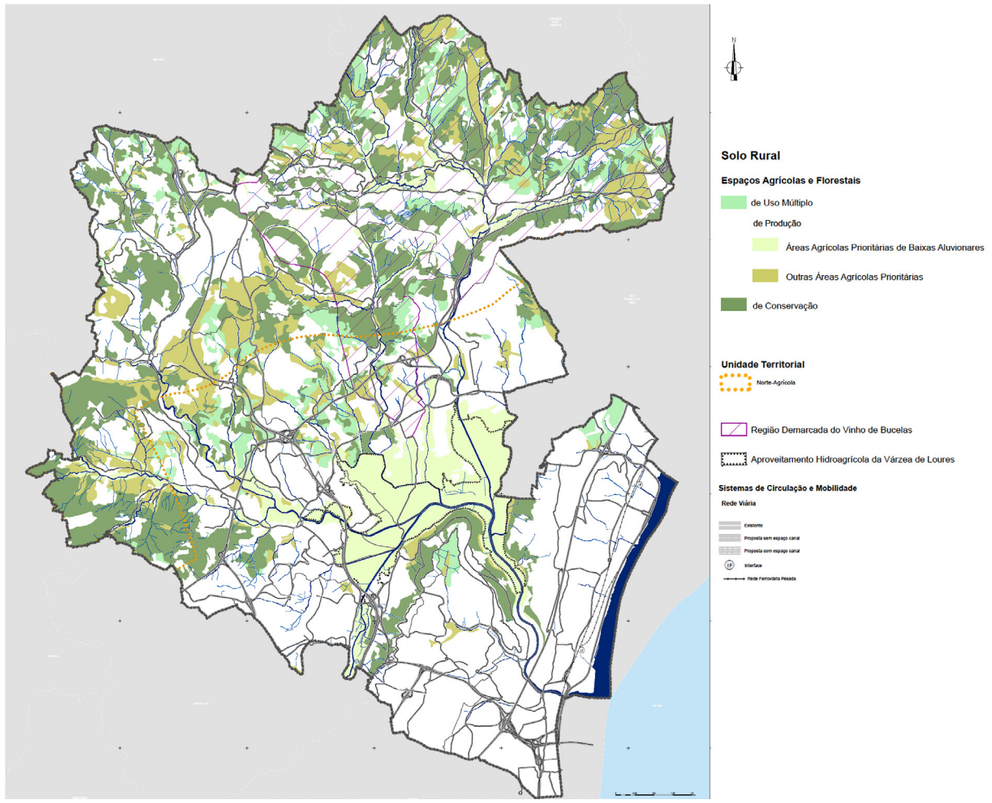

Figure 9: Soil map from the municipality of Loures, Master Plan, 2015, Soils with agricultural Use Capacity in Loures, Loures Master Plan, 2015

Examples of good practices for sustainable agriculture in Loures.

Following good national and international examples in Loures municipality some initiatives that can be shared as best practices are being developed. By encouraging the different stakeholders of the primary sector these initiatives aim to contribute to building a more sustainable territory in the area of the Loures municipality.
Some are described below.

- Urban organic gardens. Pilot project started in 2012

  Entrepreneurial Gardens - incubator for farmers in organic farming in municipal land for the production of vegetables, for commercial purposes.

  Community gardens - promoting urban gardening in organic farming on municipal land for recreational purposes or to supplement the family income.

- The promotion of short marketing circuits of vegetables

  Installation of Loures AGROBIO Market in 2011 - sale of organic products and processed vegetables in the outdoor market.

  Realization of the Loures Rural Fair, in 2011 and 2012. Sale of local products directly from producer to consumer with fair prices.

  Creation of PROVE Project in the county in 2013 - baskets of vegetables and fruits sold directly from the producer to the consumer within 50 Km.

- Promoting local action group creation, A2S- Association for Sustainable Development of Saloia Region

  In association with the municipalities of Mafra and Sintra, in 2015. Its mission is to promote and encourage the local development of community-based enterprises, in rural areas in the northern part of the Lisbon Metropolitan Area, contributing to improving the quality of life in its various dimensions, based on partner consultation, and creating answers and solutions that are based on inclusion, participation and cooperation.

- Loures Inova

  Loures INOVA, created in 2015 - Headquartered in MARL, is for the business ecosystem of Agrifood area and Logistics, developing a platform of services that contribute to business innovation, promotion and modernization of market distribution channels.

- The Enraiz'art Project

  It was implemented in 2013 and 2014 and aims at the creation of "roots" with the territory, with the culture of the community from the discovery of its history, of knowledge, of their rural material and immaterial heritage, with particular attention to the area of agriculture as an economic activity.

- Organization of visits to farms especially for citizens started in 2011.
- Organization of thematic lectures on agriculture from the consumer's point of view: the seasonal products, horticulture on balconies, honey consumption, the use of plants in cosmetics, organic wine tastings, the importance of seeds, etc.

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Case-Study 1: Murta Farm (Quinta da Murta) in Bucelas

Ana Firmino, FCSH/UNL

Wine production of quality in Bucelas is mentioned since the Romans who cultivated it for more than 2000 years, and it was popular among the royalty in England, court of Elizabeth I, having been mentioned in William Shakespeare's play Henry VI (1554), which is the reason why the wine of Murta farm adopted him for his its logo and its wine is known as "Wine of Shakespeare".

The Duque of Wellington, in XIXth century, who participated in the defense against the Napoleonic invasions in Portugal, took the Bucelas wine to the court. The Prince Regent George III recognized medicinal virtues in this wine.

The unique characteristics of Bucelas wine dictated the creation of the Demarcated Region in 1911 and it is classified as VQPRD (Quality Wine Produced in a Demarcated Region). The Bucelas Arinto has an overall citrus color intense but discreet flavor of citrus, apple and tropical fruits with an elegant and persistent texture. Preferably, it should be drunk while young. The annual production is around a half million bottles. The importance of this production for Bucelas is celebrated every year during the Feast of Wine and Harvest which attracts many tourists.

