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SUSTAINABLE TERRITORIAL DEVELOPMENT AND URBAN GROWTH: A CRITICAL INTERACTION. THE SPANISH MEDITERRANEAN COAST, AND CATALONIA, DURING THE LAST TWO DECADAS

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ACE: Architecture, City and Environment = Arquitectura, Ciudad y Entorno [en línea]. 2012, Año 7, núm. 20 Octubre P. 149-172

ISSN: [1886-4805](https://doi.org/10.1080/18864805)

Website access: http://www-cpsv.upc.es/ace/Articles_n20/articles_pdf/ACE_20_SE_24.pdf

UPCommons Access: <http://hdl.handle.net/2099/12645>

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SUSTAINABLE TERRITORIAL DEVELOPMENT AND URBAN GROWTH: A CRITICAL INTERACTION. THE SPANISH MEDITERRANEAN COAST, AND CATALONIA, DURING THE LAST TWO DECADAS

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Remisión inicial: 06-19-2012

Remisión definitiva: 18-10-2012

Keywords: Remote Sensing, Spatial Planning, Urban Growth, Land Cover, Sustainability.

Abstract

The paper aims to provide a reflection about the different types of models of urban growth in relation to the territorial natural context, it means an investigation about those relationships established between natural environment and human involvement which often, and especially in recent years, have generated not a few *conflicts* in the balance among urban / non-urban combination. Certainly, the urbanization process is affected by natural and administrative factors, but it is clear that there is a tendency to occupy the most *productive* and most profitable portions of landscape. If we look at how urbanization has spread over territory during the last twenty or thirty years, and we concentrate on its forms of occupying the soil, we have the clear suspect that urbanization, above all in the Mediterranean area, and even more toward the immediate coastal line, has underwent a process of *uncontrolled, uncoordinated* planning, almost without care for environmental problems. An important piece of evidence is that, in 2006, the first kilometre of coastal territory, along the Spanish Mediterranean coast, was 30% urbanized; this percentage, which was as low as 22% in 1990, goes down flatly already in the second kilometre (16% in 2006) to reach very low values at a distance of 20 or 40 kilometres.

1. Introduction

Far from the typical Mediterranean city model, it is actually impossible not to speak of European cities without taking into account phenomena of uncontrolled expansion, and dispersion of artificial soil in rural areas, in a discontinuous but abundant way. It is true, therefore, that the Spanish model of economic development relies, since its launch in the 50's, on three factors: emigration, building, and mass tourism (Gaja, 2008); but it is also true that building and tourism have most incisively conditioned political decisions in matters of urban growth in the last decades. Even Catalonia, being an important economic centre, has been affected by these dynamics of development, but it is also important to underline that the sheer values of percentage of soil occupation would be insufficient to describe urban models, and it is

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fundamental to define the forms of growth and the typologies on an urban and territorial level. In fact, one often speaks of compact city, disperse city, diffuse city etc., to describe an urban model not only from a purely conceptual point of view, but, above all, from an environmental, social and economic point of view, and in connection with the morphology of the urban environment and the structural features of the territory, by which we mean the complexity of settlements and all its manifold special aspects. In this work it has been analyzed the models of land consumption for the urbanized area along the Spanish Mediterranean coast and in the last twenty years, with particular emphasis on the development of the region of Catalonia which is providing a new cycle of urban development, and probably configuring a model of polycentric growth, being based on multiple territorial systems.

2. Modern dynamics of urban growth: the Mediterranean model

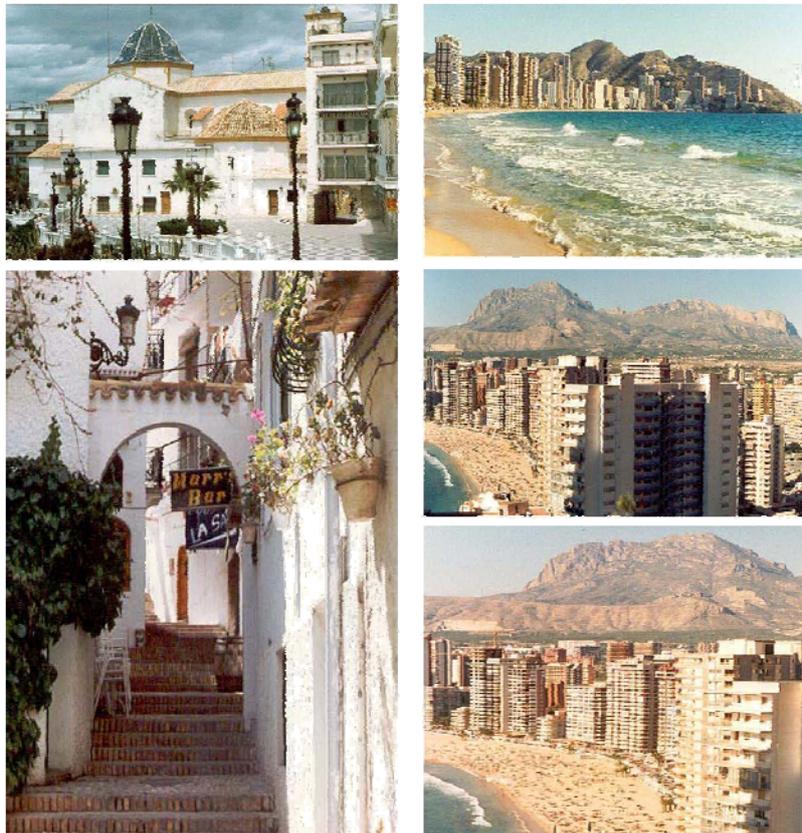
Present-day dilemmas in urban planning are fundamentally directed at three themes: the urban form (compactness-diffusion), functionality (complexity-specialization) and equity (integration-segregation) (Nel-lo, 2001). Actually by the late sixties, many European cities started to undergo an important change in their urban development. The most common phenomenon affecting big cities during these years has been a growing decentralization or de-urbanization of the urban fabric and the demographic weight, that is to say a loss of population in the inner city and a growth in the suburbs. In many cases the new suburban structures have kept strong functional relations with the city centre, so that such dynamics of *urban-centric* development, that have been affecting the *frontier* urban environment for so many years, have brought about a loss of quality in landscape and a generalized loss of identity.

