

# europaean integration and territory transformation

assessment of the urbanization  
process and funding policies for territorial  
cohesion in Lisbon Metropolitan Area.  
the case of Sintra municipality  
from 1981 to 2011



## **PROGRESS REPORT**

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## EU Funds Impact

European integration and territory transformation. Assessment of the urbanization process and funding policies for territorial cohesion in Lisbon Metropolitan Area. The case of Sintra Municipality from 1981 to 2011.

### PROGRESS REPORT

Phase 1 – Bibliographical review, Lisbon Metropolitan Area and Sintra Municipality demographic, economic and territorial and urban evolution and creation of a geographic information system (GIS) program for collected information, statistical analysis and geographical data aggregation.

Phase 2 – Identification and detailed analysis of all Sintra Municipality urbanization permit processes related to the study period (1981-2011), data treatment of all questions related to its location, date of application and of allotment permits issuance, urban parameters, total built area (residential, industry, commerce and services), network roads, and available areas for green spaces and social facilities.

**Redaction:** Leonel Fadigas



## SUMMARY

This progress report presents the preliminary results of phases 1 and 2 of the research working plan of the EUFundsImpact research project, based at the CIAUD / Faculty of Architecture of the University of Lisbon, with funds FCT / Strategic Program 2015-2010 and developed with the support of the Sintra Municipal Council.

The research project aims to evaluate, the impact of supported by European Structural Funds infrastructure investments on urban expansion and on the resulting morphological typology in Lisbon Metropolitan Area significative urban area.

For this purpose, Sintra Municipality was chosen as study area by its very high urban and demographic growth, large amount of infrastructural investments supported by European Structural Funds and its proximity and close links to Lisbon that is, in Lisbon Metropolitan Area, the main urban and economic centre

At this research stage, that corresponds to the phase 1 of the working process, research activities focused on bibliographical review, cartography organization, urban growth and administrative licensing,

infrastructure programs analysis and demographic and economic and territorial evolution.

For that, a large amount of administrative licensing documents related with the study period (1981-2011) has been analysed in detail at Sintra Municipal urban planning department archives and the European Structural Funds information in Lisbon Metropolitan Area and in Sintra Municipality was obtained through the collaboration of the Regional Coordination and Development Commission of Lisbon and Tagus Valley (CCDRLVT).

Although, the results this report presents are preliminary and adequate to the working research phases in which we are. Further and deeper research working on all more than thousand allotment permits of urbanization that Sintra Municipality has issued in the study period (1981-2011) as well detailed European Structural Funds analysis, urban policies, transports, mobility and traffic flows complementary research will aid to consolidate the final results.



**TERRITORY  
TRANSFORMATION IN  
DYNAMIC TIMES**



# 1. INTRODUCTION

A relevant question in territorial and urban studies is to understand how territory changes along and according to the different social, economic and political moments and how those changes create new landscapes, new urban morphologies and road and rail networks and assure the organization of human settlements. Not for historiographic purposes but essentially as a tool to structure and reinforce public policies adapted to the social, economic and cultural circumstances that contribute for better life quality.

In urban areas this means to get an adequate knowledge of the urbanization process, the urban morphology, the planning and design acts and the political and administrative framework that shape the territory, its mode of organization and its functionality, especially when the urban and demographic growth is intense and greatly soil consumer. Not forgetting that this whole process is greatly dependent on the private investment which, by their nature, more quickly adjust to the economic and financial conditions than the administrative structure that should regulate and control and its action in the territory.

The study of urbanization processes in the most densely populated areas such as metropolitan areas is therefore more than urban studies or urban morphology, although they are accompanied or justified by others who describe and interpret their social, demographic and economic dynamics.

In fact, territory transformation is an ongoing process that, dominantly by human action, changes its organization, its use and its landscape. It corresponds to the process that, following the evolution of societies since the earliest times, has given shape to the inhabited spaces and their economic and social use; in agrarian societies and in urban societies, regardless of their level of technological development.

In agrarian societies, even where large urbanized areas have grown and developed, the transformation of territory has always been at the rhythm that technology, the availability of labour, and wealth have allowed. In this context, the great territorial transformations took place more intensely and visibly in urban spaces where the influx of people was more intense. Main administrative, military and religious functions were concentrated there, which, together with the diversity of the

activities carried out therein, gave territorial and social cohesion to those spaces.

The need for defence was also, in most of those cases, a reason for the concentration of the built space and for a punctual occupation of the territory. As a result, the landscape was dominated by rural, agricultural and forestry space. The buildings scattered throughout rural space, because of their small size, did not disturb this reality.

In consequence of the industrial revolution, a high rate on the urban growth has profoundly altered the relationship between urban areas and their rural peripheries on which this growth occurred.

The change of urban and rural paradigms, after the industrial revolution, has gave rise to new social, cultural and economic relationships between rural and urban worlds. An increase of demographic dynamics associated with the migration of people from rural to urban areas and the dissemination of road, rail and railway infrastructures networks and transformed the territory use, landscape and economic value. The connections between the different regional areas became easier and stimulated economic activities and cultural and social exchanges, boosting social progress and economy.

Since the beginning of the second half of the nineteenth century, investment in public works played an important role in the territorial transformation and economic dynamization. At the same time, the decrease of agriculture as economic sector led to an excess of rural working people. What has stimulated the emergence of migratory movements to Europe and to the metropolitan areas of Lisbon and Porto, looking employment a better life conditions. This migration movement boosted the increase of urbanized areas and greatly extended the perimeter of growing urbanized spaces along the main axis of the road and rail networks.

Economy increase, industrial development, jobs creation strongly attracted people into cities and urbanized areas. The population movement into cities and their peripheric urban areas happened during times of social, economic and political change, which induced an unregulated and unplanned transformation of the territory, from rural to urban. A consequence was the construction of housing areas without the corresponding social, educational, health-care, public administration equipment and services, often even without appropriate road networks and other basic infrastructures to the new urban reality.



Public investment and works for the provision of equipment and services lacking to the population, particularly road networks and transport, lasted for decades and that has greatly contributed on the territorial disorganization and the dispersed and non-coherent location of new urban areas. This process of infrastructure and equipment integration has conditioned the urbanization processes and has accelerated the urban expansion in the best served areas.

Major road and rail networks impact in territorial organization and land use change had not the same intensive ~~un~~ in urban and demographic growth. Despite that, new urban agglomeration paradigms were greatly influenced by the emergence rail and road networks, especially the rail ones, with a significant impact on the population distribution and in the rural areas depopulation.

Suburban population growth and the extent of large cities to their peripheries are, so, the result of that increased intense process of enlarging communication networks, from them organized. (Baum-Snow, 2007; Atack et al., 2009; Mojica and Marti-Henneberg, 2011; Durantón and Turner, 2012; Garcia-Lopez, 2012).

Portugal, and especially Lisbon Metropolitan Area (LMA), in the second half of the twentieth century, was marked by a significant change in land use patterns, greatly by the growing of its urban dimension and the influx of people to the main cities. The changes that took place in the 1960's and in the following decades were determinant for this. The urban landscape and functional patterns of the territorial organization reflect nowadays this urbanization process and the fragility of public territorial and urban planning and managing policies to deal with it. The integration of Portugal in the European Economic Community and in the European Union, on the 1<sup>st</sup> January 1986, greatly contributed to that territorial changes and even accelerated them.

It is not clear the way how the infrastructural investments in road, rail and social facilities that have used European Structural Funds financial support have influenced territorial organization and motivated real estate investment initiatives and their typologies and location. Preliminary studies have given some indications of those relationships but not sufficient enough to a conclusive result (Martins, 2012; Serra, 2016). Primary evidences suggest that those relationships are more a result of a response to better accessibility conditions than a

more efficient land use programs; even because nothing has changed regarding the territorial management instruments related to urban planning. Especially in the areas the existent land use and urban planning instruments have not changed.

EUFundsImpact research project study period (1981-2011) includes, so, the first 25 years of integration of Portugal in the European Economic Community and in the European Union, which greatly contributed to the territorial changes that have occurred in the meantime.

During this first period of integration there was an intense application of European Structural Funds, namely in infrastructures (sanitation, water supply, roads and railway systems and social, education and health facilities), which contributed to a great transformation of the rural and urban landscape and to the creation of a social and economic landscape with a strong impact on the territorial organization.

The construction of the infrastructures that were co-financed by the European Structural Funds and the economic growth during those decades, combined with a great reduction of inflation and a sharp

drop in bank interest rates for housing construction, also contributed to the great expansion of urbanized areas and the associated demographic growth.

In rapidly changing times where economic and social paradigms privilege first relative to the second, public administration does not have the capacity to make the timely decisions that a dynamic and growing economy requires. What, in the case of territorial, central and local administration, leads to the formation of disordered urban territories where the growth of the built area is not always accompanied by adequate infrastructures.

Current methodologies of urban and regional planning and the rules that govern it today are now confronted with social, economic and cultural realities that present it new problems and challenges. Problems and challenges that impose and stimulate a proper field of research that surpasses the borders of urban and territorial aspects to include, as a main theme, the complex network of relationships between political and economic decisions, major infrastructure investment programs, social pression and their environmental context.

In this context of concerns and needs of adequate response to the urban and territorial problems for an area such as Lisbon Metropolitan Area, it is opportune and necessary to study the reasons that have determined its growth process, the way it was translated on the ground and how to it should be addressed to correct errors, anticipate events and place urban and territorial planning as a prior urban growth regulation instrument.

For this, Sintra Municipality, for what it represents in Lisbon Metropolitan Area also for the problems of urban and territorial organization that it presents, is a representative case study of many other metropolitan realities.

This allows that this project conclusions may broadly serve, in a general way, to the whole metropolitan territory that has similar growth and organization processes.

Indeed, Sintra Municipality territory, in Lisbon Metropolitan Area (LMA), reflects in its urban, social and economic landscape the effects of that process of urban expansion and soil occupation, which occurred without adequate urban planning and without public policies, national and local, unable to give meaning and order to the

new social and urban reality that quickly was transforming. Instead, private investors' initiative, in a favourable economic and financial environment, helped to make that happen.

In fact, in the period 1981-2011, Sintra Municipality population passed from 226 428 inhabitants (almost the double of 1970) in 1981 to 377 837 inhabitants in 2011 (an increase of almost 67%) with a very significant increase in the intermediate period 1991-2001, in which the population increased from 260 951 to 363 556 inhabitants (an increase of about 40%). In the same period, 1981-2011 Lisbon Municipality lost 260 205 inhabitants (a decrease of 17,4%) and, between 1991 and 2011, lost 98 737 inhabitants while Sintra Municipality increased its population by an equivalent value: 102 798 inhabitants.

This explains the reason for what the aim of this research project is to examine the impact and influence of an intensive application framework of European Structural Funds on urban growth territorial organization and cohesion and soil consumption in Lisbon Metropolitan Area and, particularly, in Sintra Municipality between 1981 and 2011.

With that, the research project also aims to contribute to a more inclusive process of urban and territorial planning in the context of major metropolitan areas. As well, to assess the land use, urban growth and territorial organization processes, in terms of landscape and urban morphology, building typology, built and free open space relationship and the nature of public policies and administrative decisions which relate them.

For this project the Faculty of Architecture has signed a collaboration protocol with the Sintra Municipality City Council and with the Regional Coordination and Development Commission of Lisbon and Tagus Valley (CCDRLVT) for the access to their archives, exchange of information, technical cooperation and research facilities as the use of cartography, statistical data, studies, plans and other relevant information.

The Research Centre for Social Sciences of the Faculty of Social and Human Sciences of the Nova Lisbon University has been a research partner for mobility, transports and traffic issues and its collaborative work allows [linking](#) the different associated questions on urban and territorial organisation and functionality.

## 2. LISBON METROPOLITAN AREA

Lisbon Metropolitan Area (LMA) corresponds to a territory which includes: 18 municipalities, two estuaries (Tagus river estuary and Sado river estuary), an Atlantic front, large industrial and urban areas, environmental protected areas and is the Portuguese region with largest population – 2 821 876 inhabitants in 2011 – which corresponds to 26.7% of the total Portuguese population.

This human potential, supported in a diverse geography, has taken advantage of the high set of economic, cultural and research and teaching institutions and the support of an extensive network of social facilities to generate a large urban growth supported by a dense and transport and communications infrastructures network. What as confirmed it as the most developed Portuguese region.

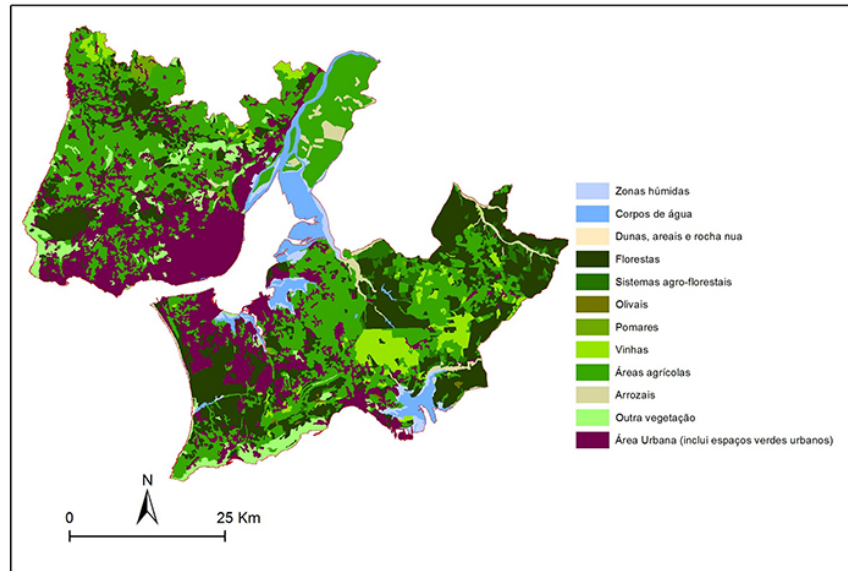
Located in the central part of Portugal, on the Atlantic coast, the Lisbon Metropolitan Area has an area of 3 015 km<sup>2</sup> – 3.3% of the area of continental Portugal – distributed along the north and south banks of the river Tagus estuary that is its aggregation element.



**Fig. 1** – Lisbon Metropolitan Area

North bank of Lisbon Metropolitan Area – currently designated as Lisbon Metropolitan Area-North (LMA-North) – with a population of 2 042 502 inhabitants, in 2011, has an area of 1 392 square kilometres and integrates the municipalities of Amadora, Cascais, Lisbon, Loures, Mafra, Odivelas, Oeiras, Sintra and Vila Franca de Xira. Its evolution has as its starting point the city of Lisbon as the main political, administrative and economic centre of the country and the effect that this had on the growth of the urban agglomerations located in its

periphery. Rural settlements and small towns has been progressively subjected to the crescent demographic and economic influence of Lisbon city.



**Fig. 2** – Lisbon Metropolitan Area land use.  
Source: Morgado (2017), based on Corine Land Cover 2006

According to the diagnostic studies of PROT-AML (Regional Metropolitan Area Planning Plan), prepared in 2006, the agricultural and forestry areas occupy 168,900 hectares, about 57% of its total area. The areas subject to agricultural use correspond to about 2.5% of

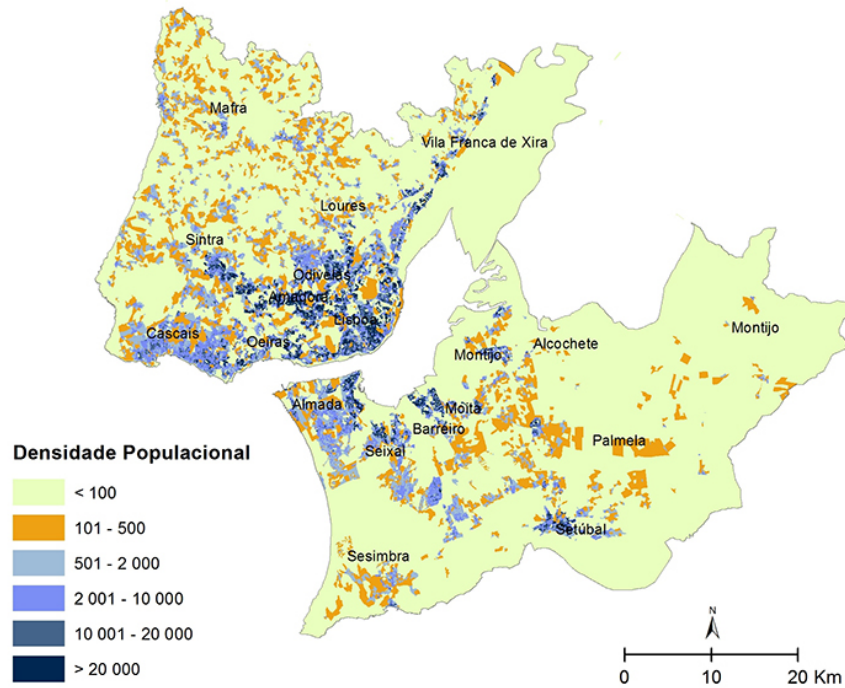
national useful agricultural area I and the forest area to only 2%. Farming incomes are, in Lisbon Metropolitan Area, comparatively to the rest of the country, high and correspond to around 15% of the national GVA (gross value added).

However, the agricultural property value is lower than the soil for urban uses, creating a pressure on the agricultural activity to which it cannot resist in periods of great real estate activity dynamism.

The existence of a road system that was mainly oriented to link those peripheral areas to Lisbon has facilitated an urbanization process that, since the beginning of the last century has deeply transformed that territory in an urban continuum. Creating, however, an urban discontinuity and multiple tracts of land from where agriculture has disappeared. These tracts of lands have become, at a territorial scale, urban voids that were not used for other agricultural uses, alternative to traditional farming, or for the creation of ecological corridors for environmental purposes or biological revitalization.

They were just expectant tracts of land eventually, in some cases, to be occupied by new housing developments, legal or not, and, in

others, staying as territorial voids without any economic or environmental use.



**Fig. 3** – Lisbon Metropolitan Area population density (2011)  
Source: INE, BGRI, Morgado (2017)

The south bank of the Tagus estuary – currently designated as Lisbon Metropolitan Area-South (LMA-South) – integrates the municipalities of Alcochete, Almada, Barreiro, Moita, Montijo, Palmela,

Seixal, Sesimbra and Setúbal, and, with a population of 758 085 inhabitants, in 2011, is significantly less populated than north bank, despite its higher area: 1 623 square kilometres. Lisbon Metropolitan Area has a high population density, 936 inhabitants/km<sup>2</sup>, which shows how strong and intense is its urban dimension compared to the national territory density that is of 114 inhabitants/km<sup>2</sup>.



**Fig. 4** – Urban voids in Lisbon Metropolitan Area -North  
Source: Google Earth

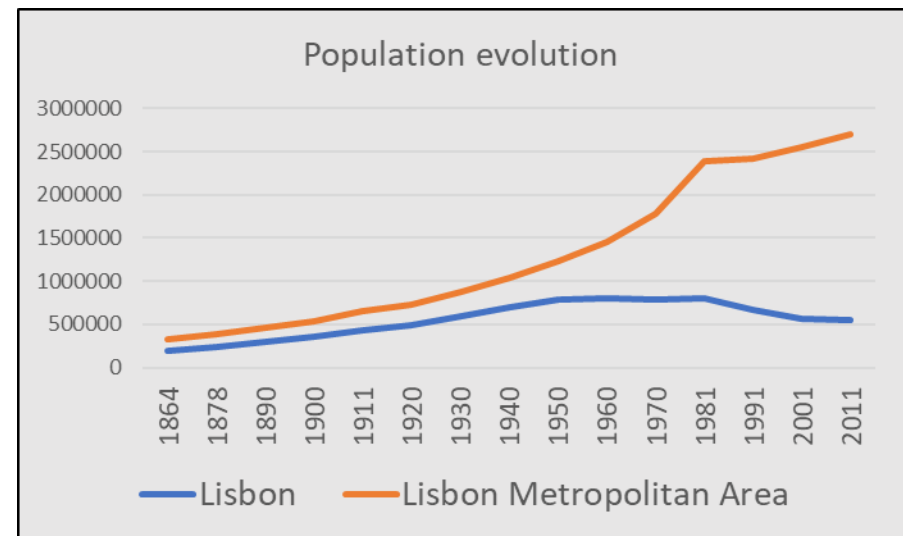


However, if we consider separately the population densities of each part of Lisbon Metropolitan Area – AML, north and south of the Tagus estuary – we find a great difference between them: 1 467 inhabitants/km<sup>2</sup> in Lisbon Metropolitan Area-North and 467/km<sup>2</sup> in Lisbon Metropolitan Area-South. In this context, Lisbon population, 547 733 inhabitants and a population density of 6 444 inhabitants/km<sup>2</sup>, represents 5,2% of the Portugal's population, and 19,4% of the Lisbon Metropolitan Area population and 26,8% of the Lisbon Metropolitan Area-North, of which it is part.

The population of the area that corresponds to what is now the Lisbon Metropolitan Area, had, in 1864, less than 350 000 inhabitants and came to just over 1 million in 1940, and 1.5 million twenty years later. That population reached 2 million inhabitants in the 1970s and 2.5 million in 1991, after a steady decline from 1981. It grew relatively little in the following two decades, reaching, in 2011, over 2,8 million.

For a long time, Lisbon influence on the neighbouring territories was not felt, in a significant way, in the population dimension of these, being the city the urban agglomerate where the growth was always superior to the other locality.

This reality continued until the beginning of the twentieth century where the industrialization reinforced Lisbon as a centralized development hub. The extension of the road and rail network, which greatly improved its link to the whole country, was largely responsible for this.



**Graph 1** – Lisbon Metropolitan Area and Lisbon population evolution

Source: INE, Population Census

The economic and social changes that happened in the 1960 decade is a key period to understand Lisbon Metropolitan Area urban and



demographic growth. Salaries increase, resulting of the manpower reduction availability, due to the intense internal migration from the rural areas to the major cities neighbouring areas and to Europe, are also associated to agricultural, industrial and tertiary sectors changes. What has also contributed to the need of low cost housing production in a short time to

The available areas for urbanization, from which agriculture had already disappeared, has been occupied by large patches of illegal urbanizations, without any kind of infrastructures, in absence of the land use and regulating urban plans regulating. Lisbon neighbouring municipalities, especially those on the north bank of the Tagus, where industrial and economic development has attracted populational have generated, from the most disadvantaged areas to them, a high internal migration movement in search of employment and better income.

This has created serious problems of homelessness and has encouraged the emergence of illegal urbanization solutions to respond to this need that the legal market, urbanization and building construction, was not able to solve. A similar phenomenon occurred on the south bank area, due to the increasing industrialization and the

impact that the construction of the bridge over the Tagus (1966) had on the nearby areas, especially in Almada, Seixal and Sesimbra municipalities.



**Fig. 5** – Cascais Municipality rural expectant soil for urbanization

In these circumstances, illegal urbanization was the possible answer that many of those who came to the Lisbon Metropolitan Area had to seek the solution to their housing problem in alternative to the emerging shacks slums of Lisbon and its peripheries where the poorest took up lodgings. In fact, in the beginning of the 1960s, 163 000

families lived, in Lisbon region, in parts of house, in overcrowded houses, or in makeshift buildings, what represented more than 50% of the total resident families (Silva, 1969; Salgueiro, 1977; Ferreira, 1984; Soares, 1985; Rolo, 2007; Alves, 2008).



**Fig.6** – Illegal urbanization in Lisbon Metropolitan Area-South  
Source: Google Earth

The occupied area by illegal urbanization, in Lisbon Metropolitan Area corresponds to 1 299 illegal settlements, distributed as follows: 298 in the Almada Municipality, 226 in Cascais Municipality, 181 in Loures Municipality, 100 in Sintra Municipality, 86 in Odivelas

Municipality, 73 in Seixal Municipality, 55 in Palmela Municipality, Sesimbra with 50, Vila Franca de Xira with 43 and Barreiro and Setúbal Municipalities with 42 each. The municipalities of Moita, with 27, and Montijo, with 22, constitute the group of municipalities with more than twenty illegal settlements (Infante, 2015; Sousa, 2015; Rolo, 2007).

The occupied area by illegal urbanizations in Lisbon Metropolitan Area is 8 821 hectares and, in some municipalities, it assumes a very significant dimension: 2 066 hectares in Seixal, 1 011 hectares in Almada, 904 hectares in Loures, 850 hectares in Sintra and 839 hectares in Palmela Municipality.

Altogether, the area occupied by illegal developments - most of them legalized in the last two decades under Law nº 91/95 - corresponds to about 3% Lisbon Metropolitan Area territorial extension.

Only in Sintra municipality, illegal urban areas correspond to about 12% of the municipal territory, about 8% of the population (32 000) and about 10 000 homes where the major one, Casal de Cambra, occupies 178 hectares, with around 13 000 inhabitants and 5 800 homes (Infante, 2015).

In this framework, urban and territorial plans and policies has left urban expansion and the emergence of new urban centres dependent only on economic and social dynamics and private initiative. What gave rise to an unbalanced and disjointed territorial structure where the functionality of urban systems was reduced, and housing problems were continually aggravated.



**Fig. 7** – Casal de Cambra illegal urbanization  
Source: Sintra Municipality, AUGI Office

The absence of planning and urban management appropriate instruments to face this new reality, in association with the fragile

technical, administrative and financial municipal organization to deal with it, prevented the application of the few existing urban plans. (Cavaco, 2009). None of them, however with proper spatial dimension to frame problems of urban expansion to such a wide and diverse territorial dispersion. The territorial fragmentation resulting from this anomalous urbanization process has marked and conditioned the urban organization and the landscape structure that characterizes Lisbon Metropolitan Area territory; even in cases and situations in which urban expansion and housing production was supported by administrative authorizations and in accordance with incipient urban planning.

The urban expansion in Lisbon Metropolitan Area, since the 1960s, has given rise to the need of appropriated urban planning instruments to the scale of the problem and of its territorial dimension. However, the political declarations of the time did not materialize in practical actions that could have prevented the progression of the phenomenon in the opportune moment. At a time when legal housing production did not meet the population housing needs at compatible costs with its income. What gave to the illegal urbanization areas a significant importance to the Lisbon region urban organization.



Given this reality, a basis for the development of an urban development plan for Lisbon region, enacted in 1959, aimed, in an integrated way, the territorial organization of a region that was expanding uncontrollably.

The Lisbon Region Master Plan (1964), containing a spatial planning regulatory and integrative framework to give coherence to urban growth and its relationship with roads and infrastructures networks in Lisbon neighbouring municipalities was not an executory instrument. Its guidelines regarding a coherent structuring and territorial planning of what is now the Lisbon Metropolitan Area show knowledge of the reality, but they were insufficient because they were not attended by the public administration.

This plan, the first one that was elaborated in a supra municipal perspective, is a landmark of Portuguese urbanism, but unfortunately, that is all. Reality has surpassed it and the practical consequence of this is the actual inefficient functionality of Lisbon Metropolitan Area.

Land use planning issues gradually gained importance, after 1976, for the felt need of a correct spatial distribution of economic activities, infrastructures, facilities and residential areas. Even because the

municipalities autonomy as elected political and administrative power centres, imposed new urban and territorial plans elaboration and approval rules.



**Fig. 8** – Lisbon region master plan (1964)  
Source: MOP-Ministry of Public Works

The political changes after the democratic revolution of April 1974 had opened to soil use regulation new perspectives and urban and territorial legislation but, unfortunately, with no immediate application.

The municipal master plan as a guiding and regulating instrument for territorial and urban planning was created in 1977 but was only definitively implemented in the early 1990s. after a decade in which existing regulation made its elaboration and approval unfeasible. With the existence of this municipal master plan territorial and urban planning matters central administration ceased to be responsible for its approval passing it to the municipal level, even though under a central administration vigilant control. This explains why the different Lisbon Metropolitan Area urbanization patterns appears as if they were the result of multiple, disjointed and varied plans.

This is most evident in the urban expansion processes in Lisbon and other Lisbon Metropolitan Area cities the peripheries of that occurred until the mid-1990s. This was because the master plans that began after 1991 only became effective in most municipalities after 1995. In others, this approval and entry into force only occurred later, as was the case of Sintra municipality, whose master plan was only approved

in 1999. Which makes more understandable the way how the territory that today constitutes the Lisbon Metropolitan Area was organized.

Urban expansions, because they are the dominant product and the consequence of private initiatives and decisions not always properly controlled by the territorial administration, do not include the major infrastructures of roads and railways. These are installed later, in the voids that the urbanization process leaves free, to supply recognized needs and not to order, guide and regulate the land and soil use in its different aspects: residential, commercial and industrial.

The economic, social and political realities that have made Lisbon Metropolitan Area structure, organization and landscape have introduced problems and functional and organizational challenges in urbanized areas. It also allows us to know the dynamics of private initiative in the urban growth process and in territorial organization, in different economic and political cycles. Even because the urban territory is predominantly a product of the private initiative.

Lisbon Metropolitan Area, in the diversity of its territorial, urban, social, economic, natural and agroforestry realities, is a clear example of how the absence of territorial planning and prior creation of the

structuring road and rail infrastructures allowed dispersed urban fabrics growing, without physical and functional articulation between them.

Territorial fragmentation appeared, so, as the result of a disperse and uncoherent urban design that have produced a splashed location of urban settlements and a multiplicity of urban typologies. This reflects uses specialization and differentiation and is facilitated by geographical and environmental conditions and progressive increase in land value profit, in association with a greater flexibility of property regimes what makes easier that territorial fragmentation. In fact, uses and property ownership forms contribute to the territorial patterns and textures due to the cadastral division that enhances the different appropriation uses and forms (rural and urban).

The main road and rail networks, that are primary reasons of territorial fragmentation, did not work as guiding elements of urban organization but as attraction elements for real estate developments that profit of its vicinity. As there is no coherent road network, traffic flows converge to the main roads, creating situations of permanent congestion at rush hour.



**Fig. 9** – Lisbon Metropolitan Area-South fragmented territory  
Source: Google Earth

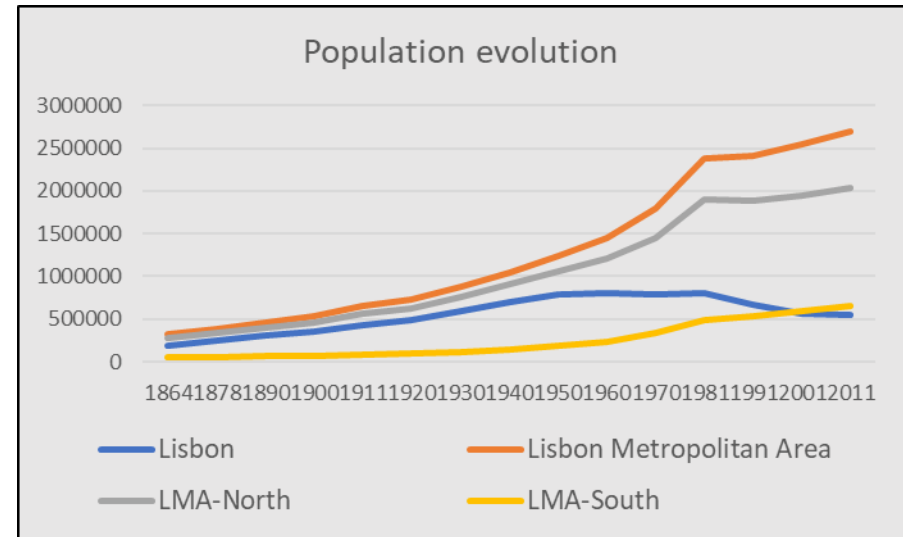
The road system resulting from the disperse and uncoherent urban design solutions that are characteristic of the metropolitan urban growth is made up only of small streets thought only to serve each of the permits that made them possible.

Often without links between them and using the main axes as unique routes for nearby and more distant displacements.

Lisbon Metropolitan Area urban and population growth, in the last thirty years, with several cycles and varying patterns of evolution, follows closely the main employment locations, the metropolitan mobility networks, and their connection to Lisbon, and the way how urban areas were located and organized. However, its demographic growth did not occur, in the last three decades, in the same way in all the municipalities.

Lisbon Metropolitan Area-North area (Amadora, Cascais, Lisbon, Loures, Mafra, Odivelas, Oeiras, Sintra and Vila Franca de Xira) have a more intense demographic growth than those of the Setubal Peninsula (Alcochete, Almada, Barreiro, Moita, Montijo, Palmela, Seixal, Sesimbra and Setúbal).

Some municipalities, because of their rural matrix, or because they were way from main communication routes, maintained, for more than a century and a half, very low growth rates, typical of their rurality, as is the case of Alcochete, which, in 1864, had 4 286 inhabitants and, about a century later, in 1960, still had only 9 270, a value that only in 2011 rose to 17 569 inhabitants. What is was largely due to the construction of the Vasco da Gama bridge between Lisbon and Alcochete (1998).



**Graph 2** – Lisbon Metropolitan Area demographic dynamics

Source: INE, Population Census

The same happened in with Palmela Municipality that had 6172 people in 1864, grew slowly to 10 584 inhabitants in 1900, reaching slightly more than the double, 22 934 inhabitants, only in 1950. Its demographic growth only was accentuated in the last five decades, when industrialization and the effects of the construction of the Tagus bridge began to have a real impact local economy development.

Lisbon Metropolitan Area industrialization has been, along with the growth of the peripheral residential areas, an important factor of urban

and population growth; in Lisbon and in some of its neighbouring municipalities, as Vila Franca de Xira, Amadora and Sintra, and, later, in the riverine municipalities of Barreiro, Seixal e Almada, on the Tagus south bank.

Barreiro Municipality had, in 1864, only 4 439 inhabitants, reaching, in 1900, 7 738 inhabitants, almost the double. After the installation, in 1907, of a large chemical-industrial complex that has marked its urban and demographic development, its population reached 12 203 inhabitants in 1911. Almost two decades after, in 1930, Barreiro Municipality had practically doubled its population to 21 042 inhabitants.

Thirty years later, in 1960, Barreiro Municipality was of 35 088 inhabitants, maintaining a rhythm of continued growth that reached its maximum in 1981 with 88 052 inhabitants. However, the deindustrialization process that followed the 1973 oil crisis, which continued in the following years, led to the continuous loss of population in the last thirty years, which in 2011 was only 78 764 inhabitants.

In the case of Almada, where naval industry is dominant, the 1973 oil crisis and the emergence of more competitive naval yards in other countries, caused, in the 1980s, a slowing of its population growth rate. Its population growth rate that was, respectively, in the 1940s, 1950s, 1960s, and 1970s of 48,16%, 62,15%, 52,39% and 36,56%, fell sharply to 2,77%, 5,96% and 8,21% in the following decades of 1980s, 1990s and 2000s.

This in spite of the impact of construction of the Tagus bridge linking Lisbon and Almada, in 1966, on the expansion of its urban area, as well in the neighbouring municipalities. In 1960, Almada Municipality had 70 968 inhabitants, its population rose to 108 150 in 1970, to 147 691 in 1981, to 151 783 in 1991, to 160 825 in 2001 and reaching 174 030 in 2011.

An example of the differences in size and intensity of population growth in the Lisbon Metropolitan Area-North and in Lisbon Metropolitan Area-South territories is the case of the municipality of Sintra. In 1864 it had 20 766 inhabitants, a figure that rose to 37 980 in 1930, and to 45 171 inhabitants in 1940.

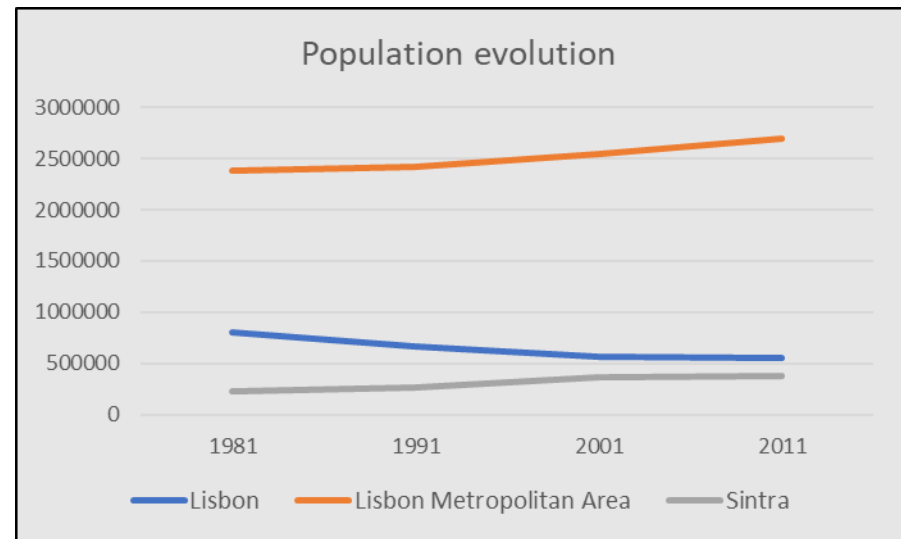


Ten years later, the number of inhabitants was 60 423, reaching 127 746 inhabitants in 1970 and 260 951 in 1991. In the last two decades, in the context of a very intense urbanization process, and taking advantage of the economic and political dynamics of this period and the effect of the investment supported by the European Structural Funds, Sintra Municipality population reached 363 749 inhabitants in 2001 and 377 835 in 2011.

At the same time, Lisbon population, which was inhabitants, in 1960, 802 230 inhabitants, dropped down, in 1970, to 782 266 inhabitants, rising again, in 1981, to 807 937 inhabitants, reaching, in that year, its highest demographic dimension.

From then on, Lisbon population sharply, drooped down to 663 394 in 1991, 564 657 in 2001 and to 547 733 in 2011.

This behaviour differentiation of demographic dynamics can be explained by the different proximity of those municipalities to Lisbon, by the increased housing cost in Lisbon city and by the intensive and varied industrial, infrastructural and facilities investments that occurred there.



**Graph 3** – Population evolution (LMA, Lisbon, Sintra) in 1981-2011. Source: INE, Population Census

Considering the role and importance of Lisbon as a political, economic, functional and demographic centre and the existence of a denser and easier communications network, the urban and demographic growth of the Tagus north area, close to Lisbon, was always higher than in the municipalities of the Tagus south bank.

For example, in 1970s north of the Tagus population, not including Lisbon, surpassed Lisbon population, a fact that only in the 1990s happened with the Tagus south bank population.

An example of this is the fact that Lisbon and its closest municipalities are among the ten most populous Portuguese municipalities, Lisbon, Sintra, Loures, Cascais, Almada and Amadora and, from these, the two most populous: Lisbon and Sintra. A reality that creates land use disorder and asymmetric development conditions inside Lisbon Metropolitan Area and essentially the rest of the country.

### 3. ECONOMIC AND SOCIAL OVERVIEW

#### The sixties and the seventies changes

Portuguese economy, after a period of isolation and low growth, slowly started to open to new international realities. European growth post war, which only later was felt in Portugal, and very moderately, has attracted a high emigration flow, mainly to France.

This emigratory flow, mainly in an illegal way, and under a strong police persecution, mostly from the poorer rural areas, affected the manpower availability in the fields, even if accelerating, in a certain way, the mechanization of some agricultural activities. But at the same time affecting also the manpower availability to the new starting up industrial sectors. Total emigration, legal and illegal, in the period 1963-1973, has been estimated in about 1,4 million people; to which must be added the large number of young people involved in the colonial wars, in Africa, that lasted from 1961 to 1974 (Rosas, 1994).

In the first half of the 1960s agrarian salaries rise followed the general salaries rise of other economic activities, what has contributed

to increased inflation rates. However, this salaries rise was not sufficient to stop the migration flow to Europe. In the industrial sector, what contributed to a high inflation increase. Even so, in 1973, the Portuguese average salary was correspondent to 25% of the German average salary and to 29% of the average French salary. What helps to explain the intense emigratory flows to those countries (Santos, 1977).

To change, in a modernizing way, the Portuguese economy, the most important economic groups, influenced by the ideals of creation of the European free market that conducted to the Treaty of Roma and the creation of the European Economic Community, forced the Portuguese Government to integrate the European Free Trade Association (EFTA) and the International Monetary Fund (IMF) in 1960. Following this, Portugal joined the General Agreement on Tariffs and Trade (GATT), in 1962, and the World Bank, in 1961.

The impact of those political decisions, in a period where Portugal needed international support to break its political isolation, has contributed to its progressive industrial development until the middle of the 1970s. New economic ideas to reorganize and integrate European economies to sustainably support and develop their

economic growth and social life model had recognized importance in the positive evolution of the Portuguese economy in the 1960s and much of the 1970s.

Despite this economic and social growth, poverty, especially in the rural areas and in the less qualified working people, were very present in people's daily life conditions. In this way emigration to Europe continued and accentuated, as well as the migration to Lisbon Metropolitan Area taking advantage of the crescent job search and looking for better living conditions. have strongly contributed to Lisbon Metropolitan Area productive geography transformation.

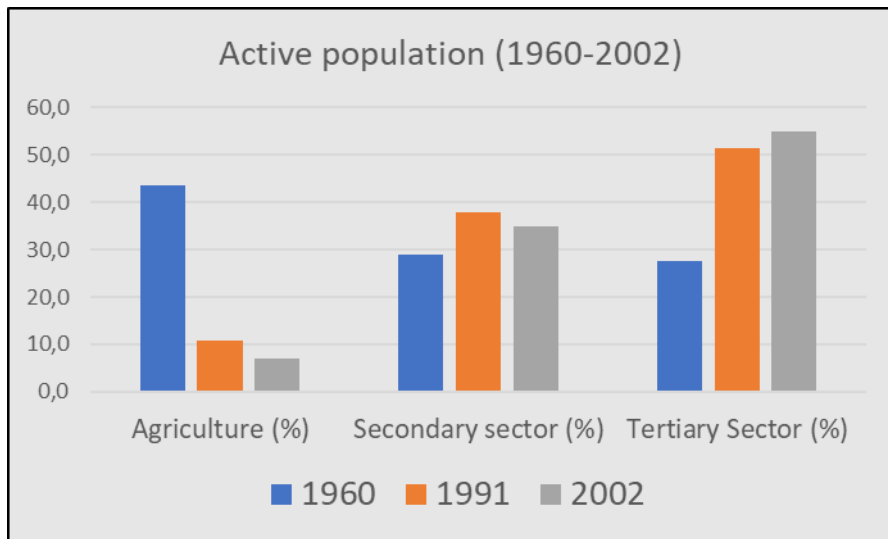
This migratory movement, reflecting the economic and social changes that were taking place, had a strong territorial and urban impact on Lisbon Metropolitan Area contributing to the territorial, urban and functional changes that were occurring there. Economic and social indicators of the time show and help to understand the conditions that, after the social turmoil period that followed the democratic revolution of 1974, paved the way for a new economic cycle started in 1976, after the approval of the Constitution of the

Republic and which was consolidated after the integration of Portugal in the EEC in 1986.

Industrial production grew, in some years of this decade, by more than 20% and, between 1960 and 1973, national per capita income grew at an average of more than 6,5% per year, with values that have sometimes exceeded 10% (Barreto, 2002). The evolution of active population in the agricultural, secondary and tertiary sectors from 1960 to 2002 exemplifies the effects of the intense changes that happened in Portugal.

The active population in agriculture has decreased from 43,6% in 1960 to 10,9% in 1991 to about 7% in 2002; in the secondary sector, it happened a moderate active population increase from 1960, with 28,9%, and to 37,9% in 1991, decreasing to about 35% in 2002.

This evolution represents the result of the economic and social changes that have occur with migrant flows from rural areas to Europe and to the metropolitan areas while industrial activities was growing, and agriculture started its modernization process and mechanization.



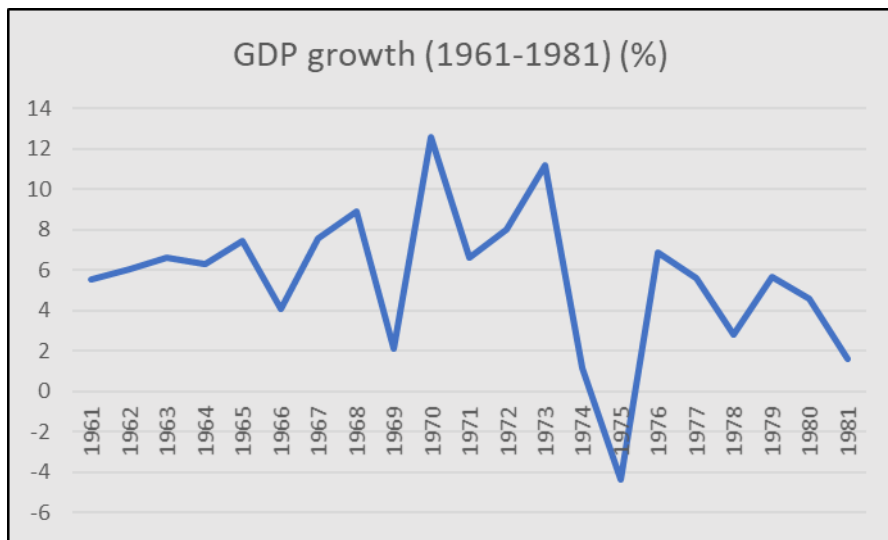
**Graph 4** –Portuguese active population (1960-2002).  
Source: INE-Population Census; Barreto (2002)

Along those four decades, that include the study period 1981-2011 tertiary sector became the most important economic activity sector. This significant increase has followed the industrial patterns evolution and the emergence of new and innovative information technologies systems and facilities networks. Active population in the tertiary sector that was 27,5%, in 1960, passed to 51,3% in 1991 and reached 55% in 2002 (INE-Population Census; Barreto, 2002).

The GDP evolution in the period 1960-1973 shows how the economic and social changes were reflected the participation variation of each sector in the national GDP.

The secondary sector increased its contribution in GDP from 36.5% to 48,1%, while the primary sector reduced its contribution from 25% to 12,7%, following the demographic decrease in the rural areas. In fact, in 1970, 77% of the Portuguese population already lived in urban centres and about 47% in urban centres with 10 000 or more inhabitants (Rocha, 1984; Rosas, 1994; Barreto, 2002).

However, this economic growth and some improvement in the levels and conditions of life that began to be felt in the 1960s, due to the salary increase, did not correspond immediately to territorial and urban qualification. Even if some territorial and urban policies began to be designed due to the urbanization pressure felt in large cities outskirts and the emergence of tourism and its impact on the urban occupation of some coastal areas of the Algarve. But without any significant urban evolution forecast for the largest cities expansion areas, namely Lisbon Metropolitan Area.



**Graph 5** – GDP growth evolution rate (1961-1981)

Source: World Bank

This at a time when it was necessary to reverse the situation identified in the 1960 population census that showed, for the country, that 39% of 150 000 homes did not have piped water; 29% had no sewage of any kind; and 34% were not connected to the electricity grid, while 163 000 families, more than 50% of the total, in Lisbon region, lived in very degraded conditions (Silva, 1969).

Social, politic, land use territorial and urban consequences on low cost housing demand, in a period in which real estate and building

industry was not prepared to a so high housing production strongly affected territorial and urban organization and their managing costs.

What it shows that, in times of financial and political crisis State action on the territory tends to weaken, by lack of means, policies implementation failures. and even because, in those moments, taxation and tax collection becomes more important than the way how wealth is created (Fadigas, 2015).

The 1973 oil crisis had a strong effect on European economy as well on Portuguese economy that was to prepare to face it. The European economy transformation after the end of the Second World War led to its gradual dependence on the Middle East cheap oil and the progressive abandonment of the coal industry until there dominant as energy source.

In this context, a strong GDP decrease growth rate announced the end of an era of economic progress, even with social and political problems which were more acute from the last years of the 1960s. The oil crisis of 1973, when prices almost quadrupled, had, thus, a decisive importance in the political crisis that led to the end of the decaying

authoritarian political regime and to the outbreak of a revolution that overthrew it on 25<sup>th</sup> April 1974.

This economic crisis undermined the structure of the economy, which was accentuated after the 1974 revolution with the attempts of productive assets nationalization that followed. That period of intense political and social tensions leading to a progressive nationalization of the economy only was interrupted by the action of the constitutional governments that resulted from the 1976 legislative elections. In consequence, all economic and social indicators indicated economy activity decline and a significative inflation rates increase.

A second oil crisis, in 1979-1980, when oil prices more than doubled, and the Portuguese economy had not yet recovered from the anterior oil crisis of 1973 and the political upheavals of 1974 and 1975, affected it directly and indirectly through its effects on European economy.

In consequence of those second oil crisis, the more developed economies, accustomed to low-cost oil and not prepared for this new reality, have suffered a serial of external shocks, largely resulting of policy inconsistencies, which greatly affected the more vulnerable countries such as Portugal. Despite its high growth in the 1960s and

part of the 1970s, the Portuguese economy was heavily dependent on tourism, on remittances from migrant workers, on foreign investment in its different forms and on foreign trade, given the inflexibility of the structure of imports. As the European economic crisis has affected those factors the Portuguese economy felt it in a very expressive way (Muñoz, 1997; Boughton, 2001).

Portuguese economy vulnerability, in this context of global and European crisis, obliged Portugal ad to request for financial assistance from the IMF in May 1978. What was not enough to stabilize the country's financial situation, having its external debt increased 157% from 1980 to 1982. This has resulted in an economic and financial crisis in Portugal, which forced the country to request, for the second time, financial assistance to the IMF.