There is a Confraria of the Arinto Wine (http://www.confrariadoarinto.com/Pro_Vit.php) as well as a Museum of Wine and Vineyard in Bucelas, located in the former residence of Camillo Alves, a famous wine producer and dealer, who started his activities in 1881. Today his enterprise gave rise to Enoport - that exports wines to China and Angola.

Murta Farm is a wine property with 27 hectares, 14,5 of which are planted with vines and it is located in Bucelas Parish, known as "Arinto's capital" (Arinto is the main stock used in Bucelas wine).

Murta Farm started producing wine in 1994 and its vineyards are located 250 meters high on the slopes of the River Boição Valley, which offers excellent and diversified conditions in terms of microclimate, exposure and soils. They produce white, red, rosé and sparkling wines with the following varieties: Arinto, Touriga Nacional and Rabo de Ovelha.

The farm is part of the Wine Route and visitors can participate in the harvest, taste wine and visit the farm, vineyards and cellar in the company of a guide. They offer several services such as wine sales and organization of events (parties and private events) in a milieu surrounded by a superb landscape (https://vimeo.com/88295217).

The Potentialities of Loures Landscapes

Madalena Neves, DPGU - DPMOTRU

Loures presents three distinct characteristics of urban occupation influenced directly by its proximity to Lisbon.

In the northern area of Loures the rural identity has been kept until today as a consequence of the agricultural production still existent. Land use presents a pattern that respects the constraints and potentialities of the natural resources. In the fertile land of the valleys along the rivers, horticulture prevails. In the soils of the slopes, stony and difficult to cultivate, we find bushes often resulting from the abandonment of agriculture. The vineyards occupy the waving slopes of Bucelas, where the best conditions for this culture are to be found. In more remote areas with difficult access due to abrupt relief, the cover is still wild, the domain of the endemic flora of the region, true alive museums of Portuguese oak forests, that have existed since Pre-History.

In this area, some settlements are characterized by the formal coherence of its structure and by its harmonious integration in the evolving landscape. The cultural system imposed by Man used local materials such as calcareous or basalt worked by hand. This knowledge is present in the shelters of the fields, in the terraces, wells, and water systems, as testimony to an ancestral use of local materials and adaptation to the limits and advantages offered by Nature.

Hand by hand with this appropriation of the territory, true landscape and built heritage, is known the richness of the geomorphologic and archaeological heritage, which presents a high potential to anchor rural development, integrating the present values and boosting them as a new paradigm of territorial appropriation.

Nevertheless it keeps being a territory under the stress of urban expansion (dwelling and small industry) mainly due to the good road infrastructures and low land price if compared to other areas in the region, and also due to the natural landscape that should be preserved. The renewable energies as well mark their presence, sometimes too drastically upon the landscape.

The agricultural occupation has the capacity to go on and grow, since the products offered are of quality, such as the wine of Bucelas, cabbages and salads, bread and cheese that have a secure market.

The strategic options are focused on multifunctionality and promotion of agricultural production and forests practiced in an ecological mode to guarantee a sustainable development and the reduction of risks, by controlling the diverse urbanization and reinforcing the structuring role of the rural settlements with a measures of conservation, that may bring added value to the cultural landscape, and measures of planning and programming of touristic development (wine tourism, ecological and cultural tourism) anchored in the different local values, as well as in the preservation and valuing of areas of agricultural and forest interest, Nature conservation and biodiversity, pursuing the goal of improving the quality of life of the populations.

Vale Nogueira – Premialha Landscape Unit

Ana Firmino - FCSH/UNL

According to Pena (2001, 35) the family of orchidaceae is by far the most valuable flower group in Loures. He stresses that the orchids are the most evoluted vegetal organism (a kind of "human beings" of the vegetal kingdom) and some of the species are relatively rare in Portugal and sensitive to the environmental changes. In 2001 he mentions the existence of 22 different species. In 2015, Rafael Santos, an orchids producer and dealer established in Montachique/Loures, identified 27 different species (see ANEX A), some of them quite rare such as Orchis champagneuxii, from which only one colony, occupying about 1 m2, 30 or 40 exemplars, is known in the municipality (Figure 13).

Figure 13: Orchis champagneuxii (Foto Source: Rafael Santos, Orchisrafa)

In the project Euroscapes two areas are identified with orchids prairies: Vale do Pequeno Trancão and Vale Nogueira – Premialha. The latter will be our case-study.

Case-Study 2: Origem do Campo, Aranhas Farm

Vale Nogueira – Premialha is a landscape unit dominated by the volcanic chimney of Serra da Sardinha, that includes some manor houses (such as Quinta da Enxertia, Quinta das Laranjeiras and Quinta da Granja, all dating from the 18th century) several rural houses and productive farms in an area with predominantly basalt soils. This landscape goes from A-dos_Cãos and A-dos-Calvos up to the far eastern part in the northern territory of the municipality of Loures.

According to the Euroscapes (CML, 2012, 47) "the landscape is fertile and has been used intensely for agricultural purposes since the old regime. Production was organized by the large manor houses and agricultural houses of considerable size. To the north, there are the ruins of the manor house of Premialha, scene of a supposed feud of the descendants of Diogo Cão, a Portuguese navigator. This attests to agricultural in this zone since 1500."

Due to the fertility of the soils this is an intensive agricultural area, dominated by the production of lettuces, but where other crops are also to be found such as eggplant and zucchini, an innovation that corresponds to the new consumers' profile and demand.

Portugal produces 106 800 ton of lettuce per year (www.observatorioagricola.pt, 2011) ranking as the 6th larger producer in Europe and the 17th at the world level (Source: FAOSTAT, 2010). Loures is considered an important lettuce production basin, with an estimated annual production of about 5000 tons in greenhouses and open-air (Figure 14).