The territorial systems, in this logic of growth, have experienced major changes, during the last decades, especially in the zones extending outside the compact urban structure, generally defined peri-urban, which have given the landscape certain features quite different from the typical urban structure of the traditional compact nuclei or of rural areas (Benni et al., 2007). The excessive alternation between urban and non-urban zones, which is more and more difficult to identify, now configures the natural space around cities only as residual areas among buildings. New *urban forms* are generating new Mediterranean cities. Cities which were formerly characterized by the compactness of their urban fabric are now resulting from the sum of peri-urban, dispersed, low-density areas. In fact, the recent models of urban development, affected by various economic dynamics, have represented a strong conceptual change in the way of *urbanizing*, generating phenomena of urban dispersion or diffusion which are now difficult to measure. This possible *dissolution* of the compact city is a recurring theme in analysis and reflection in the field of urbanism addressing a quantification of the present phenomena of development.

We may define a city from many points of view, but it is certain that a city is a complex space of analysis; a space formed by many parts, each with its distinct peculiarities, and therefore it is very difficult to provide a simplified general definition and representation. However, all the dynamics developed in an urban environment, be they demographical, economical or social, are related to each other and generate a *balance* which it is necessary to quantify in order to open new ways in planning. Much specialized literature has pointed out that sprawl is a direct consequence of the degree of economic development of a nation. As wealth grows, so does the

exploitation of natural resources and therefore of soil by the population. Income, energy consumption and sprawl seem to be connected in a single equation. It is evident that phenomena of urban explosion and paradigm changes in urban forms taking place in Spain during the last twenty or thirty years, were already experienced in other countries in the first half of the twentieth century. As soon as 1939, Lewis Mumford declared that the growth of total urban population, and sheer population explosion, are not the gravest threat for a city's or a country's balance. The gravest problem is the concentration of growth in metropolitan areas which are already congested to the point of inefficiency and disorder, a fact that gives rise to formless urban masses². Mumford speaks of metropolitan areas and urban forms, themes which are now affecting the urban planning debate in many Mediterranean countries experiencing an *identity crisis* in their traditional urban forms. As for the most famous case of Benidorm (Figure 1), situated in the Autonomous Community of Valencia, it is very clear this kind of identity crisis between a traditional Mediterranean city and a new urban development which keeps nothing of the original essence of the ancient city.

Figure 1. The city of Benidorm (Autonomous Community of Valencia)



Source: By authors.

Even when looking at the territory from above, it is possible to observe different morphological patterns of land occupation provided by the cities, based on a very different syntax. In Figure 2 we have compared four distinct types of urban structures, found in the Catalanian coastal area,

² Lewis Mumford. *The City*, documentary film. New York, 1939

based on the continuity of their urban fabric. Again the question arises: which is the Mediterranean model?

Figure 2. Examples of current urban models in the Mediterranean coastal area in Catalonia



Source: By authors

The morphologic profile of soil occupation is also the effect of different functional distributions, which *draw* urban structures that could result much more diversified in their composition or, on the other hand, excessively specialized in specific functions such as industry or residential type. The Javier Monclús words give us a very adequate description to understand the change in urban structure, from a compact form (left side of Figure 2) to a dispersed one (right side of Figure 2): “more and more independent pieces juxtaposing in a discontinuous fashion, and among which we find a proliferation of interstitial areas, urban vacuums and *terrains vagues*, which produces a final effect of generalized loss of brute density. The growing protagonism of these new suburban landscapes is undeniable: it is necessary to acknowledge that, as J. L. Sert warned, they grow larger and larger, and occupy much more space relative to what we are still accustomed to calling *cities proper*” (Monclús, 1996).

These suburban landscapes which, as we have already pointed out are defined by the term *sprawl*, constitute low-density settlements, conceptually and physically far from the consolidated city centre, and generally in areas of new development, where the environmental city quality becomes poorer and poorer. This process of dispersion of urbanization has its origins in the suburban living model which began with the generalized use of cars. A living model based on the *American dream: a house, a car (or more than one)*. Many studies refer to mobility and social and economic factors as fundamental themes for urban development. In fact, the extension of infrastructural networks has facilitated the phenomenon of urban dispersion around big cities or big centres of agglomeration, due to the increase in accessibility and mobility and in economic activity. Dematteis (1986) underlines that recent processes of peri-urbanization and reticular city diffusion, processes giving rise to urban peripheries of a very different kind from those which have formed in Europe from the industrial revolution to the sixties, are the result of profound changes in urban territorial structures (de-urbanization, counter-urbanization), in information and communication technology and in social regulation and organization (post-fordism). Some urbanism theoreticians identify with the term *diffused city* (Indovina, 1990) the result of these new urban forms which are in process of generating the modern urban peripheries. This so called diffused city in most of the cases uses to be a structure lacking a centre or a plaza, developing along a straight line going from one city to another, with houses and businesses placed along a trafficked road, and built according to very permissive local and regional planning guidelines. These kinds of urbans form surround the traditional city and

imitate some of its specific morphological features, nonetheless it is not a city but it is pulverized and dispersed over the territory. It forms without big parcels, it grows in fragments, biting and not devouring (Erbani, 2002). One of the consequences is that this pulverization, together with the dilatation of the urban space which sprawls in every direction as possible, melts with adjacent areas growingly occupying the interstitial space among infrastructures, also generating phenomena of conurbation, so that it often becomes difficult to distinguish a municipality from its neighbours following the classical administrative division. The suburban fabrics tend to consolidate municipal entities which were previously neatly separated from each other. This fact requires that we look for new ways to discriminate the new urban spaces. It also requires a different scale of analysis going beyond administrative borders. In this sense, the very concept of city does not correspond to the municipal sphere, even though the administrative definition retains a relative relevance, above all because it reflects useful features for the identification of a *central city* in a metropolitan system, or of certain places, generally called sub-centres, where the main or hierarchically prominent functions of the metropolis' *image* are concentrated (Nel-lo, 2001).