### **Economy evolution in the study period (1981-2011)**

The economy and financial crises of the beginning of the 1980s had a strong impact in Portuguese society and had political consequences. A coalition centre-right government demission forced new elections,

in 1983, that led to another coalition government between the elections winner, the Socialist Party, and the Social Democratic Party.

This government rose to power in the middle of a financial, economic and social situation of crisis, with low foreign exchange reserves, low salaries and an increased unemployment rate while the GDP growth rate went from 4,6% in 1980 to 1,6% in 1981, and 2,1% in 1982, continuing its downfall to -0,17% in 1983 and to -1,9% in 1984. Only in the following year, 1985, the GDP growth rate has inverted this decrescent movement which it remained until 1990, passing from 2,8%, in 1985 to 6,4% in 1989.

This situation has imposed a national currency devaluation and an external debt negotiation with the International Monetary Fund (IMF) to solve the internal financial and economic problems. The IMF assistance resulted in the application of an austerity policy that required a public expenditure cut and private demand reduction, which had profound social consequences.

However, in the middle of this complex financial and social environment, the Government had the possibility to conclude the negotiations for the adhesion of Portugal to the European Economic

Community a few months before falling before the normal four-year term of office.



**Graph 6 – GDP growth evolution rate (1981-2011)**

Source: World Bank

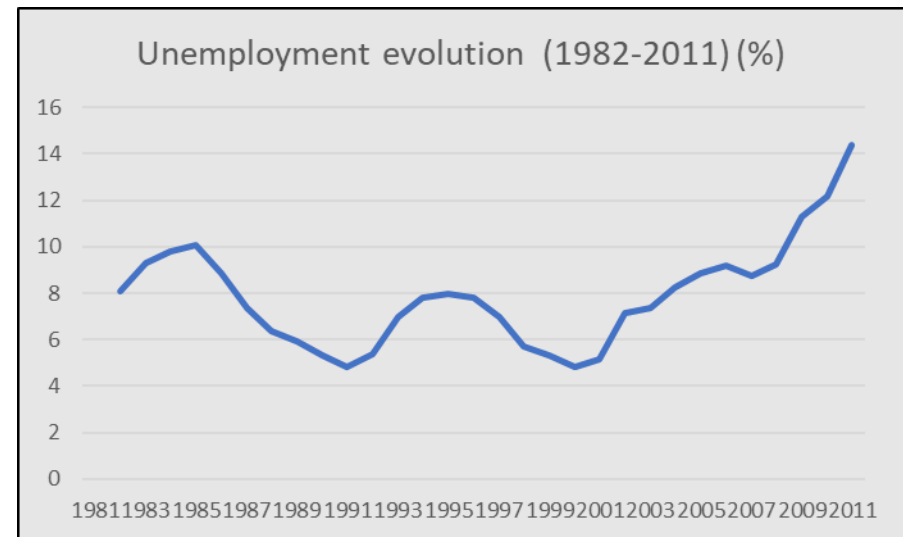
The Portuguese adhesion to the European Economic Community, which became effective on 1<sup>st</sup> January 1986, represented a mark in the evolution of its economy, GDP growth rate, and in the positive social changes which began to be felt. In terms of national annual minimum salary growth and of unemployment rate, that passed from 10,08% in 1985 to 5,31 in 1990. This value has suffered a slight increase in the



middle of the 1990s, with a maximum of 8,0% in 1995, followed by a decrease that reached a minimum of 4,84% % in 2000. After that year, unemployment growth rate started to rise until the value of 14,39% in 2011, after de financial and economic crisis of 2007-2008.

In the following years, a one-party government with an absolute parliamentary majority in 1987, created the conditions to potentiate the highly beneficial effects that adhesion to EEC has allowed. The acceleration of economic growth after the crisis of 1983-85 and the improvement of live standards well expressed by a very rapid development of private consumption and the increase government social expenditure.

At the beginning of the 1990s the economic effects of globalization began to become more visible, especially regarding the movement of capital in a world that had become a free trade area and reduced trade barriers. Technological innovations allowing allowed almost instantaneous long-distance data transmission has also contributed to reduce trading and business decisions time, giving greater expression to the capital market (Amaral, 2006).



**Graph 7 – Unemployment evolution (1981-2011)**

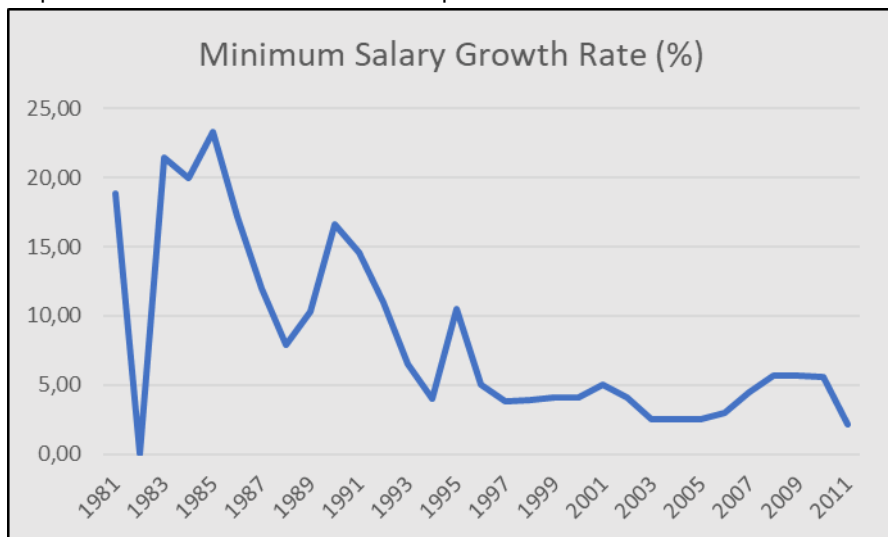
Source: DGERT/MSSS, Pordata

The privatization of the nationalized banks and the liberalization of the banking sector, by closing credit limits and administrative interest rates, accompanied by a decrease of deregulation of financial products and financial services, constituted a first set of factors that contributed to the increase in bank credit during the 1990s.

At the same time, the release of the excess reserves mandatorily deposited in the Bank of Portugal, and which has a very low payment, was also another important factor to understand the interest rates

decrease. In fact, at that time, the rate of compulsory reserves in the Bank of Portugal decreased from 17% in 1989 to 2% in 1994, in line with European practices at that time.

All these factors associated with the credit supply growth in Portugal, that is, more liquidity available and at lower prices, had strongly favoured credit demand and expansion. In association of the importance of home ownership as a mark of social status.



**Graph 8** – Annual minimum salary evolution rate (1981-2011)

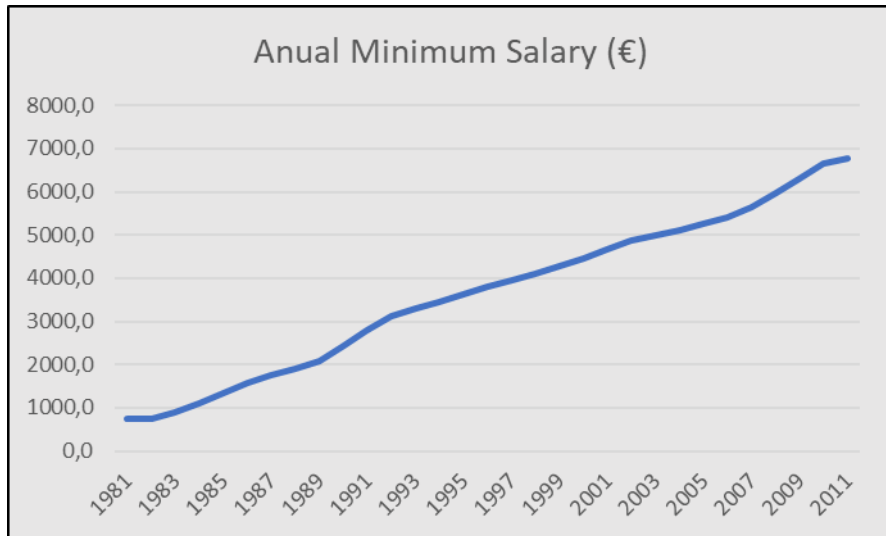
Source: DGERT/MSSS, Pordata

Taking advantage of the growth conjuncture to which the consequences of Portugal's adhesion to the European Economic

Community were not alien, in 2001, in national terms, home ownership represented about 75% of total housing, when it was about 65% in 1991 and about 57% in 1981. A very significant increase which shows the importance of the real estate sector and the dependence it has created on banking activity (Santos, Teles and Serra, 2014).

In a time of a constant salaries and population purchasing power increase and a greater availability of cash in circulation, the emerging middle classes could more easily have access to home ownership and other consumer goods. The declining inflation, in that period, driven by the impact of the Portuguese adhesion to the Economic European Community and, after, to the European Union, helped a real estate business and building industry growth which was essential to respond to a growing home ownership demand.

This financial process liberalization has contributed, in Portugal, to profound changes in banking industry, more than other sector of the Portuguese economy and, consequently, banking sector has won conditions to be the main influencing factor of the real estate business development. (Mendes and Rebelo, 2003; Castro and Santos, 2010).



**Graph 9** – Annual minimum salary evolution (Euros)

Source: DGERT/MSSS, Pordata

The economic and financial recovery that followed allowed the gradual decrease of those interest rates to 18.5% in 1992, 9.8% in 1997 and 3.4% in 2004, what has encouraged demand for credit for home purchase, taking advantage of the bank competition for what they considered a highly profitable and at low risk business, considering the evolution of economic indicators. What was a banking risk management that time has shown so not be as safe as bankers have thought.

European and national financial policies have stimulated the banking credit use to promote economy and to profit middle class consumption to support economy growth and reinforce European ideals of peace, progress and social welfare.

To a country that needed many and large investments in infrastructures, European Structural Funds application were the key factor for the construction of a missing major road infrastructure network throughout the country. This has facilitated internal mobility and, so, in metropolitan areas, the associated urban expansion became easier.

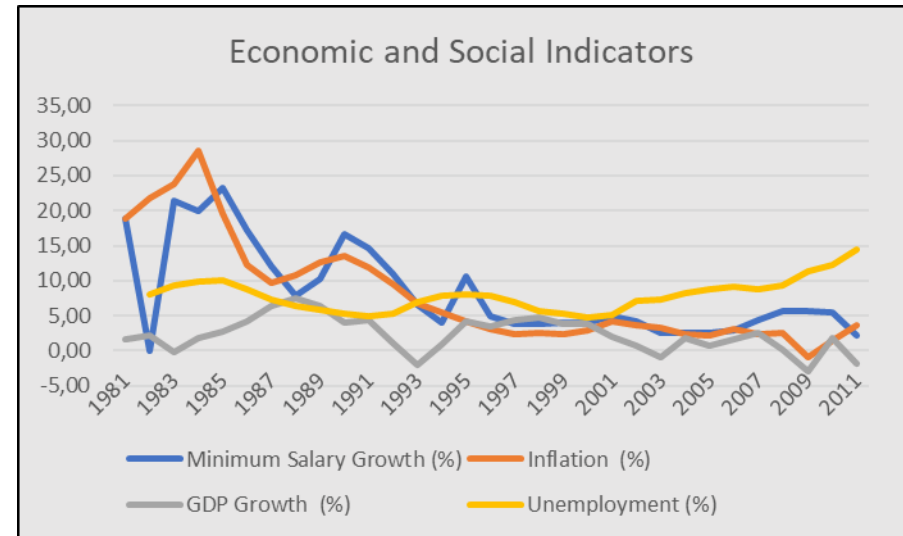
The application of these European Structural Funds has functioned as a dynamization factor for an economy centred in to public works and building industry and much less in the modernization of the production of tradable goods economy. This type of economic growth had very strong consequences in the following years. The sub-prime banking crisis, bankruptcy of Lehman Brothers Bank and the financial crisis that followed had high costs for the economy and for those who had turned to credit for home ownership. With that, the national ratio

of households' debt to Portuguese GDP rose from nearly 15% in 1990 to 24% in 1994, reaching 64% in 2000 (Farinha, 2003).

In fact, between 1986 and 2000, Portuguese economy grew at an average annual rate of almost 4%. However, the beginning of the 21st century a period of long stagnation of the Portuguese economy began in which the low growth rates contrast with the excellent performance in the first 15 years of participation in the European Union and in previous decades. What was not happening with the economic performance of the remaining EU countries.

The Portuguese economy that, in the period 1986-2000, had grown at an average annual rate of 4%, has suffered a profound change in performance from 2000 to 2008 with a GDP average growth rate of 1.2%, and a negative value in 2003 (-0.93%). This situation has worsened since 2008 until 2011 with GDP growth rates always negative with an average value of -0,68%. This deceleration of the economy has had, among others, a reduction in the acquisition of own housing and an increase in used housing supply and a steady increase in interest rates on housing loans. This resulted in an accumulation of non-run real estate product, which led to an increase in bad loans and a

significant crisis in the sector, especially in the real estate and building industries, reflecting the unemployment increase associated the economic crisis.



**Graph 10** – Economic and social indicators (1981-2011)

Source: World Bank, European Central Bank, DGERT/MSSS, Pordata, INE, Triami Media

Unemployment began, from the beginning of the 21<sup>st</sup> century, an upward trend, from a rate of 5.13% in 2001, to a value of 14.39% in 2011. This has heavily reached the lower income classes and the middle class, greatly reducing home ownership demand, with serious

consequences for the real estate sector, a strong reduction in building industry and, due to unpaid loans, in banking activity. (Alexandre, Aguiar-Conraria, Bação, 2016).

Financial markets and the broadening of the services economy were also very much present during this period, but their sustainability proved to be fragile as the signs of the 2007-2008 financial crisis, to which they also have contributed, began to be felt. The strong banks dependence on consumer goods and own house acquisition credit was another factor that has contributed to the worsening of the financial crisis that, coming from abroad, strongly affected the country and led to the bankruptcy of some reference banks.

Because of that crisis, in 2007, more than 23 000 homes were available for sale in Lisbon, with an average sales value of 2 366 euros/m<sup>2</sup>. Lisbon was, moreover, in the Metropolitan Area, the municipality with the highest housing supply and where prices were also higher. In a differentiated way identical situation occurred in other Lisbon Metropolitan Area municipalities, as Cascais that had 15 500 available homes, with an average sale value of 1 944 euros/m<sup>2</sup> and

Oeiras with 8 600 available homes, with an average sale value of 1 944 euros/m<sup>2</sup>.

In all Metropolitan Area of Lisbon there were an overall offer of about 117 000 homes, with an average sale value of 1 739 euros/m<sup>2</sup>, corresponding to a housing capacity of about 250 000 inhabitants, that is, about 10% of its population, a significant reality that shows the crisis impact intensity in the real estate business sector and an urban planning and housing policies lack to adapt urban expansion to the demand and demographic dynamics dimension. According to the *Confidencial Imobiliário* property index for 2008, between January 1988 and December 2007, the housing market has appreciated 208%, which helps to explain why the housing offer in the market was so intense (Fadigas, 2008).



## 4. THE STUDY AREA: SINTRA MUNICIPALITY

Sintra Municipality corresponds to a territorial extension with an old historical matrix organized from and according to the town of Sintra. The Serra de Sintra (with 528 meters of altitude), at whose western base lies the Sintra town historical centre, was named Monte Sagrado (Holy Mountain) by the Romans and Serra da Lua (Moon Mountain) by Ptolemy.



**Fig. 10** – Sintra Municipality in Lisbon Metropolitan Area-North

The soils fertility around Sintra has been a factor of populations settlement since prehistory. Sintra and other settlements around it

were important Roman settlements, a situation that remained during the Muslim occupation period (between the 8th and 12th centuries). During the following centuries the territory that today corresponds to Sintra Municipality was an intense agricultural production territory and important food supply support for Lisbon.

In fact, one of the factors that helped Lisbon's political and economic importance over the centuries was the surrounding soil fertility on Tagus river estuary northern and southern banks.

In the third quarter of the eighteenth century and almost throughout the nineteenth century the romantic spirit of foreign travellers such as William Beckford, and the Portuguese aristocracy rediscover the magic of Sintra and its places, but above all the exoticism of its landscape and its climate. As was the case of the English poet Lord Byron who lived in Sintra in the first decade of the nineteenth century.

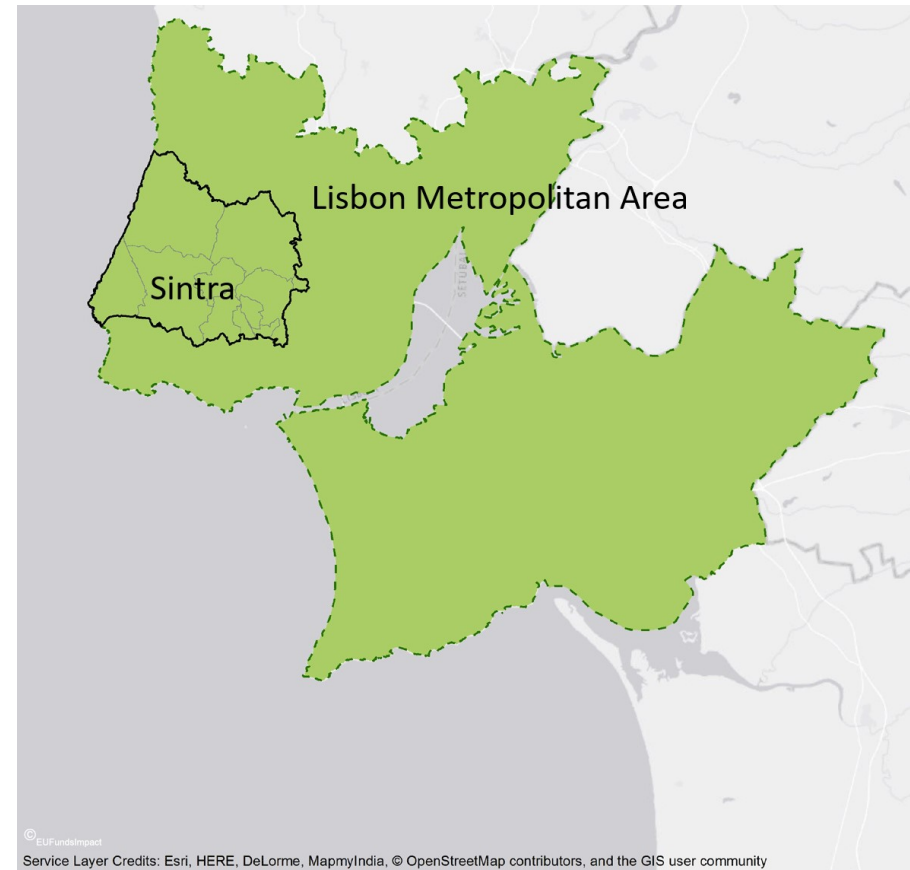
The location of Sintra on the western side of the mountain, facing the Atlantic Ocean, created the conditions to be in the summer, a very fresh site with a very frequent fog occurrence. A set of geographical

conditions that explains its importance as summer vacation resort and residence.

Sintra Municipality is one of the 18 municipalities that constitute Lisbon Metropolitan Area (LMA) and with 377 837 inhabitants, in 2011, and 13,3% of its population, it is one of the largest municipalities of Lisbon Metropolitan Area and the second in terms of population. It integrates its sub-region Lisbon Metropolitan Area-North and, with an area of 319 km<sup>2</sup>, occupies about 23,2% of its 2934,8 km<sup>2</sup> area.

With a very irregular topography Sintra Municipality territory is marked by the Serra de Sintra and the Serra da Carregueira highs and a rural flat platform in its northern territory. This has contributed to actual use patterns that corresponds to three different main landscape a use unit: dominant rural landscape in the northern area, a natural and historical area (Sintra and the Sintra-Cascais Natural Park in the Serra de Sintra) and a very dense urbanized area along the main road and rail axis connecting to Lisbon.

In the regional context of Lisbon Metropolitan Area-North Sintra Municipality is in its west coastal strip and bordered to the north by Mafra Municipality.



**Fig. 11** – Sintra Municipality location in Lisbon Metropolitan Area

Its south territory is bordered by the Oeiras and Cascais Municipalities, with which its main urban areas contact in enlarging the urban dimension of this Lisbon Metropolitan Area west territory. To



the east Sintra Municipality urban territory contacts with the urban areas of Odivelas, Loures and Amadora Municipalities and with this creating the densest urban agglomeration of the whole Lisbon Metropolitan Area.



**Fig. 12** – Cacém with Serra de Sintra in the background

Sintra Municipality west territory, dominated by the Serra de Sintra highs, ends at the Atlantic Ocean where some beaches are wonders of nature and where Cabo da Roca is the westernmost point of continental Portugal and Europe.

The Serra de Sintra, has a maximum altitude of 528 meters, and is oriented in the east-west direction to the lowlands of Várzea de

Colares and in the west by the Atlantic Ocean; its east border goes down into the Abrunheira industrial area.

The south part of the Serra Mountain is included in Cascais Municipality territory.



**Fig.13** – Abrunheira industrial area.

Source: Google Earth

The Serra da Carregueira, in the southwest quadrant of the county, has a maximum altitude of 334 meters and forms a gently rolling landscape, standing most of the Sintra municipal territory below the

200 m of altitude. Northern Sintra Municipality territory is around 200 meters above sea level platform and is marked by a gentle hills landscape and high agricultural vocation soils, where agriculture, punctuated by marble stone extraction quarries, is the dominant economic activity.



**Fig. 14** – Negrais flat valley at Sintra Municipality northern rural area

A global analysis of Sintra Municipality territory land use shows a very diverse urban occupation very concentrated in the neighbourhood and around the two main access axes to Lisbon: road complementary itinerary IC19 and the railway line.

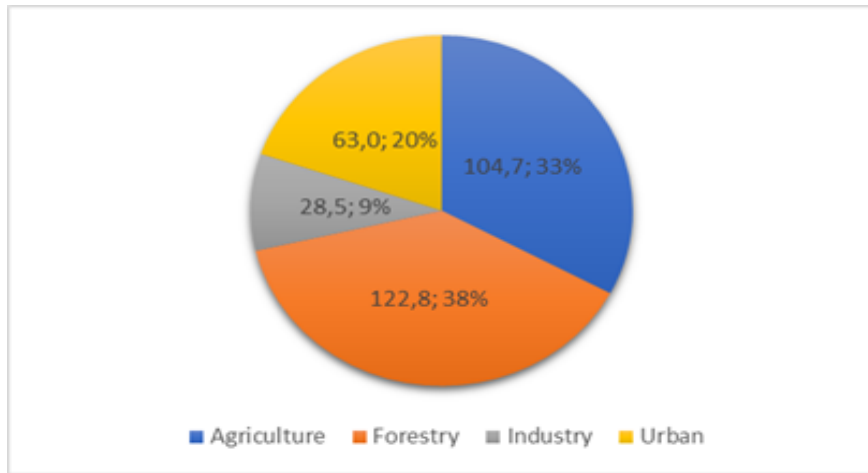


**Fig. 15** –Sintra Municipality urban axis along IC19 road

Source: Google Earth

According to the Sintra Municipality Master Plan (PDM) studies, urban soil occupies 20 % of its territorial extension, corresponding to about 63 km<sup>2</sup>, and industrial and marble stone extraction quarries occupies 9% of the municipal territory, corresponding to about 28,5 km<sup>2</sup>. However, forestry and agriculture occupy the largest extensions of the municipal territory with, respectively 38% and 33%, what corresponds to 122,8 km<sup>2</sup> and 104,7km<sup>2</sup>.



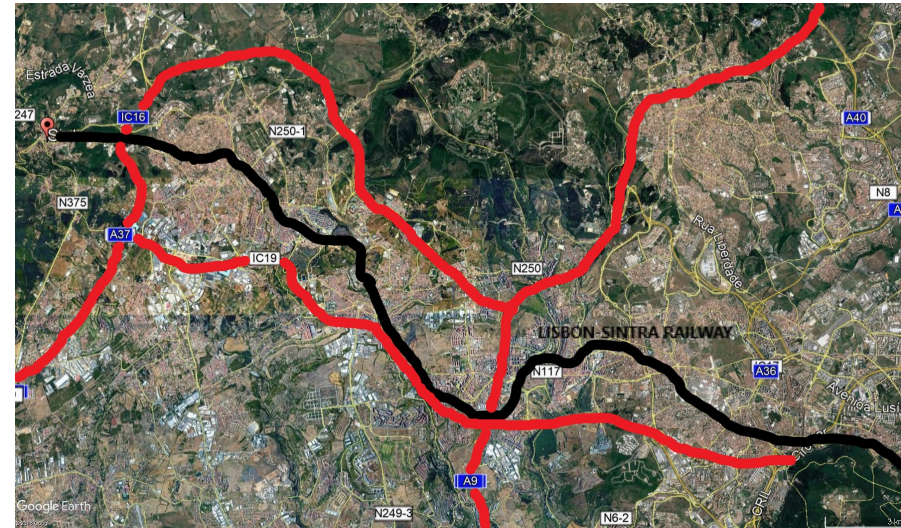


**Graph 11** -Sintra Municipality land use (area in km<sup>2</sup>)

Source: Sintra Municipality Master Plan Studies

Sintra Municipality territory is structured and crossed by a road and rail mobility system that serves internal connections, and the links to the neighbouring municipalities and to the metropolitan and national road and rail networks.

This mobility system represents the nuclear axis along which Lisbon suburban growth dominantly has been organized, profiting the vicinity of large city that offer employment and facilities but where housing high prices limits the access of the middle class to affordable housing limits the access of the middle class to affordable housing.



**Fig. 16** –Sintra Municipality main road and rail network

Source: Google Earth

Main road network includes a hierarchical system constituted by 4 complementary itineraries, a motorway network, 4 national roads and 3 regional roads. By its dimension and land use diversity main road system structures and follows mainly the most urbanized areas and the rural ones are mainly served by regional or municipal road networks.

The complementary itinerary IC19 and the highway A37, with which is linked, is the main road infrastructure serving all the urban axis Lisbon-Sintra. This is complemented by a road circular mobility system

composed by the complementary itinerary IC16 / highway A16 axis and complementary itinerary IC30 / highway A16 and the A5 link). At a lower hierarchical level, a mobility network composed by national and regional roads guarantee internal links and connections and communications relationships with the neighbouring municipalities.

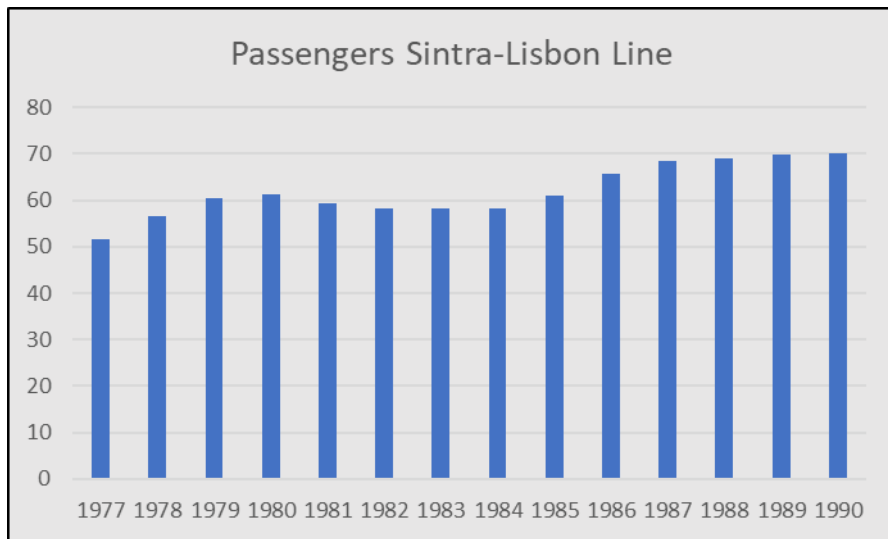
It should be noted, however, that the complementary itinerary IC19, the Portuguese road with more car traffic, is based on the old road connecting Lisbon to Sintra. Over the years it has undergone changes and enlargements to respond to the needs of a growing car traffic, the most significant being those that occurred in the 1990s.

In terms of rail mobility system Sintra Municipality is still served by two railway lines. The main one, the Sintra Line, operating since 1887, serves the large Lisbon-Sintra urban axis, in a route roughly parallel to the complementary itinerary IC19 and serves the Sintra Municipality most densely populated. Another rail line, starting from Agualva - Cacém, the West Line, links the Sintra Line with the most important urban settlements of the Portuguese west region, north of Lisbon Metropolitan Area.

Rail Sintra Line has a large importance in the organization of the commuting traffic between Sintra Municipality and Lisbon by its capacity of transport and the insufficient bus transport system efficiency. The only available alternative to this is the huge private automobile use as a current way of transport for daily displacements.

Available data on rail transport for the 1980 decade indicates that passenger transport has not followed the demographic increase rhythm, having a decrease from 1980 until 1984, a slight recovery in 1985, growing up until 1989. In 1990 the number of passengers transported is like 1989.

This may indicate a passenger transfer to other mobility systems (suburban bus or private vehicle, in response to the needs of commuting traffic between Lisbon and Sintra, because the railway being incapacity to respond to a growing demand needs for not having the capacity to allow an increase in compositions circulation or for speed reduction in normal circulation. As we have not yet complete information about road traffic on the same period conclusions are premature.



**Graph 12** – Sintra-Lisbon railway line passenger transport (in millions)

Source: CP

Sintra Municipality administrative organisation comprises, after the administrative reorganization of 2013, eleven parishes: Agualva-Mira Sintra; Algueirão-Mem Martins, Almargem do Bispo, Pero Pinheiro e Montelavar; Cacém-S. Marcos; Casal de Cambra; Colares; Massamá-Monte Abraão; Queluz-Belas; Rio de Mouro; S. João das Lampas-Terrugem and Sintra, corresponding to Sintra town and historical centre.

Territorially, Sintra Municipality corresponds to a diversity of landscape expression patterns that are associated with its topographic, biophysical and land use conditions. These landscape patterns diversity is the human history result and reflects and expresses use, possession, land use, and an affective and economic relationship between men and environment in which they live.



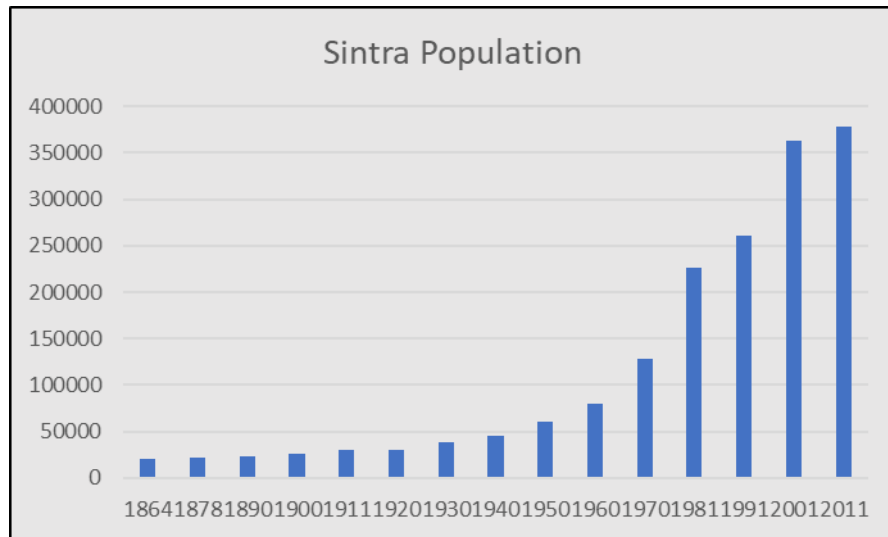
**Fig. 17** – Mira Sintra with Serra de Sintra in the background

The population growth in the study period (1981-2011) had a strong impact on Sintra Municipality territorial organization and has originated an unequal internal road development serving its urban settlements.

Sintra Municipality population most the double its 1970 population to 260 951 inhabitants, in 1991, up to 363 556 in 2001 and to 377 837

in 2011, while Lisbon Metropolitan Area passed from 2 538 893 in 1981 to 2 540 276 inhabitants, in 1991, until 2 661 850, in 2001, reaching, in 2011, 2 821 697 inhabitants.

This evolution, that is clearly accentuated from the 1960s onwards follows the economy evolution and its impact on urban growth a territorial organization.



**Graph 13** – Sintra Municipality demographic evolution (1864-2011)

Sintra Municipality has increased its population from 226 428 inhabitants in 1980 (almost the double of 1970) to 260 951 inhabitants,

in 1991, up to 363 556 in 2001 and to 377 837 in 2011, while Lisbon Metropolitan Area passed from 2 538 893 in 1981 to 2 540 276 inhabitants, in 1991, until 2 661 850, in 2001, reaching, in 2011, 2 821 697 inhabitants. In that three decades Sintra absorbed 53,5% of the total amount of the population increase of Lisbon Metropolitan Area (151 409 inhabitants in a total of 282 804); in same period Lisbon has lost 260 306 inhabitants.

From 1981 until 2011, Lisbon population decrease was continuous: 807 937 inhabitants in 1981, 663 394 in 1991, 564 657 in 2001 and 547 631, in 2011. In a rough way we can say that the population increase in Sintra Municipality, in the period 1981-2011, corresponds almost to the population that Lisbon has lost in the same period (226 428 versus 260 306 inhabitants).

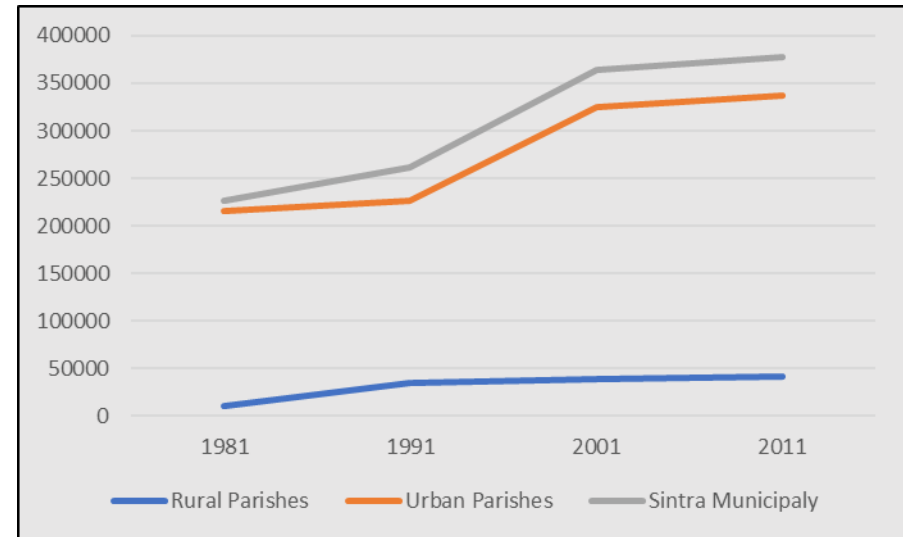
The political and economic stability conditions that has marked the 1990s with a very significant reduction of interest rates and easier access to loans for own home purchase, have resulted in a large increase in population and urban expansion. The existing illegal urbanizations have been legalized and qualified and the multifamily housing buildings became the dominant typology; which explains the

high capacity to accommodate a high population growth in the decade: overpassing the Sintra Municipality population from 260 951 to 363 749 inhabitants.

However, the demographic evolution of Sintra Municipality did not happen in the same way in all its parishes.

In those closest to the main road links to Lisbon (Aqualva-Mira Sintra; Algueirão-Mem Martins; Cacém-S. Marcos; Casal de Cambra; Massamá-Monte Abraão; Queluz-Belas; Rio de Mouro; and Sintra) where urban and industrial growth was most felt, growth rates were more pronounced than in the rural ones (Almargem do Bispo, Pero Pinheiro e Montelavar; Colares; and S. João das Lampas-Terrugem).

Sintra Municipality urban growth, after 1970, is a significative part of the metropolitan population urbanization process that Lisbon neighbouring municipalities have suffered under a strong demographic pressure on land use. The existence of a direct road and a railway line linking Sintra to Lisbon facilitated and pushed that intense urban growth.

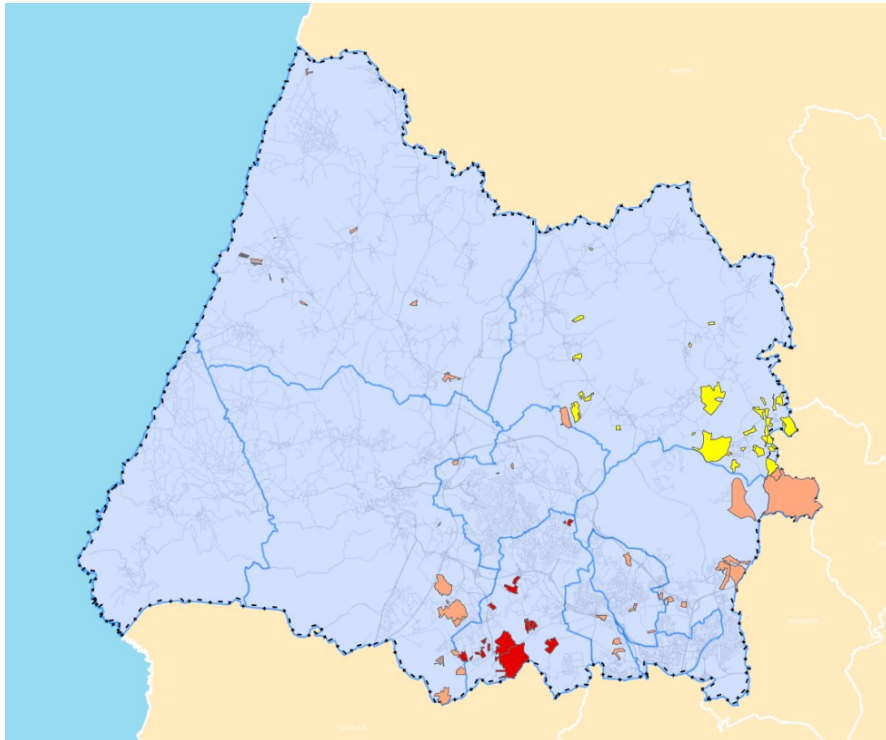


**Graph 14** – Sintra population evolution in 1981-2011.

Source: INE, Population Census

The industrial development that began to be felt from the mid-1960s was not accompanied by coherent urban land use planning instruments able to face this growing need for housing.

A reality that has also affected other municipalities in Lisbon Metropolitan Area and is responsible for the incoherent territorial organization of Lisbon Metropolitan Area as well of Sintra Municipality.



**Fig. 18** – Sintra Municipality illegal urbanizations (AUGI) location  
 Source: Sintra Municipality, AUGI Office

The pressure on the territory and the need of housing of the populations due to industrialization and economic development were also felt in the Sintra municipality.

The illegal urbanizations resulting from the population accommodation need are also a consequence of the Sintra Municipality industrialization and the economic development. The quantity and the disperse location of the 100 illegal urbanizations in Sintra Municipality, corresponding to an urbanized area of 850 hectares and around 32 000 inhabitants (8% of Sintra Municipality population) are the main causes of the constraints imposed on an attentive urban and territorial planning to the physical and environmental conditions, the existing urban and functional context and the territory sustainability (Infante, 2015; Sousa, 2015; Rolo, 2007).

A typical example of this process is Varge Mondar illegal urbanization, near the tobacco factory at Albarraque, that emerged in the 1970s in small rural plots. Initially it was a small villas settlement for accommodation of workers of that and other industries and, two decades later, became a mixed urban area of villas and multifamily housing buildings with a larger social composition.





**Fig. 19** – Varge Mondar urbanization  
Source: Google Earth

In a large scale taking advantage of agriculture decline as an economic activity, largely due to high valuation of the soil for urban use, large and small rural properties have become available to receive and support those illegal urbanizations and a marginal housing market. In a context of great demand for housing and the inability of the public administration to organize the territory and plan the urban occupation, illegal urbanizations have been distributed, with intensity,

in Sintra Municipality territory, as it happened in remaining Lisbon Metropolitan Area territory. A reality that still now affects territorial use and regeneration.

The whole of the illegal urbanizations does not constitute urban units segregated from the extended urban fabric that marks the landscape and the use of the municipal territory along the main axes and railways. is integrated in it giving rise to a diversity of patterns, in the density in the typology and in the road system, that contributes to the urban characteristic disorganization of this type of suburban landscape and use.

In the study period (1981-2011) Sintra Municipality demographic evolution did not follow a linear trajectory. Population growth has happened, in each of the years, with rhythm variations that the political cycles or the economic conjuncture of each of them can explain. These are evident in the way in which urban growth occurred in each of the three decades of study.

With a high presence of real estate operations where the villas were a very present typology, between 1981 and 1990; with dominance of denser urban solutions based on multifamily housing buildings,

between 1991 and 2000. After 2001, until 2011, lower density solutions, as villas typology, have returned greatly because of the crisis that real estate activity and construction of buildings have suffered earlier in the decade, largely due to the housing market saturation.

The political and economic stability conditions that has marked the 1990s with a very significant reduction of interest rates and easier access to loans for own home purchase, have resulted in a large increase in population and urban expansion. The existing illegal urbanizations have been legalized and qualified and the multifamily housing buildings became the dominant typology; which explains the high capacity to accommodate a high population growth in the decade: overpassing the Sintra Municipality population from 260 951 to 363 749 inhabitants.

# THE RESEARCH PROJECT



## 1. THE RESEARCH THEME AND ITS RELEVANCE

Portuguese integration in the European Economic Community (EEC), on 1<sup>st</sup> January 1986, after the economic crisis of the early 80s, was followed by the application of a large amount of European Structural Funds that allowed a very significant increase of public and private investment. In the following two decades (1991-2011) this was accentuated with a strong effect on urbanization, population distribution and deployment of infrastructures deployment.

Portugal has changed in terms of dimension, economy, landscape patterns, population distribution and urban structure. As well in qualification, living conditions and income. While environmental issues have assumed an increasingly important role in land use planning and urban qualification. With a high investment in road and suburban railway infrastructures, new relationships, spatial dimensions and territorial articulation forms shaped new territorial realities and landscape patterns, especially in metropolitan areas.

The economic dynamics achieved through the opening to new European markets, the increased availability of bank credit access for

investment and consumption, taking advantage of the interest rates reduction, allowed and encouraged large residential real estate investments, with significant visibility in Lisbon Metropolitan Area. This large amount of private real estate investment has accentuated urban pressure on land use and forced a strong public investment in road and rail infrastructures which, in turn, has encouraged more private investment and a growing housing market in Lisbon Metropolitan Area.

However, in the absence of adequate urban and territorial planning strategies to regulate this strong urban growth in that significant period of economic, urban and demographic increase, a fragmented urban organization and a deficient network of road and social infrastructures have created serious mobility problems and a crescent congested commuting traffic. Public national and municipal policies that should frame and drive this territorial transformation to achieve a balanced territorial development, were not sufficiently able to do so.

The effects of the European Structural Funds application are today very present in Lisbon Metropolitan Area urban organization, for its territorial, economic and demographic dimension, and for the fast-

urban growth in the nearest municipalities to Lisbon but not uniformly throughout the metropolitan territory. The proximity to Lisbon and the need to better serve the urban areas most in need or more subjected increased real estate investment pressure have determined geographically asymmetrical forms of investment in infrastructures.

The research project design has the purpose to identify the European Structural Funds impact on the territorial and urban organization and the way how they interfered in the planning process and in the increase of territorial fragmentation and commuting traffic.

Along the last three decades, European Structural Funds were mainly intended to reorganize main infrastructural, sanitation and energy systems, multifamily and social infrastructures and to qualify urban areas. For their dimension they had a large impact in Portuguese economy and in population welfare and contributed to new rural and urban landscapes.

The differentiated economic and social pressure on the territory, differentiated conditions of access to infrastructures associated to unplanned and incoherent political and economic decisions led to an unbalanced urban occupation. This unplanned and incoherent

diversity of political and economic decisions, at national, regional and local level, created the conditions to private initiatives in land urbanization and real estate investments; in a disjointed way and without the timely support of the indispensable infrastructures that often only appeared later. What has created a widespread urbanization in a fragmented territory and a deficient network of road and social infrastructures and a congested commuting traffic.

*At the same time, as "public policies correspond to all the initiatives and state decisions, in their different scales of intervention, to provide better population's well-being and balanced management of available resources", (Fadigas, 2014: 7), it is essential to analyse in detail how the absence of adequate territorial policies have been contributed to the urban settlements fragmented organization and the impact on existing road and rail networks and in commuting traffic congestion.*

In these terms, Lisbon Metropolitan Area growth and economic demographic and social evolution cannot be understood without considering the importance and effects of the use of European funds on its territory since the integration of Portugal into the European Economic Community. As a stimulating factor of territorial and urban

fragmentation or, on the contrary, as a contribution to reduce urban and territorial fragmentation and to facilitate their mitigation, one of the objectives of this research project.

In these changing times we live in, territorial and urban regeneration is a necessity and a challenge for more efficient urban and sustainable territories urban areas planning, organization and management. Therefore, research in these areas is timely and interesting as an attempt to respond to the modernization of territorial management modernization that public national, regional and municipal administration is seeking and to which the university should contribute.

The research project theme, in what public policies and investments concerns, has been, in the past decade, object of a vast number of research projects, which, however, have not paid sufficient attention to territorial issues.

This lacuna justifies that why territorial issues, and particularly, public policies and investments territorial impact, are the central this research project object. In line with emergent research that looks for specific relationships between territorial infrastructure investment

programs, land use planning and territorial and urban morphological patterns of coherent organization and functionality.

The emergence of these issues drives and stimulates new theoretical and practical approaches to urbanism, while science and organizing and regulation tool for territorial and urban interventions.

The research project considers this reality as an encouragement and a reason for its presentation, searching, through the analysis and interpretation of public policies and investments programs, and their context and consequences, to provide new guidelines for planning and metropolitan and municipal territorial governance.

Utility networks – consisting of water, waste, electricity, gas, and telecommunication systems – underpin the economic, social, and environmental performance of modern life. They are the basic spatial infrastructure grids which, quite literally, provide the fundamental conduits through which modern cities operate.

Infrastructures – road, rail, water, energy, sanitation and telecommunication systems – are essential tools of land use organization and of economic, and social development and of

sustainable environmental systems. In fact, economic and social activities could not be undertaken without the support and the functionality that infrastructures provide. As well, infrastructures investment is a development and multiplier in economic and employment growth and in urban development and qualification.

Suburban areas growth, in association with economic growth and housing needs, are closely linked to the existence of major road, rail, water and sanitation infrastructures that are which are the basic structure of urban and territorial organization. In large metropolitan areas this linkage is very evident and a condition of its development and its social and economic functionality. Qualified and sustainable demographic growth depends on it as also qualified housing, industrial and business areas. Urban growth and territorial organization are supported by infrastructures networks that need and impose a continuous and adequate financial investment for their development and management.

Road and rail infrastructures implementation increase accessibility, allows more friendly mobility and land more valuable for real estate investments. However, large-scale urban and territorial studies on the

impact of road and rail transport infrastructures on territorial organization, land use and urban morphology, as well sanitation and large social facilities, are scarce.

The impact of major infrastructures on land use, urban growth and territorial fragmentation has been studied under different perspectives. Geographical, demographic and economic studies focus their attention on the most visible aspects of the transformation of land uses, population dynamics and changes imposed on activities that support and nourish human life. However, demographic studies on population dynamics and social structure evolution must be always linked or integrated to urban and territorial studies because they usually ignore the territory and its organization.

Landscape, urban and architectural studies give special attention to the modelling that results from human use, the forms and structures with which the territory is organized, the relationships established between them and the physical configuration of the inhabited space although relating those issues with the political and economic cycles.

Land use impacts of transportation investments (road and rail networks) and other large infrastructural investments relationship with



urbanization have been a matter of study and reflection linked to territorial and urban morphology and organization ((Badoe and Miller, 2000; Kasraian, Maat & van Wee, 2015; Duranton & Turner, 2012; Koopmans, Ritveld & Huij, 2012; Giuliano, 2004; Kasraian, Maat & van Wee, 2016) or

Some of those studies are mainly under a geographical perspective (Hoyt, 1939; Painter and Jeffrey, 2009; Rodrigue, Comtois, and Slack, 2009; Baldwin et al., 2011), others on the effect of infrastructures and transportation policies on land use and economy (Holtz-Eakin and Schwartz, 1995; Sánchez-Robles, B., 1998; Vickerman, Spiekermann and Wegener, 1999; Badoe and Miller, 2000; Glaeser, 2008; Alder, 2014; Agbelie, Chen and Salike, 2017)), or relating travel accessibility and essential socio-economic variables with population changes (Taylor, Somenahalli and D'Este, 2006; Baum-Snow, 2007; Kotavaara et al., 2014; Somenahalli et al., 2016).

The existence of road and rail transport networks allows and facilitates people's mobility, goods movement and trade increase, while it conditions and determines residential areas and activities location and organization and land and properties value in the

neighbourhood. For its importance and impact on economy, land use and soil and property value, population welfare and its conditioning effect on the way in which urban expansion takes place road and rail transport networks deserve a special attention in urban and territorial studies.

The effects of road and rail infrastructures on urban expansion and on territory organization are varied and dependent on the concrete circumstance of each territorial and urban reality and on the way in which its functionality and accessibility are structured; in many cases depending on the existing networks density.