Figure 14: Main Lettuce Production Areas in Portugal, (Source: Observatório Agrícola,, 2011)Main Lettuce Production Areas

Two large producers operate in A-dos_Cãos: "Alface do Campo" (Lettuce from the field) and "Origem do Campo" (Field's Origin). Together they produce about 70% of the total production of lettuces in Loures (Figure 15).

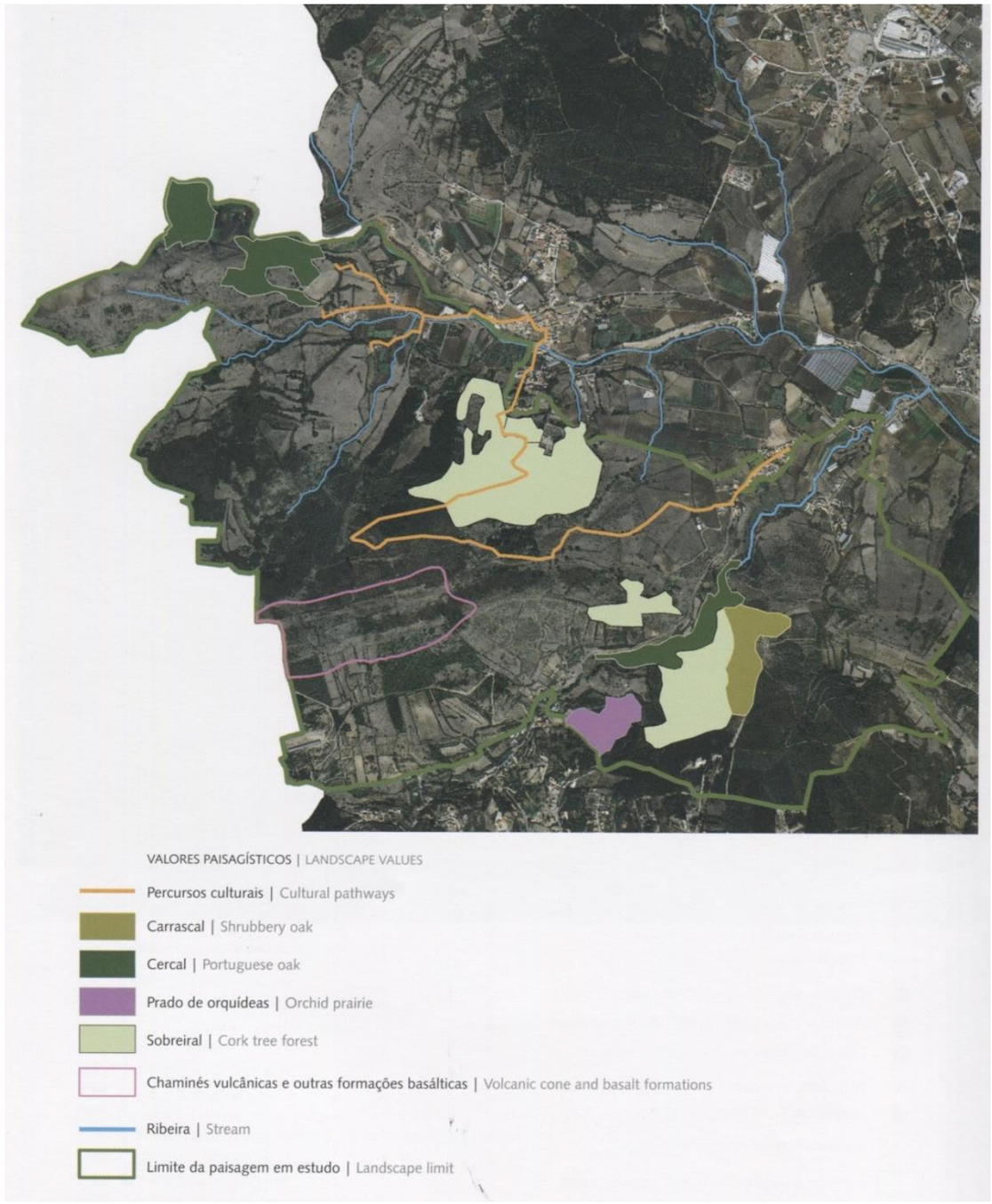

Figure 15: Quinta das Aranhas (Spider Farm), A-dos-Cãos, Tojalinho, site of "Origem do Campo" with an unit of hydroponic lettuce production.

Let us take a deeper look at “Origem do Campo” since it has the particularity of producing in hydroponic, a method of growing plants using mineral nutrient solutions, in water, without soil, which can contribute to save about 80% of water and produces faster and free of weeds.

One of the owners is João Matias, descendant from a family of farmers long established in the area. The roots of his family are in agriculture and he and his brother Paulo keep this tradition. Presently they own 14 ha, 3,5 of which are occupied with greenhouses. Fifteen years ago they created this enterprise and three years ago they started with the hydroponic production in 0,5 ha, a large investment of 148 873,30 Euros, partially financed by the European Union in the framework of FEADR and the Portuguese Government (each one participating with 23 611,00 Euros).

They represent a new generation of farmers, who participate in programs of the national TV (https://www.youtube.com/watch?v=WjNNeNK0rMs) and have contacts with foreign farmers, namely from Belgium and Brazil, from whom they learnt about the possibility to produce in hydroponics; they are concerned with the energetic footprint of their crops, and try to know if under certain circumstances, in winter, for instance, a lettuce produced in a heated British greenhouse has not a larger footprint than a Portuguese lettuce produced in Loures and exported abroad. They export occasionally to France (their neighbour “Alface do Campo” supplies regularly the market in Madrid), but they work predominantly with large Portuguese supermarket chains such as “Continente”.