It is certain that we are facing a unidirectional phenomenon, and that the classical Mediterranean, or even European, model is giving way to something different. Therefore the challenge is to understand the advantages and the disadvantages of the present models of urban and territorial development and to reinforce their positive features, looking for complex systems of development on a territorial scale. Cities can undoubtedly favour social concentration and variety in content, because, when a city can keep, in its physical form and its lifestyle, a compact urban structure, good connection networks and a close relation to its natural landscape, it is possible to obtain a good balance between development and living standards, growth and human relations: stability, continuity, closeness and mixing³. So we come to speculate about what a sustainable model of development may be, in order to evaluate, based on these premises, where the urban growth in the Mediterranean Spanish coast is going, if it is possible to stop uncontrolled and unsustainable growth, and the differences in urban performance among the various Autonomous Communities (CCAA). Some scholars like P. Hall, P. Cheshire, L. Van den Berg, R. Drewett and others⁴ see these changes as successive phases of a *urban life cycle* which, starting with the concentration of population in the central nucleus or core (urbanization), goes on with the growth of the *rings* (suburbanization), followed by a demographic decline (de-urbanization) and a hypothetical recovery of the core (re-urbanization) (Dematteis, 1998). These tendencies, such as the growth identified as *Città Diffusa* (Indovina 1990) that is to say a low density urbanization characterized by a high degree of horizontal connections, or the *peri-urbanization* defined as the process of dispersion of urban zones usually following suburbanization and counter-urbanization (Racine, 2004; Dematteis, 1986), are summed up in the concept of *metropolization* (Camagni, 2005), which interprets the dynamics, observed on a European scale, of *diffused metropolization*, *concentrated metropolization* and *set of urban and regional networks*.

3. Land consumption and population growth along the Spanish Mediterranean coast

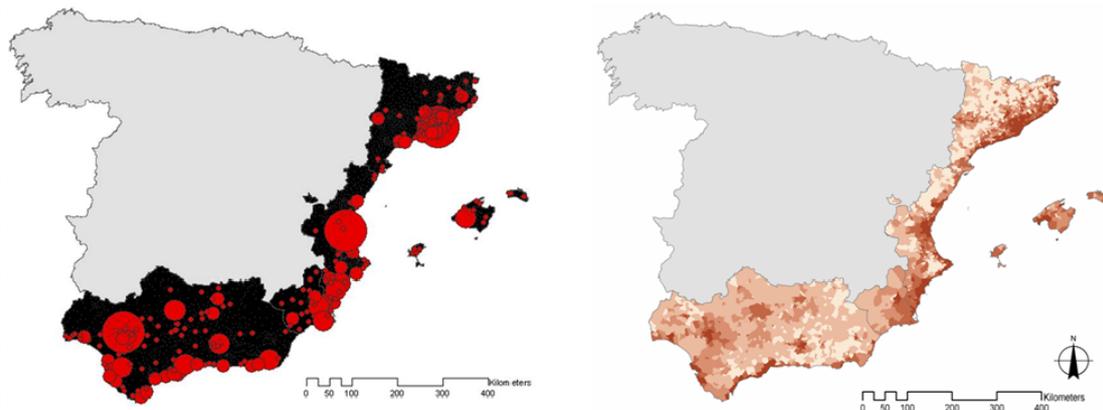
³ Lewis Mumford. *The City*, documentary film. New York, 1939

⁴ See HALL, P. and HAY, D., *Growth Centres in the European Urban System*, Heinemann, London 1980, also VAN DEN BERG, L., DREWETT, L. (et al.), *Urban Europe: a study of growth and decline*, Pergamon, Oxford 1982, and CHESHIRE, P. and HAY, D., *Urban Problems in Western Europe: An Economic Analysis*, Unwin Hyman 1989.

The general concept of *Mediterranean city*, as a synonym of compactness, relatively high density, functional variety and diversity, no longer finds a clear correspondence with our urban and metropolitan agglomerates. In fact, especially in large cities, only the central nucleus or nuclei preserve the aforementioned attributes. Along the Spanish Mediterranean coastline, the diffusion of low density urban fabric outside the compact urban zone has been, in many cases, the cause of *emptiness* in the dichotomic classification of territory in urban and rural zones, now that the rural territory has been invaded and contaminated by multiple settlements that are primarily destined to residential, not agricultural, purposes. The territorial transformation in a zone experiencing a spontaneous and progressive increase in second, temporary homes, and at the margins of the inner city, carries about a hybrid and heterogeneous territorial system of natural terrain and punctual and frequent urban structures. The production system traditionally associated with agriculture mixes with the *urban production system* occupying large sections of the available territory in coastal areas (Vespere, 2008). We should keep in mind that, according to Stefano Benni et al. (2007), the excessive soil consumption for residential use, if it is not based on a very efficient design, ends up degrading the whole territorial context of peri-urban zones, causing the above mentioned effects of urban dispersion or sprawl, fragmentation of agricultural structures, inconsistency of physical spaces and economic activities.

If we look at how urbanized zones have distributed in space, along the Mediterranean coastline, we realize that soil has been mostly *consumed* in the immediate vicinity of the coast and around big consolidated urban nuclei (Figure 3). In 2006, the first kilometre of coastal territory, along the Spanish Mediterranean coast, is around 30% urbanized. This percentage, which was 22% in 1990, drops sharply already in the second kilometre (16% in 2006) to reach very low values at 20 or 40 kilometres.