In cases where there is a high road and rail density network and, therefore, traffic flow and accessibility respond to current and future needs, the impact of new road and rail infrastructures does not interfere with the choice of the of the new built areas. Otherwise, in a territory with low road and rail density networks, where traffic flow depends and is conditioned by their functional inefficiency, the new road and infrastructures determine new urban expansions location and have a higher impact on soil value increase (Giuliano, 1986 *cit.* Obregón Biosca, 2008; Rephann and Isserman, 1994;).

Road, rail, energy, water, sanitary infrastructures are responsible for a territorial and landscape fragmentation that is greatly marked by the way how urban urbanized areas occupy the available space, with or without adequate planning, and how these networks stimulate or affect their location and spatial distribution by its proximity. This fragmentation, created by the infrastructures installation corridors and the limitations they impose on direct access to other levels of functionality and service links, is also increased by the way how urban planning morphological aspects articulates built areas and road. What affects, according to its dimension and intensity, traffic and fluidity functionality (Marvin and Graham, 1993; Fadigas, 2017; Raiter et al., 2017).

However, landscape and urban impact of infrastructures is not only visual but also in environmental conditions and in surface water flow that is a factor of urban flooding. In urban and rural areas landscape physical and geographic dimensions contribute to the organization of the patterns that characterize each of its units.

Those patterns, with which landscape identity is built, are the result of a landscape and territorial fragmentation that, since always,

accompanies the increase of human settlements, resources increasing exploitation, agriculture intensification, industrialization, urban expansion, and the extension of communication and energy grids this being an essential contribution to territorial formatting and its functionality and for the definition of landscape patterns (Fadigas, 2011; Angel, Parent and Civco, 2012;).

On all those matters public national and municipal policies on land use and territorial and urban space organization are, always, present for the importance they have in the decisions to their implementation and in the chosen timetable to do it. For immediate political interest or constraints imposed by financial and budgetary constraints.

Public policies as instruments of state action and a set of regulatory standards for economic, social and land use organization, to provide population's well-being and balanced management of available resources has been treated as that in terms of political philosophy searching new visions and ways to face contemporary challenges in urban planning and policies. This shows how issues related to land use and land use planning and urban planning are multidisciplinary issues that cannot be accommodated only in the urban universe that still

governs concepts that are out of alignment with the realities of the contemporary processes of formation and organization of the territories urban (Brenner, 2004; Condesso, 2004; Dreyfus and Eymeri, 2006; Maltez, 2007; Fadigas, 2008; Hill and Hupe, 2009; Rock, 2010, Fadigas, 2015).

Their importance as instruments of territorial and urban transformation and land use plans support has, however, gained relevance, especially in metropolitan areas where those issues create new social, economic, territorial and functional challenges to the municipal administrations and to territorial and urban planning. Major road and rail infrastructures represent, in this context, a nuclear issue with what urban organization is strongly linked, especially when intensive investments in new and renewed ones are a main urban expansion and territorial organization inductor (Bilhim, 2004; Kjaer, 2004; Mora Aliseda and Condesso, 2005; Le Galès, 2006; George et al., 2007; Bevir, 2009; Vale, 2010; Martin, 2012; Stinger, 2013; Ferrão, 2013; Fadigas, 2017).

That is why, in a changing time, since the end of the last decade of the last century, territorial and urban regeneration are an essential

condition to urban, environmental and mobility sustainability. What have led the Faculty of Architecture to create a master's degree in urban and environmental regeneration and to develop key subject of research projects and doctoral theses on those matters.

The Lisbon Metropolitan Area experience on the European Structural Funds, as a co-financing support of national, regional and municipal infrastructures investment, and their impacts on economy dynamics, urban growth, private real estate investments and building industry, reveals very present and determinant effects its territorial morphology, demographic dynamics and urban organization. With different dimensions according each municipality, urban settlements organization, its special distribution and the improved road and rail networks and mobility systems between each other and with Lisbon (George et al., 2007; Fadigas, 2008; Cavaco, 2009; Figueira de Sousa, 2011; Santos, 2011).

As a significative example of the nature and the dimension of the European Structural Funds application on urban growth, demographic dynamics, territorial organization and preferred locations for private real estate investments and their links with main road and rail existent,

renewed or new infrastructures Sintra Municipality appears as a very interesting case study.

The selection of Sintra Municipality as a case study was, so, determined by its territorial and demographic size, soil and infrastructures availability and the proximity to Lisbon as the main metropolitan administrative, economic and employment centre that created the conditions to its high urban and populational growth rates in the study period.

On the other hand, Sintra Municipality urban expansion along its main road and rail axes over which strong commuting traffic to and from Lisbon is a major mobility issue puts territorial and urban planning challenges for urban redevelopment, use of empty and isolated from major infrastructure networks spaces and the territory qualification. Its urban development is clearly associated with and dependent on the existence of two major road and rail accessibility axis (IC9 highway and Sintra Line railway), linking Lisbon to the city of Sintra, along which the main areas of residential and industrial occupation were settled and with large programs of expansion and

qualification of those infrastructures (Ferrão, 2003; Martins, 2012; Santos, 2012; Serra 2016).

Large programs of installation and expansion of infrastructures, especially roads and railways, have been implemented in Sintra Municipality, in the period when its population grew most. Those investment programs, with a relevant financial support of European Structural Funds, were, in part, a solution to the necessity of qualification and improvement of the infrastructural networks that support and allow them and a determinant of the rapid increase of urban areas and demographic dynamics growth. However, although a lack of school, health, social, sporting and cultural facilities has imposed that part of that investment has also been applied in these sectors, road and rail infrastructures have received the most significant financial support.

Therefore, to understand how infrastructure investment has a direct effect on the process of urban expansion, on the reasons and the criteria for locating residential areas, activities and services and on the resulting morphological typologies is an essential tool for sustainable urban planning.

This gains a special interest and opportunity when it is possible to analyse the whole urban and territorial organization process, in a well-defined period, in the economic, social, political, administrative and institutional context of the moment in the study area. In this case in Sintra Municipality and the Lisbon Metropolitan Area of which it is part.

The choice of the period 1981-2011 has considered the date of Portugal's integration into the European Economic Community (1986) and the application of the European Structural Funds over the following decades. At the same time, it was considered that the period corresponds to four population censuses (1981, 1991, 2001 and 2011), taking advantage of the quantity and quality of the information contained therein.



## 2. THE RESEARCH PROJECT MAIN OBJECTIVES

*EUFundsImpact* research project is the result of reflection on a special urban growth and land use process in a changing time. Previous preliminary studies (George et al., 2007; Fadigas, 2008; Santos, 2011; Santos, 2012; Martins, 2012; Cavaco, 2014; Serra, 2016) on Lisbon Metropolitan Area have started to identify its special way of urban organization and evolution and the different functional and mobility relationships and links, according to the diversity of structural road and rail structure, between the main urban settlements and municipalities.

This research track has led us to study the relationships between main road and rail infrastructures investments and urban growth morphology, new urban settlements location and the different marked interests to invest in real estate and building construction along the main mobility axis according to those main mobility investments.

The accumulated knowledge resulting from the research that has been done in the Faculty of Architecture on multiple issues related to the Lisbon Metropolitan Area urban, economic and social organization

is an important contribution to this research project. However, that research has been very focused on the organizational and morphological aspects and little on the issues related to the economy and the public and private investments that are the engine of territory transformation.

Lisbon Metropolitan Area is a paradigmatic case of this reality and a territorial space whose evolution, in terms of use, organization and transformation, is a significant sign of that network of relations. Territorial policies, national, regional or local, not always articulated, in time and space, or even their absence, have been insufficient to organize a territory which, for that, depends almost exclusively on the private initiative.

In this framework this research project has been designed to identify the complex network of economic, social and political relations that contributes to the decisions of the public and private economic agents regarding investments in infrastructure and real estate or related to them, their motivations and the opportunity to achieve them.

As a part of an academic process where the strong link between research and teaching have the objective: of knowledge improvement

and better student's qualification, it is expected that master and PhD students participate in the research work.

As well, the organization of thematic research seminars are part of the research project as a way of knowledge change and of cooperation with public local, regional and national authorities for cooperative knowledge transfer, linking university to society needs and expectations and economy development.

For this set of reasons, the *EUFundsImpact* research project aims will use Lisbon Metropolitan Area and Sintra Municipality special way of urban development as a study case, by the importance of their economic, social and political relations network that determine public and private behaviour in infrastructures and real estate investment decisions and their consequences on urban and territorial organization, functionality and morphology.

Thus, the main objectives to be achieved with the research project are:

- a) Evaluation of the urbanization process along the study period (1981-2011) including private urban investments location, date, location and decision time to their approval.
- b) Evaluation of the European Structural Funds investments impact on urban land use, real estate business, including decision opportunity, location, urban typologies and parameters, density, mobility networks articulation and on the relationships between voids and built areas.
- c) Evaluation of the relationships between the urbanization process, private initiative and the implementation of municipal policies and plans and the political national and municipal political cycles;
- d) Proposal of a new integrated approach to territorial and urban planning and management policies in a context of economic development, public and private investments and territorial qualification.



### 3. RESEARCH PROJECT WORKING PLAN

*EUFundsImpact* research project working plan involves different issues related to the territorial organization process, by nature multidisciplinary, and, therefore, is organized in step by step autonomous working phases. Each phase corresponds to a time of work organization and a set of key tasks for the research development, considering the project objectives.

Accordingly, the research project work plan includes theoretical and logistical preparation of research tasks, identification of available sources and establishment of articulated relationships with the partners who participate and collaborate in the project development: Sintra Municipality, Research Centre for Social Sciences of Nova University of Lisbon (CICS) and Commission for Coordination and Regional Development of Lisbon and Tagus Valley (CCDRLVT).

This collaboration is fundamental to access to documentation in the municipal archives, the internal reports and studies of the respective services and to obtain a comprehensive and critical view of the reality that is being studied.

This project work plan will thus be developed according to the following phases and tasks:

**Phase 1** – Bibliographical review, Lisbon Metropolitan Area and Sintra Municipality demographic, economic and territorial and urban evolution and creation of a geographic information system (GIS) program for collected information, statistical analysis and geographical data aggregation.

**Phase 2** – Identification and detailed analysis of all Sintra Municipality urbanization permit processes related to the study period (1981-2011), data treatment of all questions related to its location, date of application and of allotment permits issuance, urban parameters, total built area (residential, industry, commerce and services), network roads, and available areas for green spaces and social facilities.

**Phase 3** - identification and detailed analysis of all (Infrastructure programs (road and rail networks, water supply, sanitation, social facilities) and other private investments with co-financing through the European Structural Funds and their spatial distribution.

**Phase 4** – Metropolitan road and rail systems, public and private transports and traffic evolution, commuting and mobility flows, and transports and mobility networks.

**Phase 5** – Land use planning, urban growth and urban and territorial policies analysis, considering European Structural Funds impacts and consequences on urbanization process.

**Phase 6** – Conclusive summary and final report, including research results evaluation, contributions to territorial and urban planning and management policies.

**Phase 7** – Knowledge dissemination through progress and final reports, seminars and other thematic meetings, conferences, articles and other publications.

# ALLOTMENT PERMITS ANALYSIS



## 1. GENERAL OVERVIEW

The allotment permits issued by Sintra Municipality in the study period constitute a fundamental documentary collection to understand the way in which the urban growth was processed as well as its rhythm and intensity in the diverse political and economic moments.

Each set of administrative documents that led to the approval and issuance of the allotment permits contains their records from the private promoter application to the approval act and urban permit issuance. They include all information regarding the application nature and reason, urban design, location, territorial dimension, intended building area, building typology, use purpose and the areas to be transferred to the municipality ownership for public use or social facilities installation.

However, in cases where the municipality does not need those areas for public purposes, for reasons of size or location, this transference is converted into the payment of the equivalent soil value.

The application for approval and issuance of allotment permits is subject to an administrative and technical procedure, sometimes prolonged in time, which is designed to adjust the urbanization claim to the urban plans, the physical territorial and environmental conditions, the provision of free corridors for road, rail, water or sanitation infrastructures or other public facility installation.

The detailed analysis of each of the sets of documents corresponding to each of the applications for urbanization permit allows us to evaluate the reasons and the opportunity of the real estate investment intention, the legal and financial constraints that condition it, the opportunities or the restrictions created or suffered in economic growth or in economic recession periods, throughout each of the national and municipal political cycles.

The information they contain allows a detailed analysis of how, in each social, economic and political moment, the urban expansion in Sintra municipality has been processing and the importance of the effects of large investments in infrastructures on it. By own necessity or by Lisbon Metropolitan Area needs.

The preliminary analysis of the amount of information we can extract from the set of permits issued by the Municipality of Sintra in this long period of three decades (1981-2011) allows us to begin to have an overall idea about the urbanization growth process, its different moments and circumstances, urban typologies and its variations along the study period. This follows the economic and social dynamics diversity along that period and the effects of the adhesion of Portugal to the European Economic Community.

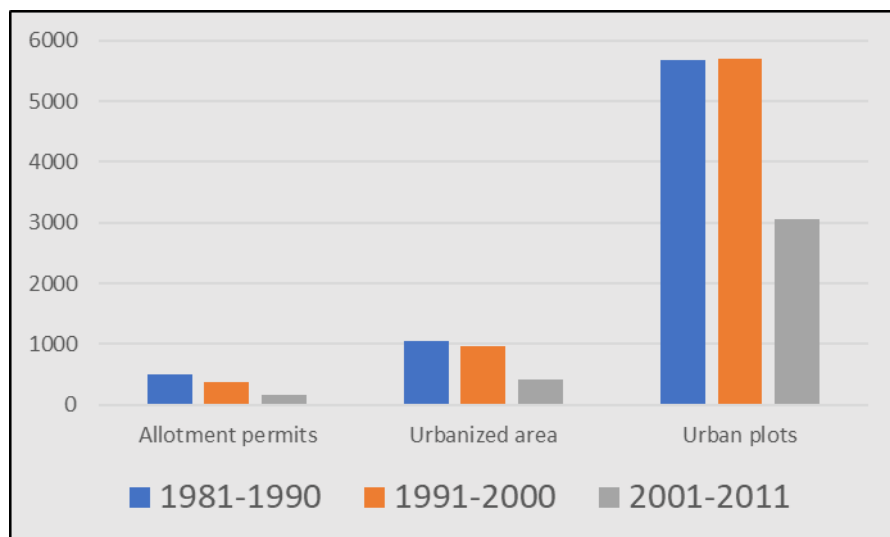
During the period 1981-2011 Sintra municipality has issued 1 024 allotment permits, for housing and economic activities corresponding to an urbanized area of 2 439,48 hectares and a total of 14 448 urban plots and 63 887 homes, which corresponds, considering 3 persons per family, to 191 661 inhabitants, dominantly in multifamily housing buildings. But in that period the population growth was only 151 407 inhabitants.

In the first years of the study period the issued allotment permits dominantly correspond to low-density urbanization processes what indicates that in the early 1980s, real estate investments were of small dimension.

	Urb.permits	Urb. area (ha)	Urban plots	Homes
1981	34	19,92	185	365
1982	49	80,26	423	2786
1983	40	245,97	348	2082
1984	46	139,41	416	1517
1985	49	67,65	503	2559
1986	51	141,67	721	5956
1987	51	114,51	532	5343
1988	67	54,36	518	1128
1989	56	140,67	1367	6035
1990	51	50,48	673	1925
1991	43	49,72	439	1324
1992	75	126,87	786	4202
1993	62	197,73	999	3982
1994	31	132,04	425	945
1995	35	244,04	1183	8440
1996	25	69,42	574	4122
1997	33	50,59	399	2021
1998	19	35,27	353	704
1999	18	40,10	299	1666
2000	20	17,89	238	425
2001	28	53,97	459	507
2002	20	28,26	386	522
2003	15	77,64	384	2114
2004	17	13,74	238	394
2005	19	13,82	284	330
2006	9	35,07	121	119
2007	11	148,53	719	1732
2008	28	22,52	249	327
2009	5	4,19	47	125
2010	10	11,62	105	118
2011	7	11,55	75	72
<b>Total</b>	<b>1024</b>	<b>2439,48</b>	<b>14448</b>	<b>63887</b>

**Table 1** – Allotment permits, area, plots and homes (1981-2011)

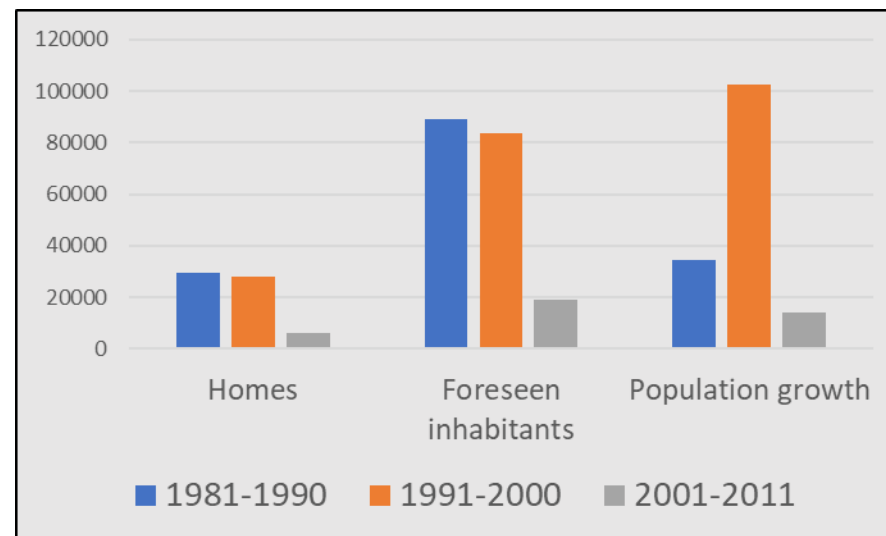
This is closely linked to dominant single-family housing typologies as real estate product for reasons associated with the economic crisis that Portugal was experiencing and by cultural reasons associated to the incoming population origins.



**Graph 15** – Allotment permits, urbanized area and urban plots (1981-2011)

In the period 1981-1990, 494 allotment permits have been issued (48,24% of the total) the urbanized area reached 1 054,90 hectares (43,24% of the total), 5668 urban plots have been foreseen in the

allotment permits (39,35% of the total) and the foreseen housing offer has been 29 696 homes (46,48% of the total).

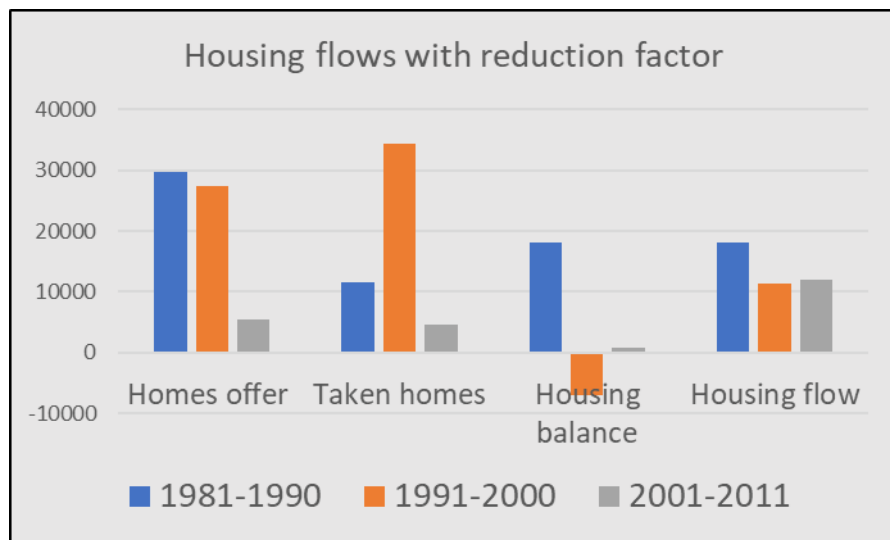


**Graph 16** – Homes offer, foreseen inhabitants and population growth (1981-2011)

The housing offer in the period 1981-1990 corresponded to a lodgement capacity of 89 088 inhabitants, considering an average family size of 3 people (the figures for 1981 are 3,3 people and 2,6 people for 2011). However, the population growth in the same period was only 34 523 inhabitants, what indicates a large supplementary

housing offer of 18,188 homes with the capacity to lodge 54 565 inhabitants.

In the second decade 1991-2000, 361 allotment permits have been issued (35,26% of the total), 963,67 hectares of urbanized area (39,50% of the total) with 5695 urban plots (39,42% of the total) and the housing offer of 27 831 homes (43,56% of the total).



**Graph 17** – Housing flows with reduction factor (1981-2011)

In the final decade of the study period (2001-2011) the total of issued allotment permits was 169 (16,50 % of the total), the urbanized area

reached 420,91 hectares (17,26% of the total) and the housing offer was 6 360 homes (9,95% of the total).

	Homes offer	Taken homes	Housing balance	Housing flow
1981-1990	29696	11508	18188	18188
1991-2000	27372	34266	-6894	11294
2001-2011	5448	4695	753	12047
<b>Total</b>	<b>62523</b>	<b>47828</b>	<b>12 047</b>	

**Table 2** – Housing flows with reduction factor (1981-2011)

Real estate market information and field reconnaissance enable us to conclude that, since 1998, a part of the foreseen homes in multifamily housing buildings and mixed-use allotment permits was not been concluded, thus creating a set of urban voids that contribute to territorial and landscape fragmentation.

For that, the total homes in those allotment permits, since that date, is lower than it was planned. So, for housing flow quantification a reduction factor of 20% was applied to those urban typology allotment



permits to adjust homes offer to a t value closer to reality. Subsequent research will confirm or correct the applied reduction factor value.

At the end of the period 1981-2011 there was a housing surplus of 12 047 homes what indicates that urban planning and private real estate promoters could not be able to predict the relation between housing needs and housing offer. This strange reality has conducted real estate economic sector to a crisis that induced the banking crisis that has originated, with foreign similar realities and behaviour, the economic and financial crises that Portugal has suffered.

For a better understanding of the permitted allotment permits analysis results, it should be noted that the all information refers to the allotment permits issue date and not to the applications submission date.

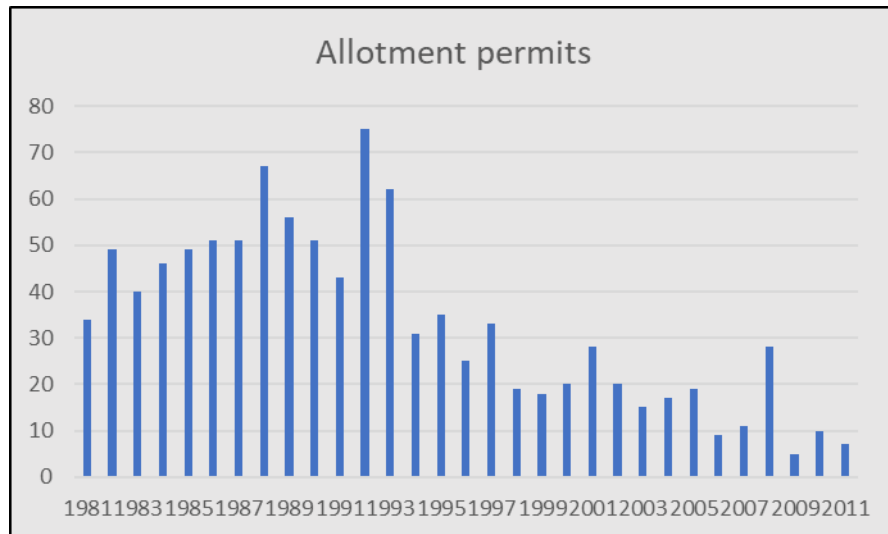
Due to the complexity of the administrative procedure, the need for complementary information and the intervention of official bodies of the central administration information the average time taken to the allotment permits issue was, in the study period in question, around 3 years.

However, there are also very frequent times of appreciation of 4 and 5 years and even more. In the 1980s, given the nature of the dominant typologies of low-density, the average time of appraisal of applications for allotment permits was in the order of 2-3 years, there being many cases in which the decision occurred within one year.

The emission of allotment permits grew practically constant from 1981 to 1988, with a small peak in 1982 and another in 1988. From 1988 to 1991 there was a slight reduction in the number of issued allotment permits, a situation that was broken with a peak in 1992, the year in which the highest number of issued allotment permits, in the three decades of the study period, was reached.

The change in the political leadership in Sintra Municipality since the local elections in December 1989, has contributed to stimulate urban growth and to facilitate the bureaucratic processes of allotment permits issuing, what can help to explain that reality. In this period, the time of appreciation of urbanizations permits was dominantly of 1 year, sometimes occurred in less time and passed to 2-3 years from 1992. In administrative environment that corresponded to a critical

moment in municipal life that led to the mayor's dismissal by a court decision, in 1992, mid-term of his mandate.



**Graph 18** – Allotment permits (1981-2011)

In 1993 there was a slight decrease in the number of allotment permits issued, then significantly lowering this figure this year, in a downward movement until 2002, with intermediate peaks in 1995 and 1997 and a small increase in 2000.

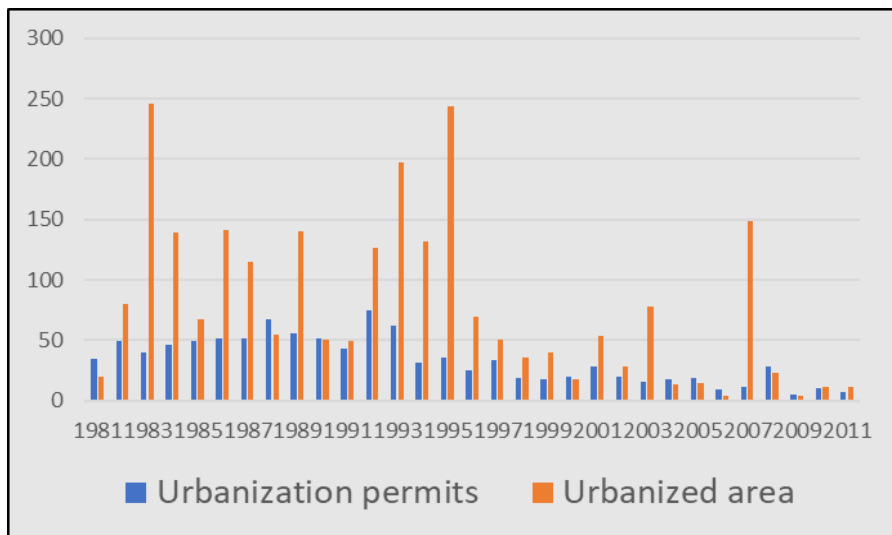
In the years 2003, 2004 and 2005 there has been a very slight recovery, returning the number of allotment permits issued to fall very

significantly in 2006, where the value, 9, is the third lowest of the three decades of the study period.

In 2007, there was a slight recovery and a significant increase in 2008, a year that the highest value of the decade, 28, was repeated, followed by an almost abrupt drop in the number of urbanizations permits issued in 2009 (5), 2010 (10) and 2011 (7).

As can be seen from the comparison between the number of allotment permits issued and the urbanized area, since 1995 there has been a significant decrease of the urbanized area, higher than that which occurred with the reduction of allotment permits. This shows a change in the urban typology, taking back the low-density solutions (villas) a dominance that they had lost since the mid-1980s. A situation that must be understood according with the starting economy changes of the end of the 1990s.

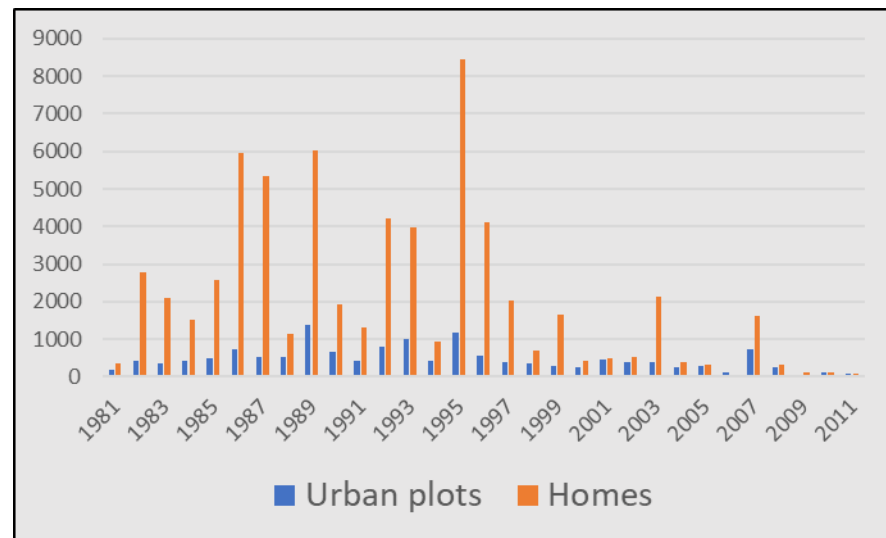
The graph showing the relationship between the number of issued allotment permits and the urbanized area (Graph 19) and the graph showing the relationship between the number of urban plots and the number of homes (Graph 18) help to verify this reality and highlight the 1990s as the decade with more urbanized area.



**Graph 19**– Allotment permits and urbanized area (1981-2011)

The reasons for this may be the high increase in the urban area, corresponding to the 1992-1995 period, and the resulting housing production delay the completion of the housing program foreseen in those allotment permits.

The reasons for this may be due to the high increase in the urbanized area corresponding to the period 1992-1995 and to the need for more time to implement the housing program foreseen in those allotment permits.



**Graph 20** –Urban plots and homes (1981-2011)

Thus, this high housing supply may have contributed to a saturation of the housing market, leaving only opening to low-density alternative typologies. This situation was very clear since 1999, with two exceptions in the years 2003 and 2007. The economic crisis that hit the building construction sector in the early years of the twenty-first century may help to explain this change in urbanization patterns.

This crisis, resulting largely from falling housing demand in a period of surplus offer, was also a sign of the approach of a more severe crisis that affected the real estate activity and that was one of the reasons of

the financial and economic crisis of 2007-2008. This economic and financial crisis that started with real estate mortgage bad debts in the United States, followed the Lehman Brothers Bank bankruptcy, has spread to Europe as well as Portugal, for the same reasons, leading to of other banks bankruptcy, without any institutions and economic policies ability to cope with them.

In consequence of that economic and financial crisis some vulnerable countries were forced to very restrictive economic and financial policies, and for these reasons Portugal was forced to request for ask for financial assistance from the IMF, European Commission and European Central Bank, in 2011.

## 2. THE FIRST DECADE (1981-1990)

In the 1980s, this is from 1981 to 1990, Sintra Municipality has issued 494 allotment permits to which corresponded 1054,89 hectares of urbanized area divided in 5 686 urban plots in which it was planned to build 29 696 homes.

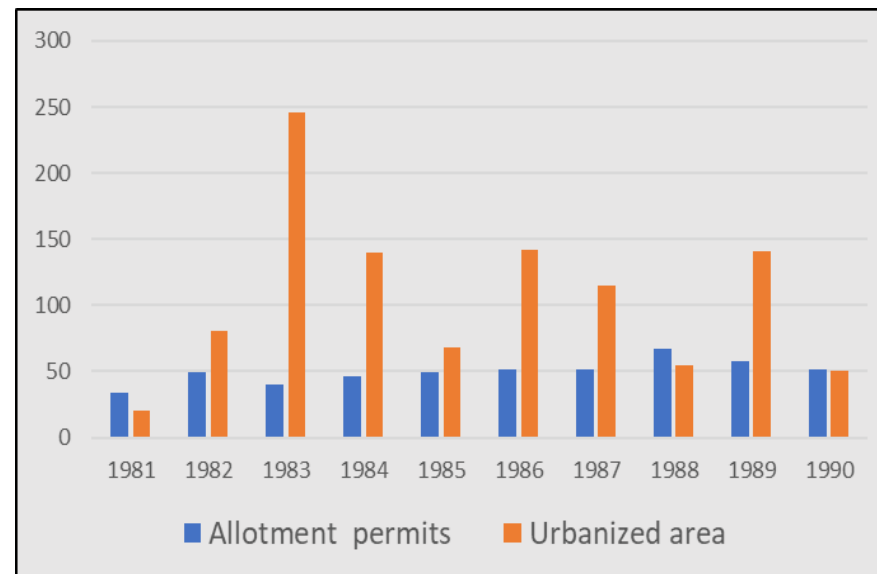
	Urbanized area (ha)	Allotment permits	Urban plots	Homes	Homes/urban plot	Homes/ha
1981	19,92	34	185	365	2	18
1982	80,26	49	423	2786	7	35
1983	245,97	40	348	2082	6	8
1984	139,41	46	416	1517	4	11
1985	67,65	49	503	2559	5	38
1986	141,67	50	721	59565	8	42
1987	114,51	51	532	5343	10	47
1988	54,36	67	518	1128	2	21
1989	140,67	56	1367	6035	4	43
1990	50,48	51	673	1925	3	38
<b>Total</b>	<b>1054,89</b>	<b>494</b>	<b>5686</b>	<b>29696</b>	<b>5</b>	<b>28</b>

**Table 3** – Urbanized area, urban plots and homes (1981-1990)

Except for 1981 (34 issued allotment permits), 1983 (40 issued allotment permits) and 1988 (67 issued allotment permits) allotment

permits issuance is practically constant between 1982 and 1990, with values varies between 46 and 58.

Except for 1983 due to a 31,70 hectares large-scale real estate investment with 83 urban plots, 2 270 homes, and an occupancy density of 71,60 homes / hectare.



**Graph 21** – Allotment permits and urbanized area (1981-1990)

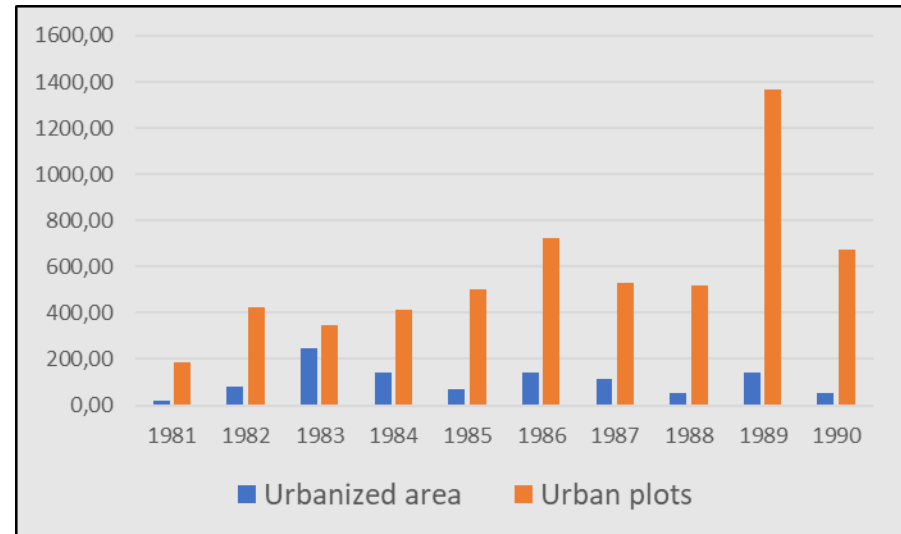
In the study period first decade there is a low occupancy rate expressed in homes/hectare until 1985, except in 1982, and a density

increase after that year (average rate of 42 homes/ha in 1985, 1986, 1987, 1989, 1999) and a decrease in 1988 (only 21 homes/ha).

The evolution of urbanized areas, by year, shows that there is no constant rhythm of evolution, which may be because allotment permits issue may correspond to previous years applications whose decision is concentrated in a same year.

The evolution of allotment permits issuance was dependent of the investment decisions that the economic and social environment did not encouraged. For that the urbanized area, in the beginning of the decade was mainly allocated to villas typology, a small dimension real estate investment that easily the market could absorb and was possible with a low financial investment.

A more detailed analysis of these data may help to clarify this issue and the reasons of investment decisions by the real estate investors, the changes in housing demand and evolution of the changing banking conditions for home ownership purchase. Further research will focus on those issues and maybe will enable us to find a clear link between those realities and social and economic circumstances.

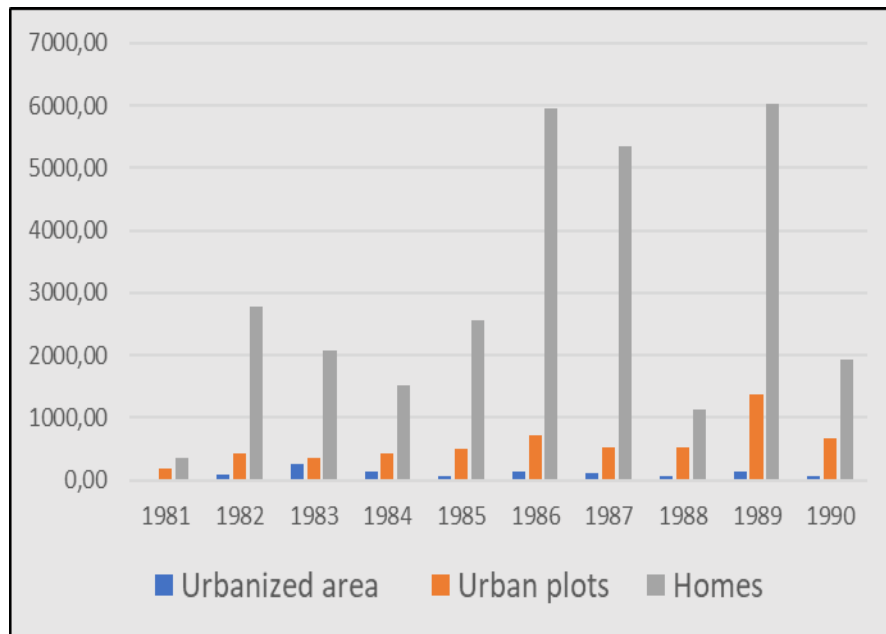


**Graph 22 – Urbanized area and urban plots (1981-1990)**

In terms of urban plots, the annual quantity varies from 185, in 1981, the lower value, which also corresponds to the lowest number of planned homes, 365, to a maximum of 1 367 in 1989, corresponding to planned 6 035 homes.

The relationship between urbanized area and urban plots also shows that, except for 1983, a crescent urban densification is a mark of the urbanization process in this decade as presented in Graph 22. A

reality that will continue in the following decade but that will have a retrocession in the period 2001-2011. The changing urban typologies evolution along the three decades of the study period is interesting as an example of how real estate marked and investment decisions, often without any kind of programmed schedule or investment planning, are adjustable to the momentary events and circumstances.



**Graph 23**– Urbanized area, urban plots and homes (1981-1990)

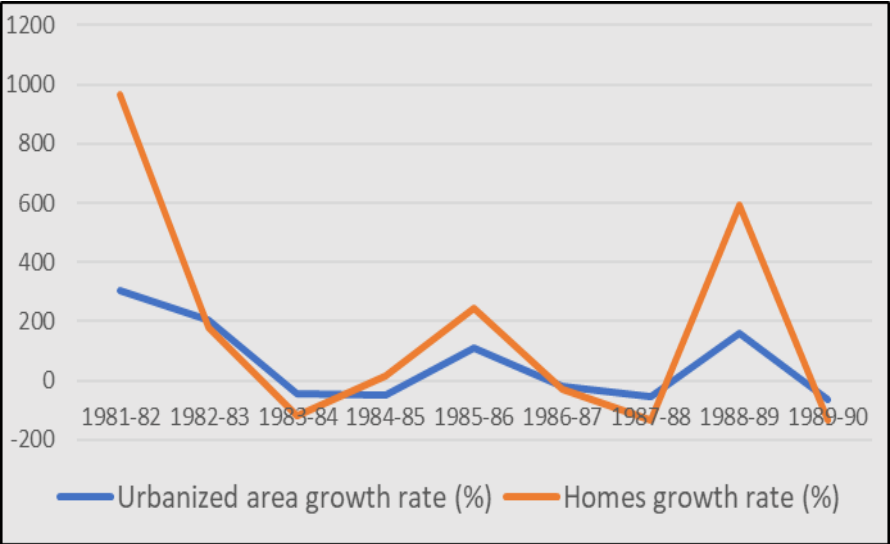
	Urbanized area growth rate (%)	Homes growth rate (%)
1981-82	302,91	663,29
1982-83	206,47	-25,27
1983-84	-43,32	-75,17
1984-85	-51,47	68,69
1985-86	109,66	132,75
1986-87	-19,17	-10,29
1987-88	-52,53	-78,89
1988-89	158,77	435,02
1989-90	-64,11	-67,94

**Table 4** – Urbanized area and homes growth rates (1981-1990)

The urbanized area grew from the beginning of the decade until 1983, descending later until 1986, when it rose again significantly. In the following years there is a new fall of the urbanized area until 1989, the year in which it rises again, descending a plot in the following year (Table 4).

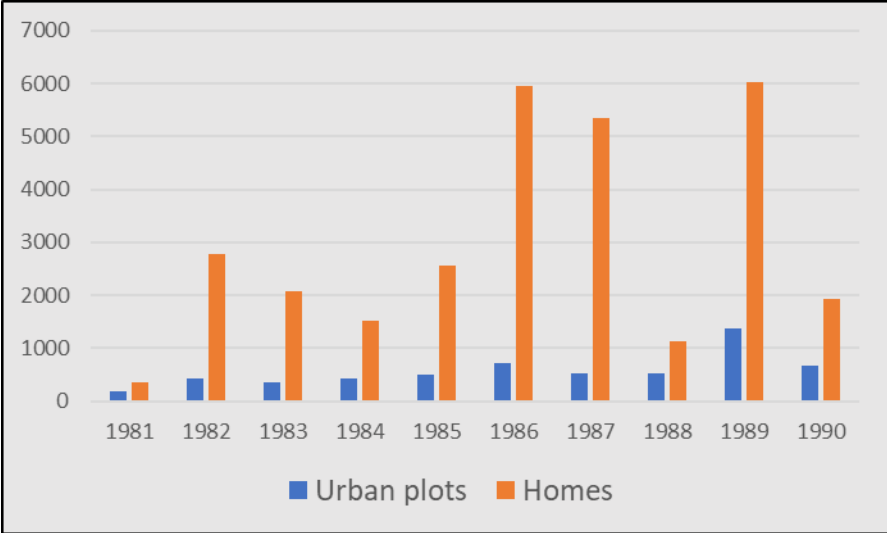
The changes in urban densities rate and the urbanized area evolution and its relationship with the programmed homes also reflects clearly the inconstancy of the urbanization process in that

period, as shown in Graph 24. In the study period (1980-2011) the 1980 decade is the starting period for the intensive urban and demographic growth of Sintra Municipality and a changing period of dominant urban typologies.



**Graph 24** – Urbanized area and homes growth rates (1981-1990)

The transition from low-density urbanization models to another where multifamily buildings are dominant is one of the explanations to that reality, in addition to the economic instability of the decade and the incipient consolidation of the real estate market.



**Graph 25** – Urban plots and homes (1981-1990)

The transition from low-density urbanization models to another where multifamily buildings are dominant is one of the explanations to that reality, in addition to the economic instability of the decade and the incipient consolidation of the real estate market.

Throughout the decade it was clear the variation of urban typologies being dominant the low-density ones (villas) having in the middle of the decade emerged a significant growth of plots for multifamily buildings and the mixed-use of multifamily buildings and villas.



The data analysis it turns out that in 1989 the very high growth of urban plots for the villas, which disturbs the evolution sequence of different urban and use typologies. However, this is due to a single urban operation of a 10,31 hectares estate property in Agualva-Cacém.

	Urbanized area (ha)	Homes	Homes /(ha)
1981	19,92	347	18
1982	80,26	2786	35
1983	245,97	2082	8
1984	139,40	1517	11
1985	67,65	2559	38
1986	141,67	5956	42
1987	114,51	5343	47
1988	54,36	1128	21
1989	140,67	6035	43
1990	50,48	1925	39
<b>Total</b>	<b>1054,89</b>	<b>29696</b>	<b>28</b>

**Table 5 – Urbanized area and homes (1981-1990)**

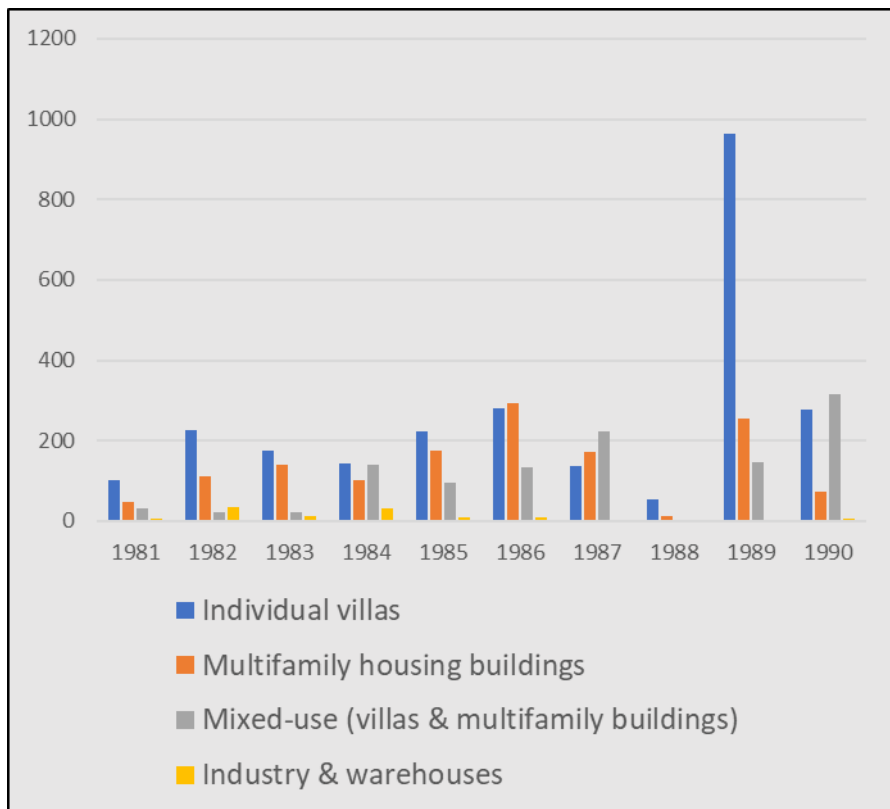
This diversification is due to the type and size of the properties available for urbanization, its proximity to the road and rail network and the type of own housing demand, in addition to the financial and business capacity of the real estate developers.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
1981	102	46	30	7
1982	225	111	21	36
1983	175	140	21	12
1984	144	101	141	30
1985	223	176	94	10
1986	281	294	135	10
1987	138	171	223	0
1988	53	11	3	0
1989	964	254	147	2
1990	276	74	317	6
<b>Total</b>	<b>2581</b>	<b>1378</b>	<b>1132</b>	<b>113</b>

**Table 6 – Urban plots distribution by urban typologies (1981-1990)**

The distribution of the urbanized area by the different use and urban organization typologies also indicates that soil consumption for urban uses is directly associated with the greater or lesser density of the adopted urbanistic solutions and the estates properties dimension.

In a territory such as Sintra Municipality, soil use for urban purposes represents a significant value in the greater urban and demographic concentration areas along the road and railway axis of IC19 and the railway line that links Sintra to Lisbon.



[LF1]

**Graph 26** – Urban plots distribution by use typologies (1981-1990)

In fact, it is here that most of the greater density real estate investments are concentrated, being those of lower density located in

a more widespread form in the surrounding rural territory or in the historical vicinity.

Provide homes distribution in the allotment permits issued in the period 1981-1990 also shows how the urban typological solutions dedicated to multifamily housing production emerged with greater expression from the middle of the decade.

	Villas		Multifamily buildings		Mixed-use		Industry & Warehouses	
	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)
1981	15,43	77,46	2,55	12,80	1,94	9,74	0,00	0,00
1982	34,97	43,57	34,17	42,57	0,81	1,01	10,31	12,85
1983	12,90	5,24	211,45	85,97	0,53	0,22	21,09	8,57
1984	41,01	29,42	16,09	11,54	58,53	41,99	23,77	17,05
1985	18,06	26,70	33,13	48,97	14,70	21,73	1,76	2,60
1986	25,56	18,04	70,42	49,71	10,04	7,09	35,65	25,16
1987	49,89	43,57	15,92	13,90	48,70	42,53	0,00	0,00
1988	45,03	82,84	6,52	11,99	2,81	5,17	0,00	0,00
1989	33,74	23,99	31,44	22,35	75,25	53,49	0,24	0,17
1990	15,67	31,04	10,50	20,80	20,59	40,79	3,72	7,37

Total	292,26	27,71	432,19	40,97	233,90	22,17	96,54	9,15
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**Table 7**– Urbanized area by urban typologies (1981-1990)

A reality that also shows the effect of changing economic conditions on the real estate market and the attractive capacity of this Sintra Municipality area for the creation of urban residential space.