Tourism in Loures

Paula Duarte, CML

Loures is today a land of contrasts after a past essentially rural and a present dominated by the economic development, demographic growth and requalification of the territory.

The eastern area is marked by urban and industrial landscapes, outlined by a modern road system. On the other hand, villages and “saloio” boroughs, agricultural soils and natural green zones, give another tonality to the northern area.

The municipality of Loures is today the result of this balanced coexistence that brings together the traditions and the identity of a people with “saloio” roots, and takes action to value the heritage.

Since the XIX century, several archaeological vestiges related to the Roman, Arabian and Medieval pre-historic Antiquity have been found in Loures.

The cultural characteristics of this region result from a long Moorish occupation and from the progressive mix between several ethnic groups and religions, from which the Mozarab were born, who during all of this time preserved their cultural traces.

The fertility of the land, the abundance of water and the purity of the air marked this “saloia” region that belonged to the limits of Lisbon from the reign of Afonso Henriques up to Maria I. This is why so many monarchs and aristocrats built farms on these lands for leisure, relaxing and protection from diseases.

In regard to the “Saloios” activities they were essentially farmers. They supplied the city with goods and services. They produced tools but also horticultural products, fruits, milk, fish, and supplied water. The women carried their bundles of cloths, that they collected from the families in the city and that they washed in the river.

Today the “Saloio” has changed a lot compared to what it used to be some years ago; in spite of that we still find some men and women, born in the municipality, who dress up the same way and talk the same way, work the fields and identify themselves as “Saloios”.

The famous wine of Bucelas has had its demarcated region since 1911 and is one of the tourist attractions namely through the wine routes and the festival of the wine and vineyard. Some other events that attract many tourists are the Fair of the Seventeenth Century and the “Saloio” Carnival, as well as the “Saloio” Snails Festival (Figure 16).

Figure 16: “Saloio” Carnival and the “Saloio” Snails Festival, (Source: CML, 2015)

There is much to discover in Loures, a land of scenic landscapes, heritage and History!

The museums, churches, farms, the Monumental Square of Santo Antão do Tojal, the castle of Pirescouxe, …wait for you!

Loures is today a dynamic territory guided by adequate local tourism development policies, that will contribute to its success as a land of much inspiration and great emotions!

The Energy Challenge

Francesca Poggi, FCSH/UNL

The contribution of renewable energies for the current Portuguese energy mix

In Portugal, the use of energy from renewable endogenous sources is the central vector of the energy model supported by the government in its National Energy Strategy (Estratégia Nacional para a Energia) in the 2020 horizon (Presidency of the Council of Ministers). In this context, the challenge on renewable energy aims for a territorial development articulated with the global framework of economic and environmental sustainability as well as promoting improved conditions for competitiveness, growth and for the country’s financial and energy independence.

Over the last decade, the contribution of renewable energy for the current energy mix has had an accelerated growth, showing great progress from the different sources when compared with the production from fossil fuels (Figure 17).

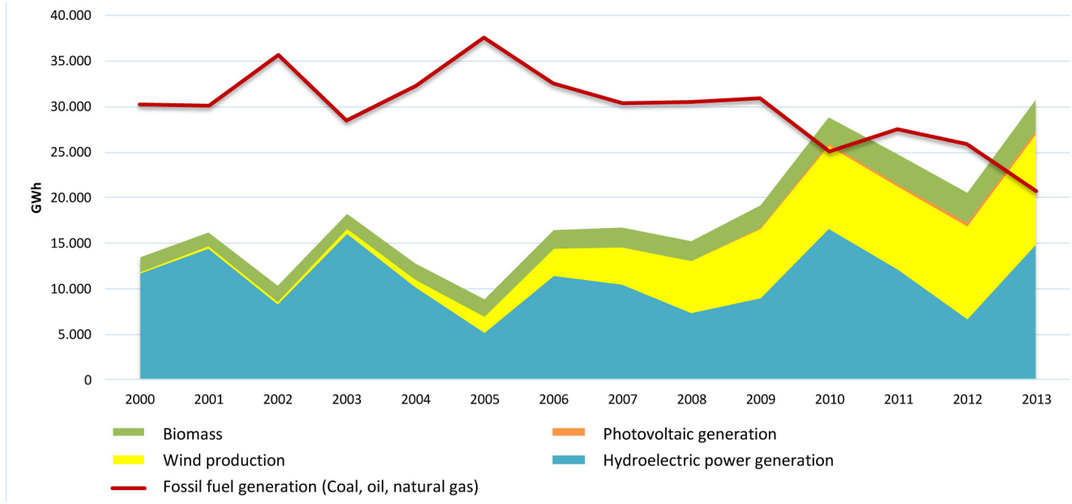

Figure 17: Contribution of renewable energy sources to the current Portuguese energy mix (Source: DGEG, 2015)

A direct comparison between the evolution of the different sources of renewable energy and the production from fossil fuels (red curve) shows a significantly speculative progression up to 2006. In the period between 2006 and 2009, the growing trend of renewable energy is obvious, being that for the first time in 2010 there is a clear reversal in the history of energy production. This analysis framework shows how the energy equation associated with the current energy model can determine with precision the real value and future prospects of renewable energy in Portugal.

The diversification in energy supply is a fundamental condition to reduce the deficit in the energy trade balance, the dependence of the country foreign entities and the vulnerability of the energy sector and also to answer with greater flexibility to both the conditioning of environmental nature and the evolution of energy prices. On the other hand, the supply of renewable energy sources is dependent upon a vast range of solutions due to its technological specificity and spatial coverage, that impose an articulated integration with the territory and with planning tools eligible for efficient implementation and management of the available renewable energy resources.