Figure 3. **Spatial distribution of population and percentage of urbanized area, along the Mediterranean coast in 2006**

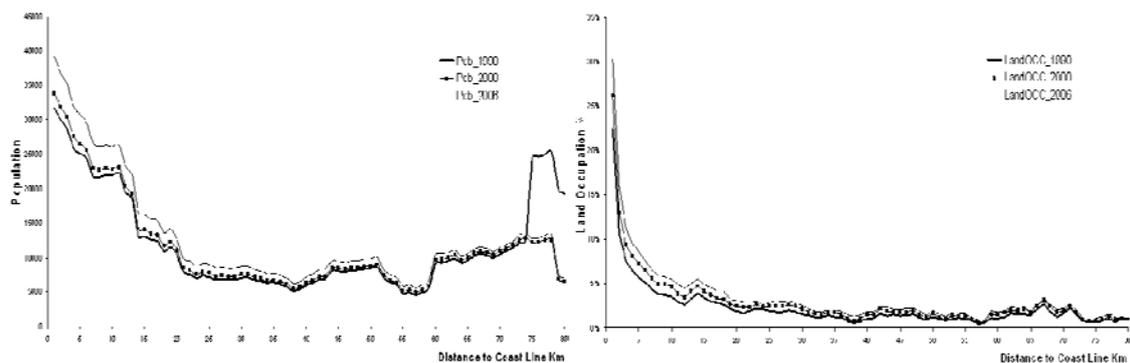


Source: By authors

In order to represent objectively the main features and critical questions of urban territories, it is necessary to structure a precise, qualitative, and mainly, a quantitative analysis of the dynamics of urban growth, by means of a combination of fundamental variables, quantifying priority values such as the soil consumption rate and the various forms of soil consumption, and above all,

analyzing the relation between soil changes and demographic curve over time. So considering two fundamental aspects of urban growth dynamics, such as population rate⁵ and quantity of territory consumed by artificial soil over twenty years, it has been underlined changes in urbanization trends, mostly focussing on the Mediterranean area, which has undoubtedly been the object of a strong human pressure and of speculative phenomena in the field of building, mostly in the last decades. The data used to calculate the quantity of urbanized land comes from the soil classification figures of the CORINE land cover project⁶, taking into account the three fundamental dates of 1990, 2000 and 2006, a key year for Spanish economy, as it has been, according to many⁷, the beginning of the economic crisis, principally for the real estate market. In order to understand the tendencies of these indicators, it is important to distinguish the effect of urbanization from the immediate vicinity of the coastline and step by step shifting to the inland. Figure 4 shows the tendency in population change and urbanized areas over the years 1990-2000-2006 in the first 80 kilometres from the coastline, measuring values at each kilometre from the seashore.

Figure 4. Population average⁸, and percentage of artificialized area along the first 80 km from the coastline, and during the years 1990, 2000, 2006



Source: By authors

The diagrams clearly show how, within 10 kilometres from the coastline, the population and the quantity of urbanized surface are very high. Moreover, we perceive that the speed in value change, especially between 2000 and 2006, is much more sensible toward the coast. We find a strong decrease in population at a distance between 70 and 80 kilometres, and among 1990 and 2000, so that we may conclude that, in those years, and from Catalonia to Andalucia there

⁵ For the data relative to the population, in the years 1990, 2000, and 2006, has been used the database of the municipal register, deriving from the survey of Spanish National Statistics Institute (INE) for the years 1991 and 2001.

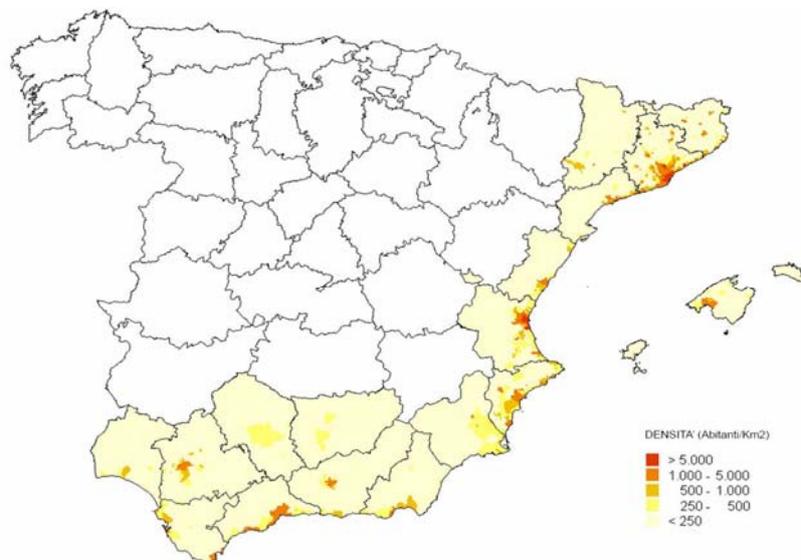
⁶ CORINE Land Cover project is a joint initiative between the European Environment Agency and the European Commission which has affected 26 countries at European level, and includes the acquisition of data from ground cover classes through remote sensing techniques, using Landsat and SPOT satellite imagery, and photo interpretation. The categories employed in our analysis are those included in the level 1 of the CORINE Land Cover Legend, which is named artificial surfaces.

⁷ Fernando Gaja (2008) points out the necessity, in order to find a starting point for an analysis of the speculative dynamics along the Spanish Mediterranean coast, to look at the final stage of the building boom between 1996 and 2006 and at the dynamics which generated it, with the consequences deriving from this growth model and, above all, without forgetting that "real estate hyperproduction" reflexes a model of real estate speculation developed to maximize profit leaving aside social and environmental concerns.

⁸ The value is calculated as the average of population between all the municipalities intersected by every strip of 1 km parallel to the coastline.

was a strong tendency, for the population, to move toward the coast, a major sign of the growing human pressure in this geographic field. Most Spanish big cities lose population in the central areas due to its displacement toward the metropolitan periphery. This relative density loss and physical dispersion of the urban mass on the immediate metropolitan hinterland and, in our case, along the coast is the consequence of an exponential occupation of suburban soil with low density residential settlements, and of industrial and service decentralization (Monclús, 1996). Comparing Catalonia with the rest of the coastland, it is clear that in absolute terms human pressure on the territory is highest (except the first kilometres of Valencian coast), but in relative terms, above all with reference to growth speed and urban fabric dispersion, not only Valencia, but also Murcia, Balearic Islands and Andalucía proceed at a faster pace, especially in the last twenty or thirty years, due to their own metropolization phase, which Barcelona has already experienced, moving now toward a successive phase of urban consolidation. In fact if we take a look at a map of density (Figure 5), calculated as the amount of resident population in the area of municipality, it is possible to clarify the above concept noting that just the cities of Barcelona and Valencia are keeping high values of density, while the surrounding areas to the big cities, that is the metropolitan space, and even some other major cities such as Sevilla tend to low values of density or at least median.