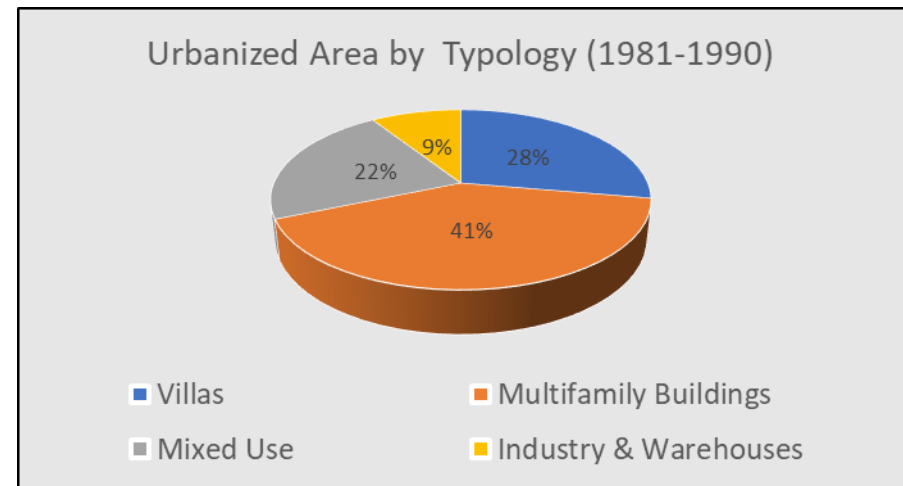
	Villas	Multifamily buildings	Mixed-use
1981	117	218	30
1982	266	2467	53
1983	175	1817	90
1984	143	960	414
1985	222	1677	660
1986	274	4653	1029
1987	132	1976	3235
1988	433	576	119
1989	954	3975	1106
1990	278	771	876
<b>Total</b>	<b>2994</b>	<b>19090</b>	<b>7612</b>

**Table 8** – Homes distribution by use typologies (1981-1990)

The comparative analysis between the urbanized area and the corresponding allocation of homes shows that, from the total

urbanized area, 1054,89 hectares, about one quarter, 292,26 hectares, is allocated to villas typology.

However, this allocation, which represents 27,71% of the total urbanized area, only allows the installation of 2994 homes, that is, 10,09% of the total.

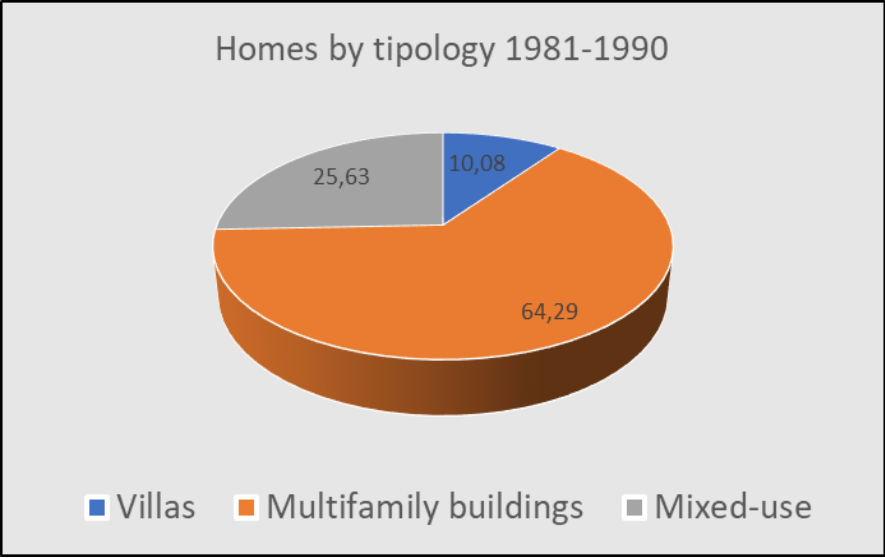


**Graph. 27** – Urbanized area (%) by use typologies (1981-1990)

On the contrary, the denser urbanistic solutions, multifamily buildings and mixed-use, which together occupy 26 788 homes, occupy 666.09 hectares, that is, 63.14 of the total urbanized area is possible to install 26 788 homes, 90.18% of the total. Homes

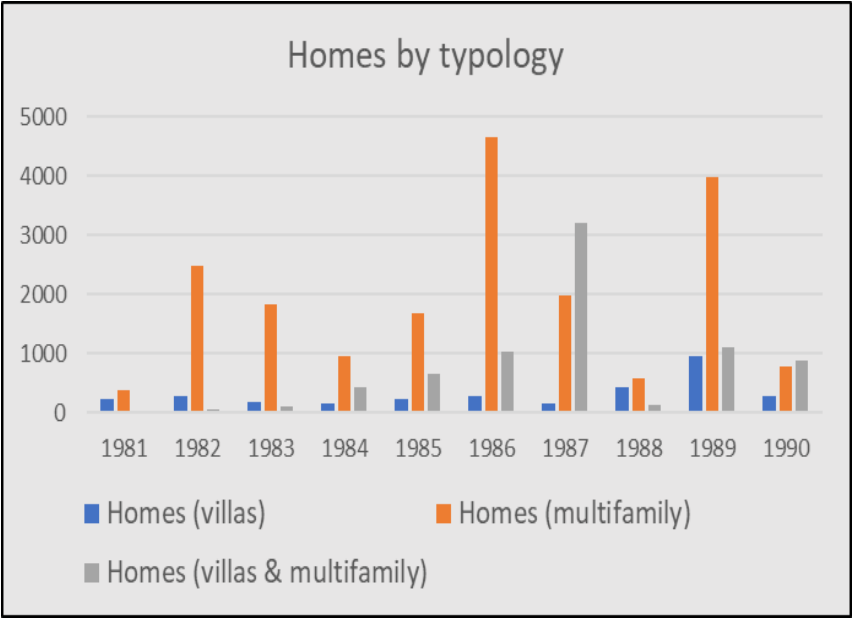
distribution by urban typologies indicate that the importance of villas typology in terms of urbanized area is not corresponded by the its dimension in terms of homes allocation. In fact, the most important multifamily housing builds represent the most significative type of urban organization in the Sintra Municipality urban growth and organization.

Even because in mixed-use villas and multifamily housing buildings typology the dominant typology pattern is the multifamily housing buildings.



**Graph 28** – Homes distribution (%) by use typologies (1981-1990)

On the contrary, the denser urbanistic solutions, multifamily buildings and mixed-use, which together occupy 666,09 hectares, that is, 63,14% of the total urbanized area, allow the installation of 26 788 homes, that is, 90.18% of the total. Multifamily buildings typology was dominant along the decade, excepting 1987, allowing the installation of the greater amount of homes.



**Graph 29** – Homes distribution by use typologies and year (1981-1990)

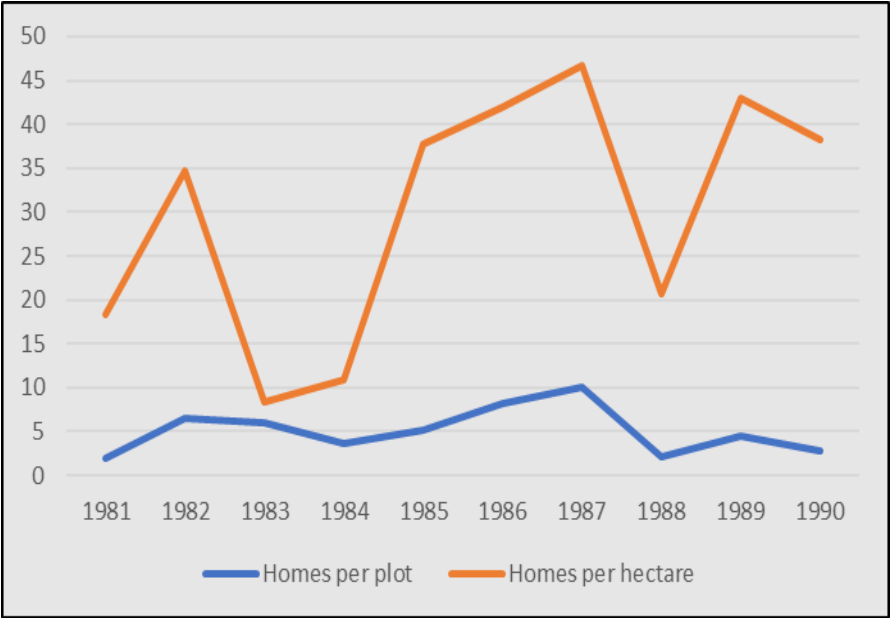
The evolution of urban density along this first decade of the study period in homes per plot and in homes per hectare show an increase in 1981 and 1983 followed by a decrease in 1983 and 1984. Along the period 1981-1990 the evolution of urban density, expressed in homes/hectare, in multifamily housing buildings allotment permits has no regular behaviour, presenting 1983, 8 homes/hectare, and 1989, 126, values that deviate much from the average of other years that is 68.

This is fact is due, in 1983, to a 202,45 homes/hectare, and 1989, 126, values that deviate much from the average of other years that is 68. This is fact is due, in 1983, to a 202,45hectares single property urbanization permit that present a large extension of 37 hectares for road and public purposes, in Rio de Mourou.

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Homes per plot	2	7	6	4	5	8	1	2	4	3
Homes per hectare	18	35	8	11	38	42	47	21	43	38

**Table 9** - Urban density, in homes/ plot and homes/ha (1981-1990)

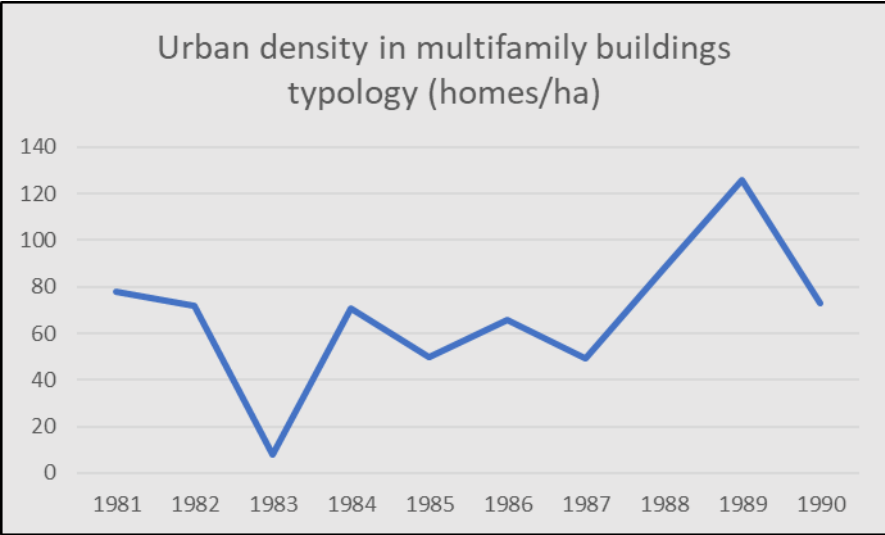
In 1989 the urban density value, 126, is due to a single 17,50 hectares property real estate investment for 2 584 homes in a multifamily housing buildings urban permit in Queluz. The lowest urban density value in multifamily housing buildings typology was verified in 1983, 8 homes/ha, due to a 202,46hectares large property urbanization process with 90 urban plots and 1 226 homes for multifamily housing buildings and commercial and services use, and a large soil extension, 37 hectares for public and municipal use.



**Graph 30** – Urban density, in homes/ plot and homes/ha (1981-1990)

From 1985 until 1987 there is an increasing movement reaching urban density the highest value of the decade in homes per plot and in homes per hectare. That increasing movement is interrupted in 1988 after what a new increase happens in 1989 followed by a decrease in 1990.

Urban density in multifamily buildings typology present a similar evolution along the decade.



**Graph 31** – Urban density, in homes/hectare in multifamily housing buildings (1981-1990)

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
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Density	78	72	8	71	50	66	49	88	126	73
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**Table 10** – Urban density, in homes/ha in multifamily buildings (1981-1990)

References to allowed construction area are variable during the period of study, 1981-1990 and only some allotment permits refer that.

	Allotment permits	Allotment permits with construction area indication	Legalized AUGI
1981	34	1	-
1982	49	4	-
1983	40	5	-
1984	46	8	-
1985	49	14	-
1986	50	10	-
1987	51	16	8
1988	67	24	11
1989	56	21	15
1990	51	28	12
Total	494	131	46

**Table 11** – Allotment permits, construction area indication and legalized AUGI (1981-1990)

In the years 1981, 1982, 1983 and 1984, the indication of the construction area only occurs in 1, 4, 5 and 8 allotment permits, number that rises to more than 10 in the following year. In 1986 this indication occurs at 10 allotment permits, through to 16 in 1987. In the next three years indicating the construction area already appears with values above 20; 24 in 1988, 21 in 1989 and 28 in 1990.

Construction area (m2)					
	Housing construction area (m2)	Commerce & Services	Industry & Warehouses	Social facilities	Total
1981	6480	-	-	-	6480
1982	9523	-	-	-	9523
1983	27399	-	-	-	27399
1984	80486	15419	-	-	95905
1985	53053	1511	2338	-	56902
1986	180499	11998	-	7591	200088
1987	575596	21771	-	6079	603446
1988	56672	-	-	-	56672
1989	457735	62055	-	307	520097
1990	126024	24908	-	-	156738
<b>Total</b>	<b>1573467</b>	<b>86963</b>	<b>2338</b>	<b>13977</b>	<b>1733250</b>

**Table 12** – Construction area (m2) by use typologies (1981-1990)

	Villas			Multifamily		Buildings	Mixed-use		
	Homes	Area per home (m2)	Const. area (m2)	Homes	Area per home (m2)	Const. area (m2)	Homes	Area per home (m2)	Const. area (m2)
1981	117	150	17550	218	100	21800	30	120	3600
1982	266	150	39900	2467	100	246700	53	120	6360
1983	175	150	26250	1817	100	181700	90	120	10800
1984	143	150	21450	960	100	96000	414	120	49680
1985	222	150	33300	1677	100	167700	660	120	79200
1986	274	150	41100	4653	100	465300	1028	120	123360
1987	132	150	19800	1976	100	197600	3235	120	388200
1988	433	150	64950	576	100	57600	119	120	14280
1989	954	150	143100	3975	100	397500	1106	120	132720
1990	278	150	41700	771	100	77100	876	120	105120
<b>Total</b>	<b>2994</b>		<b>449100</b>	<b>19090</b>		<b>1909000</b>	<b>7611</b>		<b>913320</b>

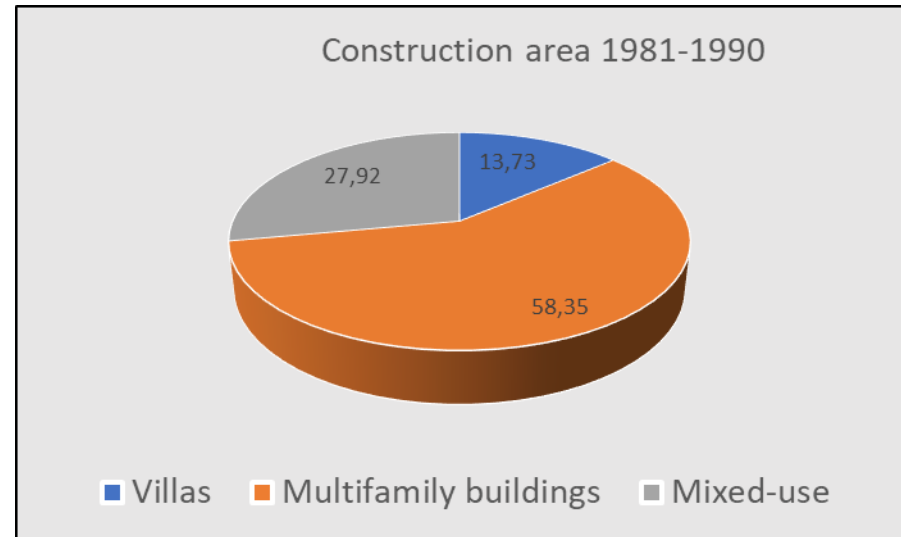
**Table 13** – Housing construction area (m2) estimated values by use typologies (1981-1990)

The construction area indicated in Table 12 is an estimated one and pretends give a comparative information about the evolution of construction area along the study period 1981-1991.

For urban permits that do not have construction area indication, this value can only be obtained by a rough estimate, using as a model an average area of 150m<sup>2</sup> per home in villas typology, 100m<sup>2</sup> per home in multifamily housing buildings and, in mixed-use villas and multifamily housing buildings typology, 120m<sup>2</sup> per home.

As there is also no indication of area related to trade and services the estimate to do must follow the same method, 100m<sup>2</sup> per unit, considering for each unit of trade and services, when it is possible to identify it. What will represent only the estimated total of construction area and not its division in housing, commerce and services. This concrete information only can be get from an individual analysis of each urban plot construction license what is out of this research project objectives.

The same applies to the construction areas related to industrial uses and warehousing because it is not possible, from the information contained in the allotment permits, to identify each one of the uses.



**Graph 32** – Housing estimated construction area values (%) by use typologies (1981-1990)

This lack of information, which corresponds to a period in which the regulatory requirements for the issuance of permits were low, does not allow us to have a precise idea about the total approved urban area. Thus, we can only estimate its size from the numbers of homes contained in the respective permits; which cannot be done for areas intended for other uses because they are not individually identified. In this way, the estimated construction area corresponds only to the housing construction area.



Ceding areas (ha)					
	Roads	Green spaces	Social facilities	Infrastructures	Total
1981	2,49	0,35	0,37	-	3,21
1982	10,34	0,08	25,04	-	35,46
1983	15,59	0,57	10,97	-	27,13
1984	12,73	2,83	5,97	0,08	21,61
1985	18,65	5,35	5,85	0,28	30,13
1986	45,69	6,03	15,17	-	66,89
1987	31,99	7,23	17,19	0,01	56,42
1988	9,94	3,66	1,95	0,30	15,85
1989	54,86	40,29	5,38	-	101,53
1990	16,03	2,12	2,41	-	20,56
<b>Total</b>	<b>219,31</b>	<b>68,51</b>	<b>90,3</b>	<b>0,67</b>	<b>378,79</b>

**Table 14** – Ceding areas (ha) for public and social uses (1981-1990)

In this decade few illegal urbanizations operations(AUGI) were legalized. The first year in what AUGI legalization is referred is 1987, with 8 allotment permits. In next years, AUGI legalization allotment permits are 11 in 1988, 15 in 1989 and 12 in 1990.

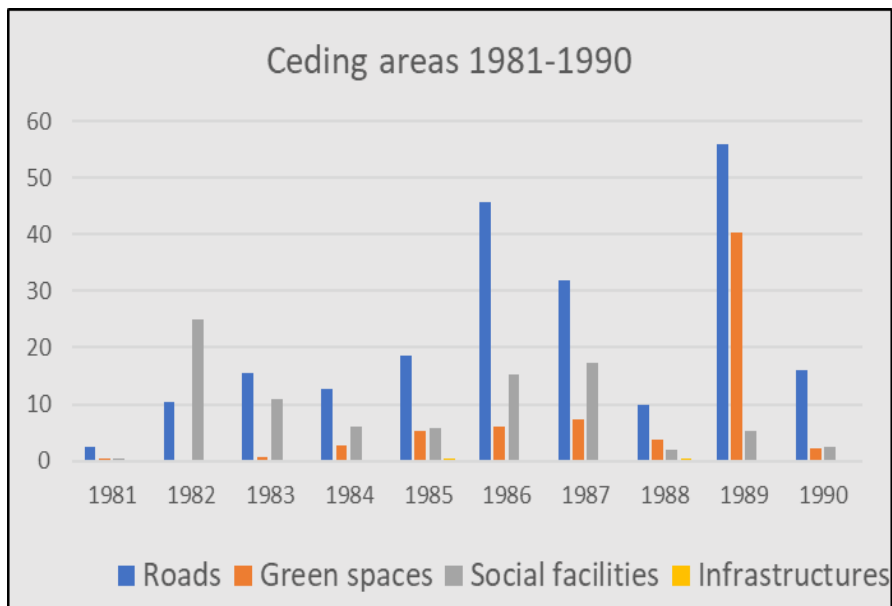
The provision of land, through the transfer of private land to the public domain, for public use, green and collective use spaces, road network and equipment, resulting from the urban operations of rustic

soil into urban land transformation aims to provide area for those purposes.

The legal provisions for public and social uses have evolved over the time corresponding to the study period, 1981-1990. Therefore, in the allotment permits analysis there are discrepancies in criteria between those of the initial period and those of the 1990s and following, due to successive legislative changes in the regulating urbanization processes.

In this decade, most of the allotment permits does not mention any ceding areas because, in some cases, the size of the property to subdivide is too small or because these ceding areas are replaced by taxes payment when the respective allotment permit issuance.

The decision time for the allotment permits issuance of allotment permits varies over the years with no time limit for the administrative procedure for applications appreciation. However, as in this temporal period, the planning regulations regarding the issue of allotment permits were very elementary, the appreciation time was almost always short.



**Graph 33** – Ceding areas (ha) for public and social uses (1981-1990)

This decision time, that is the time between the entry of the application in the municipal urban planning office and the issuance of the allotment permit, depends on the complexity and the size of what is requested and the greater or less compliance with the applicable urban regulations, which, of course, requires successive corrections until it is legally and administratively possible to issue the respective allotment permit.

Decision Time (years)	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
0	-	4	5	3	10	10	15	16	2	5
1	10	13	15	17	22	23	21	23	9	25
2	10	16	9	12	14	11	8	16	3	8
3	4	7	5	5	3	2	4	8	3	6
4	5	5	1	3	-	3	-	3	-	2
5	1	1	2	2	-	1	3	-	1	4
6	1	-	2	1	-	-	-	-	1	1
7	1	1	1	1	-	-	-	-	-	-
8	2	1	-	-	-	-	-	-	-	-
9	-	-	-	-	-	-	-	-	1	-
10	-	-	-	2	-	-	-	-	-	-
11	-	-	-	-	-	-	-	-	-	-
12	-	-	-	-	-	-	-	-	-	-
13	-	1	-	-	-	-	-	-	1	-
Allotment permits	34	49	40	46	49	50	51	66 a)	56	51

a) In this year there is an allotment permit that does not allow to know with certainty the date of its application.

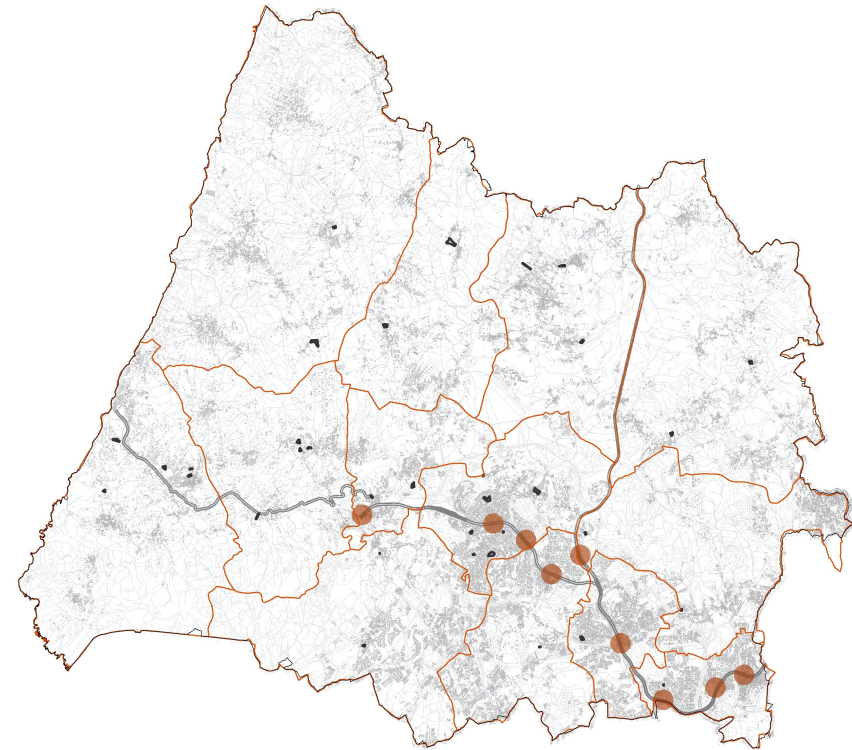
**Table 15** – Allotment permits by decision time in years (1981-1990)

### 3. YEAR 1981 ANALYSYS

In 1981 Sintra Municipality has issued 34 allotment permits which 28 of them were exclusively allocated for individual villas, 4 were for multifamily housing buildings and 2 for individual villas and multifamily housing buildings mixed-use. Of these, 1 urbanization permit, with 2 urban plots, was for a villa and a warehouse. For multifamily housing only 4 allotment permits were issued, corresponding to 43 urban plots and 200 homes.



**Fig. 20** – Mixed-use typology allotment permit in Algueirão, (35 plots, 29 homes)



**Fig. 21** – Allotment permits location (1981)

The total urbanized area in 1981 was very small comparatively with the urbanized areas of the following years. That urbanization area was only 19,92 hectares of which 15,43 (77,46%) occupied with urban plots for individual villas and 2,55 hectares (12,80%) for multifamily housing

buildings, as shown in Fig. 46. The remaining 1,94 hectares (9,74%) of urbanized area were designated for a mixed occupation of villas and multifamily housing buildings.

Allotment permits analysis show that the urbanization process in Sintra Municipality was mainly dominated by low-density real estate investments in rural areas, the most part of them are on the periphery of existing urban settlements, taking advantage of existing infrastructures.



**Fig. 22** – Small villa typology allotment permit, in Paiões, Rio de Mouro parish

The analysis of the 34 allotment permits issued in 1981 allows us to verify the small size of the real estate operations, with great dominance of the villas as urban typology. These operations occur in all parishes, which shows the dispersion of the urbanization process in the rural area of Sintra Municipality.

	Urbanization permits	Urbanized area (ha)	Urban plots	Homes
Algueirão- Mem Martins	7	4,92	93	164
Agalva - Cacém	1	0,79	12	96
Almargem do Bispo	2	1,12	4	4
Belas	2	0,35	4	4
Colares	5	1,91	18	18
Montelavar	3	1,42	10	9
Queluz	1	0,07	2	2
Rio de Mouro	1	0,05	2	2
Sta Maria/S.Miguel	2	1,07	6	32
S. João das Lampas	2	2,25	11	11
S. Martinho	4	1,78	12	12
S. Pedro de Penaferrim	2	2,81	4	4
Terrugem	2	1,38	7	7
<b>Total</b>	<b>34</b>	<b>19,92</b>	<b>185</b>	<b>365</b>

**Table 16** – Allotment permits distribution and characterization by parish (1981)

The relationship between the number of plots and homes, 185 and 365 respectively, is illustrative of this fact which is also shown in the small urbanized area per parish.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão-Mem Martins	2,05	1,48	1,39	-
Agualva - Cacém	-	0,79	-	-
Almargem do Bispo	1,12	-	-	-
Belas	0,35	-	-	-
Colares	1,91	-	-	-
Montelavar	0,87	-	0,55	-
Queluz	0,07	-	-	-
Rio de Mouro	0,05	-	-	-
Sta Maria/S.Miguel	0,79	0,28	-	-
S. João das Lampas	2,25	-	-	-
S. Martinho	1,78	-	-	-
S. Pedro de Penaferrim	2,81	-	-	-
Terrugem	1,38	-	-	-
<b>Total</b>	<b>15,43</b>	<b>2,55</b>	<b>1,94</b>	<b>0</b>

**Table 17** – Urbanized area (ha) by urban typologies and parishes (1981)

In only three parishes there was multifamily buildings investments but with a very small expression of a total of 2,55 hectares. Even so, the

more relevant presence of this typology is in Algueirão-Mem Martins and Agualva-Cacém near to the railway mobility system, and the main road system. In fact, the set of planned homes in multifamily buildings allotment permits, 218, is concentrated in the great majority,188 (86.23%) in just those two parishes. However, the relationship between road and rail infrastructures is, in this year, negligible.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	4	30	35	-
Agualva - Cacém	-	12	-	-
Almargem do Bispo	4	-	-	-
Belas	4	-	-	-
Colares	18	-	-	-
Montelavar	8	-	2	-
Queluz	2	-	-	-
Rio de Mouro	2	-	-	-
Sta Maria/S.Miguel	2	-	2	-
S. João das Lampas	11	-	-	-
S. Martinho	12	-	-	-
S. Pedro de Penaferrim	4	-	-	-
Terrugem	7	-	-	-
<b>Total</b>	<b>78</b>	<b>42</b>	<b>39</b>	<b>0</b>

**Table 18** – Urban plots by urban typologies and parishes (1981)

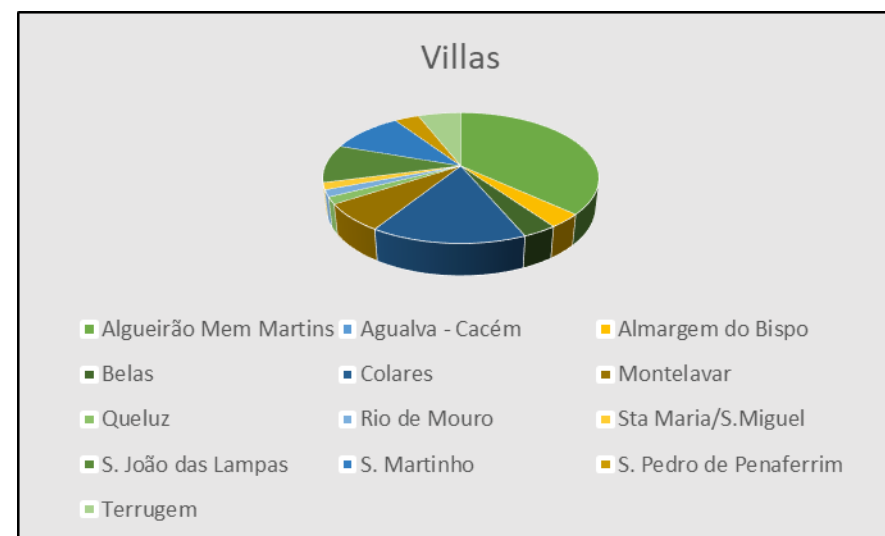
The distribution of the urbanized area by urban typologies also expresses a dominance of villas typology as the dominant program for real estate investments, according to the of allotment permits issuance and in a larger number of parishes.

	Villas	Multifamily buildings	Mixed use
Algueirão Mem Martins	43	92	29
Agualva - Cacém	-	96	-
Almargem do Bispo	4	-	-
Belas	4	-	-
Colares	18	-	-
Montelavar	8	-	1
Queluz	2	-	-
Rio de Mouro	2	-	-
Sta Maria/S.Miguel	2	30	-
S. João das Lampas	11	-	-
S. Martinho	12	-	-
S. Pedro de Penaferrim	4	-	-
Terrugem	7	-	-
<b>Total</b>	<b>117</b>	<b>218</b>	<b>30</b>

**Table 19** – Homes by urban typologies and parishes (1981)

The urban growth shown by the issued urban permits, in 1981, was essentially achieved through individual villas urban plots, with 117

homes, and only 218 in multifamily housing buildings in a total of 365 homes.



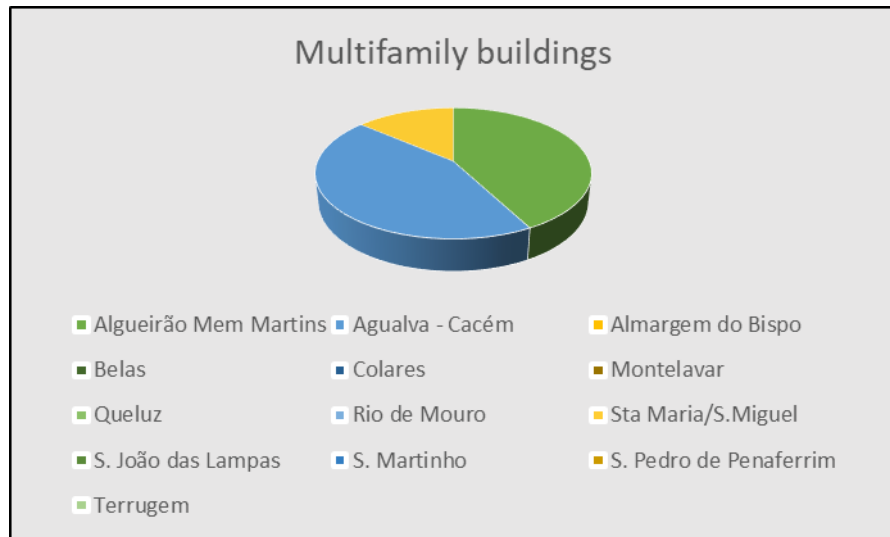
**Graph 34** – Homes by villas typology and parishes (1981)

Commercial use is foreseen in 2 multifamily housing buildings allotment permits, in Algueirão-Mem Martins and in one urbanization permit for mixed-use, with only 2 urban plots, one of them maybe foreseen for industry or warehouse uses.

In Algueirão-Mem Martins, in another mixed-use (villas and multifamily housing buildings) urbanization permit with 35 urban



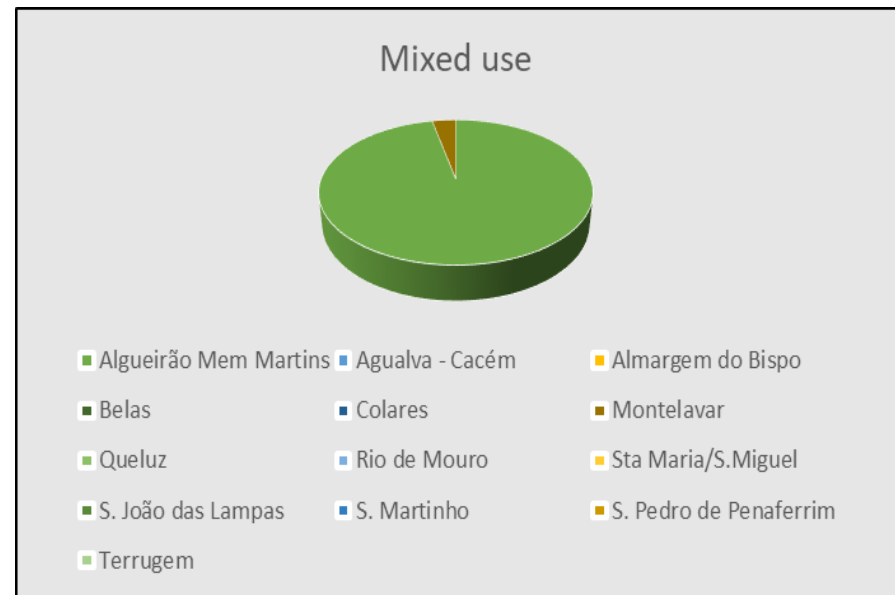
plots, only 29 homes are foreseen. This urbanization permit does not specify the concrete foreseen use in terms of sure knowledge of the final plots destination.



**Graph 35** – Homes by multifamily buildings typology and parishes (1981)

This unspecified existence of a set of plots for other unidentified uses, trade, services, warehouses or small industry, is characteristic of small real estate operations very dependent on small economic activities that, without a clear schedule. What allow them to adjust their activity to available space and location.

The dispersed villas typology in the different parishes of Sintra Municipality represent a dominant urban concept of low density urbanization process that may be understood as a rural cultural matrix of the populations that look for housing in Lisbon periphery. Or a rejection of more dense typologies as urban environment.



**Graph 36** – Homes by mixed-use typology and parishes (1981)

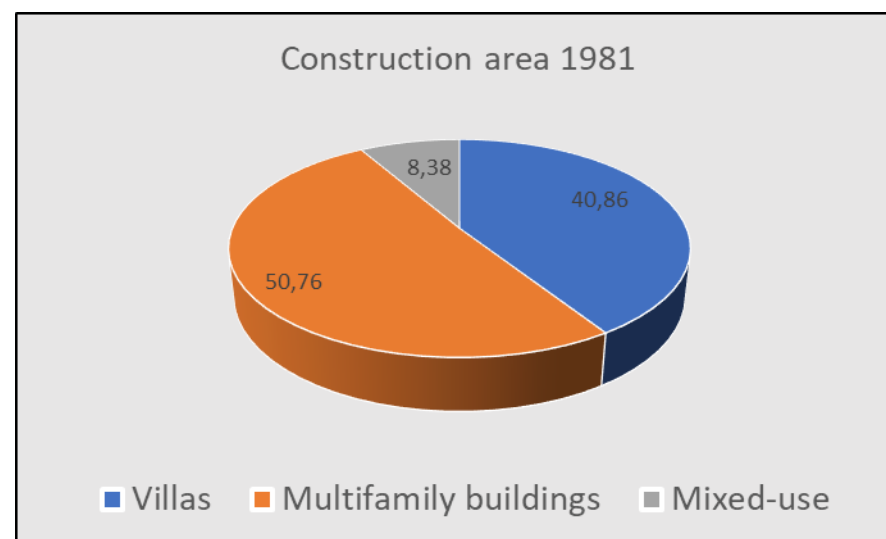
In this year only one allotment permit indicates the total construction area: a mixed-use villas and multifamily housing buildings allotment permit in Algueirão-Mem Martins that indicates 6480 m2.

This lack of information does not allow us to have a correct knowledge of the evolution of the construction area in the different

	Villas		Multifamily Buildings		Mixed-use	
	Home s	Constr. area (m2)	Home s	Constr. area (m2)	Home s	Const. area (m2)
Algueirão Mem Martins	43	6450	92	9200	29	3480
Aigualva - Cacém	-	-	96	9600	-	-
Almargem do Bispo	4	600	-	-	-	-
Belas	4	600	-	-	-	-
Colares	18	2700	-	-	-	-
Montelavar	8	1200	-	-	1	120
Queluz	2	300	-	-	-	-
Rio de Mouro	2	300	-	-	-	-
Sta Maria/S.Miguel	2	300	30	3000	-	-
S. João das Lampas	11	1650	-	-	-	-
S. Martinho	12	1800	-	-	-	-
S. Pedro de Penaferrim	4	600	-	-	-	-
Terrugem	7	1050	-	-	-	-
<b>Total</b>	<b>117</b>	<b>17550</b>	<b>218</b>	<b>21800</b>	<b>30</b>	<b>3600</b>

**Table 20** – Estimated construction area (m2) by use typology and parishes (1981)

The estimated construction area for all the municipal territory is, as shown in table above, 42 950 m2, divided in 17 550 m2 in villas typology (40,86%), 21 800m2 in multifamily housing buildings (50,76%) and 3600 in mixed-use typology. (8,38%)



**Graph 37** – Estimated construction area (%) by use typologies (1981)

In this year there is no clear indication of the real area for public and social facilities. Most of the allotment permits only refer provided area for roads and only one indicates ceding area for green areas and social facilities.



As the urban planning regulations concerning urban allotment process does not indicate precisely the criteria for soil allocation to public and social uses, the allotment permits allotment not contain enough information on the subject

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	1,37	0,35	0,37	-	2,09
Agualva - Cacém	0,49	-	-	-	0,49
Almargem do Bispo	0,01	-	-	-	0,01
Belas	-	-	-	-	0
Colares	0,19	-	-	-	0,19
Montelavar	0,11	-	-	-	0,11
Queluz	-	-	-	-	0
Rio de Mouro	-	-	-	-	0
Sta Maria/S.Miguel	0,14	-	-	-	0,14
S. João das Lampas	0,13	-	-	-	0,13
S. Martinho	0,03	-	--	-	0,03
S. Pedro de Penaferrim	0,01	-	-	-	0,01
Terrugem	0,01	-	-	-	0,01
<b>Total</b>	<b>2,49</b>	<b>0,35</b>	<b>0,37</b>	<b>-</b>	<b>3,21</b>

**Table 21** – Ceding areas (ha) for public and social uses (1981)

In this year there is no clear indication of the real area for public and social facilities. Most of the allotment permits only refer provided are for roads and only one indicates ceding area for green areas and social facilities.

This is caused by the small dimension of each of the properties subjected to real estate operations and their small impact on the territory. A fragmented impact that, however, all together, has impact on the territory and in the lack of space for future public and social facilities.

The set of allotment permits issued in 1981 urban density, expressed in homes per hectare, in multifamily housing buildings urbanized area, is 78.



## 4. YEAR 1982 ANALYSYS

In 1982, Sintra Municipality has issued 49 allotment permits: 39 for villas, 7 for multifamily buildings, 2 for industry and warehouses and 1 for a mixed-use of villas and multifamily buildings

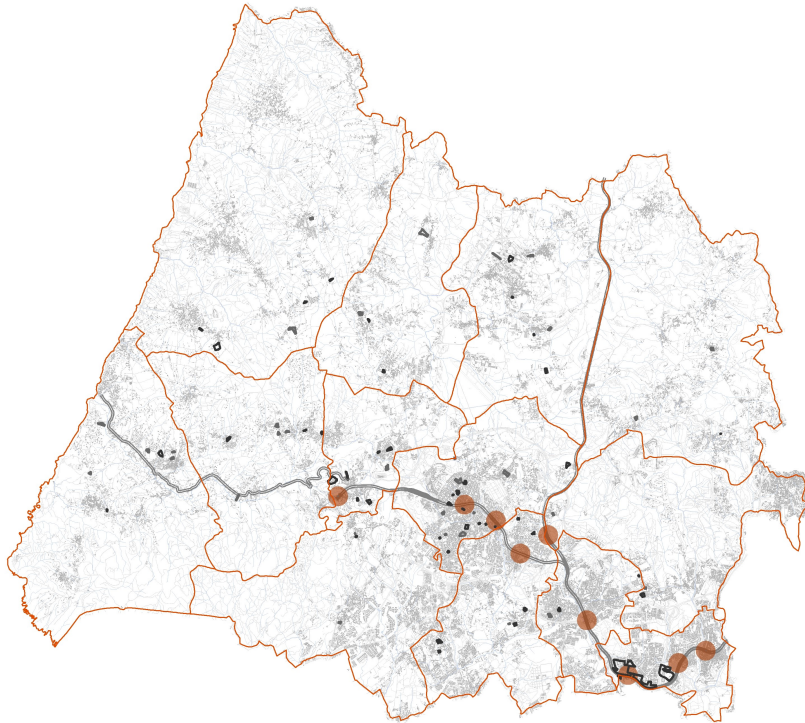


Fig. 23 – Allotment permits location (1982)

The corresponding urbanized area, 80,26 hectares, was divided in 423 urban plots and allowed the construction of 2 786 homes.

	Urbanization permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	11	3,1	66	107
Aigualva - Cacém	2	0,59	8	50
Almargem do Bispo	1	0,02	2	2
Belas	1	0,86	2	2
Colares	2	1,37	9	9
Montelavar	4	2,53	25	32
Queluz	3	40,96	121	2314
Rio de Mouro	8	15,14	50	86
Sta Maria/S.Miguel	7	5,96	100	132
S. João das Lampas	4	3,26	10	10
S. Martinho	3	1,05	18	30
S. Pedro de Penaferrim	1	4,23	1	1
Terrugem	2	1,19	11	11
<b>Total</b>	<b>49</b>	<b>80,26</b>	<b>423</b>	<b>2786</b>

Table 22 – Allotment permits distribution and characterization by parish (1982)

Of the total urbanized area, 80,26 hectares, 34,97 hectares (43,57%) were allocated to 255 plots for villas, 34,17 hectares were allocated to

multifamily housing buildings (42,57%), 10,31 hectares for industrial activities (12,85%) and 0,81 hectares (1,01%) for the mixed-use of villas and multifamily buildings.



**Fig. 24** – Multifamily buildings allotment permit in Fanares, Algueirão-Mem Martins parish (8 plots, 37 homes)

The urban growth dominant urban morphology still was allotment permits exclusively designated to individual villas: 255 urban plots for

villas, 111 urban plots for multifamily buildings, 36 urban plots to economic activities and 21 for a mixed-use of villas and multifamily buildings.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	2,45	0,65	-	-
Agalva - Cacém	0,1	0,5	-	-
Almargem do Bispo	0,02	-	-	-
Belas	0,86	-	-	-
Colares	1,37	-	-	-
Montelavar	0,93	0,12	-	1,47
Queluz	0	32,12	-	8,84
Rio de Mouro	14,36	0,78	-	-
Sta Maria/S.Miguel	5,15	-	0,81	-
S. João das Lampas	3,26	-	-	-
S. Martinho	1,05	-	-	-
S. Pedro de Penaferrim	4,23	-	-	-
Terrugem	1,19	-	-	-
<b>Total</b>	<b>34,97</b>	<b>34,17</b>	<b>0,81</b>	<b>10,31</b>

**Table 23** – Urbanized area (ha) by urban typologies and parishes (1982)

The urban growth dominant urban morphology still was allotment permits exclusively designated to individual villas: 255 urban plots for villas, 111 urban plots for multifamily buildings, 36 urban plots to economic activities and 21 for a mixed-use of villas and multifamily buildings.



**Fig. 25** - Villa typology allotment permit in Mem Martins, (2 plots, 2 homes)

The indication of construction area for commerce is referenced in 5 allotment permits, 2 in Algueirão-Mem Martins, one of them in the urbanization permit for villas, 1 in Montelavar and other in Rio de Mouro.

In Queluz, commerce and services use is indicated in a 31, 70 hectares large propriety real estate operation allotment permit.



**Fig. 26** - Multifamily buildings typology with commerce and services use allotment permit in Massamá, Queluz parish (183 plots, 2270 homes)

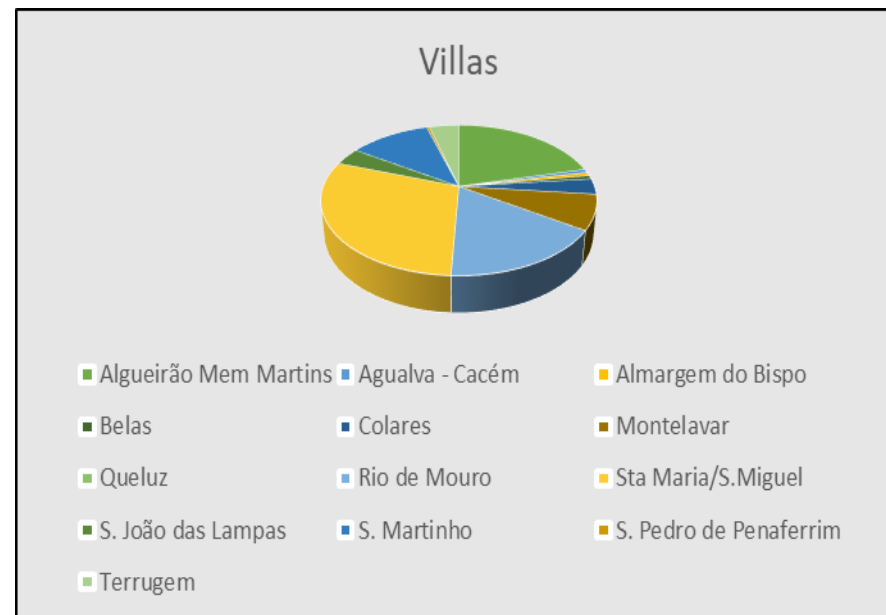
In this large scale real estate operation, a ceding area of 24, 57 hectares for social facilities use and 6,99 hectares for road network constitute the larger soil provision for social and public uses in 1982 allotment permits.



	Villas	Multifamily buildings	Mixed use	Industry & Warehouses
Algueirão Mem Martins	56	10	-	-
Aigualva - Cacém	2	6	-	-
Almargem do Bispo	2	-	-	-
Belas	2	-	-	-
Colares	9	-	-	-
Montelavar	20	3	-	2
Queluz	-	87	-	34
Rio de Mouro	45	5	-	-
Sta Maria/S.Miguel	79	-	21	-
S. João das Lampas	10	-	-	-
S. Martinho	18	-	-	-
S. Pedro de Penaferrim	1	-	-	-
Terrugem	11	-	-	-
<b>Total</b>	<b>255</b>	<b>111</b>	<b>21</b>	<b>36</b>

**Table 24** – Urban plots by urban typologies and parishes (1982)

As in the precedent year, according to information that is possible to get from the allotment permits analysis the importance of soil consumption for industrial use is marginal and represents the consolidation aspect of a suburban urbanization process more influenced by Lisbon economic activity and jobs offer than by Sintra Municipality economic activity.



**Graph 38** – Homes by villas typology and parishes (1982)

The distribution of the urbanized area by urban typologies also expresses a dominance of low density real estate investments in terms of allotment permits issuance and in a larger number of parishes.

As well the number of urban plots designated to low density urbanization programs (villas) is clear example of the low intensity of the urbanization growth in the initial years of the 1980s, where economic crisis effects still was present.