The need for a strategic positioning on behalf of the municipal halls, in particular when it comes to the implementation of renewable energy, is a very significant theme especially considering the reasoning for the smart, sustainable and inclusive growth defined by the European Commission for the next decade (Europeia, 2010). This significant paradigm shift, be it in ways of conceiving more efficient cities from an energy viewpoint or in the structuring of clean energy producing rural areas, is a factor of paramount importance to achieve the balance between energy supply and demand.

The potential for energy balance of the Loures county

The concept of energy balance can be applied on a county scale as a way to understand its relational character, i.e. promoting coherent energy interdependence between the various components of the territory (Poggi, Firmino, & Amado, 2015).

With the intention of evaluating the performance connected to the local energy consumption and production, the case study of the Loures county, of which the contribution to the total of national electric energy production was 1.3% in 2013, is presented.

Analysis of energy consumptions

In regards to electric energy consumption in the county, the collected data reveal that the industrial consumption is significantly higher, followed by the consumption of the domestic and non-domestic sector and lastly the residual consumption of agriculture, public lighting and the lighting of the interior of public buildings (Figure 18).

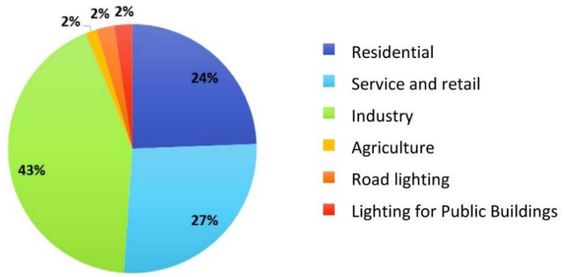

Figure 18: Percentages of electric energy consumption in the various sectors of the Loures county in 2012 (Source: INE, 2015)

Taking into account that the average annual electric energy consumption per habitant is 1124kWh/hab. (INE, 2015), it was possible to estimate the distribution patters of energy consumption per statistical subsection by conjugating the number of residing individuals with the standard value (Figure 19).

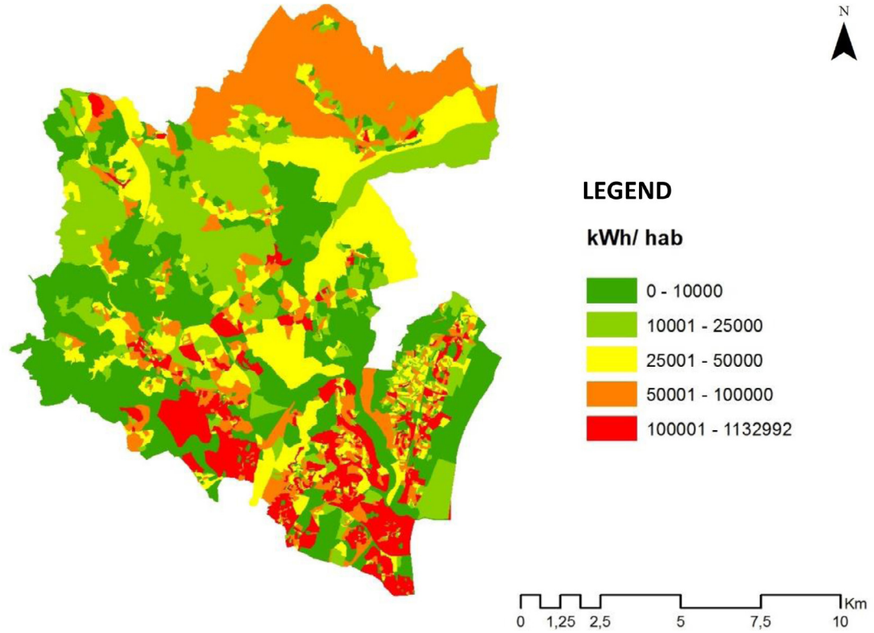

Figure 19: Annual electric energy consumption per habitant (kWh/ hab) Source: (INE, 2015)

Through the analysis of Figure 19, it is possible to compare the distribution of the annual electric energy consumption of the domestic sector in the county being that it is an essential indicator for understanding the spatial coherence between the energy system, options for the use of the soil and the territory's functioning patterns.

Potential for the production of renewable energy in the county

As a result of the aforementioned concept of energy balance, the desired model aims for the possibility of planning renewable energy production poles on rural areas in articulation with the energy consumption patterns of the neighbouring urban areas.

In this sense, it is important to mention the significant exploitation of renewable energy sources, in particular wind and solar energy, existing in the Loures county that result from the geo-climatic and physiographic conditions inherent to the territory.

The state of maturity of wind power technology makes the production of electricity of great quality profitable through sets of aerogenerators installed in wind farms, while allowing the continuation of activities (e.g. agricultural activities) in the surrounding terrain. Among the most relevant factors for the contribution of this energy resource, it is important to mention the conditioning phenomena of local flows, especially the ones related to the terrain's orography and rugosity and the spatial/time scales of weather phenomena (Costa, 2004).

In fact, the county of Loures presents a variable orography, presenting a range of inclinations significantly different between the south and southwest parts of the county, varying between 0m and 100m, and between north and northeast parts, varying between 100m and 500m (Figure 20).