Figura 5. Population density of provinces along the Spanish Mediterranean coast



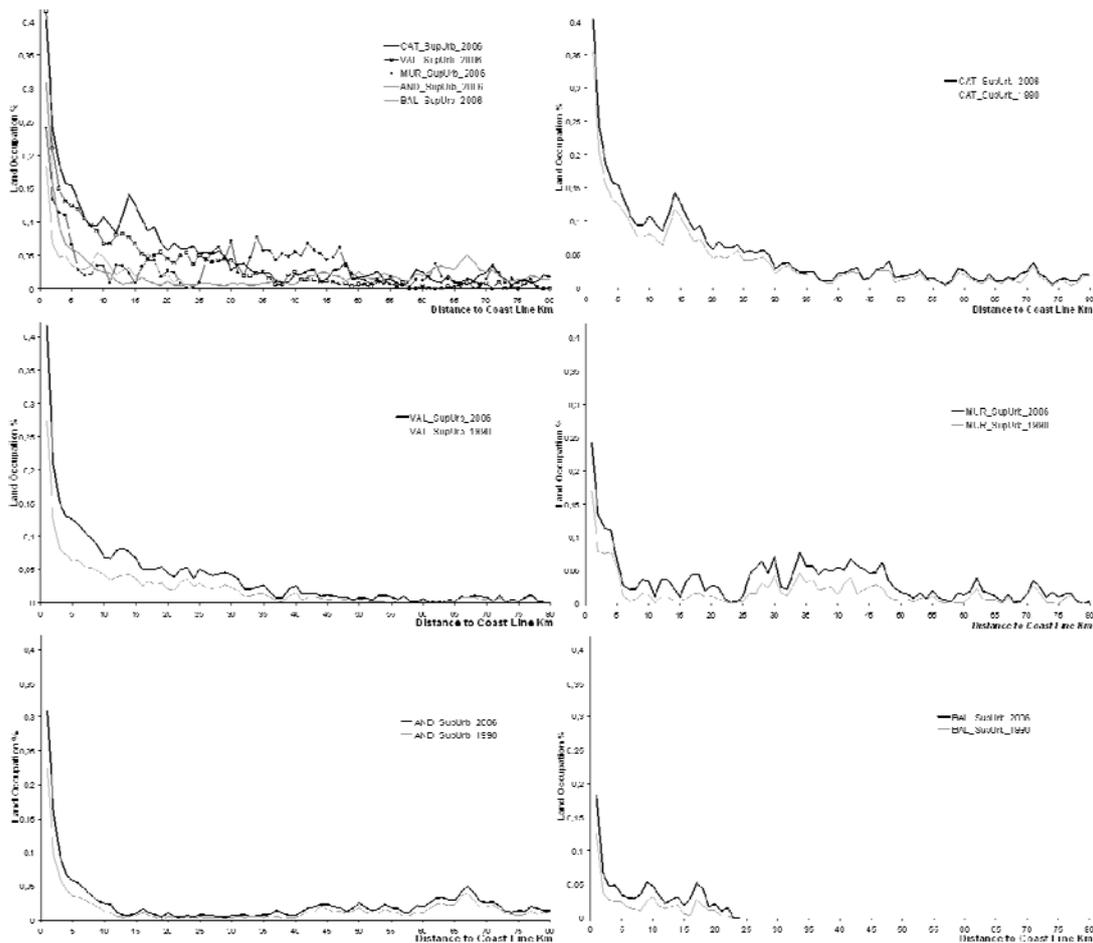
Source: The urbanization process along the Spanish Mediterranean coast - workshop at Centre of Land Policy and Valuations.

Marambio et al. (2011) note, analyzing the CORINE Land Cover, that the impact of urban expansion along the Spanish Mediterranean coast, particularly in certain areas, reaches worrisome levels. In the case of Castellón and Huelva, for example, growth has reached 40% in the last 20 years (urbanized soil has therefore almost doubled). Moreover, they note that, in general, more than 40% of urbanized surface is distributed at a distance of less than two kilometres from the coast. While Nel-lo (2001) underlines that the present process of urban

diffusion over the territory could also have positive effects, mostly when the decrease of density in central urban areas could favor the progressive relative homogenization of urban functions all over the territory, such as job, infrastructure, and services. On the other hand he also points out that, being largely regulated by the filters of soil and housing market, the old, and large social divides (centre vs. metropolitan periphery) give way to a much more complex kaleidoscope where barriers do not disappear but are multiplied in smaller and smaller unities (Nel-lo, 2001).

If we concentrate on soil occupation rates for the single Autonomous Communities, we underline that the Catalanian coast has grown less in comparison with the other Mediterranean autonomous communities, in terms of relative soil occupation, going from 35% in 1990 to about 40% in 2006. We do not intend to say that it has not grown much and, above all, we remark that, around the capital, the urbanization pattern approaches models of dispersion keeping low the values of density, despite the Barcelona city effect which contributes to moderate such values of density. The *Comunidad Autonoma Valenciana*, though the central city follows metropolizing tendencies just like Barcelona, fails to harness the urban explosion along the coast, which shows an increase in occupied soil from 28% in 1990 to 42% in 2006, surpassing Catalonia and reaching high dispersion values around the capital as well. Even in Murcia we note an important increase in urban growth along the coast, going from 18% to 25%, as well as in the interior, where the capital is, from 5% to 10%; but the most remarkable fact, in Murcia, is the type of growth, which is very dispersed and low density. Andalucia also shows some remarkable growth in the coastal area, from 23% to 32%, but in the vicinity of Seville, for example, there is almost no growth in terms of consumed surface, probably because some cities are moving toward a new phase of urban development, striving to polycentrism and compactness. In the Balearic Islands the urbanized surface grows from 14% to 20%, but one should consider that islands deserve an ad hoc treatment, being a special and territorially limited environment (Figure 6).