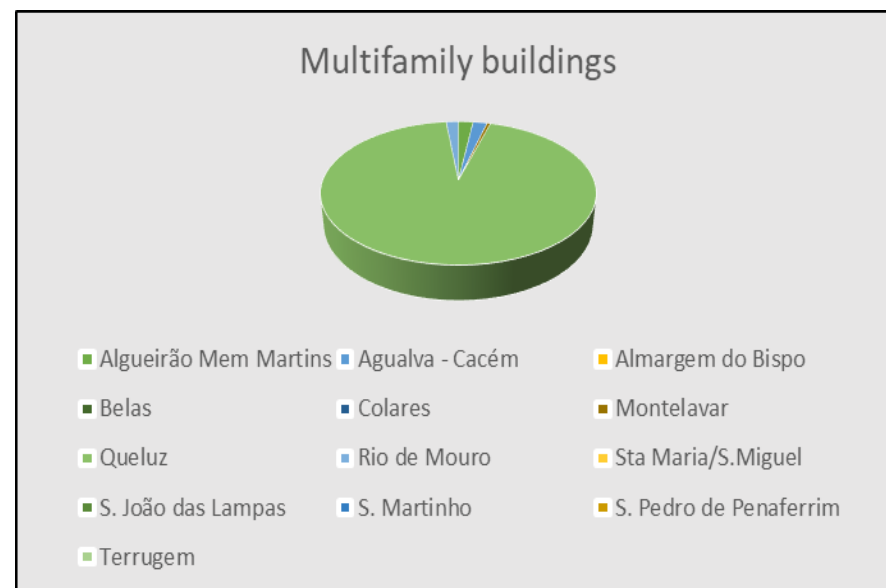
	Villas	Multifamily buildings	Mixed use
Algueirão Mem Martins	56	51	-
Aqualva - Cacém	2	48	-
Almargem do Bispo	2	-	-
Belas	2	-	-
Colares	9	-	-
Montelavar	20	12	-
Queluz	-	2314	-
Rio de Mouro	44	42	-
Sta Maria/S.Miguel	79	-	53
S. João das Lampas	1-	-	-
S. Martinho	30	-	-
S. Pedro de Penaferrim	1	-	-
Terrugem	11	-	-
<b>Total</b>	<b>266</b>	<b>2467</b>	<b>53</b>

**Table 25** – Homes by urban typologies and parishes (1982)

The concentration of multifamily housing real estate investments in Queluz may be associated to the railway and road mobility system proximity and its effect on urbanization dynamics. This fact will present in following years urbanization development programs a very strong impact on territorial and urban organization and on social facility services demand and in mobility services and transport infrastructures.

The highlight of this real estate operation in the ensemble of the allotment permits issued in 1982, due to the exceptionality, accentuates the dominant character that the low-density urbanization operations had in this and in previous years.

In fact, this single real estate operation contributes with 83,05% of the total homes of the year. But using only 39,50% of the total urbanized area.



**Graph 39** – Homes by multifamily buildings typology and parishes (1982)



**Graph 40** – Homes by mixed-use typology and parishes (1982)

As in the previous year, the information about the construction area in the allotment permits is scarce. This information is only present in 4 allotment permits; one in a villas typology allotment permit, another in a multifamily housing build typology and 2 in a mixed-use allotment permit.

A reason for this is the fact that construction area was not, at the time, a relevant information in the allotment permits. So, it is only possible to have a real homes size information by typology, after the

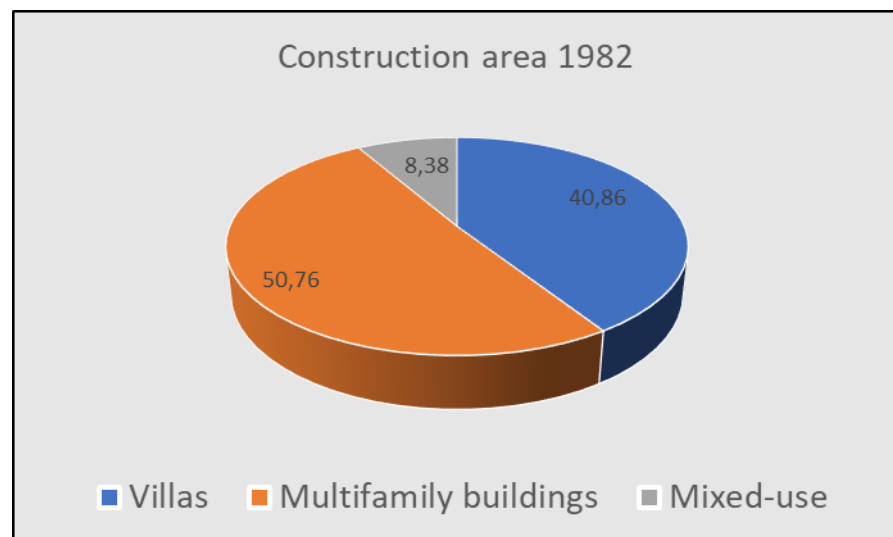
buildings construction licenses correspondent to each allocated villa or multifamily building in each allotment permit.

	Multifamily					
	Villas		Buildings		Mixed-use	
	Homes	Constr. area (m2)	Homes	Constr. area (m2)	Homes	Const. area (m2)
Algueirão Mem Martins	56	8400	51	5100	0	0
Agualva - Cacém	2	300	48	4800	0	0
Alargem do Bispo	2	300	-	-	-	-
Belas	2	300	-	-	-	-
Colares	9	1350	-	-	-	-
Montelavar	20	3000	12	1200	0	0
Queluz	0	0	2314	231400	0	0
Rio de Mouro	44	6600	42	4200	0	0
Sta Maria/S.Miguel	79	11850	0	0	53	6360
S. João das Lampas	10	1500	-	-	-	-
S. Martinho	30	4500	-	-	-	-
S. Pedro de Penaferrim	1	150	-	-	-	-
Terrugem	11	1650	-	-	-	-
<b>Total</b>	<b>266</b>	<b>39900</b>	<b>2467</b>	<b>246700</b>	<b>53</b>	<b>6360</b>

**Table 26** – Estimated construction area (m2) by use typology and parishes (1982)



Total construction area, 292 960m<sup>2</sup>, is divided in 39 900m<sup>2</sup> in villas typology allotments (13,62%), 246 700m<sup>2</sup> in multifamily housing buildings typology (84,21%) and 6360m<sup>2</sup> in mixed-use typology (2,17%).



**Graph 41** – Estimated construction area (%) by use typology (1982)

For commercial, services or industry or warehousing uses there is no construction area indication.

The information about the provision areas for public and social uses is has little expression and is practically reduced to the indication of

the dedicated area, in each allotment permit, for the creation of the road network.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	0,33	0,08	-	-	0,41
Agualva - Cacém	0,19	-	-	-	0,19
Almargem do Bispo	-	-	-	-	-
Belas	0,11	-	-	-	0,11
Colares	-	-	-	-	--
Montelavar	0,28	-	-	-	0,28
Queluz	7,73	-	24,58	--	32,31
Rio de Mouro	0,74	-	0,38	-	1,12
Sta Maria/S.Miguel	0,50	-	0,02	-	0,52
S. João das Lampas	0,03	-	0,06	-	0,09
S. Martinho	0,30	-	-	-	0,30
S. Pedro de Penaferrim	0,04	-	-	-	0,04
Terrugem	0,09	-	-	-	0,09
<b>Total</b>	<b>10,34</b>	<b>0,08</b>	<b>25,04</b>	<b>-</b>	<b>35,46</b>

**Table 27** – Ceding areas (ha) for public and social uses (1982)

Urban density, expressed in homes per hectare, was 142 in multifamily housing buildings urbanized area is 72.

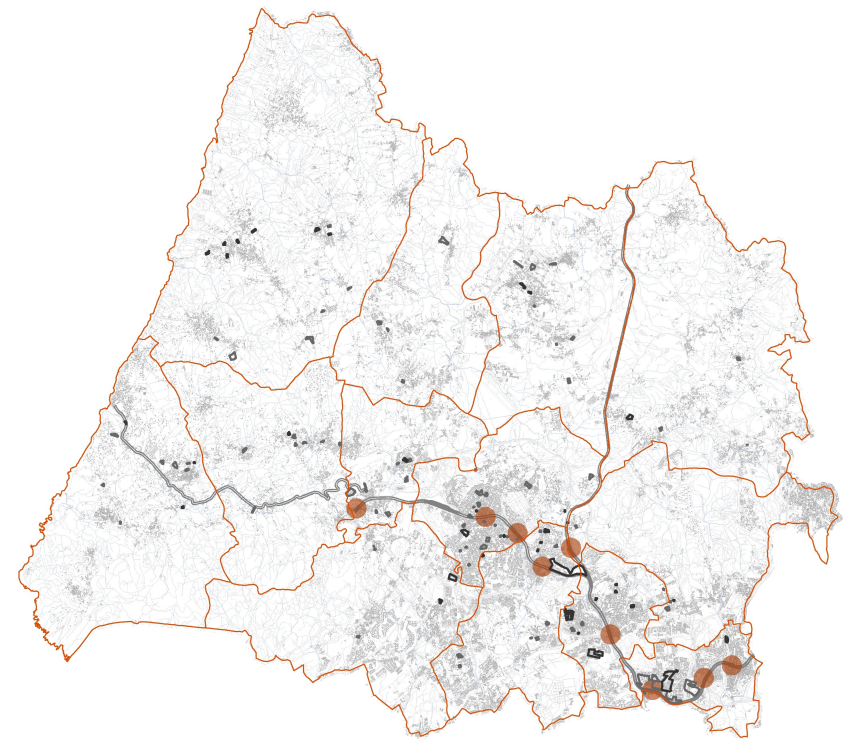


## 5. YEAR 1983 ANALYSYS

In 1983, only 40 allotment permits were issued by Sintra Municipality, corresponding to an urbanized area of 245,97 hectares, more than three times the urban area of the previous year. This increase of area was very influenced by a single property allotment with 202,5 hectares in 90 urban plots for mixed-use of housing commerce and services and corresponding to an offer of 1 226 homes.



**Fig. 27** – Small rural property a villas allotment permit in Tojeira, S. João das Lampas parish (2 plots, 2 homes)



**Fig.28** – Allotment permits location (1983)

The 40 issued allotment permits correspond to 26 allotment permits for individual villas, 11 for multifamily housing buildings and 3 for mixed-use of individual villas and multifamily housing buildings. For industry there was no one allotment permits.

This allotment permits issuance reduction, in a year in which the crisis was very present on the Portuguese economy, cannot be assigned to it because allotment permits issue, in this and other years, corresponds to requests made in previous years.

As their administrative assessment is very variable according to the request size and nature and its major or minor compliance with the urban plans and regulations, we must be attentive to this before conclusions.



**Fig. 29** – Villas typology allotment permit in Rinchoa, Rio de Mouro parish (9 plots, 9 homes)

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	6	5,7	32	186
Aigualva - Cacém	9	8,18	55	351
Almargem do Bispo	1	1,47	38	38
Belas	2	0,19	7	7
Colares	3	1,2	8	8
Montelavar	2	2,82	18	18
Queluz	3	16,91	12	120
Rio de Mouro	4	203,5	106	1242
Sta Maria/S.Miguel	1	0,74	12	53
S. João das Lampas	7	3,9	45	44
S. Martinho	1	0,86	7	7
S. Pedro de Penaferrim	1	0,5	8	8
Terrugem	-	-	-	-
<b>Total</b>	<b>40</b>	<b>245,97</b>	<b>348</b>	<b>2082</b>

**Table 28** – Allotment permits distribution and characterization by parish (1983)

The total urbanized area in 1983 was 245,97 hectares of which 12,90 (5,24%) occupied with urban plots for individual villas and 211,45 hectares (85,97%) for multifamily housing buildings, and the remaining 0,53 hectares (0,22%) for a mixed occupation of individual villas and multifamily housing buildings and 21,09 hectares (8,57%) for industrial and warehouses uses. In a total of 348 urban plots, corresponding to a

total of 2082 homes, 175 are designated for individual villas, corresponding to 175 homes and 152 for multifamily housing buildings, corresponding to 1817 homes. The 9 mixed-use (individual villas and multifamily housing buildings) urban plots corresponded to 90 homes and only 12 urban plots were designated for industrial and warehouse purposes.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	0,48	2,14	0,07	3,00
Agualva - Cacém	0,43	4,70	0,46	2,60
Almargem do Bispo	1,47	-	-	-
Belas	0,19	-	-	-
Colares	1,20	-	-	-
Montelavar	2,82	-	-	-
Queluz	-	1,42	-	15,49
Rio de Mouro	1,05	202,45	-	.
Sta Maria/S.Miguel	-	0,74	-	.
S. João das Lampas	3,9	-	-	-
S. Martinho	0,86	-	-	-
S. Pedro de Penaferrim	0,50	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>12,90</b>	<b>211,45</b>	<b>0,53</b>	<b>21,09</b>

**Table 29** – Urbanized area (ha) by urban typologies and parishes (1983)

However, it should be mentioned that of the group of 140 urban plots for multifamily housing 90 belonged to a single 202,45 hectares large property urbanization permit, and the remaining for multifamily housing corresponded to small real estate investments.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	17	10	3	2
Agualva - Cacém	11	30	6	8
Almargem do Bispo	38	-	-	-
Belas	7	-	-	-
Colares	8	-	-	-
Montelavar	18	-	-	-
Queluz	-	10	-	2
Rio de Mouro	16	90	-	-
Sta Maria/S.Miguel	-	12	-	-
S. João das Lampas	45	-	-	-
S. Martinho	7	-	-	-
S. Pedro de Penaferrim	8	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>175</b>	<b>152</b>	<b>9</b>	<b>12</b>

**Table 30** – Urban plots by urban typologies and parishes (1983)





**Fig. 30** – Multifamily buildings with commercial and services use typology allotment permit in Mem Martins (10 plots, 162 homes)

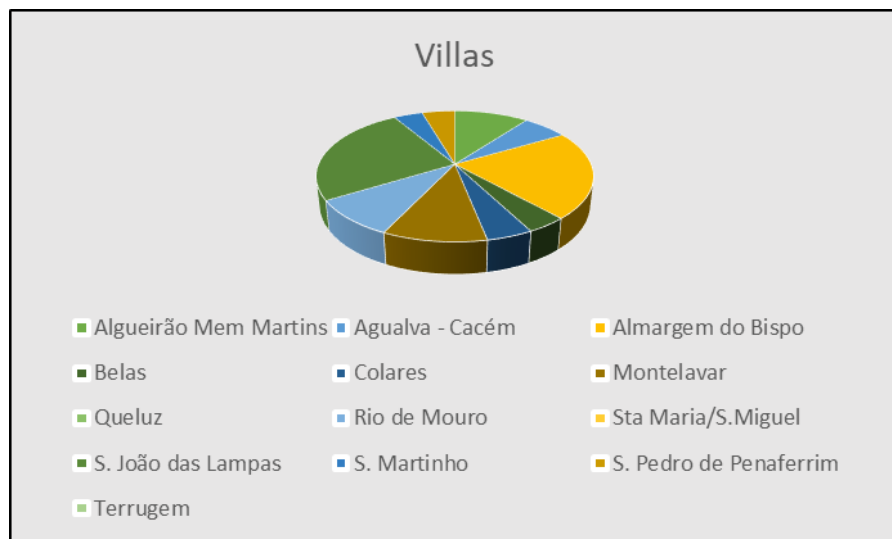
The remaining plots were divided into 2 allotment permits with 10 urban plots each and 95 and 162 homes each, another with 17 urban plots and 185 homes and the remainder corresponded to 2 allotment permits of 3 urban plots each and 24 and 29 homes respectively.

This diversity in the urban typologies express the urbanization patterns diversity in Sintra Municipality, in this beginning of the decade. Individual villas typology dominance terms of allotment permits have no correspondence with the urbanized less significative soil occupancy.

	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	18	162	6
Agualva - Cacém	11	309	31
Almargem do Bispo	38	-	-
Belas	7	-	-
Colares	8	-	-
Montelavar	18	-	-
Queluz	-	120	-
Rio de Mouro	16	1226	-
Sta Maria/S.Miguel	-	-	53
S. João das Lampas	44	-	-
S. Martinho	7	-	-
S. Pedro de Penaferrim	8	-	-
Terrugem	-	-	-
<b>Total</b>	<b>175</b>	<b>1817</b>	<b>90</b>

**Table 31** – Homes by urban typologies and parishes (1983)

In 1983, the 26 allotment permits issue for individual villas real estate investments corresponding to 175 urban plots, only represented 5, 24% of the total urbanized area (18,89 hectares). On the other hand, the area designated to multifamily housing buildings was 85,67% of the total urbanized area (210,71 hectares), which shows a growing importance of this type of urban typology in Sintra Municipality urban growth process.

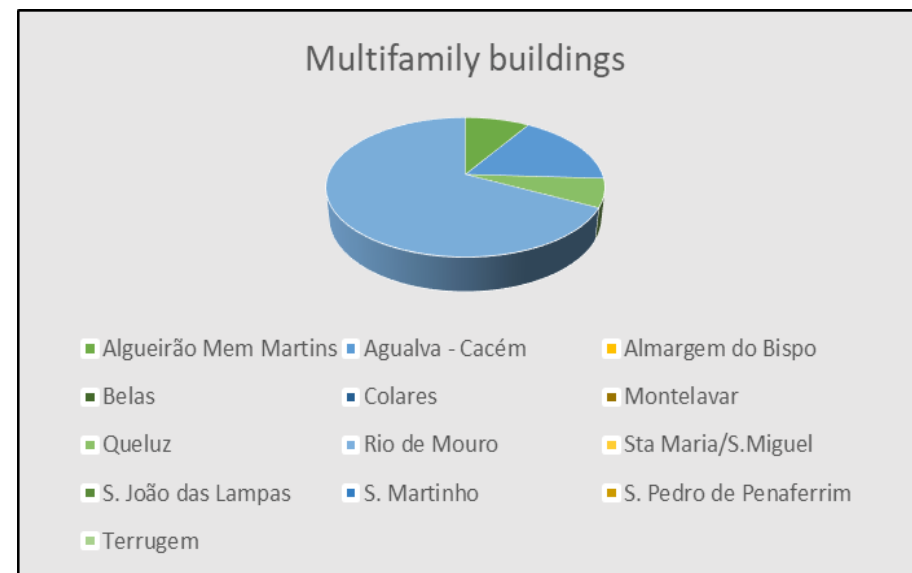


**Graph 42** – Homes by villas typology and parishes (1983)

The indication of construction area for commerce is referenced in 5 allotment permits and 2 of them has also a reference to services. A

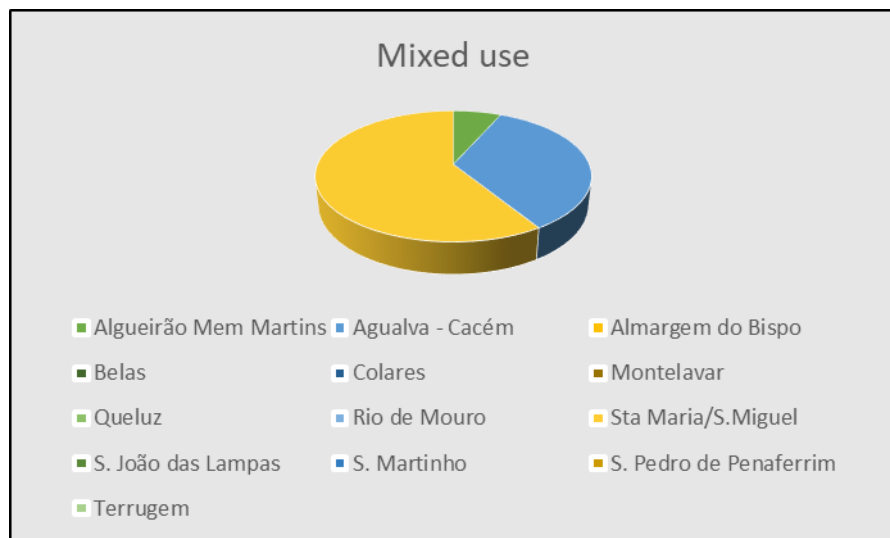
reference to social facilities is also present in one of this allotment permits.

In 1983 increased urbanized area for multifamily housing buildings is very evident and shows that the urban growth process was based on a dominant supply of housing and not on the organization of a coherent and consolidated urban fabric with varying typological and functional solutions.



**Graph 43** – Homes by multifamily buildings typology and parishes (1983)

This is explained by the suburban character of Sintra Municipality areas more subject to the pressure of real estate operations, a reality that has gradually become more pronounced.



**Graph 44**– Homes by mixed-use typology and parishes (1983)

Construction area indication in the allotment permits issued in 1983 is, as in the previous years, estimated according the established parameters. This allow urban growth evolution comparation along the study period, 1981-1990, as well its distribution by the different urban typologies and parishes.

As in the previous year the is no indication construction area for commercial, services or industry or warehousing uses.

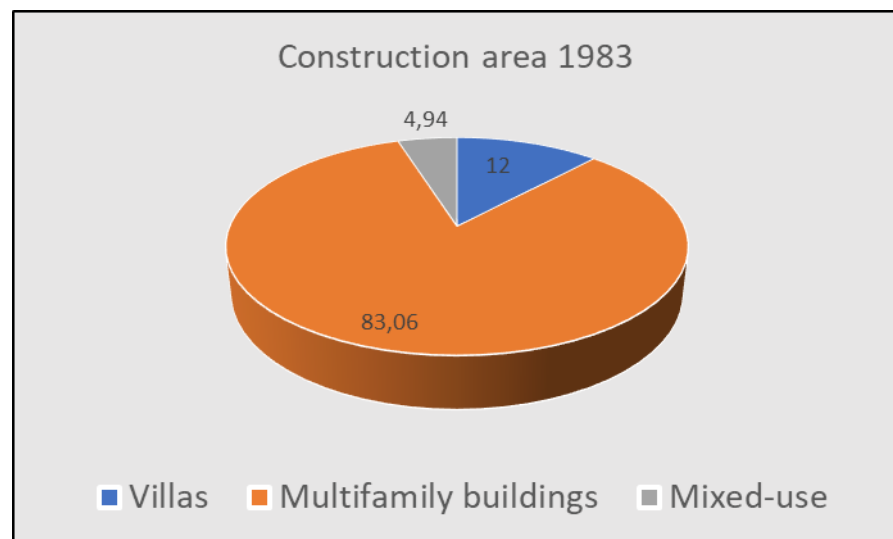
	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m2)	Homes	Constr. area (m2)	Homes	Constr. area (m2)
Algueirão Mem Martins	18	2700	162	16200	6	720
Aguilva - Cacém	11	1650	309	30900	31	3720
Almagem do Bispo	38	5700	-	-	-	-
Belas	7	1050	-	-	-	-
Colares	8	1200	-	-	-	-
Montelavar	18	2700	-	-	-	-
Queluz	-	0	120	12000	-	-
Rio de Mouro	16	2400	1226	122600	-	-
Sta Maria/S.Miguel	-	0	-	-	53	6360
S. João das Lampas	44	6600	-	-	-	-
S. Martinho	7	1050	-	-	-	-
S. Pedro de Penaferrim	8	1200	-	-	-	-
Terrugem	-	-	-	-	-	-
<b>Total</b>	<b>175</b>	<b>26250</b>	<b>1817</b>	<b>181700</b>	<b>90</b>	<b>10800</b>

**Table 32** – Estimated construction area (m2) by use typology and parishes (1983)



The total construction area, 218 750m<sup>2</sup>, correspond to 26 250m<sup>2</sup> in villas typology allotment permits (12,00%), 181 700m<sup>2</sup> in multifamily housing buildings (83,06%) and 10 800 in mixed-use allotment permits (4,94%).

This construction area information highlights the importance of multifamily housing buildings typology as the main responsible for Sintra Municipality urban growth.



**Graph 45** – Estimated construction area (%) by use typology (1983)

Ceding areas indication is almost reduced to the dedicated area for road network installation. As in the previous years the soil provision for green areas, social facilities or infrastructures installation is scarce because of the urbanized propriety small dimension.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	1,59	-	0,12	-	1,71
Agalva - Cacém	2,41	0,55	0,86	-	3,82
Almargem do Bispo	0,41	-	0,38	-	0,79
Belas	0,02	-	-	-	0,02
Colares	0,05	-	-	-	0,05
Montelavar	0,40	-	-	-	0,40
Queluz	0,92	-	-	-	0,92
Rio de Mouro	9,09	-	9,57	-	18,66
Sta Maria/S.Miguel	0,25	0,02	-	-	0,27
S. João das Lampas	0,24	-	0,04	-	0,28
S. Martinho	0,1	-	-	-	0,1
S. Pedro de Penaferrim	0,11	-	-	-	0,11
Terrugem	-	-	-	-	-
<b>Total</b>	<b>15,59</b>	<b>0,57</b>	<b>10,97</b>	<b>-</b>	<b>27,13</b>

**Table 33** – Ceding areas (ha) for public and social uses (1983)

Urban density, expressed in homes per hectare, in multifamily housing buildings urbanized area is only 8, because large part of the large property real estate operation was for non-building use but for commercial, services and public use and social facilities.

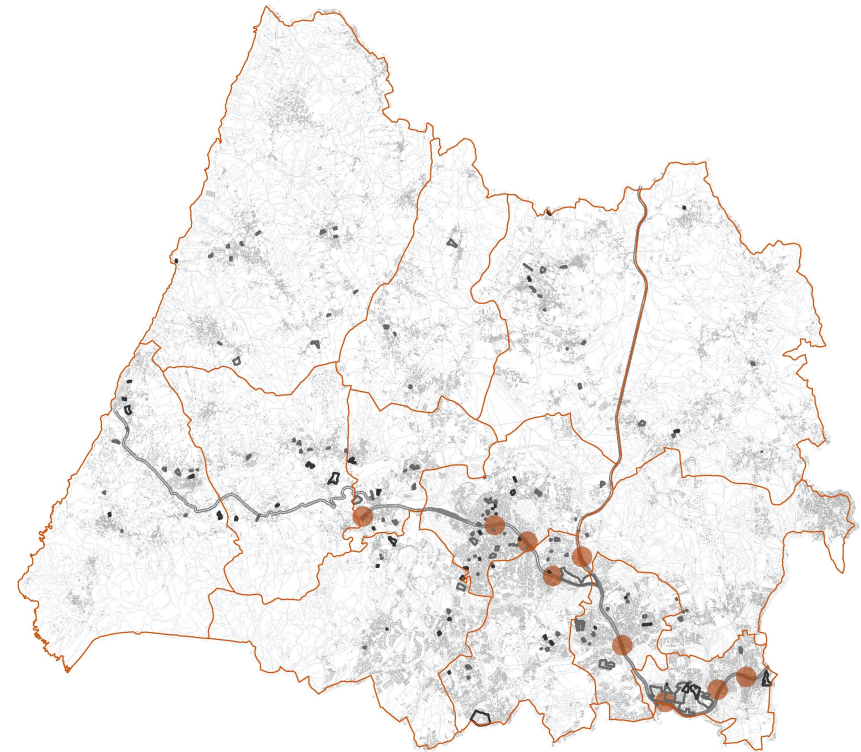
## 6. YEAR 1984 ANALYSYS

In 1984, the Sintra Municipality urbanization growth correspond to the issuance of 46 allotment permits issuance and an urbanized area of 134,90 hectares, 416 urban plots and 1 517 homes. 26 of those 46 allotment permits were for individual villas, 9 for multifamily housing buildings, 7 for mixed-use for individual villas and multifamily housing buildings and 4 for industrial activities.



**Fig. 31** – Villas typology allotment permit in Albarraque, Rio de Mouro parish (8 plots, 8 homes)

In this year three parishes, Queluz, Rio de Mouro and Santa Maria and S. Miguel, absorbed 82% of the total urbanized area.



**Fig. 32** – Allotment permits location (1984)

Queluz and Rio de Mouro parishes, along the main railway and IC19 road axis Sintra-Lisbon, their urbanized area, 81,95 hectares were destined to multifamily housing buildings mixed-use for individual villas and multifamily housing buildings, and industrial and warehousing uses.

In Queluz, with an urbanized area of 63,20 hectares, 11,19 were for multifamily housing buildings and 51,90 for mixed-use for individual villas and multifamily housing buildings with 44 urban plots and 201 homes; for villas the urbanized area was only 0,1 hectares, destined to 2 urban plots and 2 homes.

The larger part of the 18,75 hectares urbanized area in Rio de Mouro parish, 17,16 hectares, is dedicated for industrial and warehousing uses and only 1,59 hectares were considered for residential use in 52 homes in villas and multifamily housing building plots.

In the other Sintra parishes real estate operations were dominated by villas typology. However, in Santa Maria/S.Miguel parish the larger urbanized area propriety, with 26,12 hectares, has only 2 urban plots and one home; what indicates that it not properly a real estate operation .



**Fig. 33** – Mixed-use allotment permit in Queluz (44 plots, 201 homes)





**Fig. 34** – Multifamily buildings allotment permit in Mem Martins, (3 plots, 21 homes)

Nevertheless, the distribution of urban plots by types, according to its destination, shows that the number of urban plots for individual villas, 144, continues higher than those for multifamily housing buildings, that are 101.

This represents not only a fragmented urbanization process but also a fragmented way to organize the urban fabric in the urban expansion areas.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	9	4,28	53	129
Aigualva - Cacém	3	0,87	12	71
Almargem do Bispo	2	0,80	4	4
Belas	-	-	-	-
Colares	6	5,51	52	110
Montelavar	2	0,88	13	13
Queluz	4	63,20	118	975
Rio de Mouro	6	18,75	55	52
Sta Maria/S.Miguel	5	32,25	43	70
S. João das Lampas	1	0,12	4	4
S. Martinho	3	6,77	41	42
S. Pedro de Penaferrim	5	5,97	21	47
Terrugem	-	-	-	-
<b>Total</b>	<b>46</b>	<b>139,40</b>	<b>416</b>	<b>1517</b>

**Table 34** – Allotment permits distribution and characterization by parish (1984)

The number of plots for mixed-use of individual villas and multifamily housing buildings is in this year, nearly six times higher than the average of the three previous years, reaching a value of 141 urban plots. Plots for industry and warehouses were 30.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	1,52	1,02	-	1,59
Agualva - Cacém	0,15	0,72	-	-
Almargem do Bispo	0,8	-	-	-
Belas	-	-	-	-
Colares	2,79	2,72	-	-
Montelavar	0,88	-	-	-
Queluz	0,1	11,2	52,00	-
Rio de Mouro	1,48	0,11	0,00	17,17
Sta Maria/S.Miguel	31,36	-	0,90	-
S. João das Lampas	0,13	-	0,00	-
S. Martinho	1,75	-	5,03	-
S. Pedro de Penaferrim	0,05	0,32	0,60	5,01
Terrugem	-	-	-	-
<b>Total</b>	<b>41,01</b>	<b>16,09</b>	<b>58,53</b>	<b>23,77</b>

**Table 35** – Urbanized area (ha) by urban typologies and parishes (1984)

This reality corresponds to an increase of real estate activity and an urban densification. In fact, the housing density has passed from 11 homes/ha in 1983, to 38 homes/ha, in 1984, much at the cost of a great urbanization operation on a large property that allowed its use for a denser urban use.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	30	13	6	4
Agualva - Cacém	2	10	-	-
Almargem do Bispo	4	-	-	-
Belas	-	-	-	-
Colares	19	-	33	-
Montelavar	13	-	-	-
Queluz	2	72	44	-
Rio de Mouro	32	2	-	21
Sta Maria/S.Miguel	30	-	13	-
S. João das Lampas	4	-	-	-
S. Martinho	5	-	36	-
S. Pedro de Penaferrim	3	4	9	5
Terrugem	-	-	-	-
<b>Total</b>	<b>144</b>	<b>101</b>	<b>141</b>	<b>30</b>

**Table 36** – Urban plots by urban typologies and parishes (1984)

The urbanized area, 139,40 hectares, according to the different occupation typologies, shows a greater soil consumption for individual villas, 41,01 hectares (29,42%) than for multifamily housing buildings, 16,09 hectares (11,54%). What is a constant reality in the urbanization processes of this and the previous years.

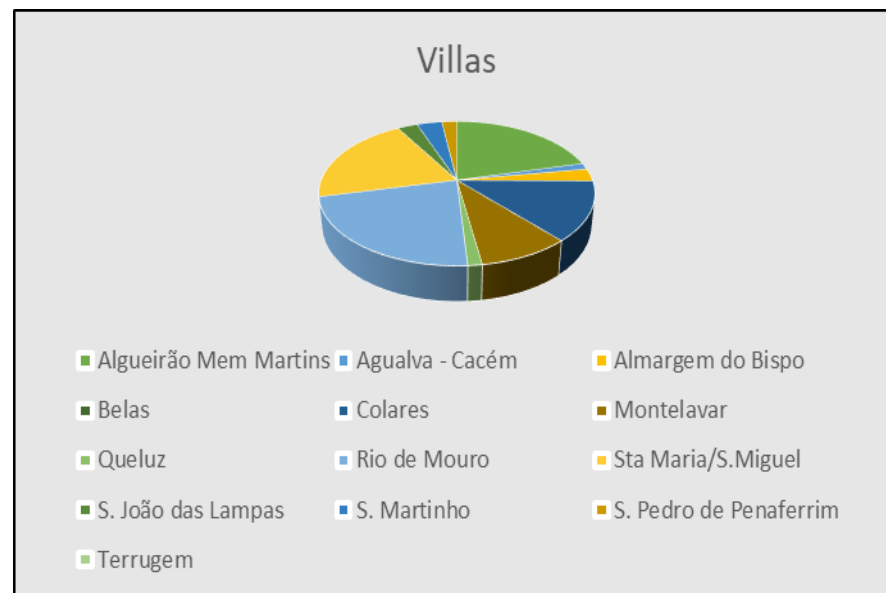
	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	30	83	16
Aigualva - Cacém	2	69	-
Almargem do Bispo	4	-	-
Belas	-	-	-
Colares	19	-	91
Montelavar	13	-	-
Queluz	2	772	201
Rio de Mouro	32	20	0
Sta Maria/S.Miguel	29	-	41
S. João das Lampas	4	-	-
S. Martinho	5	-	37
S. Pedro de Penaferrim	3	16	28
Terrugem	-	-	-
<b>Total</b>	<b>143</b>	<b>960</b>	<b>414</b>

**Table 37** – Homes by urban typologies and parishes (1984)

In this year, a significant area, 58,53 hectares (41,99%) is for real estate operations for mixed-use, which corresponds to the highest of the parcels of the urbanized areas, by type of occupation.

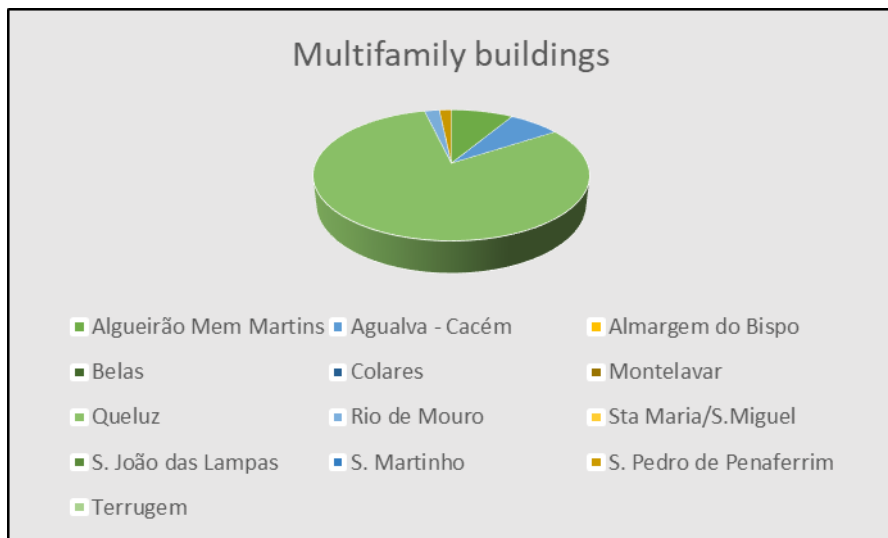
The area destined for industry and warehouse, corresponding to about one-sixth of the total urbanized area, is 23,77 hectares (17,05%). This industrial and warehousing urban permits in Rio Mouro is

probably associated to their location and the importance of road and rail systems in urbanization process.



**Graph 46** – Homes by villas typology and parishes (1984)

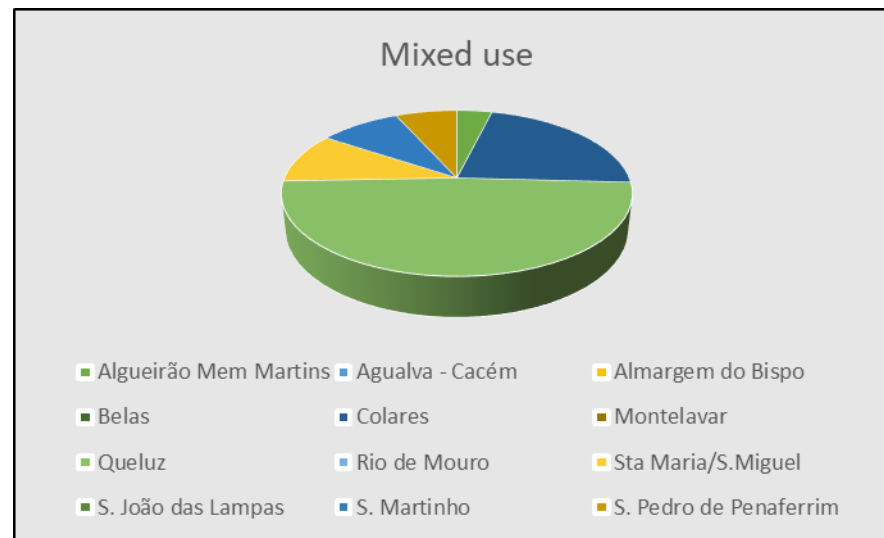
The area destined for industry and warehouse, corresponding to about one-sixth of the total urbanized area, is 23,77 hectares (17,05%). This industrial and warehousing urban permit in Rio Mouro express the importance of large dimension proprieties for a significative installation of this kind of uses. Its situation also indicates the importance of road and rail systems in urbanization process.



**Graph 47** – Homes by multifamily buildings typology and parishes (1984)

The total number of homes, 1517, has its highest value in the areas destined for multifamily housing buildings, 960 homes. Homes number in the areas for individual villas is 143 and in the intended areas for mixed-use, individual villas and multifamily housing buildings, homes number is 414.

In this year, the indication of construction area for commerce is referenced in only 9 allotment permits and one of them has also a reference to services use.



**Graph 48** – Homes by mixed-use typology and parishes (1984)

Nevertheless, the allotment permits analysis, since the beginning of the decade, allows to verify that urban is dominantly focused in housing production. Which is not surprising in a suburban territory like the one at issue.

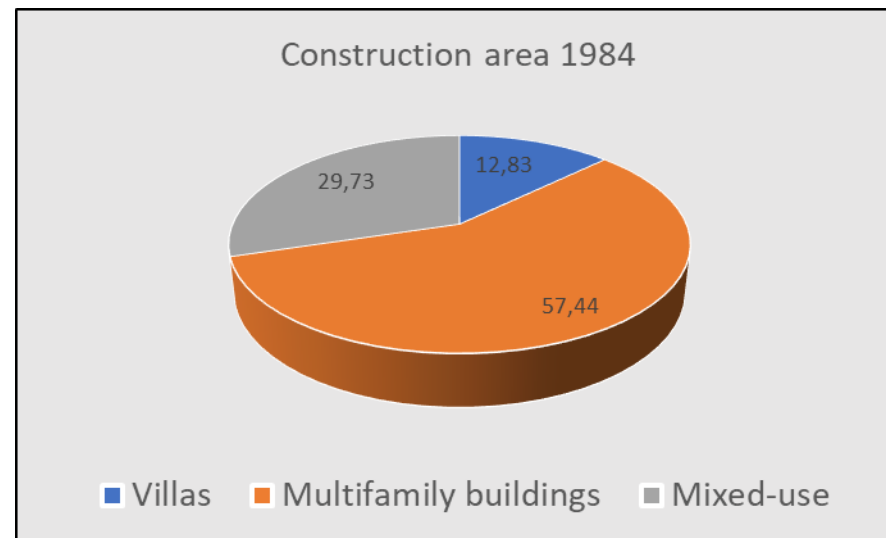
The construction area by urban typology, as in previous years, does not follow this dominance. In fact, the most significant construction corresponds to the multifamily housing buildings, with 96 000m<sup>2</sup> in a total of 167 130 m<sup>2</sup>, what corresponds to 57, 44% of the total construction area. Mixed-use typology represents 29,73% and villas



typology, with 21 450 m<sup>2</sup>, only represents 12,83% of the total construction area.

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	30	4500	83	8300	16	1920
Agualva - Cacém	2	300	69	6900	-	-
Almargem do Bispo	4	600	-	-	-	-
Belas	-	-	-	-	-	-
Colares	19	2850	-	-	91	10920
Montelavar	13	1950	-	-	-	-
Queluz	2	300	772	77200	201	24120
Rio de Mouro	32	4800	20	-	-	-
Sta Maria/S.Miguel	29	4350	-	-	41	4920
S. João das Lampas	4	600	-	-	-	-
S. Martinho	5	750	-	-	37	4440
S. Pedro de Penaferrim	3	450	16	1600	28	3360
Terrugem	-	-	-	-	-	-
<b>Total</b>	<b>143</b>	<b>21450</b>	<b>960</b>	<b>96000</b>	<b>414</b>	<b>49680</b>

**Table 38** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1984)



**Graph 49** – Estimated construction area (%) by use typology (1984)

In 1984 ceding areas for public and social use indication highlights the importance of the road system as the main allocation of those areas. However, in this year total information about ceding areas is not included in many of the issued allotment permits. So, the values present on the table 38 only give an approximative idea of the total information. Even so, the available information allows us to conclude that, given the size of most urban operations, soil provision for social and public use was not a very relevant issue.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	1,42	-	0,10	-	1,52
Aqualva - Cacém	0,62	0,06	-	-	0,68
Almargem do Bispo	0,02	-	-	-	0,02
Belas	-	-	-	-	-
Colares	0,93	0,51	0,05	-	1,49
Montelavar	0,19	-	-	-	0,19
Queluz	5,81	2,14	4,93	-	12,88
Rio de Mouro	1,68	-	0,39	0,01	2,08
Sta Maria/S.Miguel	0,90	-	0,22	0,01	1,13
S. João das Lampas	0,02	-	-	-	0,02
S. Martinho	0,60	0,11	0,26	0,05	1,02
S. Pedro de Penaferrim	0,54	0,01	0,02	0,01	0,58
Terrugem	-	-	-	-	-
<b>Total</b>	<b>12,73</b>	<b>2,83</b>	<b>5,97</b>	<b>0,80</b>	<b>21,61</b>

**Table 39** – Ceding areas (ha) for public and social uses (1984)

Urban density, expressed in homes per hectare, in multifamily housing buildings urbanized area is 71.

## 7. YEAR 1985 ANALYSYS

In the year 1985 a total of 49 allotment permits issuance correspond to an urbanized area of 67,65 hectares.

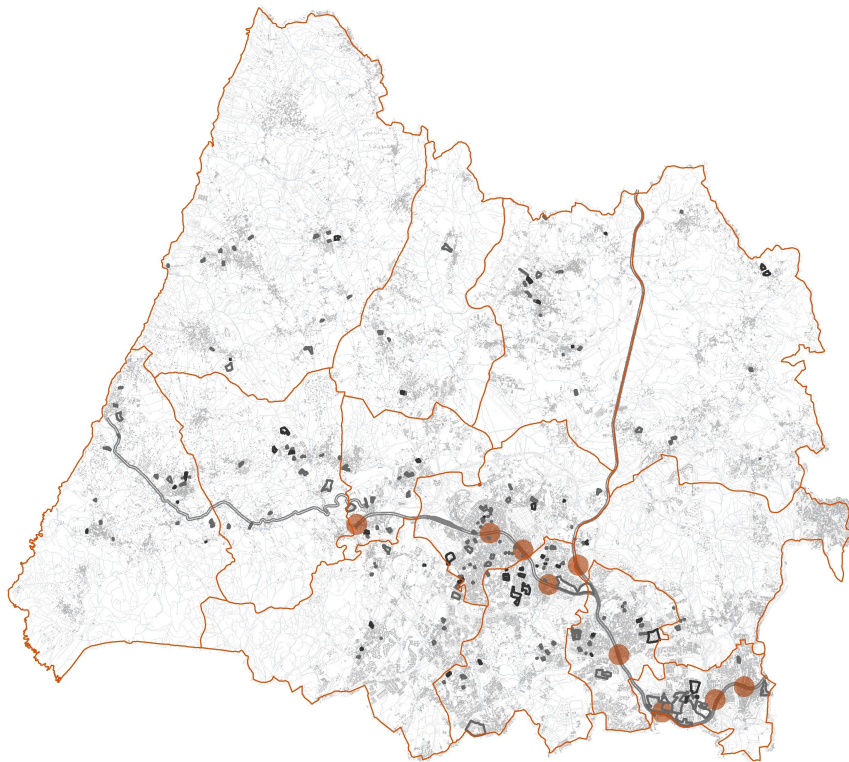
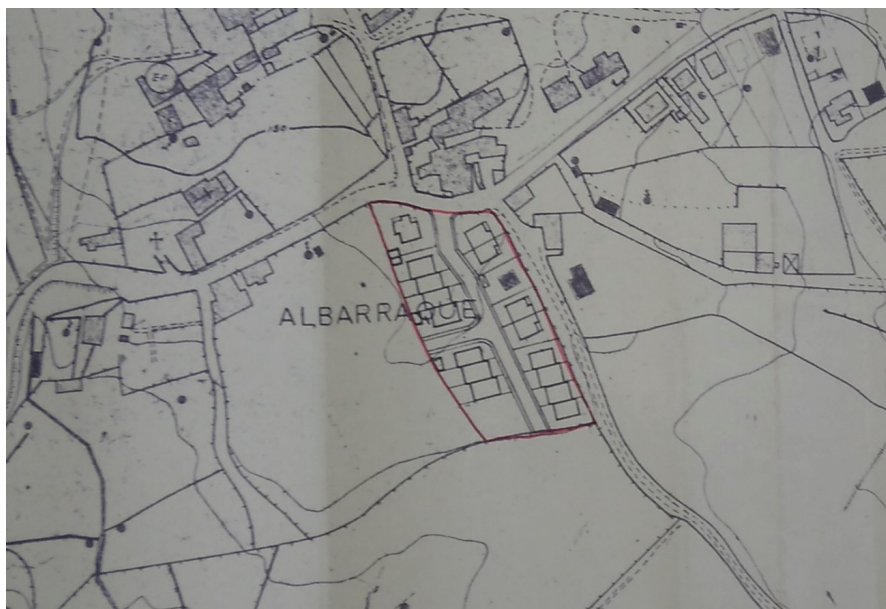


Fig. 35 – Allotment permits location (1985)

That urbanized area a total allows to organize 503 urban plots and to install 2559 homes. This means a reduction of urbanized area, relatively to the previous year, and an increase in the number of urban plots and homes.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	5	8,15	81	318
Aigualva - Cacém	4	14,34	105	738
Almargem do Bispo	2	2,51	3	1
Belas	1	0,27	2	2
Colares	5	1,75	26	26
Montelavar	4	1,17	19	40
Queluz	3	12,59	63	370
Rio de Mouro	14	18,51	146	1007
Sta Maria/S.Miguel	2	1,26	10	10
S. João das Lampas	2	1,16	6	6
S. Martinho	3	3,98	18	17
S. Pedro de Penaferrim	3	1,32	8	8
Terrugem	1	0,64	16	16
<b>Total</b>	<b>49</b>	<b>67,65</b>	<b>503</b>	<b>2559</b>

Table 40 – Allotment permits distribution and characterization by parish (1985)



**Fig. 36** – Villas typology allotment permit in Albarraque, Rio de Mouro parish (16 plots, 16 homes)

The urbanized area, 67,65 hectares, was distributed, according to the different occupation typologies as follows: for individual villas, 18,06 hectares (26,70%); for multifamily housing buildings, 33,13 hectares (48,97%); for mixed-use, villas and multifamily housing buildings 14,70 hectares (21,73%); for industry and warehouses, 1,76 hectares (2,60%).

From that total multifamily housing buildings typology urbanized area is concentrated in only two parishes: Queluz and Rio de Mouro.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	2,74	4,81	-	0,60
Aigualva - Cacém	0,33	0,66	13,35	-
Almargem do Bispo	-	-	1,35	1,16
Belas	0,27	-	-	-
Colares	1,75	-	-	-
Montelavar	0,79	0,38	-	-
Queluz	0,36	12,23	-	-
Rio de Mouro	3,46	15,05	-	-
Sta Maria/S.Miguel	1,26	-	-	-
S. João das Lampas	1,16	-	-	-
S. Martinho	3,98	-	-	-
S. Pedro de Penaferrim	1,32	-	-	-
Terrugem	0,64	-	-	-
<b>Total</b>	<b>18,06</b>	<b>33,13</b>	<b>14,7</b>	<b>1,76</b>

**Table 41** – Urbanized area (ha) by urban typologies and parishes (1985)

This year the largest real estate operation was intended for mixed-use, villas and multifamily housing buildings in Aigualva-Cacém on a property with 13,35 hectares in which 92 urban plots and 659 homes were planned. What corresponds to almost all the operations of this

typology because the other referred to only 2 plots, one for one villa and another for a non-residential use.



**Fig. 37** – Villas typology allotment permit in Algueirão (28 plots, 28 homes)

The 49 allotment permits are dominated by villas typology, 35, and only 10 are for multifamily housing buildings.