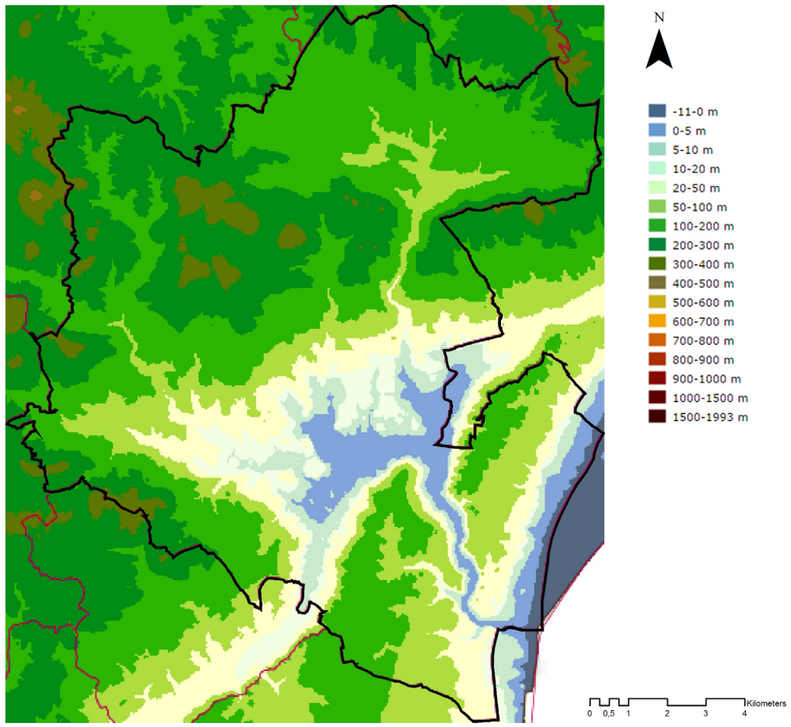

Figure 20: Hypsometry of the Loures county (Source: Centro de Estudos de Arquitectura Paisagista «Prof. Caldeira Cabral», 2013)

On the other hand, the northmost part of the county is characterized by having relatively low terrain rugosity, resulting from a regular natural vegetation coverage and the presence of small house agglomerates, spread out from the urban centres (Figure 21).

Figure 21: Topography and rugosity of the terrain associated with wind power potential in the Loures county (Foto source: Firmino, 2015)

It should however be stated that the average wind velocity is the most important element to determine the potential for wind power production in a given locale. In the map of wind power potential on a national scale elaborated by the INETI it can be observed the spatial configuration of wind intensity in the Loures county (Figure 22).

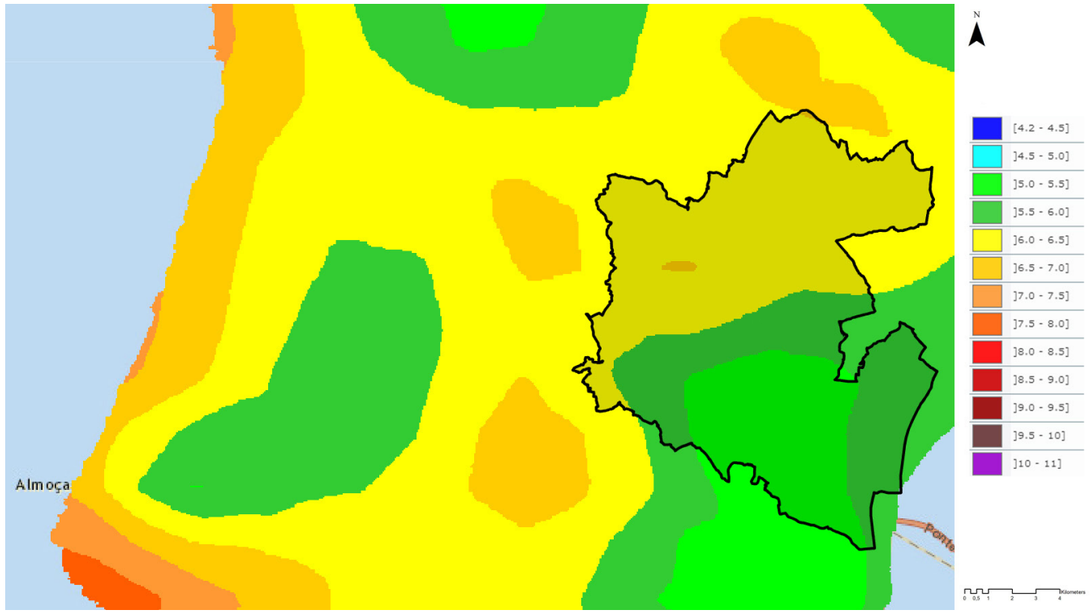

Figure 22: Map of the wind power potential in the Loures county (Source: INETI, 2015)

The analysis of the aforementioned morphological and climatic aspects allows it to be concluded that the Loures county has locations with particularly favourable conditions for exploiting wind power energy on a large scale. This fact is equally confirmed by the data on Figure 23 where it is possible to observe the growing evolutional trend of wind power, more recently followed by photovoltaic energy and micro/mini production.

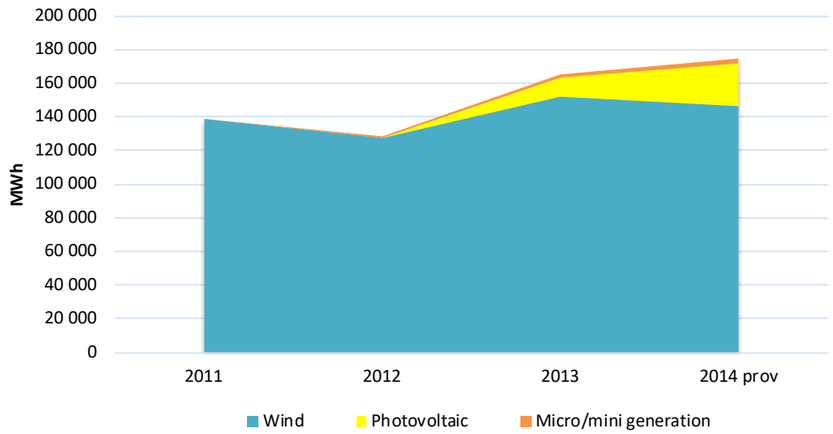

Figure 23: The importance of renewable energy in the Loures county (Source: DGEG, 2015)

In this picture, the wind farm situated in Loures (Figure 24) stands out, having an installed power of 1800Kw and annually producing 4,5GWH, equivalent to the consumption of 1870 habitations while avoiding the release into the atmosphere 2260 metric tons of CO2 (Cavalum sgps sa, 2012).