Figura 6. Urbanized land rate in 2006 for the five regions at once, and experienced growth between 1990 and 2006 for the CC.AA.



Source: By authors.

Based on an investigation about the use of quantitative indices for analyzing patterns of urban growth in Spain⁹, it has been evaluated that, in general, a decrease in density has clearly taken place during two decades, underlining that net density is the only value that always tends to decrease in this time frame, especially along the coast. The inverse relationship between the growing land consumption and the decreasing density, mainly in the first 20 kilometres going from the coast toward the interior, is an index of the differing speed in the population increase relative to the soil occupation rate, while the dispersion of the urban fabric on the territory shows a more direct relationship with the increasing human pressure. In analyzing the level of dispersion it has been revealed, in some areas, a cyclical process consisting of an initial phase of dispersion of urban fabric followed by a second phase of re-compacting (in the case of highly developed urban environments, i.e. in the more *mature* areas from the point of view of

⁹ Nicola Colaninno, Jorge Cerda y Josep Roca. 2011. Spatial patterns of land use: morphology and demography, in a dynamic evaluation of urban sprawl phenomena along the Spanish Mediterranean coast. 51st ERSAs congress Barcelona, Spain: Processes of urbanization along the European coastal areas.

metropolitan development), while in other zones the dispersion process tends to grow (cities in expansion). It is mostly the case of the middle-size cities which are still undergoing a major urban expansion, and above all those cities situated around big metropolitan centres, or near the coast, tend to be more dynamic and show a high degree of dispersion and soil occupation, keeping however average or low density values. According to Dematteis (1998), the higher growth of minor and peripheral systems results from the balance of two movements: a decentralizing one, moving jobs from the central metropolitan system to the peripheral areas, or creating ex novo jobs in minor systems, and a centralizing one, with the development of new jobs in the metropolitan centre, jobs generally tied to highly qualified activities and services. We want to emphasize that the most relevant result of the above cited investigation was to validate the thesis that, in almost 20 years of urbanization along the Spanish Mediterranean coast, the expansion of artificial surface has generally been higher than the population growth rate, which means that the density has substantially decreased over time. These considerations suggest that the production increase in the real estate sector, above all in housing, has not been the result of real demand or adequate planning. The effect has been the generation of plenty of *centrifugal* urban growth models expanding over the territory, moving away from consolidated nuclei, and mainly depending on speculative dynamics.

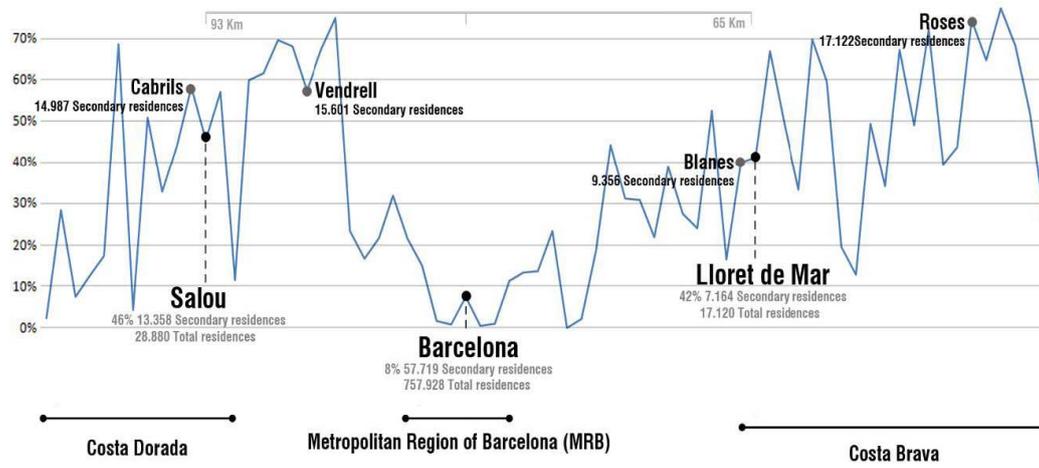
4. Analysing urban growth in Catalonia

There is no doubt that lot of urbanization processes in Europe has entered a new phase, which is not characterized by concentration but rather by population and activity diffusion over the territory. The most visible result of this phenomenon is migration from large metropolitan municipalities toward medium and small ones. Moreover, in many Mediterranean coastal areas (not only in Spain) this phenomenon of diffusion has brought about the notorious phenomenon of *second home* in urban polygons with their own formal features, and, above all, without balancing the weight of housing with services and structures. As an important process of transformation and degradation, this has cancelled every relation between the territory and the sea, creating, in particular, barriers and obstacles instead of a balanced relationship between interior spaces and coasts. The phenomenon, a result of individual needs for second houses since the sixties, has taken place in rural areas, creating a progressive transformation of the territory and reducing the productive function of land; as well as along the coast and highway infrastructure (Vespere, 2008).

We face such phenomena along the Catalanian coast too, even if an inversion of the trend is perceivable, and mainly around the metropolitan area of Barcelona. Such as for other cities, above all in metropolitan areas, present day trends in urban planning, inspired by concepts of sustainability, tend to *fill in* empty areas within the cities, in order to bridge the *anonymous gaps* left as an effect of vast contemporary expansion. This is one of the main challenges of spatial planning. It is because the urban models we usually define as *low density*, models that are increasingly occupying rural and coastal areas with discontinuous texture and *instable* urban structure, tend to modify a larger quantity of land through the use of a disperse residential typology, connecting infrastructures and new suburban centres. These types of urban models, which have grown most rapidly in the last decades and, in coastal areas, because of tourism and other economic factors, are generating various patterns of fragmentation in soil use. In fact Marambio et al. (2011), in order to analyze the urban phenomenon along the Catalanian coast,

propose (Marambio et al. 2011) a *horizontal* section relative to the coastline, analyzing all 70 coastal municipalities and focussing on the differences between Costa Dorada, Costa Brava, and Metropolitan Region of Barcelona (MRB). The section provides a view of the coast from the sea, and the study concentrates, in particular, on the analysis of second housing and hotel offer in coastal municipalities. The graphic results (Figure 7) show that the highest number of second houses is in Barcelona (57.719 units), a number representing, however, only 8% of total housing, that is to say the lowest percentage along the Catalan coast. Lloret de Mar, in Costa Brava, for example, has 42% of second houses over total housing, well above the average value of 36.6% and approaching a 1:1 ratio. The graphics, moreover, show that second housing concentrates mainly in the environs of Cabriils (Costa Dorada), Vendrell and Roses.