The 49 allotment permits are dominated by villas typology, 35, and only 10 for multifamily housing buildings. For mixed-use of villas and multifamily housing buildings are 2 and 1 for industry and warehousing uses. According to that of villas typology as urbanization pattern continues to be very present in allotment permits issued in 1985.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	42	30	-	9
Aguilva - Cacém	8	5	92	0
Almargem do Bispo	-	-	2	1
Belas	2	-	-	-
Colares	26	-	-	-
Montelavar	14	5	-	-
Queluz	6	57	-	-
Rio de Mouro	67	79	-	-
Sta Maria/S.Miguel	10	-	-	-
S. João das Lampas	6	-	-	-
S. Martinho	18	-	-	-
S. Pedro de Penaferrim	8	-	-	-
Terrugem	16	-	-	-
<b>Total</b>	<b>223</b>	<b>176</b>	<b>94</b>	<b>10</b>

**Table 42** – Urban plots by urban typologies and parishes (1985)



	Villas	Multifamily buildings	Mixed use
Algueirão Mem Martins	42	276	-
Agualva - Cacém	8	71	659
Almargem do Bispo	-	-	1
Belas	2	-	-
Colares	26	-	-
Montelavar	14	26	-
Queluz	6	364	-
Rio de Mouro	67	940	-
Sta Maria/S.Miguel	10	-	-
S. João das Lampas	6	-	-
S. Martinho	17	-	-
S. Pedro de Penaferrim	8	-	-
Terrugem	16	-	-
<b>Total</b>	<b>222</b>	<b>1677</b>	<b>660</b>

**Table 43** – Homes by urban typologies and parishes (1985)

Homes distribution corresponding to the total allotment permits is as follows: 222 in individual villas, 1667 in multifamily housing buildings and 660 individual villas and multifamily housings mixed-use.

The distribution of urban plots by types, according to its destination shows that the number of urban plots for villas, 223,

continues higher than those for multifamily housing buildings, 176, even though these have grown by about three quarters compared to the previous year. The number of urban plots for villas, 233, and multifamily housing buildings, 176, has increased relatively to the previous year and urban plots for mixed-use and industry and warehousing uses has a decrease.



**Fig. 38** – Multifamily buildings typology allotment permit with commercial use in Pero Pinheiro, Montelavar parish (5 plots, 26 homes)

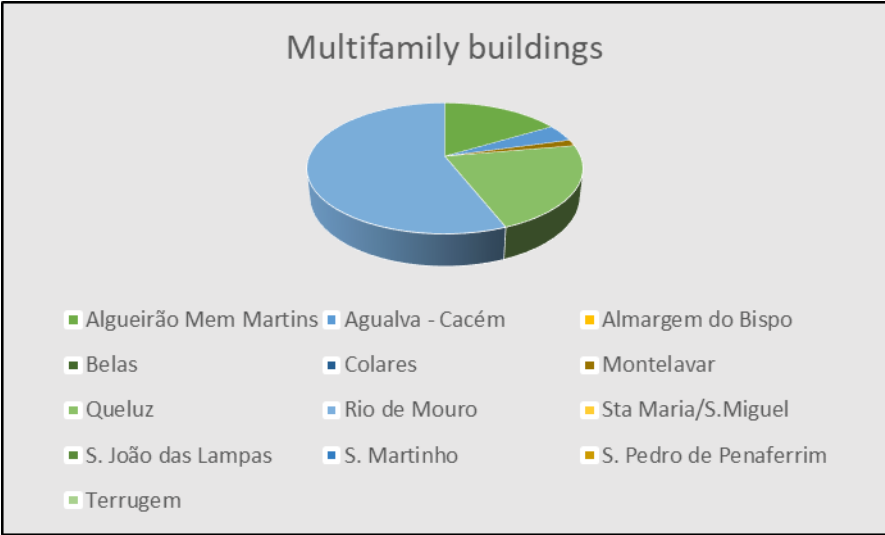
Building areas for commercial uses are referred in 7 allotment permits. However, a significant homes number increase, that passed from 1517 homes, in 1984, to 2559, in 1985, has happened in all urban typologies is a clear indication of progressive urban growth intensification.

This homes number increase may be associated to the progressive exit from the economic crisis of the beginning of the decade.



**Graph 50** – Homes by villas typology and parishes (1985)

Urban growth concentration in the parishes of Agualva-Cacém, Rio de Mouro and Queluz, in the denser urban area of Sintra Municipality along the IC19 road and the railway line Sintra-Lisbon axis.



**Graph 51** – Homes by multifamily buildings typology and parishes (1985)

This reality that is evident in the allotment permits distribution also show that low density urbanization processes continues dominantly in the more rural parishes.

This reality, which confirms the dual urban reality consolidation with a compact urbanization process along the Lisbon-Sintra axis and another, in which villas are the dominant typology, in that axis peripheral areas; and in a dispersed way in rural parishes.



**Graph 52** – Homes by mixed-use typology and parishes (1985)

A greater soil appreciation along the main road and railway axis, leading to a search for optimization of its value as an economic good, also leads to a greater urban densification of that area.; even because residential demand is higher in this area. Urban soil price, and the

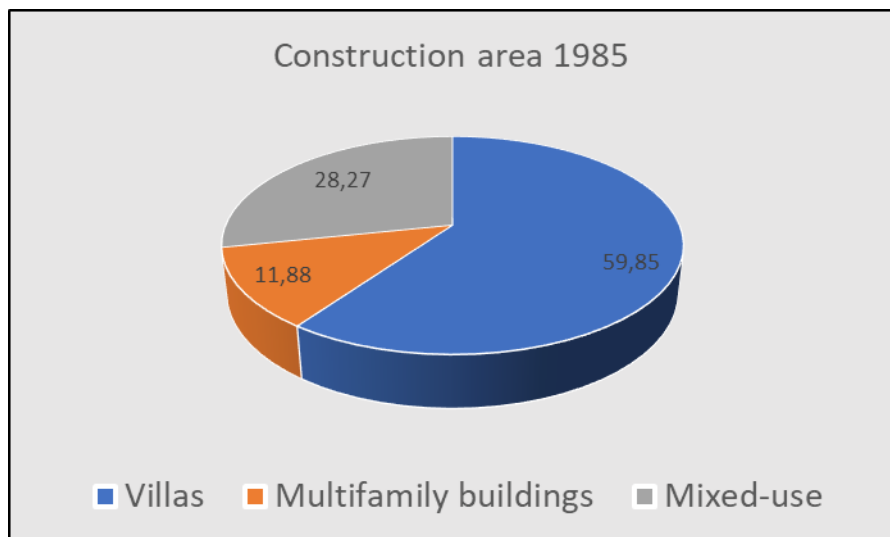
effect it has on urbanization processes, cannot therefore be left behind when the Sintra Municipality urbanization process is under analysis.

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m2)	Homes	Constr. area (m2)	Homes	Constr. area (m2)
Algueirão Mem Martins	42	6300	276	27600	-	-
Agualva - Cacém	8	1200	71	7100	659	79080
Almargem do Bispo	-	-	-	-	1	120
Belas	2	300	-	-	-	-
Colares	26	3900	-	-	-	-
Montelavar	14	2100	26	2600	-	-
Queluz	6	900	364	36400	-	-
Rio de Mouro	67	10050	940	94000	-	-
Sta Maria/S.Miguel	10	1500	-	-	-	-
S. João das Lampas	6	900	-	-	-	-
S. Martinho	17	2550	-	-	-	-
S. Pedro de Penaferrim	8	1200	-	-	-	-
Terrugem	16	2400	-	-	-	-
<b>Total</b>	<b>222</b>	<b>33300</b>	<b>1677</b>	<b>167700</b>	<b>660</b>	<b>79200</b>

**Table 44** – Estimated construction area (m2) by use typology and parishes (1985)



The total construction area by urban typology, as in previous years, does not follow villas typology dominance in the total issued allotment permits. The most significant construction area corresponds to the multifamily housing buildings, with 167 700m<sup>2</sup> in a total of 280 200 m<sup>2</sup>, (59,85% of the total construction area). Mixed-use typology construction area is 79 200m<sup>2</sup>, (28,27%) and villas typology 33 300m<sup>2</sup> (11,88%). What confirms multifamily housing buildings as the dominant urban typology in terms of homes supply.



**Graph 53** – Estimated construction area (%) by use typology (1985)

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	2,99	-	2,34	-	5,33
Agualva - Cacém	3,30	2,34	0,90	0,01	6,55
Almargem do Bispo	0,01	-	-	-	0,01
Belas	-	-	-	-	-
Colares	0,12	-	-	0,26	0,38
Montelavar	0,45	-	0,09	-	0,54
Queluz	3,32	-	1,30	0,01	4,63
Rio de Mouro	8,03	3,01	1,06	-	12,10
Sta Maria/S.Miguel	0,04	-	-	-	0,04
S. João das Lampas	0,01	-	-	-	0,01
S. Martinho	0,23	-	0,10	-	0,33
S. Pedro de Penaferrim	0,01	-	-	-	0,01
Terrugem	0,14	-	0,06	-	0,20
<b>Total</b>	<b>18,65</b>	<b>5,35</b>	<b>5,85</b>	<b>0,28</b>	<b>30,13</b>

**Table 45** – Ceding areas (ha) for public and social uses (1985)

The ceding area information in the allotment permits issued in 1985 is concentrated on soil allocation for the road system. Green spaces is only considered in 5 allotment permits; in Agualva-Cacém parish, 2 allotment permits and in Rio de Mouro parish, 3 allotment permits.

Ceding area for social and public purposes is scarce relatively to the quantity of issued allotment permits but this is related with the fact that villas typology is the dominant typology. Most of the ceding area for social facilities is, thus, associated with multifamily housing buildings typology real estate investments on larger properties.

The urban density, expressed in homes per hectare, in multifamily housing buildings urbanized area, corresponding the 176 urban plots and 33,13 hectares of urbanized area is 50.

## 8. YEAR 1986 ANALYSYS

In 1986, Sintra Municipality issued 50 allotment permits, accompanying the previous year's values

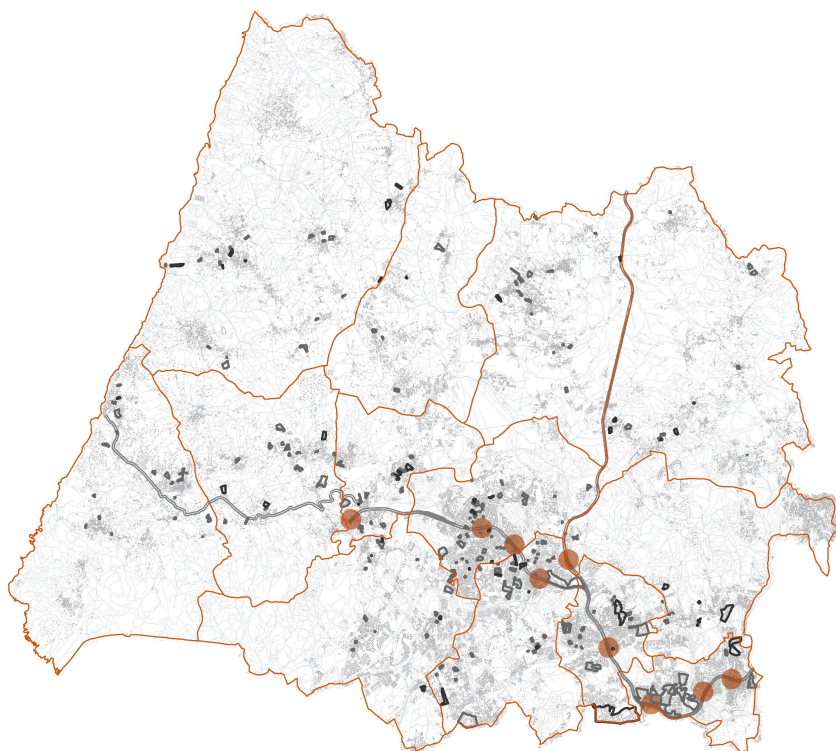
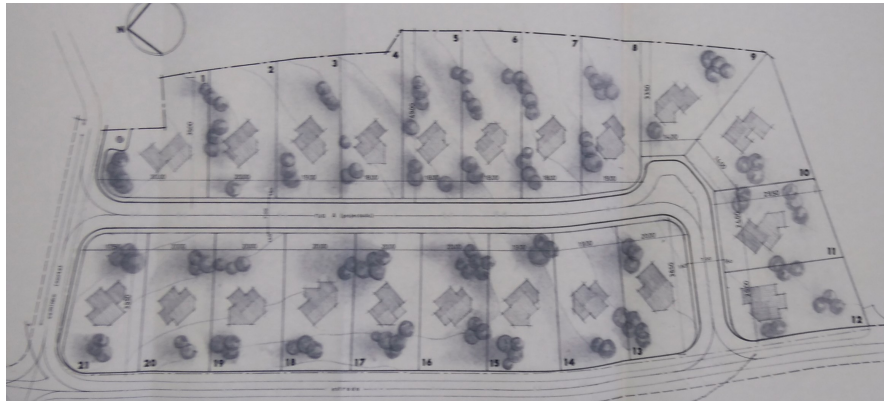


Fig. 39 – Allotment permits location (1986)

The allotment permits issued in 1986 represent an urbanized area of 141, 67 hectares divided in 720 urban plots of which 281 were for individual villas, 294 for multifamily housing buildings, 135 for villas and multifamily buildings mixed-use and 10 for industry, which corresponds to the construction of 5 956 homes.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	8	3,64	61	92
Aigualva - Cacém	3	58,08	258	3741
Almargem do Bispo	6	3,27	45	49
Belas	5	10,56	114	942
Colares	1	0,31	5	5
Montelavar	1	1,14	2	2
Queluz	1	8,09	13	693
Rio de Mouro	6	38,85	30	164
Sta Maria/S.Miguel	6	3,75	38	114
S. João das Lampas	7	7,17	74	94
S. Martinho	3	5,36	36	36
S. Pedro de Penaferrim	3	1,45	30	23
Terrugem	0	0,00	0	0
<b>Total</b>	<b>50</b>	<b>141,67</b>	<b>706</b>	<b>5955</b>

Table 46 – Allotment permits distribution and characterization by parish (1986)



**Fig. 40** – Villas typology allotment permit in Várzea de Sintra, S. Martinho parish (21 plots, 21 homes)

The total urbanized area, 141,67 hectares, was divided, as follows: 25,56 hectares (18,04%) allocated to 281 urban plots for individual villas; 70,42 hectares (49,71%) allocated to 294 urban plots for multifamily housing buildings; 10,04 hectares (7,09%) for 135 urban plots for mixed-use of villas and multifamily buildings mixed-use.

For industry and warehousing uses are allocated 10 plots in 35,65 hectares (25,16%). The urbanized area allocated for industry and warehousing uses is all concentrated in Algueirão-Mem Martins, Agualva-Cacém and Rio de Mouro parishes in the denser urbanized area of Sintra-Lisbon axis.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	2,17	1,26	-	0,21
Agualva - Cacém	0	57,92	-	0,17
Almargem do Bispo	3,18	0	0,09	-
Belas	1,75	0,04	8,77	-
Colares	0,31	-	-	-
Montelavar	1,14	-	-	-
Queluz	0	8,09	-	-
Rio de Mouro	0,73	2,84	-	35,27
Sta Maria/S.Miguel	2,69	0,27	0,79	-
S. João das Lampas	6,75	-	0,39	-
S. Martinho	5,38	-	-	-
S. Pedro de Penaferrim	1,46	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>25,56</b>	<b>70,42</b>	<b>10,04</b>	<b>35,65</b>

**Table 47** – Urbanized area (ha) by urban typologies and parishes (1986)

For industry and warehousing uses are allocated 10 plots in 35,65 hectares (25,16%). The urbanized area allocated for industry and warehousing uses is all concentrated in Algueirão-Mem Martins, Agualva-Cacém and Rio de Mouro parishes in the denser urbanized area of Sintra-Lisbon axis.



**Fig. 41** – Multifamily buildings typology allotment permit with commercial and services use in S. Marcos, Agualva-Cacém parish (181 plots, 3 062 homes)

It should be noted that about one-quarter of the urbanized area provided for industry and warehousing uses in issued allotment permits, in 1986, corresponds almost only to one of the three allotment permits for that use.

This varied distribution of correspond to the varied industrial and warehousing uses typology and industrial installations dimension.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	54	3	-	4
Agualva - Cacém	-	255	-	3
Almargem do Bispo	42	-	3	-
Belas	8	2	104	-
Colares	5	-	-	-
Montelavar	2	-	-	-
Queluz	-	13	-	-
Rio de Mouro	11	16	-	3
Sta Maria/S.Miguel	33	5	14	-
S. João das Lampas	60	-	14	-
S. Martinho	36	-	-	-
S. Pedro de Penaferrim	30	-	-	-
Terrugem	-	.	-	-
<b>Total</b>	<b>281</b>	<b>294</b>	<b>135</b>	<b>10</b>

**Table 48** – Urban plots by urban typologies and parishes (1986)

This urbanization permit, covering an area of 35,28 hectares, was the largest real estate investment operation for the industry during the first half of the decade.

Homes distribution, in 1986, shows that 274 homes correspond to villas typology, 4 653 are in multifamily housing buildings and 1 028 in



mixed-use of individual villas and multifamily housing buildings real estate operations.

	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	54	38	-
Agualva - Cacém	-	3741	-
Almargem do Bispo	42	-	7
Belas	8	8	926
Colares	5	-	-
Montelavar	2	-	-
Queluz	-	693	-
Rio de Mouro	11	153	-
Sta Maria/S.Miguel	33	20	61
S. João das Lampas	60	-	34
S. Martinho	36	-	-
S. Pedro de Penaferrim	23	-	-
Terrugem	0	-	-
<b>Total</b>	<b>274</b>	<b>4653</b>	<b>1028</b>

**Table 49** – Homes by urban typologies and parishes (1986)

The total planned homes in all the issued allotment permits, 5956 homes, more than twice than in the previous year, reaches the highest value since the beginning of the decade, a value only surpassed later in 1989.

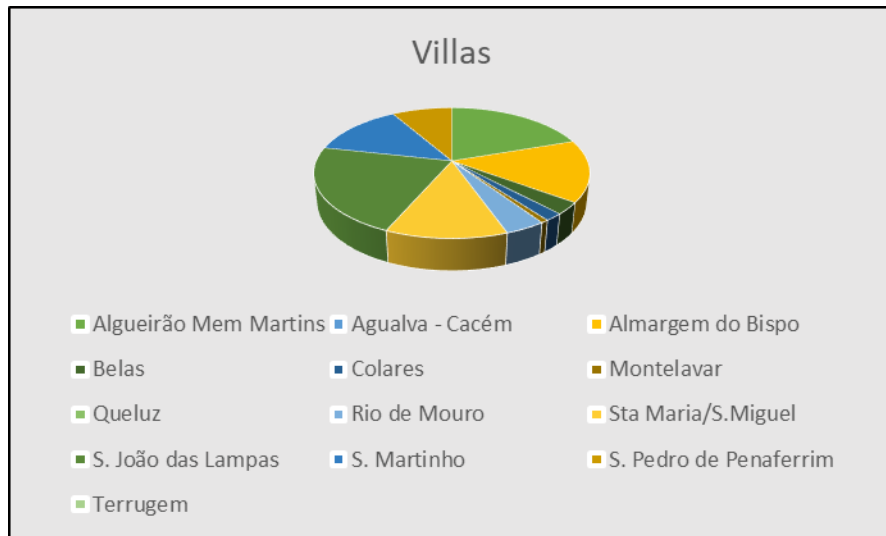


**Fig. 42** – Mixed-use typology allotment permit in Lourel, Santa Maria and S. Miguel parish (14 plots, 61 homes)

Allotment permits issued in 1986, regarding their type, were distributed as follows: 33 for individual villas, 9 for multifamily housing buildings, 5 for villas and multifamily buildings mixed-use and 3 for industry.

However, homes multifamily housing buildings are 17 times higher than homes number in villas typology urbanizations. In fact, the process of urbanization of the municipality of Sintra in this year, as in

the decade 1981-1990, can be characterized by a process that follows two different typologies.

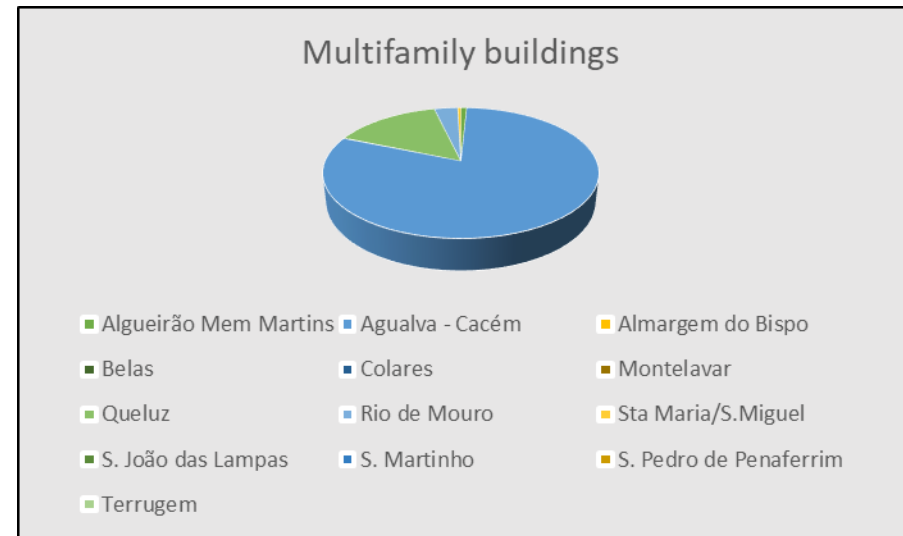


**Graph 54** – Homes by villas typology and parishes (1986)

In the main road and railway axes closest areas concentrated urbanization solutions area are the most present typologies; in further areas from those axes, or where the rural presence is more evident, the dominant urban operations are dominated by villas typology.

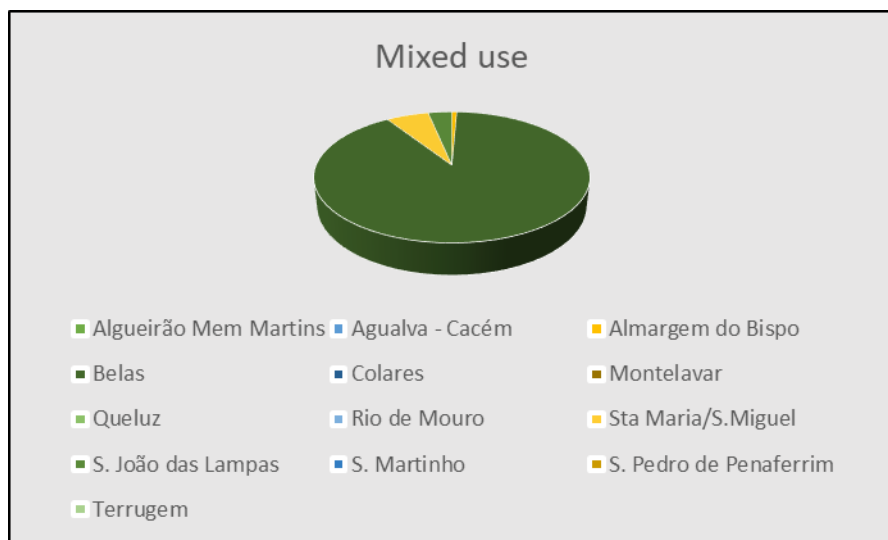
This fragmented urban organization process also correspond to a changing movement from rural areas to large urban areas where villas

typology represents an expression of this still rural matrix of the arriving population to these new areas of urban expansion.



**Graph 55** – Homes by multifamily buildings typology and parishes (1986)

Allotment permits issued, regarding their type, were distributed as follows: 33 for individual villas, 9 for multifamily housing buildings, 5 for villas and multifamily buildings mixed-use and 3 for industry. However, homes multifamily housing buildings are 17 times higher than homes number in villas typology urbanizations.



**Graph 56** – Homes by mixed-use typology and parishes (1986)

A set of 7 allotment permits refer commercial use and two of them also have planned services use.

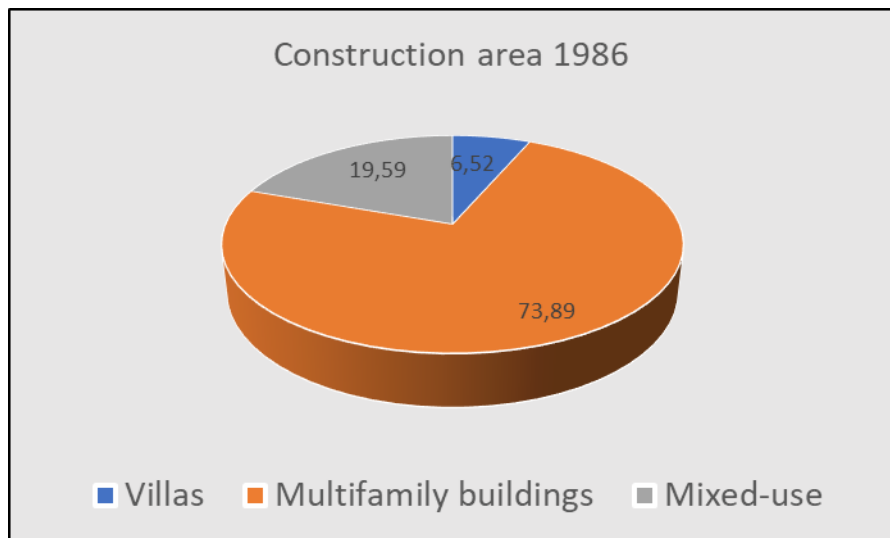
The most significant construction area corresponds to the multifamily housing buildings allotment permits, with 465 300m<sup>2</sup>, (73,89% of the total construction area) in a total of 167 130 m<sup>2</sup>. Mixed-use typology construction area, 123 360m<sup>2</sup>, represents 19,59% of the 629 760m<sup>2</sup> total construction area. Villas typology allotment permits, with 41 100m<sup>2</sup>, only represents 6,52% of the total construction area,

highlighting, as in the previous year, the dominant character multifamily housing builds in terms of homes supply.

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	54	8100	38	3800	-	-
Aguálva - Cacém	-	-	3741	374100	-	-
Almargem do Bispo	42	6300	-	-	7	840
Belas	8	1200	8	800	926	111120
Colares	5	750	-	-	-	-
Montelavar	2	300	-	-	-	-
Queluz	-	-	693	69300	-	-
Rio de Mouro	11	1650	153	15300	-	-
Sta Maria/S.Miguel	33	4950	20	2000	61	7320
S. João das Lampas	60	9000	-	-	34	4080
S. Martinho	36	5400	-	-	-	-
S. Pedro de Penaferrim	23	3450	-	-	-	-
Terrugem	-	-	-	-	-	-
<b>Total</b>	<b>274</b>	<b>41100</b>	<b>4653</b>	<b>465300</b>	<b>1028</b>	<b>123360</b>

**Table 50** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1986)





**Graph 57** – Estimated construction area (%) by use typology (1986)

Soil allocation for road system is the soil allocation in the allotment permits issued in 1986 and represents 68% of the registered total ceding area. Green spaces are scarcely considered in the registered information what is comprehensive by the fact that villas typology have an important position in the total urban plots.

This year increase of soil allocation for social facilities is consequence of the dominant position of multifamily housing buildings in the total urban plots and the existence of large proprietaries real estate urbanizations.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	0,98	0,06	0,07	-	1,11
Agualva - Cacém	33,51	0,91	10,91	-	45,33
Almargem do Bispo	0,37	-	0,22	-	0,59
Belas	4,37	-	1,33	-	5,70
Colares	0,02	-	-	-	0,02
Montelavar	-	-	-	-	-
Queluz	2,16	5,06	0,95	-	8,17
Rio de Mouro	2,10	-	0,31	-	2,41
Sta Maria/S.Miguel	0,79	-	0,07	-	0,86
S. João das Lampas	0,55	-	1,23	-	2,68
S. Martinho	0,57	-	0,08	-	0,65
S. Pedro de Penaferrim	0,27	-	-	-	0,27
Terrugem	-	-	-	-	-
<b>Total</b>	<b>45,69</b>	<b>6,03</b>	<b>15,17</b>	<b>-</b>	<b>66,89</b>

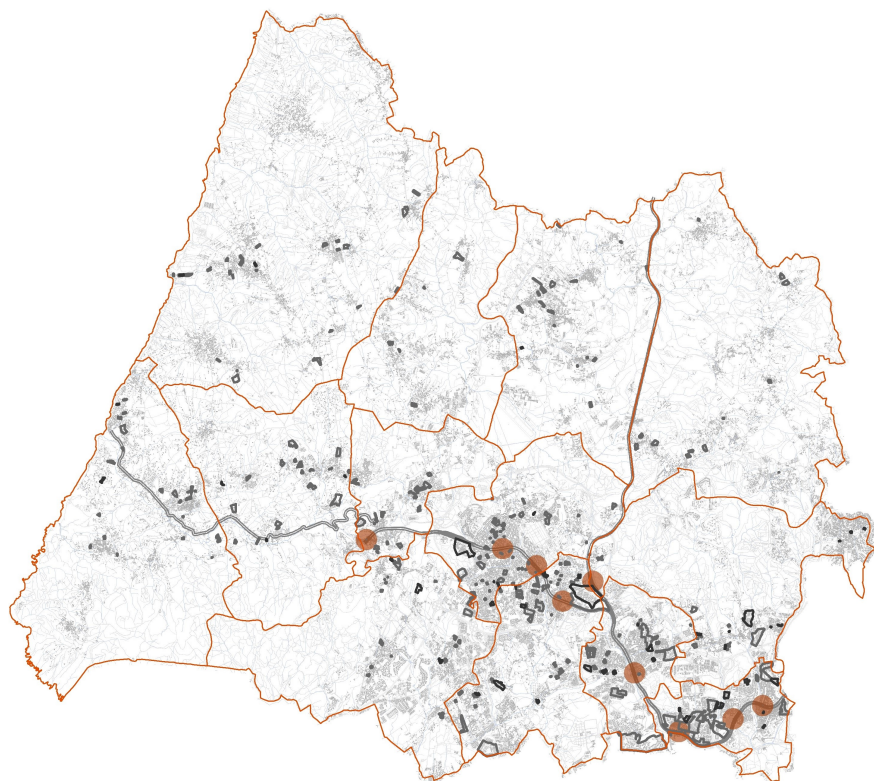
**Table 51** – Ceding areas (ha) for public and social uses (1986)

Urban density, expressed in homes per hectare, in multifamily housing buildings urbanized area is, in this year, 66.



## 9. YEAR 1987 ANALYSYS

Sintra Municipality issued 51 allotment permits, in 1987, one more than the previous year's numbers.



**Fig. 48** – Allotment permits location (1987)

Regarding their type, those 51 allotment permits are distributed as follows: 27 for individual villas, 20 for multifamily housing buildings, 4 for villas and multifamily buildings mixed-use and no one for industry.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	7	17,53	62	1189
Aigualva - Cacém	7	5,14	43	509
Almargem do Bispo	-	-	-	-
Belas	11	11,43	83	658
Colares	2	1,86	6	6
Montelavar	1	0,17	2	2
Queluz	7	24,82	69	871
Rio de Mouro	6	49,85	223	2022
Sta Maria/S.Miguel	1	0,34	3	3
S. João das Lampas	4	0,53	12	54
S. Martinho	3	0,39	6	6
S. Pedro de Penaferrim	2	2,45	23	23
Terrugem	-	-	-	-
<b>Total</b>	<b>51</b>	<b>114,51</b>	<b>532</b>	<b>5343</b>

**Table 52** – Allotment permits distribution and characterization by parish (1987)

The urbanized area corresponding to those 51 allotment permits is of 114,51 hectares divided in 532 urban plots of which 138 were for

individual villas, 171 for in multifamily housing buildings, 223 for villas and multifamily buildings mixed-use and none for industry for industry.



**Fig. 49** – Villa typology allotment permit in an illegal urbanization in Casal de Cambra, Belas parish (4 plots, 4 homes)

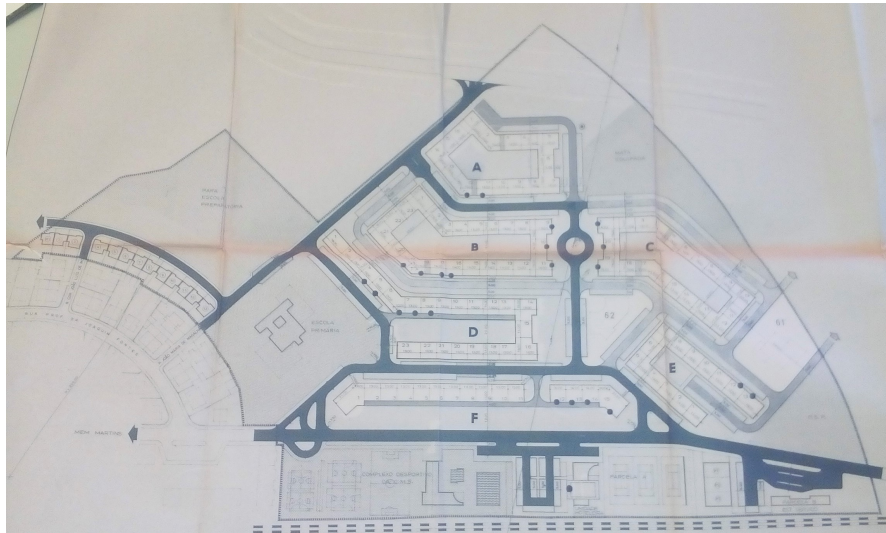
The total urbanized area, 114,51 hectares, was divided, as follows: 49,89 hectares (43,57%) allocated to 134 urban plots for individual villas; 15,92 hectares (13,90%) allocated to 171 urban plots for multifamily housing buildings and 48,7 hectares (42,53%) for 227 urban plots designated to mixed-use of villas and multifamily housing

buildings. In 1987, multifamily housing buildings typology has a scarce presence on the urbanization process.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	0,86	0,66	16,01	-
Aguilva - Cacém	0,08	4,38	0,68	-
Almargem do Bispo	-	-	-	-
Belas	1,99	9,44	-	-
Colares	0,59	1,27	-	-
Montelavar	0,17	-	-	-
Queluz	24,82	-	-	-
Rio de Mouro	17,84	-	32,01	-
Sta Maria/S.Miguel	0,34	-	-	-
S. João das Lampas	0,36	0,17	-	-
S. Martinho	0,39	-	-	-
S. Pedro de Penaferrim	2,45	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>49,89</b>	<b>15,92</b>	<b>48,7</b>	<b>-</b>

**Table 53** – Urbanized area (ha) by urban typologies and parishes (1987)

The exception is a 9,44 hectares large propriety real estate operation for multifamily housing buildings allotment permit with 54 urban plots and 586 homes.



**Fig. 50** – Mixed-use typology allotment permit in Ouressa, Algueirão-Mem Martins parish (16 plots, 1048 homes)

The urbanized area by urban typologies clearly indicates the importance of villas typology as the dominant typology in Sintra Municipality territory this year.

Despite this, real estate multifamily housing buildings urbanizations concentrate most of the housing supply and responsible for the population increase in the Sintra Municipality growing urban area.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	24	6	32	-
Agualva - Cacém	2	25	16	-
Almargem do Bispo	-	-	-	-
Belas	22	61	-	-
Colares	2	4	-	-
Montelavar	2	-	-	-
Queluz	-	69	-	-
Rio de Mouro	44	-	179	-
Sta Maria/S.Miguel	3	-	-	-
S. João das Lampas	6	6	-	-
S. Martinho	6	-	-	-
S. Pedro de Penaferrim	23	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>134</b>	<b>171</b>	<b>227</b>	<b>-</b>

**Table 54** – Urban plots by urban typologies and parishes (1987)



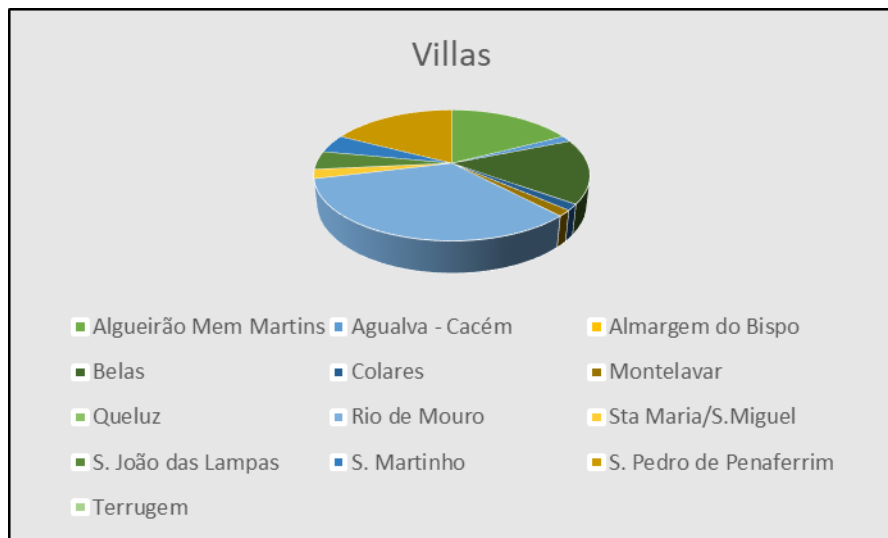
	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	23	48	1118
Agualva - Cacém	2	368	139
Almargem do Bispo	-	-	-
Belas	21	637	-
Colares	2	4	-
Montelavar	2	-	-
Queluz	-	871	-
Rio de Mouro	44	-	1978
Sta Maria/S.Miguel	3	-	-
S. João das Lampas	6	48	-
S. Martinho	6	-	-
S. Pedro de Penaferrim	23	-	-
Terrugem	-	-	-
<b>Total</b>	<b>132</b>	<b>1976</b>	<b>3235</b>

**Table 55** – Homes by urban typologies and parishes (1987)

The total planned homes in all the issued allotment permits, 5343 homes, is very similar to the previous year value and corresponds to 132 homes in individual villas, 1976 homes in multifamily housing buildings and 3 235 homes in individual villas and multifamily housing buildings mixed-use allotment permits.



**Fig. 51** – Mixed-use typology allotment permit in Fitares, Rio de Mouro parish (175 plots, 1948 homes)



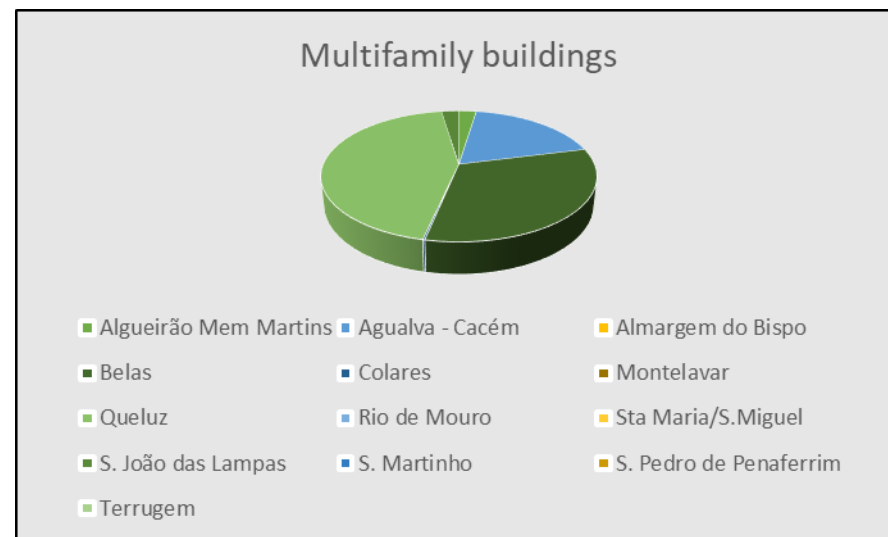
**Graph 58** – Homes by villas typology and parishes (1987)

Although the urbanized area intended for villas is roughly the same as for mixed-use, there is a huge difference in the number of homes provided for each. For the first 132 while for the second this value is 3225. For multifamily buildings housing the allocated urbanized area is about one-third of the remaining but the number of homes in 1976, is close to the predicted value for the urbanized area for mixed-use.

The largest real estate operation, in this year, was an individual villas and multifamily housing buildings mixed-use operation with an urbanized area of 30,92 hectares corresponding to 175 urban plots

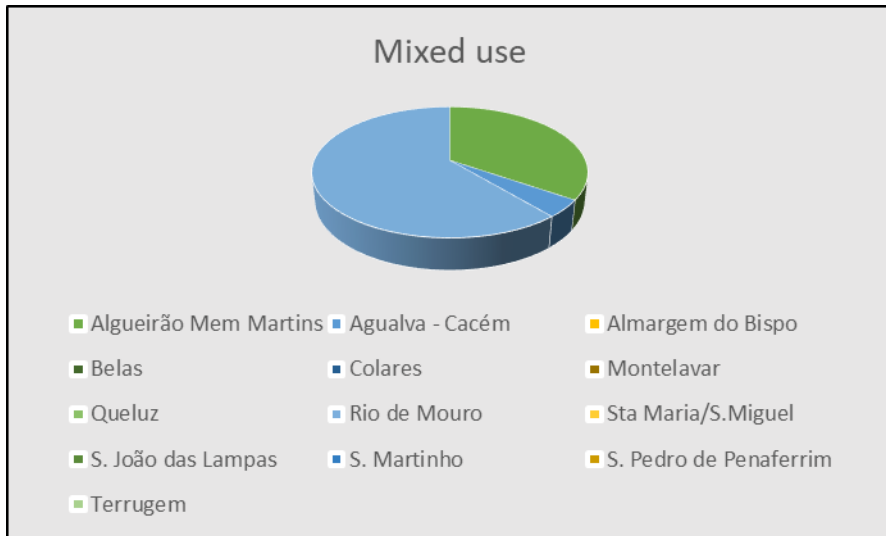
and 1948 homes, what represents a huge impact on the mixed-use values present in this year allotment permits analysis.

As in the previous years, most of the planned homes (4591 homes), in the allotment permits issued in 1987, is concentrated in the parishes of Rio de Mouro, Algueirão-Mem Martins, Queluz and Agualva-Cacém, along the Sintra-Lisbon rail and IC19 road axis, showing its importance as an inducing factor of urban growth. For accessibility reasons and by its effect on soil value and private investment attraction.



**Graph 59** – Homes by multifamily buildings typology and parishes (1987)

Real estate operations with planned commercial use area referred in 14 allotment permits, of which 5 also refer services use and in one of them, in a mixed-use of villas and multifamily housing buildings operation, warehouse use is also referred.



**Graph 60** – Homes by mixed-use typology and parishes (1987)

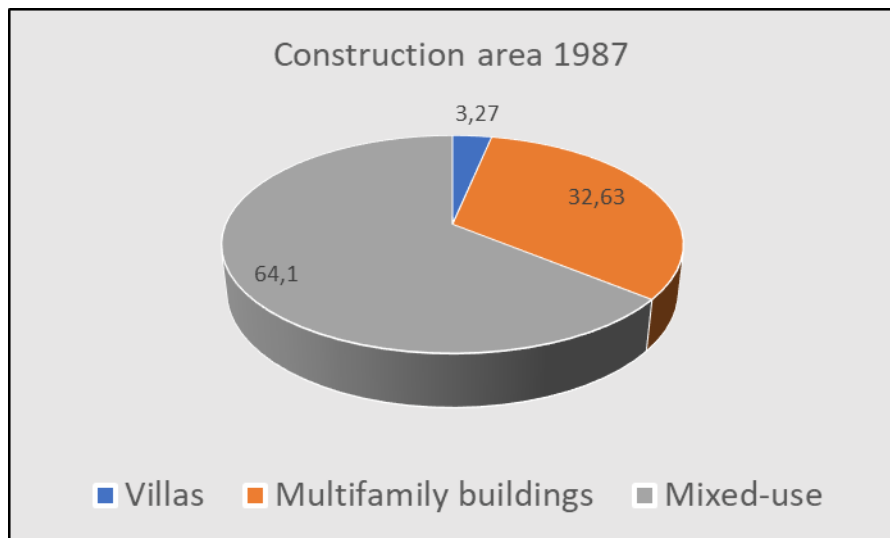
The total construction area foreseen in the issued allotment permits in 1987, 605 600m<sup>2</sup>, area corresponds essentially to multifamily buildings and mixed-use typologies. Construction area in multifamily housing buildings allotment permits corresponds to 197 600m<sup>2</sup> (32,64% of the total) and in mixed-use allotment permits 388 200m<sup>2</sup>

(64,10% of the total). Villas typology is less expressive with a construction area of only 19 800m<sup>2</sup> (3,27% of the total).

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	23	3450	48	4800	1118	134160
Agualva - Cacém	2	300	368	36800	139	16680
Almargem do Bispo	-	-	-	-	-	-
Belas	21	3150	637	63700	-	-
Colares	2	300	4	400	-	-
Montelavar	2	300	-	-	-	-
Queluz	-	-	871	87100	-	-
Rio de Mouro	44	6600	-	-	1978	237360
Sta Maria/S.Miguel	3	450	-	-	-	-
S. João das Lampas	6	900	48	4800	-	-
S. Martinho	6	900	-	-	-	-
S. Pedro de Penaferrim	23	3450	-	-	-	-
Terrugem	-	-	-	-	-	-
<b>Total</b>	<b>132</b>	<b>19800</b>	<b>1976</b>	<b>197600</b>	<b>3235</b>	<b>288200</b>

**Table 56** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1987)





**Graph 61** – Estimated construction area (%) by use typology (1987)

In 1987 ceding areas for public and social use area dominated by soil allocation for road system and for social facilities use. Soil allocation for green spaces only significative in the parishes where large real estate urban operations and does not appears in the allotment permits designated for villas typology or other small real estate urban operations.

As in previous years, the scarce information about cedings areas is the result of the existence of many villas typology allotment permits.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	3,92	4,08	3,64	-	11,64
Agualva - Cacém	2,05	0,21	1,47	0,01	3,74
Almargem do Bispo	-	-	-	-	-
Belas	6,35	-	1,50	-	7,85
Colares	0,03	-	-	-	0,03
Montelavar	0,01	-	-	-	0,01
Queluz	3,72	2,94	0,96	-	7,62
Rio de Mouro	15,71	-	9,62	-	25,33
Sta Maria/S.Miguel	0,03	-	-	-	0,03
S. João das Lampas	0,01	-	-	-	0,01
S. Martinho	0,01	-	-	-	0,01
S. Pedro de Penaferrim	0,15	-	-	-	0,15
Terrugem	-	-	-	-	-
<b>Total</b>	<b>31,99</b>	<b>7,23</b>	<b>17,19</b>	<b>0,01</b>	<b>56,42</b>

**Table 57** – Ceding areas (ha) for public and social uses (1987)

In multifamily housing buildings urbanized area urban density, expressed in homes per hectare, is 49.

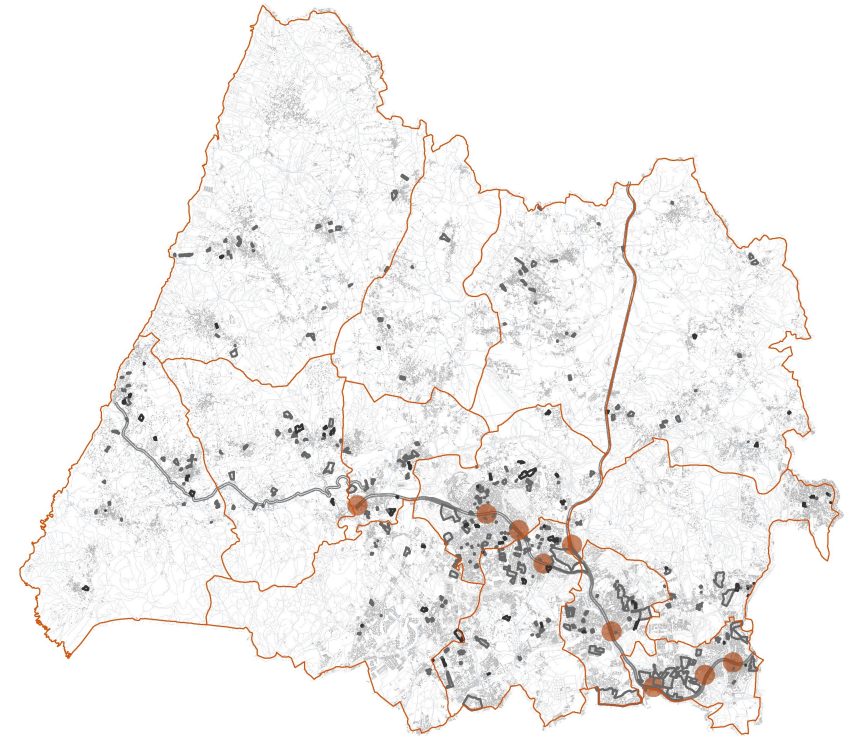


## 10. YEAR 1988 ANALYSYS

In 1988, Sintra Municipality issued 68 allotment permits, but one of them was not possible to analyse for administrative documentation unavailability. For that reason, the allotment permits analysis only 67 allotment permits are considered.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	13	11,63	119	202
Agualva - Cacém	3	1,79	19	186
Almargem do Bispo	4	2,08	16	16
Belas	9	3,49	57	140
Colares	10	5,40	41	64
Montelavar				
Queluz	2	0,39	4	27
Rio de Mouro	12	12,41	150	360
Sta Maria/S.Miguel	4	10,56	26	49
S. João das Lampas	2	1,05	9	9
S. Martinho	4	3,68	47	45
S. Pedro de Penaferrim	3	1,65	28	28
Terrugem	1	0,23	2	2
<b>Total</b>	<b>67</b>	<b>54,36</b>	<b>518</b>	<b>1128</b>

**Table 58** – Allotment permits distribution and characterization by parish (1988)



**Fig. 52** – Allotment permits location (1988)

The number of urban plots, 518, is a value close to the previous year, but with only 1 128 homes, about 21% of the corresponding value of the previous year. With an urbanized area of 54,31 hectares,

corresponding to 47% of the previous year, the total number of urban plots is only 14 urban plots lower than that year.