Figure 24: Wind farm in the county of Loures (Foto source: Firmino, 2015)

In regard to solar energy, Portugal is one of the countries in Europe registering the highest incidence of solar radiation, with about 3 thousand sun hours per year in some regions. To determine the global, direct and diffuse incidence of solar radiation and its duration (in hours) in the Loures county's territory, the Solar Analyst module from ArcGis was used with respect to latitude and based on a terrain MDT of 30m. Figure 25 represents the global solar radiation incidence in the county on the course of a year and the respective duration (in number of hours) of direct radiation.

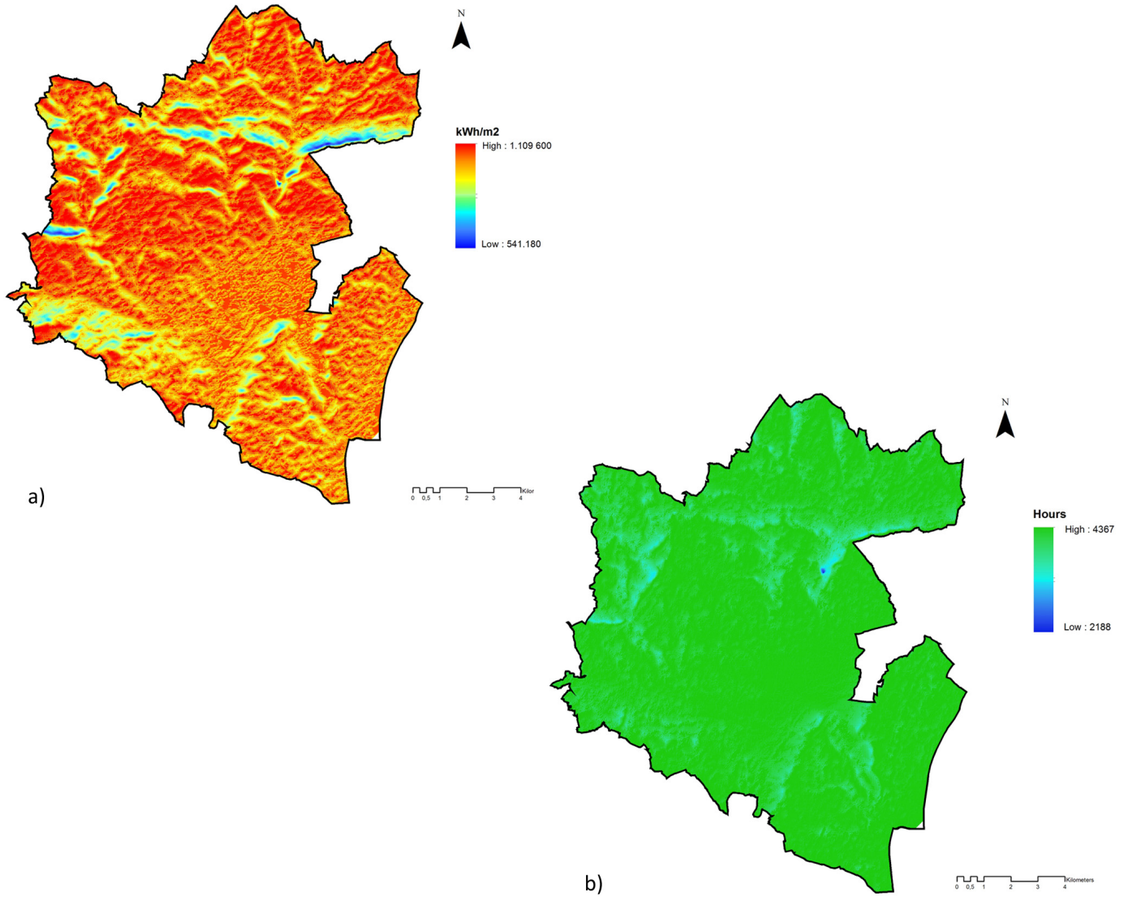

Figure 25: a) Global solar radiation in the Loures county; b) Number of hours of direct solar radiation

From the analysis of data relating to solar radiation it is possible to verify that the Loures county presents an excellent potential for exploiting solar energy, being in aspects microgenearation, minigeneration and solar thermal energy or in the implementation of centrals of a greater dimension to provide for important population agglomerates. The installation of photovoltaic centrals in particular has proven to be one of the greatest challenges the Loures county faced over the last years. In the context of solar energy production in the Loures county, it is important to mention the 6 MW photovoltaic central installed on the coverings of the storehouses and on the exposed surfaces of excavation slopes and embankments existing in the platforms of the Mercado Abastecedor da Região de Lisboa (MARL) (Figure 26).

Figure 26: MARL photovoltaic central, Loures (Foto source: Firmino, 2015)

Guaranteeing enough energy production to supply the equivalent to the consumption of 3000 habitations and satisfy the annual needs of 12000 people, the MARL photovoltaic central is the biggest urban solar central in the world (MARL ENERGIA, 2015).

Case-Study 3: Photovoltaic Station, Malhapão

The photovoltaic central located in Malhapão is a reference case study to evaluate the potential contribution of renewable energy sources for the energy mix of the county and their respective impacts in terms of the environment and sustainable development (Figure 27).

Figure 27: Photovoltaic Central in Malhapão, Loures (Foto Source: Firmino, 2015)

With a total installed power of 2MW and consisting of 9000 249W photovoltaic panels, the central occupies an area of about 40 hectares and guarantees an energy production equivalent to the consumption of 3700 habitants (Figure 28).