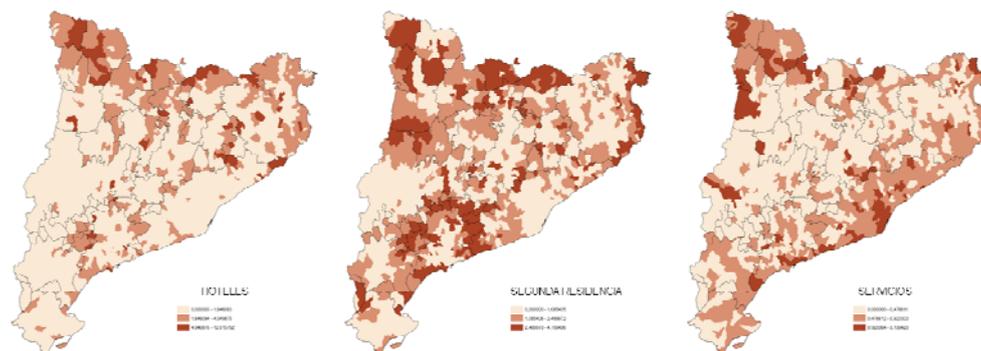
Figura 7. Percentage between second homes and total residence (2010), for the 70 municipalities of the first line of Catalan coast



Source: Marambio et al., 2011.

The spatial distribution of the economic activity concerning the localization of second houses, and hotel market, provides a map of Catalonia (Gaja et al., 2012) where we corroborate the aforementioned concerns about the localization of second houses and hotel offer especially in certain zones of the coast (Costa Brava, Costa Dorada and the surroundings of Tarragona), and at the same time noticing the presence of this kind of specialization on the Pyrenees. While, in particular the area around Barcelona, specializes in services (figure 8).

Figura 8. Economic specialization in second homes¹⁰, hotels and services¹¹ in Catalonia



Source: Gaja et al., 2012.

It is important to underline that even if we notice phenomena of urban dispersion in the outermost metropolitan perimeter, basically due to the increase of second home rate, the metropolitan area of Barcelona as a whole specializes, as we have seen, mostly in services (but also in industry), and generally keeps a certain complexity in the composition of its economic structure, providing the typical features of polycentric metropolitan areas. Moreover, the core of the metropolitan system puts together, in little less than 500 square kilometres, three million people, that is to say almost half the entire population of the Autonomous Community. There is no doubt that this compactness, due to the strong influence Barcelona exerts on the territory, is affecting many urban systems (Nel-lo 2001). Specific internalities, either in the metropolitan contexts or produced by particular geographical areas, such as the coastal area which is subject to important human pressure caused by tourism demand, generate dynamics of urban development we have called *Metropolis effect* and *coast effect* (Gaja et al., 2012). If the coast effect along the Mediterranean side, and especially during the last twenty or thirty years, has generated significant phenomena of urban sprawl in terms of excessive growth, fragmentation, and low density, on the other hand the metropolis effect, which also assumes significant growth in terms of land occupied (as indeed happened in the space of Barcelona), can unwrap a key role in the sustainable development of the entire area, by organizing the *form* of urbanizing, based on the redistribution of urban weights and betting for policies addressed to an integrated operation of the regional system and through a complex network, and functionally polycentric territorial structures. A containment role in growth, due to an urban center *mature*, is particularly noticeable in the RMB, due to Barcelona city; where in fact, as points Marmolejo (2011), since the decade 1981-1991, the crown the highest growth in the context of the RMB was the second ring of metropolitan area, which lies between 20 and 30 km (measured by road) from Barcelona, and which includes today consolidated municipalities. In the decade from 1991 to 2001 the municipalities which experienced the greatest growth are those of the third metropolitan ring, 30 to 40 km to Barcelona, while in the last decade the municipalities with the highest growth are those within the more external ring that is located more than 40 km from Barcelona, where clearly it is provided an *inside out* growth and where, the peripheral municipalities are now gradually getting a central role in the metropolitan development. More than emphasizing as the

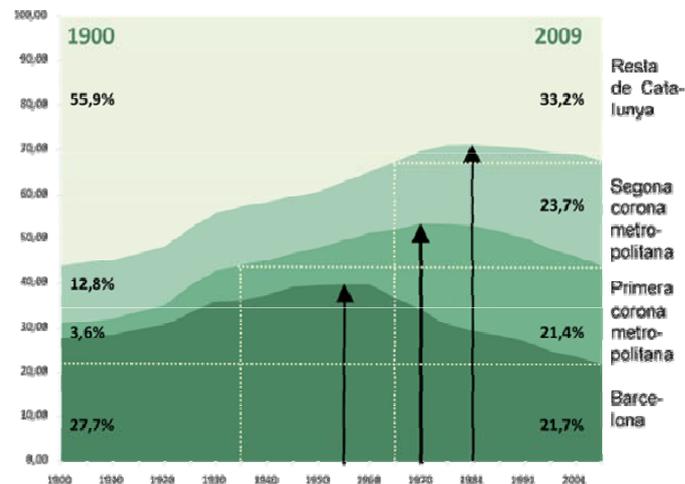
¹⁰ CNAE, National Classification of Economic Activities.

¹¹ INE, National Institute of Statistics of Spain.

direct neighborhood of Barcelona has experienced its greatest growth before the eighties, we need to note that currently the central role of the consolidated capital tends to affect the evolution of metropolitan space, and regional, driving growth of other municipalities spread over the territorial space.