**Fig. 53** – Villa typology allotment permit in Magoito, S. João das Lampas parish (2 plots, 2 homes)

This shows a much higher population density comparatively to the previous year, 1987. In that year housing density was 49 and the present year, 1988, this density is 88. Almost the double.

Allotment permits issued, regarding their type, were distributed as follows: 53 for individual villas, 11 for multifamily housing buildings, 3 for villas and multifamily buildings mixed-use and none for industry.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	9,93	1,14	0,56	
Aigualva - Cacém		1,79		
Almargem do Bispo	2,08			
Belas	1,29		2,20	
Colares	5,26	0,09	0,05	
Montelavar				
Queluz	0,03	0,36		
Rio de Mouro	9,82	2,59		
Sta Maria/S.Miguel	10,01	0,55		
S. João das Lampas	1,05			
S. Martinho	3,68			
S. Pedro de Penaferrim	1,65			
Terrugem	0,23			
<b>Total</b>	<b>45,03</b>	<b>6,52</b>	<b>2,81</b>	<b>0,00</b>

**Table 59** – Urbanized area (ha) by urban typologies and parishes (1988)

The 67-analysed allotment permits corresponded to an urbanized area of 54,36 hectares divided in 518 urban plots of which 433 were for individual villas, 62 for multifamily housing buildings and 23 for villas

and multifamily buildings mixed-use and allowed the construction of 1 128 homes.



**Fig. 54** – Multifamily buildings typology allotment permit in Mem Martins (8 plots, 45 homes)

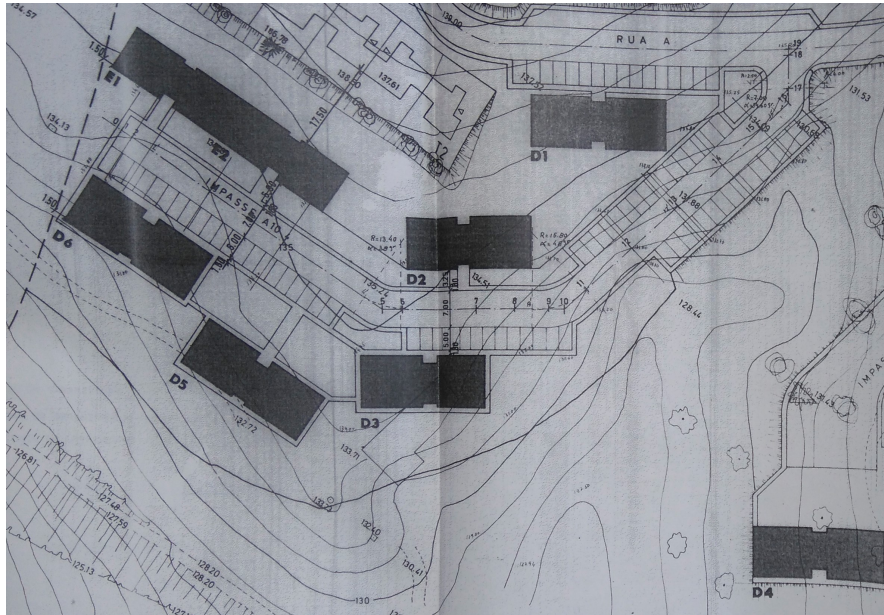
The 45,03 hectares of urbanized area allocated for individual villas, correspondent to 82,84% of the total urbanized area, of only 433 urban plots are designed to allocate 433 homes, what correspond to 8,38% of the total 1128 homes foreseen in the total allotment permits.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	100	12	7	
Agualva - Cacém		19		
Almargem do Bispo	16			
Belas	45		12	
Colares	30	7	4	
Montelavar				
Queluz	2	2		
Rio de Mouro	131	19		
Sta Maria/S.Miguel	23	3		
S. João das Lampas	9			
S. Martinho	47			
S. Pedro de Penaferrim	28			
Terrugem	2			
<b>Total</b>	<b>433</b>	<b>62</b>	<b>23</b>	<b>0</b>

**Table 60** – Urban plots by urban typologies and parishes (1988)

However, in the urbanized area destined to multifamily, 6,52 hectares, 11,99% of the total urbanized area, 62 plots and 576 homes (51,06% of the total foreseen homes) and in the urbanized area destined to mixed-use, 2,81 hectares, 5,16% of the total urbanized area, 23 plots for 119 homes (10,55% of the total foreseen homes) are foreseen in the total allotment permits.





**Fig. 55** – Multifamily buildings typology allotment permit in Rio de Mouro (6 plots, 138 homes)

The differentiation of the urban typologies used in the urbanization of the railway and IC19 road Sintra-Lisbon axis surrounding areas and in the rural territories is still present, in 1988, in the allotment permits analysis.

The total urbanized area, 54,36 hectares, was divided, as follows: 45,03 hectares (82,84%) allocated to 416 urban plots for individual villas; 6,52 hectares (12,00 %) allocated to 62 plots for multifamily

housing buildings and 2,80 hectares (5,16%) allocated for villas and multifamily buildings mixed-use.

	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	100	80	22
Agualva - Cacém		186	
Almargem do Bispo	16		
Belas	46		94
Colares	31	30	3
Montelavar			
Queluz	2	25	
Rio de Mouro	130	230	
Sta Maria/S.Miguel	24	25	
S. João das Lampas	9		
S. Martinho	45		
S. Pedro de Penaferrim	28		
Terrugem	2		
<b>Total</b>	<b>433</b>	<b>576</b>	<b>119</b>

**Table 61** – Homes by urban typologies and parishes (1988)

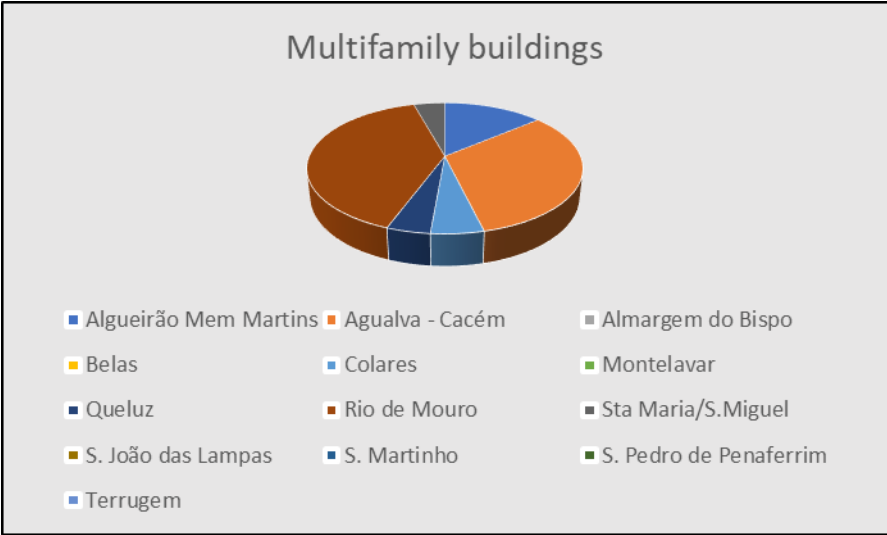
Although more than 80 percent of the urbanized area is intended for individual villas, the 11 allotment permits for multifamily housing buildings correspond to about 52 homes per urbanization permit and about 9 homes per urban plot.



**Graph 62** – Homes by villas typology and parishes (1988)

This represent the importance of villas typology in soil consumption with few people per hectare and the importance of multifamily housing buildings in soil saving and the demographic concentration of people in smaller areas.

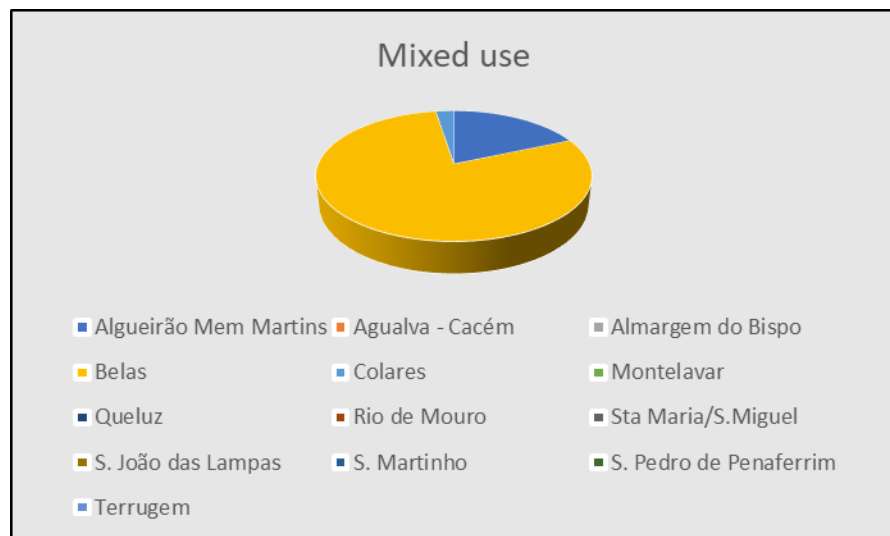
Commercial use is planned in 7 allotment permits, and 3 allotment permits consider also services use in multifamily housing buildings, 2, and in 1 mixed-use urbanization permit.



**Graph 63** – Homes by multifamily buildings typology and parishes (1988)

The strategic position of Agualva-Cacém and Rio de Mouro relatively to the road and rail Lisbon-Sintra is felt once again in the location of most of the homes provided for in permits issued this year.

Of a total of 1128 homes, 546 are allocated in these two parishes, that is 48,40% of the total.



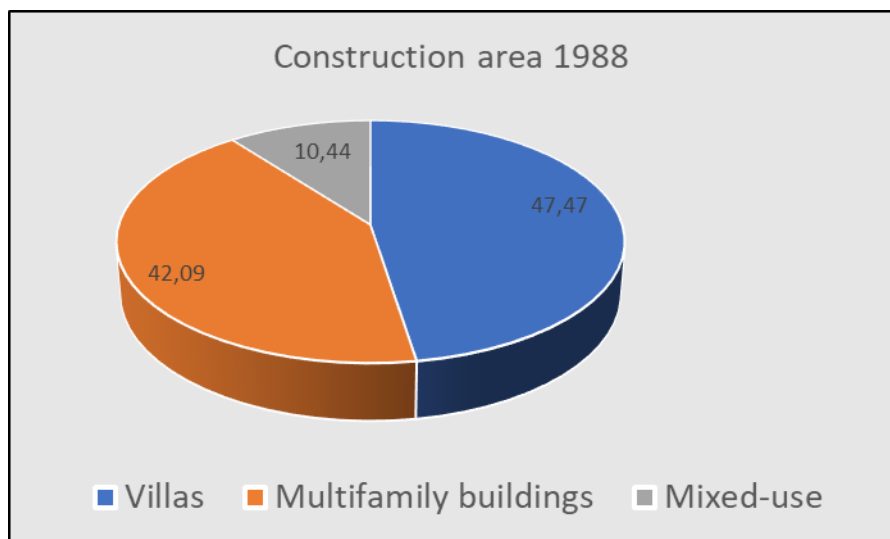
**Graph 64** – Homes by mixed-use typology and parishes (1988)

In this year the total construction area, 136 830m<sup>2</sup>, was mainly allocated to villas typology with a construction area of 64 950m<sup>2</sup> (47,47% of the total area). Multifamily housing buildings typology represent 57 600m<sup>2</sup> of construction area (42,09% of the total) and mixed-use typology 14 280m<sup>2</sup> (10,44% of the total construction area).

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	100	15000	80	8000	22	2640
Agualva - Cacém	-	-	186	18600	-	-
Almargem do Bispo	16	2400	-	-	-	-
Belas	46	6900	-	-	94	11250
Colares	31	4650	30	3000	3	360
Montelavar	-	-	-	-	-	-
Queluz	2	300	25	2500	-	-
Rio de Mouro	130	19500	230	23000	-	-
Sta Maria/S.Miguel	24	3600	25	2500	-	-
S. João das Lampas	9	1350	-	-	-	-
S. Martinho	45	6750	-	-	-	-
S. Pedro de Penaferrim	28	4200	-	-	-	-
Terrugem	2	300	-	-	-	-
<b>Total</b>	<b>433</b>	<b>64950</b>	<b>576</b>	<b>57600</b>	<b>119</b>	<b>14280</b>

**Table 62** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1988)





**Graph 65** – Estimated construction area (%) by use typology (1988)

Ceding areas for public and social use, in 1988, are mostly allocated to road system what is resulting from the fact that urban plots for villas typology are very dominant as typology.

Urban plots for villas typology are 433 in a total of 518, what correspond to 83,59% of the total plots. For this, ceding areas indication for green spaces uses only occurs in more concentrated real estate operations allotment permits.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	1,85	0,01	0,46	-	2,32
Agualva - Cacém	0,47	0,67	0,25	-	1,39
Almargem do Bispo	0,09	-	-	-	0,09
Belas	0,96	0,46	0,03	-	1,45
Colares	2,26	-	0,02	-	2,28
Montelavar	-	-	-	-	-
Queluz	0,16	-	-	-	0,16
Rio de Mouro	2,47	2,39	1,07	0,30	6,23
Sta Maria/S.Miguel	0,80	0,13	0,02	-	0,95
S. João das Lampas	0,13	-	-	-	0,13
S. Martinho	0,54	-	-	-	0,54
S. Pedro de Penaferrim	0,21	-	0,1	-	0,31
Terrugem	-	-	-	-	-
<b>Total</b>	<b>9,94</b>	<b>3,66</b>	<b>1,95</b>	<b>0,30</b>	<b>15,85</b>

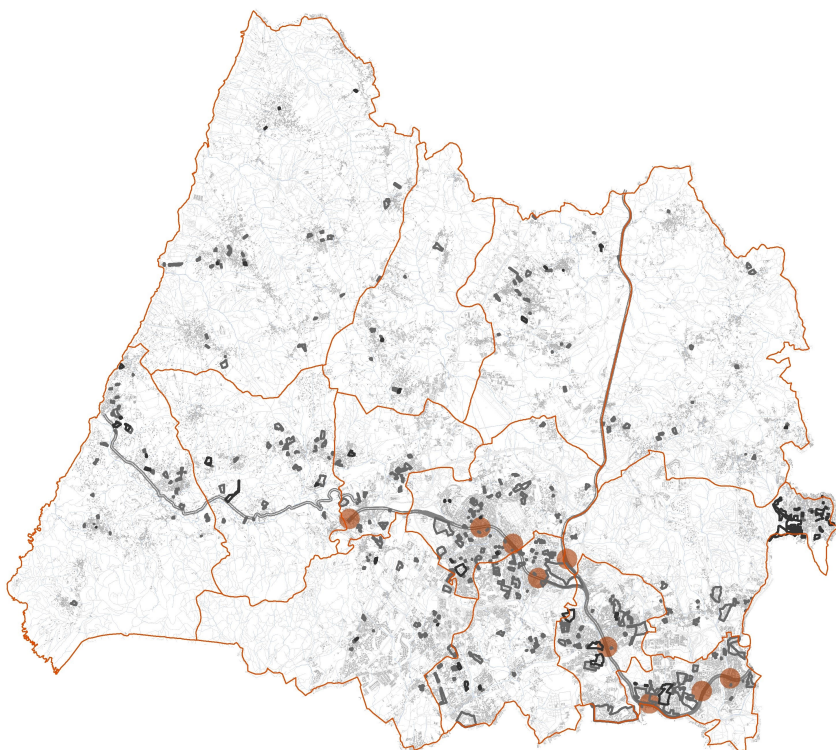
**Table 63** – Ceding areas (ha) for public and social uses (1988)

In the total urbanized area for multifamily housing buildings urban density, expressed in homes per hectare, is 88.



## 11. YEAR 1989 ANALYSYS

In 1989, the Sintra Municipality issued 56 allotment permits corresponding to an urbanized area of 140,67 hectares, and to 1 367 urban plots and 6 035 homes.



**Fig. 56** – Allotment permits location (1989)

These numbers correspond to the largest numbers of urban plots, 1367, and homes, 6035, approved in a single year, in the study period 1981-1990.

	Urbanization permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	6	12,62	656	829
Aigualva - Cacém	3	12,92	97	1286
Almargem do Bispo	1	0,27	5	5
Belas	13	67,92	128	478
Colares	8	12,04	107	529
Montelavar	4	2,08	27	25
Queluz	3	18,40	140	2677
Rio de Mouro	3	2,77	45	45
Sta Maria/S.Miguel	1	1,59	80	80
S. João das Lampas	5	1,39	23	22
S. Martinho	4	6,35	30	30
S. Pedro de Penaferrim	3	1,18	18	18
Terrugem	2	1,14	11	11
<b>Total</b>	<b>56</b>	<b>140,67</b>	<b>1367</b>	<b>6035</b>

**Table 64** – Allotment permits distribution and characterization by parish (1989)

From the total urbanized area 964 urban plots, 33,74 hectares, are allocated for individual villas, representing 23,98% of the total

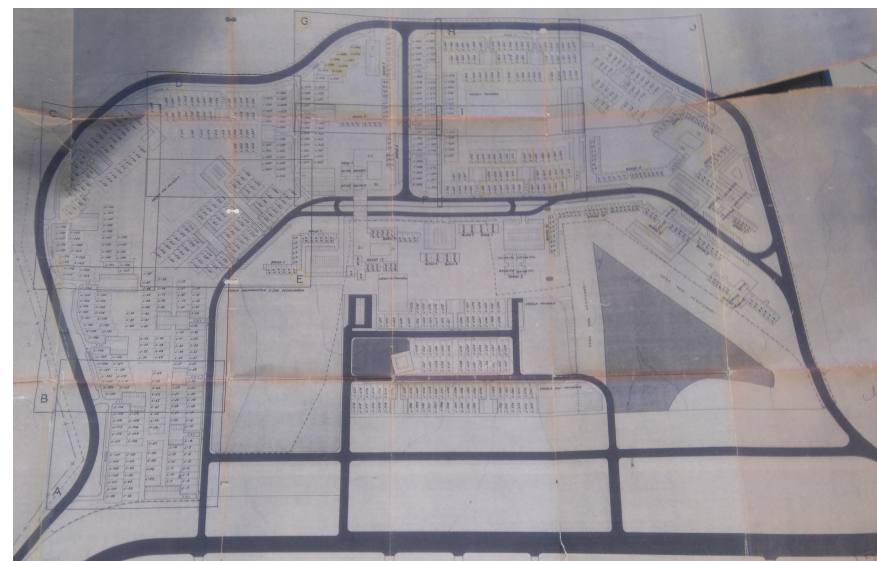


urbanization area and 1 106 homes, 18,33% of the total of homes, in 147 urban plots, 10,75% of the total.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	615	41		
Agualva - Cacém		13	64	
Almargem do Bispo	5			
Belas	80	5	43	
Colares	32	35	40	
Montelavar	25			2
Queluz		140		
Rio de Mouro	45			
Sta Maria/S.Miguel	80			
S. João das Lampas	23			
S. Martinho	30			
S. Pedro de Penaferrim	18			
Terrugem	11			
<b>Total</b>	<b>964</b>	<b>234</b>	<b>147</b>	<b>2</b>

**Table 66** – Urban plots by urban typologies and parishes (1989)

The urbanized area for villas typology allotment permits and for multifamily housing buildings are equivalent but this has no correspondence in the total homes foreseen in the 1989 allotment permits issuance.



**Fig. 58** – Multifamily buildings typology allotment with commercial and services uses allotment in Casal da Cavaleira, Algueirão-Mem Martins parish (582 plots, 570 homes)

The number of foreseen urban plots and homes in the issued allotment permits in 1989 correspond to 24% of the urban plots of all



the allotment permits issued in the whole decade 1981-1990 and to 20,31% of the total homes therein.



**Fig. 59** – Villa typology allotment in S. Pedro de Sintra, S. Pedro de Penaferrim parish (11 plots, 11 homes)

As in the previous years, there is a very significant villas typology dominance in the 1989 that has no correspondence in the respective allotment permits foreseen homes.

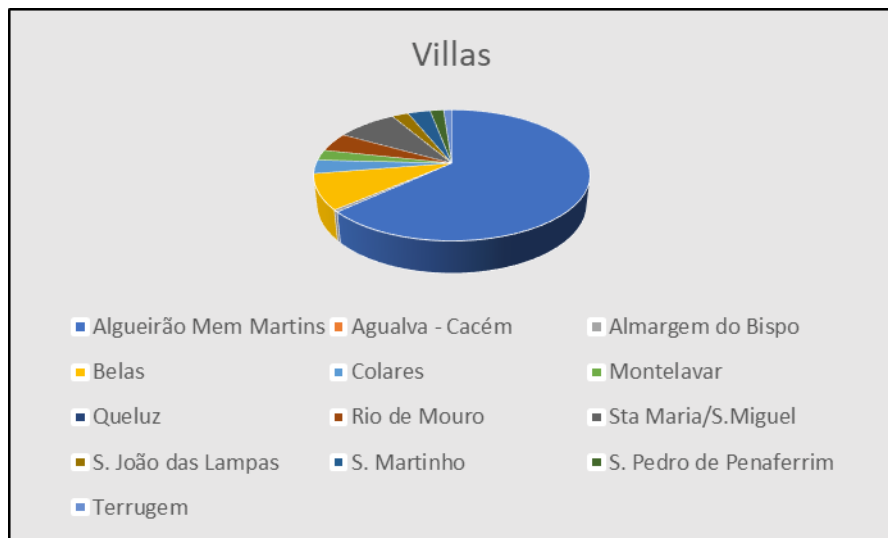
Commercial use is planned in 9 allotment permits, and 3 of them consider also services; one in a villa typology urbanization permit,

other in multifamily housing building typology urbanization permit and another in a mixed-use typology one.

	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	603	226	-
Aigualva - Cacém	-	622	664
Almargem do Bispo	5	-	-
Belas	83	40	355
Colares	32	410	87
Montelavar	25	-	-
Queluz	-	2677	-
Rio de Mouro	45	-	-
Sta Maria/S.Miguel	80	-	-
S. João das Lampas	22	-	-
S. Martinho	30	-	-
S. Pedro de Penaferrim	18	-	-
Terrugem	11	-	-
<b>Total</b>	<b>954</b>	<b>3975</b>	<b>1106</b>

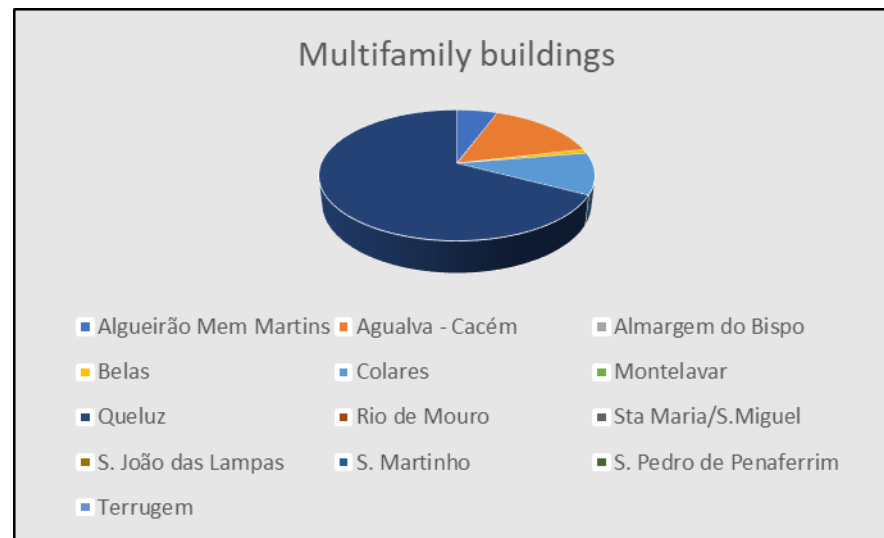
**Table 67** – Homes by urban typologies and parishes (1989)

Homes high percentage in multifamily housing buildings relatively to the total allotment permits homes show their increasing importance in Sintra Municipality urban growth process.



**Graph 66** – Homes by villas typology and parishes (1989)

As indicated in the graph 63 Algueirão-Mem Martins parish absorbs almost two thirds of the villas typology homes, 603, and Queluz parish also absorbs almost two thirds of the 3975 foreseen homes in multifamily housing building permits. Mixed-use allotment permits foreseen homes are mostly concentrated in Aguialva-Cacém parish with 664 homes, almost two thirds of this typology total homes.



**Graph 67** – Homes by multifamily buildings typology and parishes (1989)

The high percentage of homes in multifamily housing buildings and in individual villas and multifamily buildings mixed-use in relation to the total homes foreseen the total allotment permits shows their increasing importance in the characterization of the dominant urban typology in Sintra Municipality urban growth process.





**Graph 68** – Homes by mixed-use typology and parishes (1989)

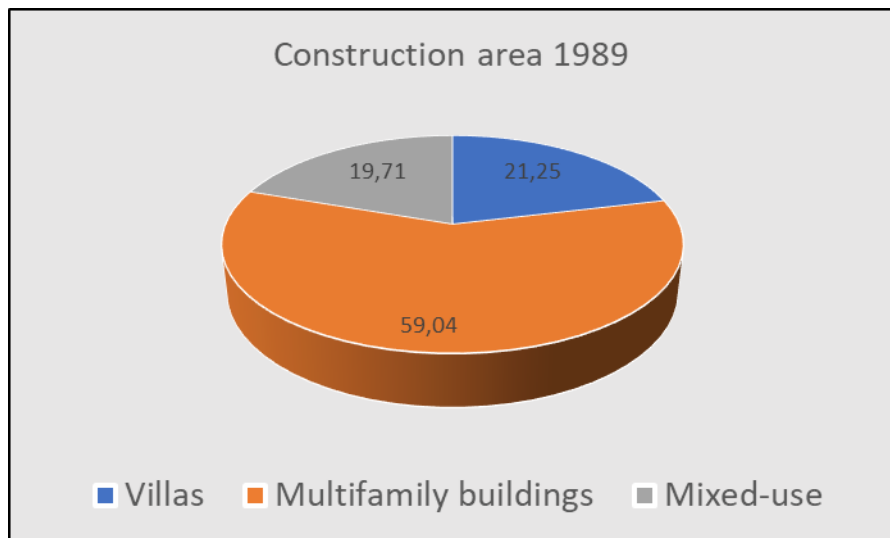
Of the total construction area, 673 320 m<sup>2</sup>, about three fifths correspond to multifamily housing buildings allotment permits that represent 397 500m<sup>2</sup> (59,04% of the total). Villas and mixed-use typologies construction area present approximate values: 143 100m<sup>2</sup> (21,25% of the total) in the first case and 132 720 m<sup>2</sup> (19,71% of the total) in the second case.

In 1989, multifamily housing buildings, as in previous, continues to be the dominant typology in Sintra Municipality urban growth. Aqualva-Cacém and Queluz parishes absorb 49,00% of the

construction area corresponded to multifamily housing buildings typology.

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	603	90450	226	22600	-	-
Aqualva - Cacém	-	-	622	62200	664	7968
Almargem do Bispo	5	750	-	-	-	-
Belas	83	12450	40	4000	355	42600
Colares	32	4800	410	41000	87	10440
Montelavar	25	3750	-	-	-	-
Queluz	-	-	2677	267700	-	-
Rio de Mouro	45	6750	-	-	-	-
Sta Maria/S.Miguel	80	12000	-	-	-	-
S. João das Lampas	22	3300	-	-	-	-
S. Martinho	30	4500	-	-	-	-
S. Pedro de Penaferrim	18	2700	-	-	-	-
Terrugem	11	1650	-	-	-	-
<b>Total</b>	<b>954</b>	<b>143100</b>	<b>3975</b>	<b>397500</b>	<b>1106</b>	<b>132720</b>

**Table 68** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1989)



**Graph 69** – Estimated construction area (m2) by use typology (1989)

In 1989, ceding areas for public and social use are mostly allocated to road system and for green spaces. This results from large real estate urban operation in the three parishes: Aqualva-Cacém, Belas and Queluz. Soil allocation for social facilities is mainly indicated in Aqualva-Cacém and Queluz for the same reasons.

Soil extension for social and public uses is, in this year, the largest one in all the decade records. A 65,45 hectares real estate urban operation, in Belas, is the principal responsible for this reality.

Ceding areas (ha)					
	Roads	Green Spaces	Social facilities	Infrastructures	Total
Algueirão Mem Martins	8,75	-	0,58	-	9,33
Aqualva - Cacém	4,47	2,64	2,89	-	10,00
Almargem do Bispo	0,01	-	-	-	0,01
Belas	28,24	30,57	-	-	58,81
Colares	5,84	-	0,69	-	6,53
Montelavar	0,25	-	-	-	0,25
Queluz	5,99	7,08	0,98	-	14,05
Rio de Mouro	0,62	-	-	-	0,62
Sta Maria/S.Miguel	0,83	-	-	-	0,83
S. João das Lampas	0,16	-	-	-	0,16
S. Martinho	0,48	-	0,14	-	0,62
S. Pedro de Penaferrim	0,16	-	0,10	-	0,26
Terrugem	0,06	-	-	-	0,06
<b>Total</b>	<b>55,86</b>	<b>40,29</b>	<b>5,38</b>	<b>-</b>	<b>101,53</b>

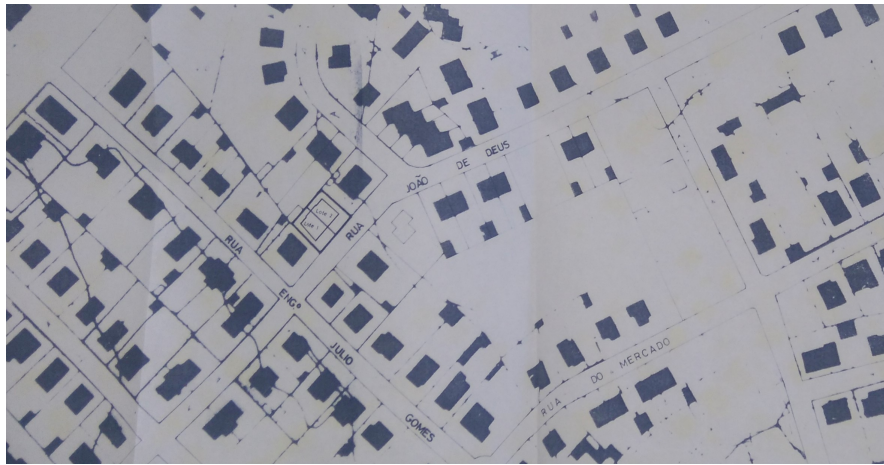
**Table 69** – Ceding areas (ha) for public and social uses (1989)

The urban density in the total urbanized area for multifamily housing buildings is 126 homes per hectare.



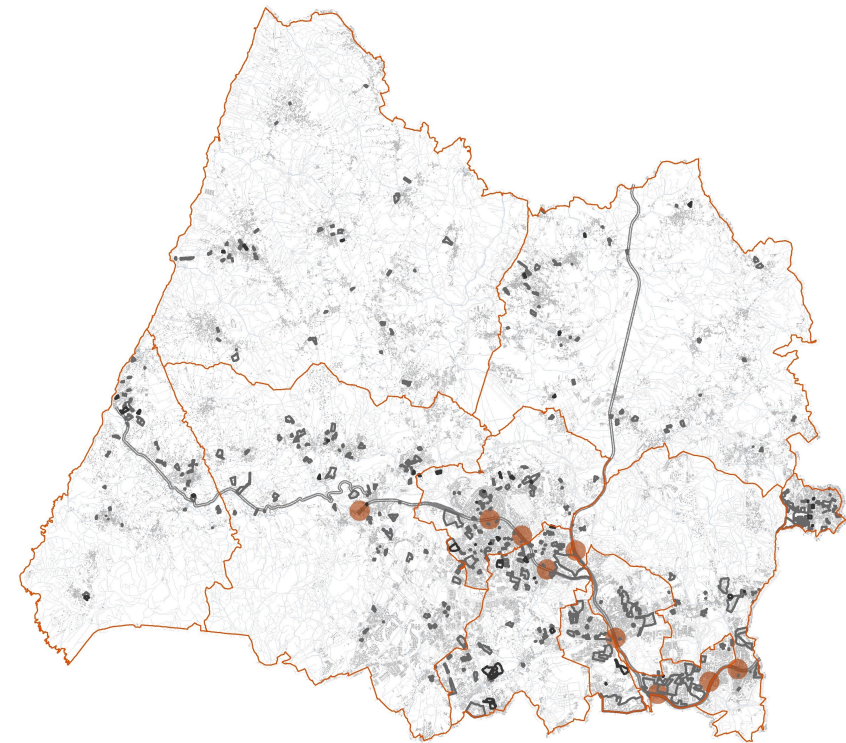
## 12. YEAR 1990 ANALYSYS

In 1990, the last year of the study period first decade, Sintra Municipality issued 51 allotment permits, to which correspond 50,48 hectares of urbanized area.



**Fig. 60** – Villa typology allotment in Algueirão (2 plots, 2 homes)

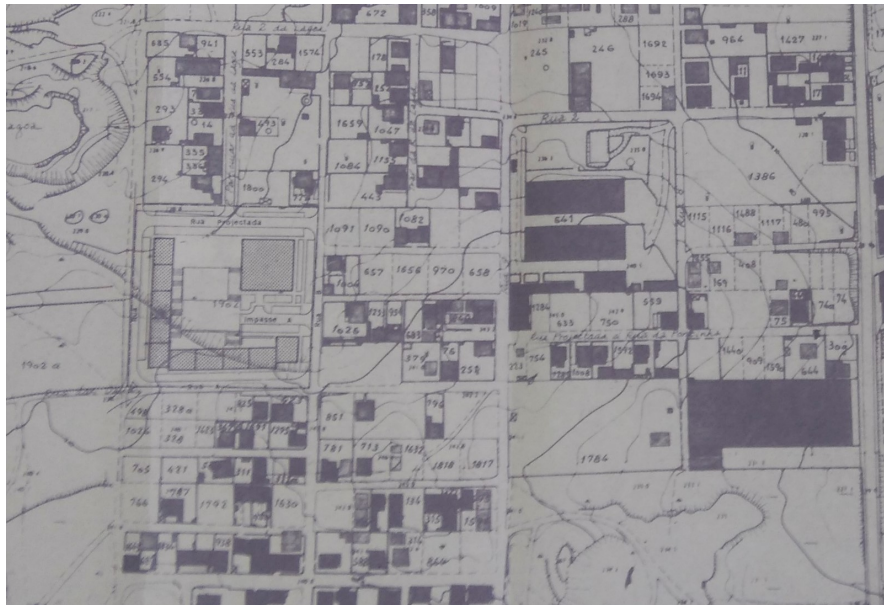
Allotment permits issued, regarding their type, were distributed as follows: 35 for individual villas, 9 for multifamily housing buildings, 5 for villas and multifamily buildings mixed-use and 2 for industry and warehouse use. In one of the urbanization permit for individual villas there is also an urban plot designated for warehouse use.



**Fig. 61** – Allotment permits location (1990)

In this year the number of urban plots corresponding to the 51 issued allotment permits is 673 divided in 276 urban plots for individual villas, 74 for multifamily housing buildings, 317 for villas and multifamily buildings mixed-use and 6 for industry and warehouse use.

The total urbanized area, in 1990, is 50,48 hectares, in which 1 925 homes are foreseen, concentrating Algueirão-Mem Mem Martins and Rio de Mouro 62,30% of the total urbanized area and 63,53% of the total of homes.



**Fig. 62** – Multifamily buildings typology allotment with commercial use in Casal de Cambra, Belas parish (10 plots, 76 homes)

In one of the urbanization permit for individual villas there is also an urban plot designated for warehouse use.

	Allotment permits	Urbanized area (ha)	Urban plots	Homes
Algueirão Mem Martins	14	9,50	210	514
Aqualva - Cacém	2	4,39	23	298
Almargem do Bispo	1	0,60	2	2
Belas	7	2,87	40	142
Colares	6	6,46	29	174
Montelavar	4	2,08	13	12
Queluz	1	0,11	2	11
Rio de Mouro	9	21,95	324	709
Sta Maria/S.Miguel	2	0,48	6	39
S. João das Lampas	3	1,44	16	16
S. Martinho	2	0,60	8	8
S. Pedro de Penaferrim	-	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>51</b>	<b>50,48</b>	<b>673</b>	<b>1925</b>

**Table 70** – Allotment permits distribution and characterization by parish (1990)

The urbanization area distribution by urban typologies indicates 15,67 hectares allocated to villas typology (30,84% of the total), 10,50 hectares for multifamily housing buildings typology (20,80% of the total) and 20,59 hectares for mixed-use villas and multifamily housing buildings (40,79% of the total urbanized area). For industrial and warehousing uses are allocated 3,72 hectares (7,37% of the total).



	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	4,87	0,99	3,64	-
Agualva - Cacém	0,12	4,27	-	-
Almargem do Bispo	-	-	0,60	-
Belas	0,8	2,07	-	-
Colares	2,73	1,83	-	1,90
Montelavar	2,08	-	-	-
Queluz	-	-	0,11	-
Rio de Mouro	3,04	0,86	16,24	1,82
Sta Maria/S.Miguel	-	0,48	-	-
S. João das Lampas	1,44	-	-	-
S. Martinho	0,59	-	-	-
S. Pedro de Penaferrim	-	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>15,67</b>	<b>10,50</b>	<b>20,59</b>	<b>3,72</b>

**Table 71** – Urbanized area (ha) by urban typologies and parishes (1990)

However, this urbanized area division by urban typologies has no direct correspondence with homes distribution. In fact, to villas typology only correspond 273 homes (14,44 of the total) while to multifamily housing buildings correspond 771 homes (40,05% of the total) and to mixed-use typology 876 homes (45,51% of the total).



**Fig. 63** – Multifamily buildings typology allotment with commercial and services uses in Cacém (21 plots, 296 homes)

Most of the urbanized area this year was destined to mixed-use typology real estate operations: a total of 317 urban plots out of a total of 673, corresponding to 876 homes out of a total of 1925 and an

urbanized area of 20,58 hectares, which is practically double that of 10,50 hectares intended for multifamily housing buildings use.

	Villas	Multifamily buildings	Mixed-use	Industry & Warehouses
Algueirão Mem Martins	141	15	54	-
Aigualva - Cacém	2	21	-	-
Almargem do Bispo	2	-	-	-
Belas	24	16	-	-
Colares	19	8	-	2
Montelavar	13	-	-	-
Queluz	-	-	2	-
Rio de Mouro	53	8	259	4
Sta Maria/S.Miguel	-	6	-	-
S. João das Lampas	16	-	-	-
S. Martinho	8	-	-	-
S. Pedro de Penaferrim	-	-	-	-
Terrugem	-	-	-	-
<b>Total</b>	<b>278</b>	<b>74</b>	<b>315</b>	<b>6</b>

**Table 72**– Urban plots by urban typologies and parishes (1990)

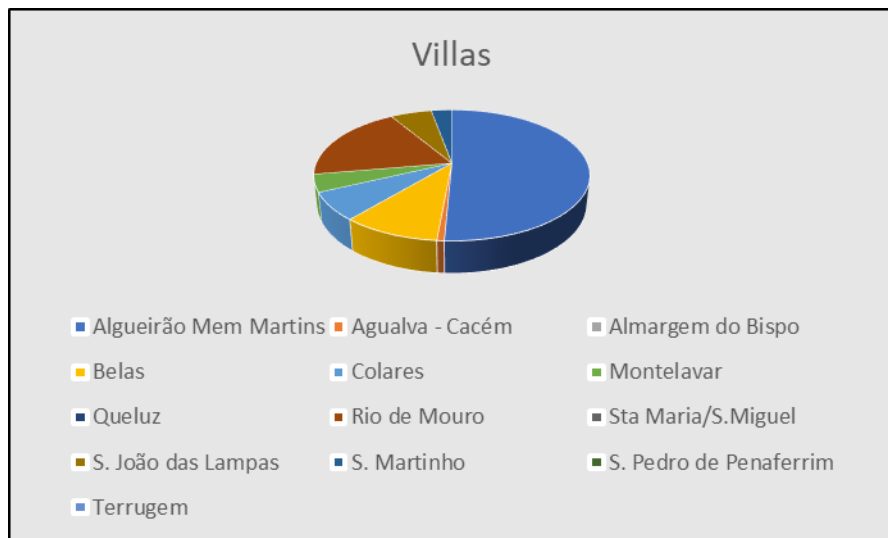
Industrial and warehousing uses area restricted to only 6 urban plots, 2 in Colares parish and 4 in Rio de Mouro.

The total 1 925 homes are distributed as follows: 278 planned homes for individual villas, 771 for multifamily housing buildings and 876 for individual villas and multifamily housing buildings mixed-use.

	Villas	Multifamily buildings	Mixed-use
Algueirão Mem Martins	141	102	271
Aigualva - Cacém	2	296	-
Almargem do Bispo	-	-	2
Belas	27	115	-
Colares	19	155	-
Montelavar	12	-	-
Queluz	-	-	11
Rio de Mouro	53	64	592
Sta Maria/S.Miguel	-	39	-
S. João das Lampas	16	-	--
S. Martinho	8	-	-
S. Pedro de Penaferrim	-	-	-
Terrugem	-	-	-
<b>Total</b>	<b>278</b>	<b>771</b>	<b>876</b>

**Table 73** – Homes by urban typologies and parishes (1990)



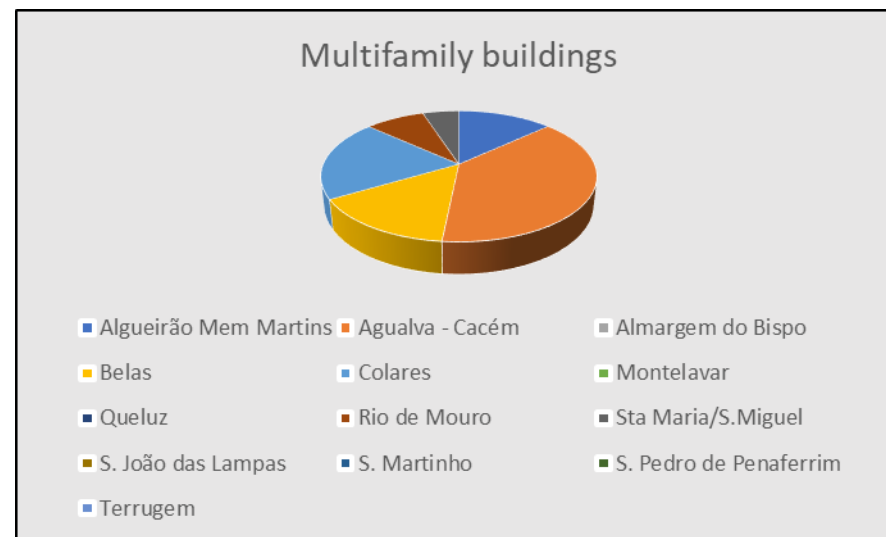


**Graph 70** – Homes by villas typology and parishes (1990)

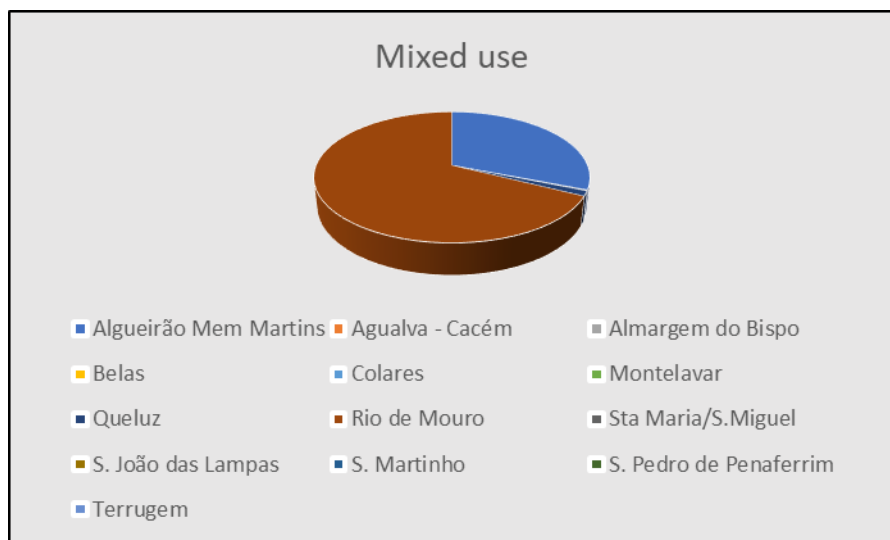
Commercial use is planned in 7 allotment permits, 3 of them considering also services use in multifamily housing buildings. In one of the allotment permits for multiple housing buildings tourism use is foreseen.

Villas typology area very present in almost all the Sintra Municipality parishes especially in the rural ones. The more concentrate urban typologies, multifamily housing buildings and mixed use multifamily housing buildings and villas are concentrated in the parishes closer to the main road and railway transport axis linking Sintra to Lisbon.

This represent a clear evidence of the influence of transports facilities in the urban growth and in the increased soil value, forcing a greater economic optimization of land use and, of course, a greater densification of the urban fabric. A reality that is very present in the landscape patterns of Sintra Municipality territory and is a mark of a strong suburbanization process that results from the impact that Lisbon has on its surroundings. What is accentuated in the absence of adequate planning rules.



**Graph 71** – Homes by multifamily buildings typology and parishes (1990)



**Graph 72** – Homes by mixed-use typology and parishes (1990)

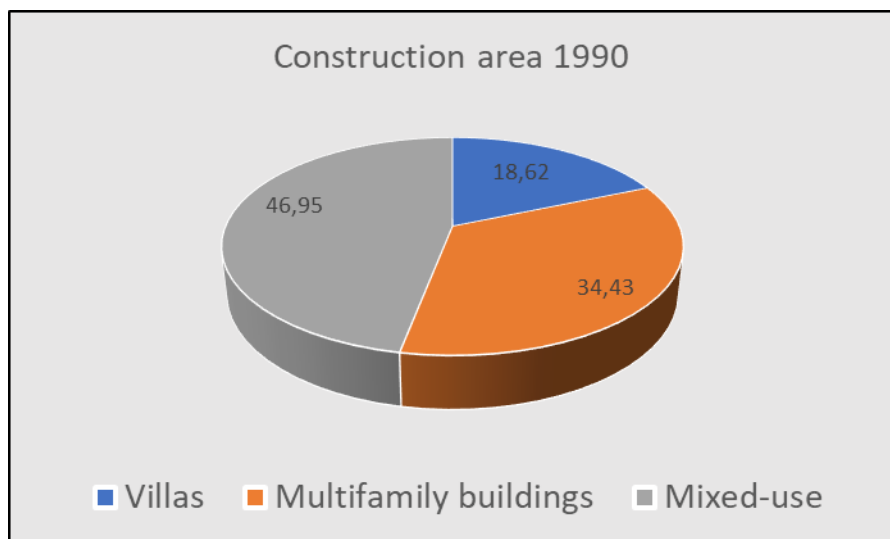
The total construction area, 223 920m<sup>2</sup>, is divided by villas typology that present 41 700m<sup>2</sup> (18,62% of the total construction area), multifamily housing buildings typology with 77 100m<sup>2</sup> (34,43% of the total) and mixed-use typology with 105 120m<sup>2</sup> (46,95% of the total).

The mixed-use typology construction area dominance in 1990 is caused by only 3 propriety allotment permits; in Algueirão-Mem Martins a 3,64 hectares real estate operation with 271 homes and two others in Rio de Mouro with 9,13 and 7,10 hectares and 592 homes. This confirms that importance of villas typology in terms of urbanized

area does not correspond to its importance in terms of construction area and foreseen homes.

	Villas		Multifamily Buildings		Mixed-use	
	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )	Homes	Constr. area (m <sup>2</sup> )
Algueirão Mem Martins	141	21150	102	10200	271	32520
Agualva - Cacém	2	300	296	29600	-	-
Almargem do Bispo	-	-	-	-	2	240
Belas	27	4050	115	11500	-	-
Colares	19	2850	155	15500	-	-
Montelavar	12	1800	-	-	-	-
Queluz	-	-	-	-	11	1320
Rio de Mouro	53	7950	64	6400	592	71040
Sta Maria/S.Miguel	-	-	39	3900	-	-
S. João das Lampas	16	2400	-	-	-	-
S. Martinho	8	1200	-	-	-	-
S. Pedro de Penaferrim	-	-	-	-	-	-
Terrugem	-	-	-	-	-	-
<b>Total</b>	<b>278</b>	<b>41700</b>	<b>771</b>	<b>77100</b>	<b>876</b>	<b>105120</b>

**Table 74** – Estimated construction area (m<sup>2</sup>) by use typology and parishes (1990)



**Graph 73** – Estimated construction area (%) by use typology (1990)

Soil allocation for social and public uses as indicated in allotment permits issued in 1990 is largely influenced by 2 large real estate urban operations in Rio de Mouro being soil allocation for green spaces and social facilities dispersed by small proprieties urban operations.

As in the previous years ceding areas for social and public areas are concentrated is soil allocation for the road system.