Figure 28: 240W photovoltaic panels (Foto Source: Firmino, 2015)

Lesson from Loures energy approach

Taking into account the fact that the total electric energy consumption in the county in 2012 was 833GWh and the total electric energy produced from renewable sources was 517GWh, it is possible to promote the concept of energy balance on a county scale. The Loures county is a clear reference of the great underlying potential in the implementation of renewable energy and allows for the evaluation of the factors concurring for its realization according to matters of preservation of urban, landscape and environment amenities. The core case study of the Malhapão photovoltaic central leads to an important reflexion on the contribution of renewable energy sources and their respective process of implementation in the county. The strategies considered to be promoters of the real development of the county have to be accompanied by a process of energy planning that assures the integration and inter-relation in equal measure of the three sustainability components. In this context, energy efficiency and the integrated planning of renewable energy sources are fundamental conditions to obtaining significant results in the promotion of a 'low energy' society as well as the implementation of an adequate process to assure its sustainable development.

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Smart Answers for a smiling future

Ana Firmino, UNL/FCSH

In an article published in 2004 about Loures, Firmino wrote that Rurality is not yet extinct, as some authors allege. It can be perceived in the behavior of the inhabitants living in the small and medium-sized villages and in the characteristics of the landscape. Signs of this mode of living are found in the presence of the baker selling bread every morning from his van, followed by many other merchants (fruits and vegetables, fish, grocery products, frozen products, cloth, etc.) and the persistence of street markets in spite of all the modern shopping malls that have been built. The dominant culture tries to exclude everything that does not fit its pattern. However the shepherd who each morning with his large flock crosses one of the most important rotundas in Loures, to the despair of the drivers, is not only contributing to the production of cheese and wool but is also helping to prevent fires, since the sheep keep the grass low.

Figure 29: Shepard with his nearly 200 sheep flock near the hospital in Loures (Foto source: Firmino, 2014)

The political endeavor of the authorities at different levels (from CAP to local level) may guarantee that in such areas, the production of fresh food will proceed, contributing to the preservation of the best soils and to the sustainability of important ecosystems (adapted from Firmino, 2004).

Figure 30: Small family farm in Loures (Foto Source: Firmino, 2014)

Some years later the reality in Loures shows that the locals are proud to be “saloios” and use that self-identity to differentiate themselves from their competitors, as an informal label to promote their territories and products. As Baptista states, this identity lays in the “museumfication” of the past work of the “saloios” and in the qualities of a healthy life associated with the “good air”, “good food” and “good people” (Baptista, 1999, 8).

The case-studies presented here show that Loures is well positioned to persue a trend of development that matches what Girardet (2010) presents as regenerative cities, with the advantages that are associated with it: “Policy makers, the commercial sector and the general public need to jointly develop a much clearer understanding of how cities can develop a restorative relationship with the natural environment on which they ultimately depend. The underlying incentive is that positive outcomes are likely to be beneficial for both global ecology as well as the urban economy.

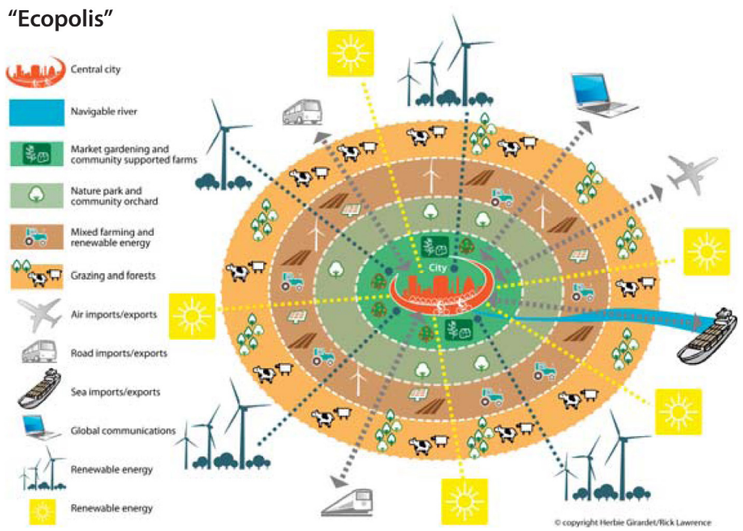

Figure 31: the concept of ‘Ecopolis’ – the ecologically as well as an economically restorative city (Source: http://www.worldfuture-council.org/fileadmin/user_upload/papers/WFC_Regenerative_Cities_web_final.pdf

Many reports indicate that a wide range of new businesses and many new job opportunities could be created from a steady move towards efficient use of resources”.

The policies for creating regenerative cities, according to Girardet (2010, 17-18) tackle: energy sufficiency, “solar city” development, water security, implementing zero waste, local food, sustainable transport, Nature and the city, green business and a culture of restorative urbanization. Let’s hope that Loures may become in the future one of the many Green Cities in the world!

References:

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Annex A

List of Orchidae in the Municipality of Loures (Rafael Santos)

- Anacamptis pyramidalis
- Barlia robertiana (Himantoglossum robertianum)
- Cephalanthera longifólia – (disperse, rare)
- Epipactis tremolsii – (2 locations, rare)
- Ophrys apifera
    - " bombyliflora
    - " dyris ?? * some authors consider it a subsp. of Op. fusca
    - " fusca
    - " lupercalis ?? * some authors consider it a subsp. of Op. fusca
    - " lutea
    - " picta
    - " pintoi * some authors consider it a subsp. of Op.fusca
    - " scolopax
    - " speculum subsp. lusitânica
    - " tenthredinifera subsp. guimaraesii
    - " tenthredinifera subs. praecox
    - " vernixia
- Orchis anthropophora - common
    - " x bivonae (Hib. natural O. italica x O. antropophora)
    - " champagneuxii – Very Rare - 1 colony, only 1 m2, about 30/40 exemplars.
    - " conica
    - " coriophora subsp. coriophora
    - " coriophora subsp. fragans
    - " italica
- Serapias cordigera ?? - 1 colony in the past. Extinct?
    - " parviflora
    - " strictiflora
- Spiranthes spiralis - disperse, rare