	Ceding areas (ha)				Total
	Roads	Green Spaces	Social facilities	Infrastructures	
Algueirão Mem Martins	3,48	0,15	0,75	-	4,38
Agualva - Cacém	1,70	1,91	0,11	-	3,72
Almargem do Bispo	0,01	-	-	-	0,01
Belas	0,92	-	0,74	-	1,66
Colares	1,10	-	0,33	-	1,43
Montelavar	0,13	-	-	-	0,13
Queluz	0,01	-	-	-	0,01
Rio de Mouro	8,08	0,06	0,48	-	8,62
Sta Maria/S.Miguel	0,26	-	-	-	0,26
S. João das Lampas	0,20	-	-	-	0,20
S. Martinho	0,14	-	-	-	0,14
S. Pedro de Penaferrim	-	-	-	-	-
Terrugem	-	-	-	-	-
<b>Total</b>	<b>16,03</b>	<b>2,12</b>	<b>2,41</b>	<b>-</b>	<b>20,56</b>

**Table 75** – Ceding areas (ha) for public and social uses (1990)

In the total urbanized area for multifamily housing buildings urban density, expressed in homes per hectare, is 73.



# EUROPEAN STRUCTURAL FUNDS



## STRUCTURAL FUNDS PROGRAMS

The European Structural Funds correspond to a set of five funds created to reduce the gap in development levels of the most recent accession countries to the European Economic Community and later to the European Union. They therefore have a focus on regional development and cohesion issues, mainly on about infrastructures, the qualification of urban and rural territories and the qualification of human capital.

Until 1988, the cohesion policy for the implementation of the European Structural Funds had a logic of annual implementation and reimbursement of individual projects presented by the Member States and so only small size projects and investments could be co-financed. From that year, the application of these funds started to have a multi-annual and strategic programming, integrating its complementarity.

In this context, the Portuguese government has established integrated programs with the European Commission to coordinate the use of European Structural Funds in each of the cycles of its implementation:

- a) the I Community Support Framework (QCA I) for the 1989-1993 programming period;
- b) the II Community Support Framework (QCA I) for the 1994-1999 programming period;
- c) the III Community Support Framework (QCA III) for the 2000-2006 programming period;
- d) the National Strategic Reference Framework (QREN) for the 2007-2013 programming period.

The European Regional Development Fund (FEDER) was established in 1975 with the broad aim of financing structural aid through regional development programmes. The aid was targeted at less developed regions and applied in the light of a global strategy integrated with the other structural funds. Among them the European Social Fund (ESF) that aims to support supporting jobs, professional training, helping people get better jobs and ensuring fairer job opportunities.

The European Regional Development Fund (FEDER) aims to strengthen economic and social cohesion in the European Union by



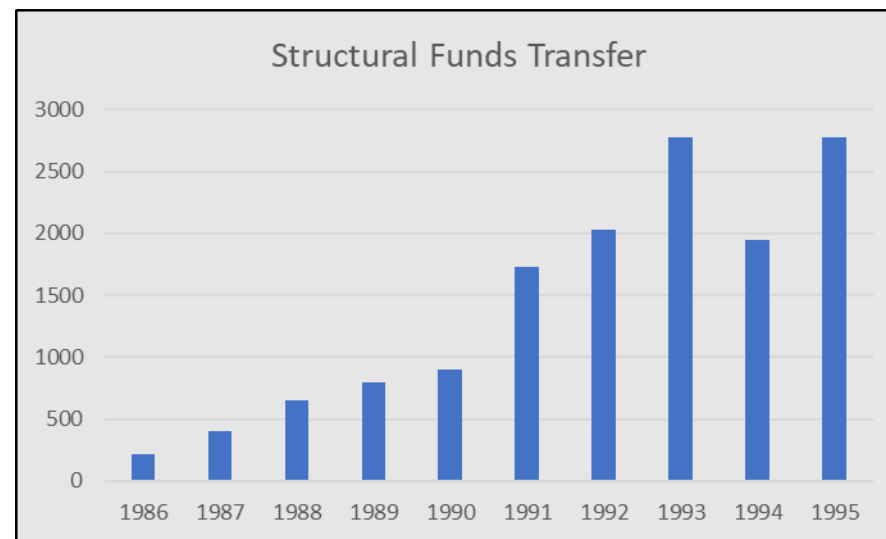
correcting imbalances between its regions, reducing economic, environmental and social problems in urban areas, with a special focus on sustainable urban development and territorial infrastructures.

To accelerate economic growth in the less developed Member States the Cohesion Fund (those whose Gross National Income per inhabitant is less than 90 % of the EU average) aims to reduce economic and social disparities and to promote sustainable development. It can also support projects related to energy or transport to benefit the environment in terms of energy efficiency, use of renewable energy and developing rail transport to support intermodality to strength public transport as dominant transportation system.

Since joining the European Community, in January 1986, Portugal has applied for this co-financing, which, together with public and private national investment, has been a key support in the implementation of numerous development actions. In the period 1986-1995 Portugal received EUR 13 400 million from the Structural Funds, which corresponds to 2.6% of the domestic product generated in that period. In the period 1986-1995 Portugal received EUR 13 400

million from the Structural Funds, which corresponds to 2.6% of the domestic product generated in that period. This amount was negotiated under the Implementing Regulation in force until 1989 and, from that date, under the QCAI from 1989 to 1993, and QCAII the 1994-1999 period.

This amount was negotiated under the Implementing Regulation in force until 1989 and, from that date, under the QCAI from 1989 to 1993, and QCAII the 1994-1999 period.



**Graph 74–** Structural Funds transfer in EUR million (1986-1995)

Source: DGDR- Ministry of Planning and Territorial Administration (1995)

For the purposes of this study only the structural funds dedicated to territorial cohesion, infrastructure and urban qualification (EDRF and Cohesion Fund) are considered.

### **The 1986-1988 FEDER implementing regulations**

According to the FEDER regulation, following the adhesion of Portugal to the European Economic Community, the Regional Development Program (PRODR) for the period 1986-1988 was approved by the European Economic Community.

According to the FEDER regulation, following the adhesion of Portugal to the European Economic Community, the Regional Development Program (PRODR) for the period 1986-1988 was approved by the European Economic Community. This program focused on two areas of intervention: directly productive investments and infrastructures linked to productive investments (parks and

industrial equipment, transport and telecommunications, hydraulic infrastructures, etc.)

In the first three years following Portugal's adhesion to the European Economic Community (1986-1988) and in which the implementation of the EDRF had an annual program, co-financing was only applicable to small-scale and size projects and projects.

For this reason, the amount of financial transfers under the EDRF was less significant than in the following years because it could only be applied to small-scale projects. Even so, in those three years, 605,5 million euros were distributed nationwide, distributed as follows: 135,5 million euros in 1986, 187,5 million euros in 1987 and 282,5 million euros in 1988. In that period the FEDER financial support was mainly directed to the implementation of 2 262 investment projects and some 650 Incentives to productive activity, telecommunications, energy projects and programs as well those allocated to the north Alentejo development operation.

The 1987, the Regional Development Program (PRODR) included territorial planning issues as determinants to the areas that could be co- financed by the European Structural Funds, especially the FEDER,

leaving aside relevant other relevant sectors that were not financed by the fund.

In this period there is no indication of significative infrastructural EDRF co-financed investments with impact on urban organization and qualification in Sintra Municipality.

### **I Community Support Framework (QCA I) 1989-1993**

The I Community Support Framework (QCAI) financial support allocated to Portugal in the period 1989-1993 reached a total of EUR 8 540 million. This co-financed support, to promote the development of less developed regions, together with national public and private financial participations, made possible to make a total investment of EUR 17 205 million. Overall, the Structural Funds that made up the QCA I accounted for almost 50% of total planned funding, with central government responsible for most of the associated public investment. However, the weight of national public and private financial participation was very different, according to the specificities of each of the Structural Funds.

The reform of the Structural Funds which took place on 1 January 1989 corresponded to a change in the philosophy of the application of the funds, and isolated support for investment projects was abandoned. With this reform, support was given to integrated programs that defined medium-term development objectives and strategies, spelling out the priorities, programs and actions to be carried out.

In this context, the Greater Lisbon Operational Plan (1990-1993) was the organized development plan to frame the co-financing of the Structural Funds for public and private investments, which are part of the QCA I objectives. The total FEDER co-financed support for this plan was EUR 3 747 million.

The Operational Plan of Greater Lisbon presented as the main justification and foundation the fact that the city of Lisbon has always been the organizing and stimulating element of the urban and economic growth of its peripheries. This fact elapsing to a set of problems both transport, due to the increasing commuting traffic and the unruly organization of its urban peripheries.

Of all the problems in question, three groups stand out as development strangulations, requiring immediate resolution:

- existence of productive fabric amalgamated with residential urban fabric or monofunctional dormitory areas. In one case and in another case with insufficient social and public facilities to cover the minimum of population needs, creating situations of poor housing conditions and a fragile social cohesion;

- close active population dependence on Lisbon, whose tertiarization process was growing, giving rise to large commuting flows that evidenced the need for permanent scaling of access roads and transport systems;

- disarticulated territorial and urban occupation, provoking basic sanitation networks ruptures, leading to the water lines degradation through its use as open sky sewers, fertile agricultural soils and floodplain areas urban occupation with housing and industries, and the existence of many scattered untreated dumps throughout the territory. The Greater Lisbon Operational Plan focused mainly on solving the problems related to the third bottleneck, especially

regarding the environmental problems arising from the above situations.

<b>Investment Projects</b>	<b>FEDER Co-financing support (EUR million)</b>
Sintra Railway remodelling works	2,851
Various municipal initiative projects	0,250
East Agualva-Cacém industrial circular road	10,494
Pero Pinheiro industrial circular road	0,447
Extension of Vitorino Nemésio Avenue, Mem Martins (connection EN249 to Pero Pinheiro)	0,112
Section of the northern branch of the Pontinha radial road	0,398
Water supply to sector 9 Abrunheira	1,940
Mem Martins industrial zone sanitation network	0,562
Mem Martins rainwater drainage network	0,213
Cacém road-rail interface freight	1,484
<b>Total</b>	<b>17,267</b>

**Table 76** – Sintra Municipality FEDER co-financed projects (1989-1993)

Source: CCRLVT (1990)

This plan was a was not the starter for economic development that was under way but only a response to the problems created by the functional breakdowns of the territory, lack of equipment, poor accessibility and environmental degradation.

The total estimated cost for QCA I (1989-1993) projects and actions implementation was EUR 55,872 million with a FEDER co-financing support of EUR 28,185 million (CCRLVT, 1990).

In Sintra Municipality, the total FEDER co-financed municipal investments, in the QCA I application period, reached EUR 16,810 million, to which must be added the financial support related to inter-municipal investments for the expansion of the industrial plant for the treatment of municipal solid waste and the Estoril Coast Sewerage System (2nd phase) that serves 60% of the municipality of Sintra.

The inter-municipal investments for the expansion of the industrial plant for the treatment of municipal solid waste (under the Association of Municipalities of Cascais, Oeiras and Sintra for the Treatment of Solid Waste) are part of a measure for the construction and expansion of solid waste treatment and recovery infrastructures which also

covered the Beirolas Solid Waste Treatment Station in Lisbon, which was granted an ERDF co-financing of EUR 6,213 million.

To the Estoril Coast Sewerage System (2nd phase) was granted a EUR 8,497 million.

## **II Community Support Framework (QCA II) 1994-1999**

The II Community Support Framework (QCA II, as a partnership agreement between the Portuguese Government and the European Commission, was designed to carry out a diversity of programs by sector and by region, denominated operational interventions, to achieve two objectives: (i) the approach to the European Union and (ii) the reduction of internal regional asymmetries.

The financial envelope allocated to Portugal was EUR 15 576,5 million, of which EUR 8 411.31 million (54%) under the FEDER programs. To this amount, it has been added EUR 1 122,5 million to 14 Community Initiative Programs and EUR 3 005 million to the Cohesion Fund.

For the integrated application of the Structural Funds provided by the European Commission in the Lisbon and Tagus Valley Region, the Lisbon and Tagus Valley Operational Program (PORLVT) 1996-1999 was created in the meantime with an amount of EUR 54,04 million of co-financing support.

This plan, however, had some disruption in its implementation due to insufficient human and technical support to operationalize the whole process, lack of articulation between the financial instruments of the QCA II and the lack of territorial planning instruments capable to coherently integrate projects and programs to be financed (CCRLVT, 1996).

During the period of validity of the QCA II (1994-1999), municipal investments co-financed by the ERDF represented a significant amount which nevertheless focused on only 19 projects and programs. The information consulted, especially the information available in the implementation reports of the PORLVT under the CSF II, has not, however, enabled us to confirm the total amount of Structural Funds applied. This is due to the incomplete available information for the year 1998.

Investment projects	1996	1997	1998	1999
Road pavement integrated program	1,148	15,356	a)	2,270
Municipal road system restructuring program	14,405	0,516	a)	0,685
Urban park Agualva-Cacém	0,460	0,307	a)	0,302
Connection road Fontanelas - A dos Eis	0,752	,278	a)	-
Extension of Vitorino Nemésio Avenue, Mem Martins	0,755	1,213	a)	-
River Jamor rehabilitation project (Queluz)	-	0,589	a)	0,589
Cacém East circular road			a)	0,100
River Colares sanitation	2,240	2,241	a)	2,115
Sewage Treatment Plant - Magoito	-	-	a)	0,487
Lisbon Metropolitan Area circular road	7,961	7,980	a)	-
S.Miguel de Odrinhas Museum	1,162	1,153	a)	1,151
Cine-Theatre Carlos Manuel	0,149	-	a)	1,796
Sintra World Heritage Site	-	0,155	a)	-
Sintra Municipality's Strategic Plan	-	0,038	a)	0,158
Youth House	-	0,934	a)	0,707
Sintra Theatre House	-	-	a)	0,194
Colares Regional Wine Cellar Tourist Animation Centre	0,150	-	a)	0,141
Tourism Fair of Lisbon	-	-	a)	0,025
Cacém circular road	-	-	a)	0,096
<b>Total</b>	<b>29,182</b>	<b>30,758</b>	<b>a)</b>	<b>10,815</b>

a) Incomplete data information

**Table 77** – Sintra Municipality FEDER co-financed projects in EUR million (1996-1999)  
Source: CCRLVT (1990)

### III Community Support Framework (QCA III) 2000-2006

The III Community Support Framework has been developed from the proposals submitted in the form of operational programs among which the Lisbon and Tagus Valley Operational Program (PORLVT)

The framework, strategic orientation, operational systematization, financial programming and organizational structure of structural support for the period 2000-2006, for territory, persons and organizations qualifying, provided a co-financing support, through the FEDER, of EUR 970,37 million.

The financial envelope allocated to Portugal was EUR 40 018,427 million, of which EUR 2 761,673 million (6,9%) allocated to the Lisbon and Tagus Valley Operational Program (PORLVT) and EUR 3 336,117 million (8,3%) allocated to the Accessibilities and Transports Operational Program (POAT) to reformulate and improve the transport system, including urban transport, safety, energy and environmental efficiency and strengthening territorial cohesion and mobility.

The total FEDER co-financed support to municipal investment projects has reached the amount of EUR 6, 681 million.

Investment projects	EUR million
Alto do Forte / Serra das Minas Urban Park	0,731
Almeida Araújo Quarter rehabilitation, Queluz	0,406
Conde Almeida Araújo Garden rehabilitation, Queluz	0,256
Pre-school education equipment network	0,335
Sintra road junction (IC16) connection to Algueirão	0,656
Elementary school and kindergarten of Belas	0,795
Municipal Library BM1 Quinta do Mirante, Queluz	0,540
Elementary school 1 nº 5 Rinchoa remodelling	0,501
Palacio Sanches Baêna (elementary school and kindergarten) remodelling	0,330
EM594 Albarraque-Rio de Mouro rehabilitation	0,331
Sintra tramway rehabilitation, Ribeira-Estefânia section	0,966
Socio-cultural Centre, Casal de Cambra	0,491
Faria da Costa Street rehabilitation, Azenhas do Mar	0,278
Internet space in Pero Pinheiro	0,021
Internet space in Fitaes	0,033
House of Culture internet space, Mira Sintra	0,011
<b>Total</b>	<b>6,681</b>

**Table 78** – Sintra municipality FEDER co-financed projects (2000-2006)

Source: CCRLVT (2010)



What represents a set of local interventions to respond to educational, socio-cultural and urban qualification needs.

In the context of the actions of urban qualification provided for in the QCA III was held in 2000-2006, a set of urban and environmental qualification interventions were carried out in Cacém through the POLIS (National Program for Urban Renewal and Environmental Cities Valuation) under the responsibility of the public company Cacém Polis.

The amount of FEDER co-financed support for those investment projects and interventions for road and urban renewal and a 4 hectares linear park along a small water course, Ribeira das Jardas, connecting with the Agualva-Cacém urban park reached EUR 35,443 million.

Other major structural investment projects in Sintra Municipality territory have been carried out directly by the central administration and by public and private utility companies and correspond to a total FEDER co-financed support of EUR 15,716 million of which has been allocated EUR 10, 912 million to natural gas infrastructures and domestic distribution and EUR 1,347 million allocated to IC19 enlargement between Queluz and Sintra-Amadora Hospital road connections.

Those major investment projects also included two small health equipment and a sports complex rehabilitation, the sealing of three dumps, the construction of a living science centre and a youth hostel.

### **National Strategic Reference Framework (QREN) 2007 - 2013**

The 2007-2013 National Strategic Reference Framework (QREN) was the European Union support framework to pursue the economic and social cohesion European policy in Portugal, during the period between 2007 and 2013.

For this period, the QREN aims were persons qualification, knowledge, science, technology and innovation valorisation, within a framework of equal opportunities, and better public institutions efficiency and quality, considering that major infrastructural, energy and environmental investments were already concluded.

The Lisbon and Tagus Valley Operational Program (PORLVT) that has been organized to carry out the actions that should contribute to achieve the general QREN objectives was also oriented by those

guidelines. So, the Lisbon and Tagus Valley Operational Program (PORLVT) was focused on particularly relevant aspects of the main recent dynamics of the Lisbon Region to profit and respond to the opportunities and threats it faces in the coming years.

Among them it is important to point out the human resources qualification, the landscape and natural resources valorisation, the metropolitan territory fragmentation, the urban fabric requalification and the mobility obstacles reduction and the improvement of more efficiency to public space management.

The QREN 2007-2013 implementation consists on the deployment of a co-financed European Structural Funds support of approximately EUR 21 500 million to eligible interventions all over the country, to be used according three main agendas: human resources qualification, promotion of the sustainable growth of the Portuguese economy and financial reinforcement of the Regional Operational Programmes.

All this in accordance with the Cohesion Policy objectives: convergence, regional competitiveness and European territorial cooperation.

The investments allocated to the Lisbon Metropolitan Area municipalities ascends to over EUR 1 200 million, what corresponds to around 5,6% of the total QREN investments, a large part concentrated in investments to be realized in Lisbon Municipality.

The investments related to infrastructures fall on 75% branch, and they include several different types of territorial infrastructures that are addressed as issues of the Operational Programme for Territory Valorisation (POVT). Focusing on the type of infrastructures related to transportation and mobility, which are relevant for our research, there are two specific lines of investment directed for the purpose: Transport Network and Equipment and Territorial Mobility.

The first includes 'heavy duty' interventions and the second is related to smaller and more diverse operations, and together they reach a global investment amount of EUR 90,2 million, which is around 7,3 % of the total programmed investment and 10,5% of the European Structural Funds to Lisbon Metropolitan Area.

Sintra municipality had 46 projects financed by the QREN 2007-13, in the total amount of EUR 65, 956 million of programmed

investment, including EUR 57,374 million of European Structural Funds.

The major investment on heavy infrastructures that occurred in Sintra Municipality was promoted by the public company 'Infraestruturas de Portugal SA' in the Sintra rail line along the section Barcarena –Cacém. This investment in the railway system, within the Operational Programme for Territory Valorisation (POVT), had a total budget of EUR 37,9 million, financed by Community Funds to 100%, which corresponds to 57% of the total investment programmed for Sintra Municipality in all domains of the QREN.

The intervention on the railway infrastructure included quadruplicating the railway on a section of 4,5 Km, the upgrading of the railway stations of Barcarena and Cacém and the suppression of all the pedestrian and car railway crossings, aiming to improve the security and capacity of the railway.

Within the other projects programmed for Sintra there is another significant intervention on the infrastructure domain, even if not related with transportation or mobility that also comprises a significant part of the overall investment of the QREN, which is the

construction of the "Main water pipeline system between the Alto do Carenque reservoir and the Mercês reservoir", reprogrammed to 2014. The relevance of these two infrastructure interventions is very significant because together they correspond to approximately 70% of the total QREN investment in Sintra Municipality in the period from 2007 to 2013, reaching EUR 45,8 million.

Other interventions in the territorial valorisation agenda included different types of actions coastal valorisation, risk prevention and erosion mitigation and defence (EUR 0,968 million) urban policies and urban regeneration.

Within the Human Potential Operational Agenda there also were interventions in administrative modernisation projects and in the public-school network, specifically in 4 kindergarten/elementary schools: Elementary School n. 1 in Varge Mondar (Rio de Mouro parish), Elementary School and Kindergarten B1 n. 2 in Queluz, Elementary School and Kindergarten B1 in Algueirão and in the Elementary School of Sarrazola (Colares parish). Those interventions promoted by Sintra City Council, reached the total amount of EUR 5,7 million, from which EUR 2,6 million correspond to FEDER-co-financed support.



# PRELIMINARY CONCLUSIONS



## PRELIMINARY CONCLUSIONS

The preliminary conclusions that are possible to present at this early stage of the work of the EUFundsImpact research project represent a first approximation of what the final research results will be.

The research produced and the analysis of a very high number of permits issued by Sintra Municipality in the period 1981-2011 enables us to configure the guiding lines of the following research to be carried out.

In fact, at this early stage the work was focused on the collection of material related to the issuance of allotment permits, the treatment of urban data, the preparation of the cartographic bases and the recording of the location of each of the allotment permits analysed.

The component part of the report on the geographical, urban, economic and demographic context of the study area, Sintra Municipality territory, make it possible to contextualize, in time and space, the urban and territorial realities that resulted from the process of urban growth and its characteristics.

In the study period (1981-1990) 1024 allotment permits were issued have been subjected to a general analysis to get an overall comprehension of the urbanization process and its particular characteristics along those three decades. Looking for coherent urbanization patterns and for interactive effects of economic, political and social circumstances on the investment decisions and urban development locations.

In this period the urbanized area reached 2 407,91 hectares and the urbanization process was made through the implementation of diverse urban typology (villas, multifamily housing buildings and mixed-use villas and multifamily housing buildings in the same allotment permit). From the 1 024 allotment permits issued in the study period (1981-2011) have resulted 14 448 urban plots that have contributed to a housing production of 63 897 homes to which corresponds 191 691 inhabitants.

Knowing that not all the allotment permits were completed –a factor of reduction of 20% it was considered for the permits for multifamily housing buildings to mixed use allotment permits emitted from 1998 and, so, the housing offer values referred in these conclusions are those resulting from the application of this factor.

In the period 1981-1990, that corresponds to the first decade of the study period, 494 allotment permits has been issued and has been urbanized an area of 1 054,89 hectares. Those allotment permits has been realized throught 5 686 urban plots to which corresponded 29 695 homes. In this period villas typology was the dominant typogy with 2 581 urban plots in a total of 5 204 (49,60%) while to multifamily buildings typology corresponded 1 378 urban plots (26,48%) and to mixed-use typology 1 132 urban plots (21,75%). For industrial and warehousing use only 113 urban plots were allocated (2,17%). However in terms of homes offer villas typology only represent u

In the second decade 1991-2000, 361 allotment permits have been issued (35,26% of the total), 963,67 hectares of urbanized area (39,50% of the total) with 5695 urban plots (39,42% of the total) and the housing offer of 27 831 homes (43,56% of the total). If considering the reduction factor application (20%) the effective housing offer was 27 372 homes.

In the final decade of the study period (2001-2011) the total of issued allotment permits was 169 (16,50 % of the total), the urbanized area reached 420,91 hectares (17,26% of the total) and the

housing offer was 6 360 homes (9,95% of the total). If considering the reduction factor application (20%) the effective housing offer was 5 448 homes.

The working phases 1 and 2 of the EUFundsImpact research project that we have just completed allow only preliminary conclusions about Sintra Municipality urbanization process and demographic growth for the period 1981-1990 that corresponds to the first decade of the study period (1981-1990). For that is important to emphasize that mobility and commuting traffic information and analysis as well their impact on urban organization only will be treated in subsequent working phases and so they are not present in these preliminary conclusions.

Thus, the research preliminary conclusions are as follow:

- The relationship between urbanized area and urban plots shows that, except for 1983, a crescent urban densification was a mark of the urbanization process in this decade. In the following decade this will be more clearly visible in the analysis of the respective permits but will present a



regression from 2000, year from which the villa typology resumes a dominant expression.

- Sintra Municipality population grew during the study period (1981-2011) 151 407 inhabitants (equivalent to 50 471 homes/families) and the housing offer provided by the issued allotment permits allowed the installation of 187 548 inhabitants (equivalent to 62 516 homes/families).
- The registered homes surplus in the end of the study period, 2011, was of 12 047 homes and no natural or migrant demographic dynamics could absorb them; what helps to explain the real estate crisis that appeared in the beginning of the century and had its more intense expression at the first decade end.
- This housing surplus may have contributed to a saturation of the housing market, leaving only opening to low-density alternative typologies what is very clear since 1999, with two exceptions in the years 2003 and 2007. The economic crisis that hit the building construction sector in the early

years of the twenty-first century may help to explain this change in urbanization patterns.

- Most of the issued allotment permits, particularly those with more housing density (multifamily housing buildings and mixed-use typologies) is located along the Sintra-Lisbon rail and IC19 road axis, showing its importance as an inducing factor of urban growth; for accessibility reasons and by its effect on soil value and private investment and business attraction.
- Less housing density typology (villas) have a more dispersed location and have a more significative relevance in the rural areas of the county or in more attractive areas away from the compact urban areas.
- Ceding areas are only referred in some allotment permits, and in most cases as ceding area for roads implantation, , what can be explain by the small dimension of many real estate operations or by the absence of clear urban regulations to impose it.

- Dispersed and unregulated real estate operation location is a result of the absence of territorial and urban planning to fit and integrate urban growth in a coherent territorial organization and in a less fragmented landscape. the Municipal Master Plan only has been approved in 1999, its regulatory effects are not evident in the urban and territorial analysis made even because, from that date, the urbanized area and the denser real estate operations began to decline.
- Structural Funds impact was not felt in the period 1981-1990 to which this progress report concerns because only after the I Community Support Framework (QCA I) for the period 1989-1993 started to be running. The effect of the other Community programs that followed will only be analysed in the next working phases when the Sintra Municipality urban and demographic growth and respective allotment permits will be subject to detailed and comprehensive study.

## BIBLIOGRAPHY

- AAVV (1999). *Ordenamento do território e desenvolvimento urbano – visão do quadriénio (1995-1999)*. Ministério do Equipamento, do Planeamento e da Administração do Território – Secretaria de Estado da Administração Local e Ordenamento do Território, DGOTDU/PROSIURB. Lisboa
- AGBELIE, B.R.D.K.; CHEN, Y.; SALIKE, N. (2017). Heterogeneous economic impacts of transportation features on prefecture-level Chinese cities. *Theoretical Economics Letters*, 7: 339-351.  
<http://www.scirp.org/journal/tel>
- ALVES, C. M. P. M. (2008). *Áreas urbanas de génese ilegal - perfis socio-demográficos e modelos de reconversão*. Dissertação final de mestrado em Urbanística e Gestão do Território. Universidade Técnica de Lisboa, Instituto Superior Técnico, Lisboa
- ANGEL, S.; PARENT, J.; CIVCO, D. L. (2012). The fragmentation of urban landscapes: global evidence of a key attribute of the spatial structure of cities, 1990–2000. *Environment & Urbanization*, 24 (1), 249–283
- ATAACK, J.; BATEMAN, F.; HAINES, M.; MARGO, R.A. (2009). Did railroads induce or follow economic growth? Urbanization and population growth in the America Midwest, 1850–60. Working paper 14640. *National Bureau of Economic Research*, Cambridge, MA
- AUSTIN, G. (2014). *Green infrastructure for landscape planning: Integrating human and natural systems*, Routledge, London
- BADDOE, D. A.; J. MILLER. (2000). Transportation-land-use interaction: Empirical findings in North America, and their implications for modelling. *Transportation Research Part D-Transport and Environment* 5(4): 235–263.
- BAGANHA, M.I.; MARQUES, J.C.; GÓIS, P. (2002). *O sector da construção civil e obras públicas em Portugal: 1990-2000*. Oficina do CES, nº 73.
- BANISTER, D.; J. BERECHMAN. (2001). Transport investment and the promotion of economic growth. *Journal of Transport Geography* 9: 209–218.
- BARRETO, A. (2002). *Mudança social em Portugal 1960-2000*. Instituto de Estudos Sociais da Universidade de Lisboa, Lisboa
- BAUM-SNOW, N. (2007). Did highways cause suburbanization? *Quarterly Journal of Economics* 122(2):775–805.  
<https://doi.org/10.1162/qjec.122.2.775>
- BALDWIN, R.; FORSLID, R.; MARTIN, P.; OTTAVIANO, G.; ROBERT-NICOUD F. (2011). *Economic Geography and Public Policy*. Princeton University Press, N.J.
- BEVIR, M. (2009). *Key concepts in governance*. Sage Publications, London
- BILHIM, J. (2004). *A governação nas autarquias locais*. Sociedade Portuguesa de Inovação. Porto
- BOUGHTON, J.M. (2001). *Silent Revolution. The International Monetary Fund 1979–1989*. The International Monetary, Washington
- BRENNER, N. (2004). *New State Spaces. Urban Governance and the Rescaling of Statehood*. Oxford University Press. Oxford
- BURY, J-C. (2003). *Métropoles et structuration du territoire*. Conseil Économique et Social, Paris

CARVALHO, J. (coord.) (2013). *Ocupação Dispersa: Custos e benefícios à escala local*, Direção-Geral do Território. Lisboa

CASTRO, G; SANTOS, C. (2010). Determinantes das taxas de juro e do crédito bancário. *Banco de Portugal - Boletim Económico*, Primavera 2010, 69-91

CCRLVT- Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (1990). *Plano Operacional da Grande Lisboa: plano de desenvolvimento regional*. Comissão de Coordenação Regional de Lisboa e Vale do Tejo, Lisboa

CCRLVT- Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (1997). *Investimento realizado na Região de Lisboa e Vale do Tejo entre 1989 e 1993*. Comissão de Coordenação Regional de Lisboa e Vale do Tejo, Lisboa

CCRLVT- Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (1997). *Investimento realizado na Região de Lisboa e Vale do Tejo entre 1989 e 1993*. Comissão de Coordenação Regional de Lisboa e Vale do Tejo, Lisboa

CCDRLVT-Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (2002). *Plano Regional de ordenamento do Território da Área Metropolitana de Lisboa – Volume I*. Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo, Lisboa

CCDRLVT-Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo (2010). *Relatório final de execução 2000-2006- Programa Operacional de Lisboa e Vale do Tejo*. Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo, Lisboa

CONDESSO, F.R. (2004). *Ordenamento do território. Administração e políticas públicas: direito administrativo e desenvolvimento regional*. ISCSP. Lisboa

DEMIREL, H., E. SERTEL, S. KAYA; D. Z. SEKER. (2008). Exploring impacts of road transportation on environment: A spatial approach. *Desalination* 226 (1 – 3): 279– 288.

DGOTDU-Direção-Geral do Ordenamento do Território e Desenvolvimento Urbano (1997). *Sistema urbano nacional – cidades médias e dinâmicas territoriais*. Direcção-Geral do Ordenamento do Território e Desenvolvimento Urbano (DGOTDU). Lisboa

DGDR -Direção-Geral do Desenvolvimento Regional (1995) *Fundamentos estruturais 10 anos depois*. DGDR, Ministério do Planeamento e de Administração do Território, Lisboa

DOMINGUES, A. (coord.) (2006). *Cidade e democracia, 30 Anos de transformação urbana em Portugal*. Fundação da Juventude / Secção Regional Norte da Ordem dos Arquitectos Portugueses/DGOT-DU, Argumentum Edições, Lisboa.

DREYFUS, F., EYMERI, J.-M. (eds.) (2006). *Science politique de l'administration*. Economica, Paris

DURANTON, G.; M. A. TURNER. (2012). Urban growth and transportation. *Review of Economic Studies* 79(4): 1407–1440.

EUROPEAN COMMISSION (1999). *European Spatial Development Perspective – Towards Balanced and Sustainable Development of the Territory of the European Union* Luxembourg: Office for Official Publications of the European Communities, Luxembourg

FARHAT, G. (2011), Infrastructural landscape: beyond memory and metaphor, in: Hauck, T.; Keller, R.; Kleinekort, V., *Infrastructural Urbanism. Addressing the In-between*, Berlin: DOM Publishers, pp. 273-288

FARINHA, L. (2003). The effect of demographic and socioeconomic factors on households' indebtedness. *Banco de Portugal Economic Bulletin*, June, 33-43

FERRÃO, J. (2013). Governança, governo e ordenamento do território em contextos metropolitanos, in Ferreira, A., Rua J., Marafon, G. J. e Silva, A.C.P. (org.), *Metropolização do Espaço: Gestão Territorial e Relações Urbano-Rurais*. Editora Consequência, Rio de Janeiro, pp. 255-281.

FERRÃO, J. (2011). *O ordenamento do território como política pública*. Fundação Calouste Gulbenkian, Lisboa

FERRÃO, J.; MARQUES, T.S. (2003). *Sistema urbano nacional*. DGOTDU, Lisboa

FERRÃO, J. (2003) – Uma metrópole em transição. Novo perfil produtivo, novos espaços económicos in *Atlas da Área Metropolitana de Lisboa*. Área Metropolitana de Lisboa, Lisboa

FERREIRA, A. F. (1984). A crise do alojamento e construção clandestina em Portugal. *Sociedade e Território*, ano 1 (1), março, 29-37

FERREIRA, V. M. (1987). *A cidade de Lisboa - de capital do Império a centro da metrópole*. Edições Dom Quixote. Lisboa

GAMA, A. (1993) Espaço e sociedade numa situação de crescimento urbano difuso, in Boaventura de Sousa Santos (org.), *Portugal: Um retrato singular*. Col. Saber Imaginar o Social, 5. Porto: Edições Afrontamento, pp. 441-73

GAMA, A. (1992) "Urbanização Difusa e Territorialidade Local", *Revista Crítica de Ciências Sociais*, 34: 161-72.

GAMA, A. (1987) "Indústria e produção de um espaço peri-urbano", *Revista Crítica de Ciências Sociais*, 22: 33-54.

GARCIA-LOPEZ, M. A. A. (2012) Urban spatial structure, suburbanization and transportation in Barcelona. *Journal of Urban Economics* 72: 176-190

GEORGE, P., *et al.* (2007), Área Metropolitana de Lisboa 1975-2001. De la monopolaridad a la matricialidad emergente/ Metropolitan Area of Lisbon 1975-2001. From monopolarity to an emerging matrix pattern. In Font, A.(ed.) *La explosión de la ciudad. Transformaciones territoriales en las regiones urbanas de la Europa Meridional/The Explosion of the city. Territorial Transformations in the South Europe Urban Regions*. Ministerio de Vivienda, Madrid.

GISEKE, U. (2008), Productive Landscape. In: Seggern, H., Werner, J., Grosse-Bächle, L., *Creating Knowledge. Innovation Strategies for Designing Urban Landscapes*, Jovis Verlag, Berlin. pp. 267-276

GIULIANO, G. (2004). Land use impacts of transportation investments: highway and transit. In Hanson; G. GIULIANO (eds.). *The Geography of Urban Transportation*, edited by S., 237-273. The Guilford Press, NY

GLAESER, E. L. (2008) *Cities, agglomerations and spatial equilibrium*. Oxford University Press, Oxford

HILL, M.; HUPE, P. (2009). *Implementing public policy*. (2nd ed.). Sage Publications, London

HOLTZ-EAKIN, D.; SCHWARTZ, A.E. (1995). *Infrastructure in a structural model of economic growth*. In *Regional Science and Urban Economics*, Volume 25 (2):131-151

HOYT, H. (1939). *The structure and growth of residential neighbourhoods in American cities*. US Government Printing Office, Washington, DC

INFANTE, F. (2015). *Cem AUGI, sem AUGI - da realidade à utopia*. (Apresentação). Seminário AUGI e construção ilegal: experiências de atuação na região de Lisboa e Vale do Tejo, Loures, 28 de maio. Câmara Municipal de Sintra, Gabinete AUGI, Sintra

KASRAIAN, D.; MAAT, K.; VAN WEE, B. (2017). The impact of urban proximity, transport accessibility and policy on urban growth: a longitudinal analysis over five decades. *Environment and Planning B: Urban Analytics and City Science* 0(0) 1–18

KASRAIAN, D.; MAAT, K.; VAN WEE, B. (2016). Development of rail infrastructure and its impact on urbanization in the Randstad, the Netherlands. *The Journal of Transport and Land Use*. 9 (1): 1-20

KJAER, A. M. (2004), *Governance. Key concepts*. Policy Press, Cambridge

KOOPMANS, C.; RIETVELD, P.; HUIJG, A. (2012). An accessibility approach to railways and municipal population growth, 1840–1930. *Journal of Transport Geography* 25: 98–104.

KRUGMAN, P. (1997). *Desarrollo, geografía y teoría económica*. Antoni Bosch, Barcelona

LE GALÈS, P. (2006). *Gouvernement et gouvernance des territoires*. La Documentation Française, Paris

MALTEZ, J. A. (2007). *Metodologias da ciência política*. ISCSP, Lisboa

MATOS, P. P. M. (2011). *Contribuição para uma proposta de qualificação das Áreas Urbanas de Génese Ilegal*. Dissertação apresentada a obtenção do grau de Mestre em Engenharia Civil – Perfil Construção. Universidade Nova

de Lisboa, Faculdade de Ciências e Tecnologia, Departamento de Engenharia Civil, Monte da Caparica

MARVIN, S.; GRAHAM, S. (1993) Utility networks and urban planning: An issue agenda, *Planning Practice & Research*, 8:4, 6-14, <http://doi10.1080/02697459308722898>

MENDES, V.; REBELO, J. (2003). Structure and performance in the Portuguese banking industry in the nineties. *Portuguese Economic Journal*, 2 (1) 53-68

<https://doi.org/10.1007/s10258-002-0016-5>

MÉNY, Y.; MULLER, P.; QUERMONNE, J.-L. (dir.) (1995). *Politiques publiques en Europe*. L'Harmattan, Paris

MOJICA, L.; MARTÍ-HENNEBERG (2011). Railways and Population Distribution: France, Spain, and Portugal, 1870–2000. *Journal of Interdisciplinary History*, 42, 1, 15-28

MORA ALISEDA, J.; CONDESSO, F.R. (coords.) (2005). *Políticas urbanas e territoriales en la Península Ibérica*. Junta de Extremadura, Mérida.

MORGADO, M. J. (2017). Lisboa e a Área Metropolitana: contexto populacional no centro do Sistema Alimentar Urbano. *Estudo Prévio* 11. Lisboa: CEACT/UAL - Centro de Estudos de Arquitetura, Cidade e Território da Universidade Autónoma de Lisboa ([www.estudoprevio.net](http://www.estudoprevio.net))

MUÑOZ, R.D. (1997). *Análise Social*, vol. XXXII (141), (2º), 369-401

OBREGÓN BIOSCA, S. A. (2008). *Impactos sociales y económicos de las infraestructuras de transporte viario: estudio comparativo de dos ejes, el "Eix Transversal de Catalunya" y la carretera MEX120 em Mexico*. Tesis doctoral.

Escuela Técnica Superior de Ingenieros de Caminos, Canales y Puertos de Barcelona, UPC, Barcelona

PAINTER, J.; JEFFREY, A. (2009). Political geography. An introduction to space and power. Sage Publications, London

PORTAS, N.; DOMINGUES, A.; CABRAL, J. (2003). *Políticas urbanas – tendências e oportunidades*. Fundação Calouste Gulbenkian, Lisboa

RAITER, K.G.; PROBER, S.M.; POSSINGHAM, H.P.; WESTCOTT, F.; HOBBS, R.J. (2017). Linear infrastructure impacts on landscape hydrology. *Journal of Environmental Management*, 206:446-457  
<http://10.1016/j.jenvman.2017.10.036>

REPHANN, T.; ISSERMAN, A. (1994). New highways as economic development tools: An evaluation using quasi-experimental matching methods. *Regional Science and Urban Economics*, vol. 24, 6, 723-751

ROBIN, R. (2013). *L'évolution de la prise en compte du paysage dans les études d'impacts des infrastructures de transports*. Université de Franche-Comté, Besançon

ROCHA, E. (1984). Crescimento económico em Portugal nos anos de 1960-73: alteração estrutural e ajustamento da oferta à procura de trabalho. *Análise Social*, vol. XX (84), 621-644

RODRIGUE, J-P.; COMTOIS C.; SLACK, B. (2006). *The geography of transport systems*, Routledge, London

ROLO, H.R. (2007). *Atualidade do fenómeno clandestino na GAML*. Comunicação apresentada no Encontro "Áreas Urbanas de Génese ilegal, que futuro?", Sesimbra, 6 e 7 de dezembro

ROSAS, F. (1994). Portugal depois da Guerra: Estado velho, mundo novo (1950-1974). In: JOSÉ MATTOSO (coord.), *História de Portugal, vol. 7 - O Estado Novo (1926-1974)*, 417-563. Círculo de Leitores, Lisboa

SALGUEIRO, T. B. (1977). BAIRROS CLANDESTINOS NA PERIFERIA DE LISBOA. *Finisterra- Revista Portuguesa de Geografia*, vol. 12, nº 23, 28-55

SILVA, R. P. (1969). *Habitação e urbanismo em Portugal - alguns aspectos atuais*. Edição do autor, Lisboa

SANCHEZ-ROBLES, B. (1998) Infrastructure Investment and Growth: Some Empirical Evidence. *Contemporary Economic Policy*, 16, 98-108.  
<https://doi.org/10.1111/j.1465-7287.1998.tb00504.x>

SANTOS, A.C.; TELES, N.; SERRA, N. (2014). Finanças e habitação em Portugal. *Cadernos do Observatório*, nº2. Observatório sobre Crises Alternativas, Centro de Estudos Sociais, Coimbra

SANTOS, A.R. (1977). Desenvolvimento monopolista em Portugal: fase 1968-1973, estruturas fundamentais. *Análise Social*, vol. XIII, 49, 69-95

SERRA, M. (2016) *Evolução urbanística do Cacém no período 1991 - 2011. O impacte do investimento nas infraestruturas rodoferroviárias*. Tese de Mestrado em Arquitetura, especialização em Urbanismo, Faculdade de Arquitetura da Universidade de Lisboa, Lisboa

SOARES, L. B. (1985). Urbanização clandestina na AML. *Sociedade e Território*, 3, 59-63

SOLÁ-MORALES, M. (1997). *Las formas del crecimiento urbano*. Ediciones UPC, Barcelona

SOMENAHALLI, S. V. C.; TAYLOR, M. A. P.; SUSILAWATI S. (2016). Road Network Accessibility and Socio-economic Disadvantage Across Adelaide Metropolitan Area. *Transportation in Developing Economies*, 2:15  
<https://doi.org/10.1007/s40890-016-0020-y>

SOUSA, A. (2015). *Reconversão urbanística vs requalificação do território*. (Apresentação). Seminário AUGI e construção ilegal: experiências de atuação na região de Lisboa e Vale do Tejo, Loures, 28 de maio. Câmara Municipal de Odivelas, Divisão de Reconversão e Reabilitação Urbana, Odivelas

STANILOV, K. (2003). Accessibility and land use: The case of suburban Seattle, 1960–1990. *Regional Studies* 37(8): 783–794

TAYLOR M.; SOMENAHALLI S.; D'ESTE G. (2006) Application of accessibility based methods for vulnerability analysis of strategic road networks. *Networks and Spatial Economics* 6(3):267–291  
<http://10.1007/s11067-006-9284-9>

TENEDÓRIO, J. (2003). *Atlas da Área Metropolitana de Lisboa*. Área Metropolitana de Lisboa, Lisboa

VALE, D. (2010). Sustainable Urban Form, Accessibility and Travel: The relationship between polycentric urban development and commuting in Lisbon. Saarbrücken, LAP Lambert Academic Publishing.

VICKERMAN, R.; SPIEKERMANN, K.; WEGENER, M. (1999) Accessibility and economic development in Europe, *Regional Studies* 33, 1-15

## Selected works by team members

CAVACO, C. (2009), *Formas de habitat suburbano: tipologias e modelos na área metropolitana de Lisboa*, PhD Thesis in Architecture, Faculdade de Arquitectura da Universidade Técnica de Lisboa.

<http://www.repository.utl.pt/handle/10400.5/3652>

CAVACO, C. (2014), *From urban sprawl to a compact city policy: the primacy of process over form*, ISUF 2014 - Our Common Future in Urban Morphology, Porto

COSTA, J.P.; FIGUEIRA DE SOUSA, J. (2013), *Climate Change Adaptation in Urbanized Estuaries, Contributes to the Lisbon Case*. Faculdade de Arquitectura – Universidade de Lisboa, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa. Lisboa

FADIGAS, L. (2017). *Território e poder – o uso, as políticas e o ordenamento* [Territory and power – use, policies and planning]. Edições Sílabo. Lisboa

FADIGAS, L. (2015), *Urbanismo e Território - as políticas públicas* [Urban planning and territory: public policies]. Edições Sílabo. Lisboa

FADIGAS, L. (2011), *Fundamentos ambientais do ordenamento do território e da paisagem* [Environmental principles of landscape and spatial planning], [2007]. Edições Sílabo. Lisboa

FADIGAS, L. (2010). *Urbanismo e natureza – os desafios* [Urban planning and nature -the challenges]. Edições Sílabo. Lisboa

FADIGAS, L. (2008). *Evolução do mercado imobiliário na Área Metropolitana de Lisboa, no período 1990-2005. Relatório de atividade de*



*licença sabática*. Faculdade de Arquitetura, Universidade Técnica de Lisboa, Lisboa

FIGUEIRA DE SOUSA, J. et al. (2011). *A evolução dos transportes e acessibilidades e as transformações na organização do território*. Instituto da Dinâmica do Espaço, FCSH/UNL, Lisboa

FIGUEIRA DE SOUSA, J. et al. (2010) - "A Aplicação de Indicadores de Acessibilidade na Análise da Evolução das Infra-estruturas de Transporte em Portugal Continental". In Actas do XII Colóquio Ibérico de Geografia. Lisboa: Associação Portuguesa de Geógrafos e Departamento de Geografia da Faculdade de Letras da Universidade do Porto.

FIGUEIRA DE SOUSA, J.; GALIAU, S.; FERNANDES, A. (2010) - *A Evolução das Acessibilidades Rodoviárias e Ferroviárias em Portugal Continental*. In Actas do VII Congresso da Geografia Portuguesa. Lisboa: Associação Portuguesa de Geógrafos.

FIGUEIRA DE SOUSA, J.; FERNANDES, A.; GALIAU, S. (2009) - *A Evolução das Acessibilidades e as suas Repercussões na Organização do Território*. In Actas do 15.º Congresso da APDR . Coimbra: Associação Portuguesa de Desenvolvimento Regional.

FIGUEIRA DE SOUSA, J. et al. (1998a). Rede urbana e acessibilidades: transformações recentes na organização do território. *Inforgeo*. Associação Portuguesa de Geógrafos. Lisboa, 12/13. pp. 249-263.

FIGUEIRA DE SOUSA, J. et al. (1998b). Rede urbana e acessibilidades: retrospectivas e tendências. *In Actas do V Encontro da APDR*. Associação Portuguesa de Desenvolvimento Regional, Coimbra

MARTINS, A. M. (2012). *Impacte dos investimentos nas infraestruturas rodo e ferroviárias na expansão e estruturação urbana do eixo Queluz-Mem*

*Martins (Sintra), no período 1991-2001*. Tese de Doutoramento em Urbanismo. Faculdade de Arquitetura. Universidade Técnica de Lisboa, Lisboa

SANTOS, J. R. (2015), *Discrete landscapes in metropolitan Lisbon: open space as a planning resource in times of latency*, Planning Practice & Research, Published online in 09/April/2015.  
<http://dx.doi.org/10.1080/02697459.2015.1028253>

SANTOS, J. R. (2014), *Tracing post'networked metropolis in the fast changing East: findings from Tokyo*, Post-Doctoral Research Report. University of Tokyo, Graduate School of Frontier Sciences

SANTOS, J. R. 2012), *Espaços de mediação infraestrutural: Interpretação e projecto na produção do urbano no território metropolitano de Lisboa [Spaces of infrastructural mediation: Interpretation and design in the production of the urban in the metropolitan territory of Lisbon]*, PhD Thesis in Urbanism, Faculdade de Arquitectura da Universidade Técnica de Lisboa, <https://www.repository.utl.pt/handle/10400.5/5429>

SANTOS, J. R. (2011), "Infrastructural spatial mediation in Lisbon metropolis" in: ECKARDT, F., MORGADO, S. (eds.), *Understanding the Post-industrial City*. Verlag Köenigshausen & Neuman. Wurzburg.



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