The increase in population in Catalonia throughout the twentieth century has allowed almost quadruple its population rising from 1.966.382 in 1900 to 7.504.881 in 2010 through a no-linear evolution but continuously over time¹². But it is a fact that especially in the last thirty years, the demographic weight, along with the weight of urbanization has been redistributed throughout Catalonia, assigning a considerable role to municipalities in the growth phase along the whole regional territory. In fact, in the autonomous community as a whole, the population growth in recent decades, from the eighties, has suffered a very important decline. Nel-lo (2001) points out that if between 1960 and 1975 the resident population grows, passing from 2.5 to 4 million people, in the next twenty years the growth has been just 200,000 people. Moreover, between 1991 and 1996 there was even a small loss of population in absolute terms. And the RMB as a whole loses relative to the total weight of Catalonia. In addition, within the RMB, the development process generates an important *differential* growth, mainly due to changes of residence of the population, particularly in the second metropolitan ring. The municipality of Barcelona, between 1975 and 1996 has undergone a major reduction in population, from 1.751.136 to 1.508.805 inhabitants, with a negative migration balance compared to all the municipalities of metropolitan area (although by 2010 the population in the city of Barcelona has again risen to 1.619.337¹³) (Figure 9).

Figura 9. Evolution of the Catalan population by territorial ambits, 1900-2009



Source: SERRA, J., Metropolitan Area of Barcelona.

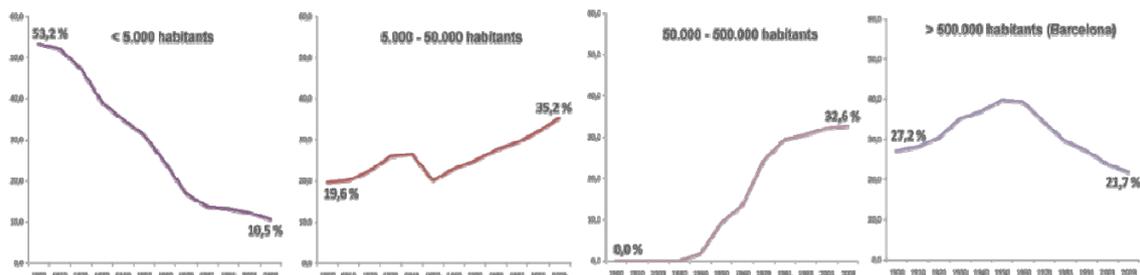
For over two centuries, the main Catalan cities have experimented an almost incessant growth of population and an extraordinary increase of the relative weigh (en terms of demography), urbanizing a considerable part of rural areas. In principle has been generated an asymmetry

¹² Institute of Territorial Studies. Slices of territorial information, number 5, July 2010.

¹³ National Institute of Statistics, Municipal Census: Population at 1 January 2010 (23 December 2010).

between the development of Barcelona and the rest of Catalonia, producing large migratory movements which emptied large rural areas in the plains and the mountains inland. A secular process of concentration that tends to gather either people, activities and services in major cities in Catalonia and in particular Barcelona and its urban environment. However, in the mid-seventies, other cities outside the Barcelona metropolitan area begin to build their own metropolitan structure, so gaining relative weight (Nel-lo, 2001). The *differential* growth rate, related to territorial distribution, often depends on the size of the municipalities, in terms of population, which underlines that municipalities maintaining *positive* and relevant growth trends are the medium, i.e. those municipalities between 5.000 to 500.000 (Figure 10).

Figura 10. Evolution of the weight of the population by size of municipality, Catalonia 1900-2009



Source: Institute of Territorial Studies. Sheets of territorial information, Number 5, July 2010.

The smallest municipalities have changed from retaining more than half of the population of Catalonia in 1900 (53,2%) at only one-tenth in 2009 (10,5%). In a context of overall growth of the Catalan population it is logical that many of the small municipalities, in this logic have *jumped* to another category. Middle size municipalities, have been over the last decade those which have shown a higher rate of growth, providing the category that collects a higher proportion of the population, with 35,2% of the total. Large municipalities that experienced the most growth between 1940 and 1981 have seen stabilizing their share over the overall Catalan population with approximately one third (32,6%). The cities of Badalona, Terrassa, Sabadell and Lleida fall into this category in 1940 (L'Hospitalet had done it the previous decade), while Tarragona, Mataró, Santa Coloma de Gramenet, Reus, Manresa Cornellà de Llobregat they will not until the decade of 1950, and others like Girona in 1960. Barcelona meanwhile, despite having regained positive growth rates that had been lost over the decades of 1980 and 1990, shows a below average growth Catalan, by losing weight to 21,7% of total¹⁴.

The case of the province of Girona is also indicative of the speculative phenomenon due to massive urbanization, but especially low density, that occurred during the last twenty years. This way of building, mostly in particular geographical areas such as coastal, which has been pushed especially by accented tourist flows and the economic and physical accessibility (think about the plenty of low cost flights), has produced settlements basically based on a type of continuous and *linear* urbanization. This continuous and *linear* system, parallel to the coast,

¹⁴ Institute of Territorial Studies. Slices of territorial information, number 5, July 2010. Goerlich, F.J. MAS and M: The location of Spanish population on Territory. A century of changes. A study in basado homogeneous series (1900-2001). BBVA Foundation. Bilbao, 2006, 2002-2009: INE: Census.

competes with the consolidated structure of the metropolis that generates other lines of forces, from the beach to the inland through sort of penetration axes. This concept is very clear if we compare the cases of Barcelona and Tarragona with Girona, which is about 30 kilometers from the coastline, and which over the last years generated an alternative system, such as the Costa Brava. But the progressive depletion of soil, which now obligates to more dense and compact urban typologies, but also awareness by many municipalities to unsustainability of developing sprawl models, and the consolidation of rationalizing vision at supramunicipal level, are the elements that have allowed reverse the trends begun during the 1980s. This investment in the pattern of building housing occurred in recent years especially in the province of Barcelona. A change in the planning and decentralized management has enabled start a process of *mending* of fragmented tissue caused by urban sprawl. It is hipotizable the existence of the first signs of a change in the use of the Catalan territory, which is directed to a process of reclassification of the peripheries and the possible beginning of the end of the fragmented city (Marmolejo and Stallbohm, 2008).

5. The regional planning in Catalonia

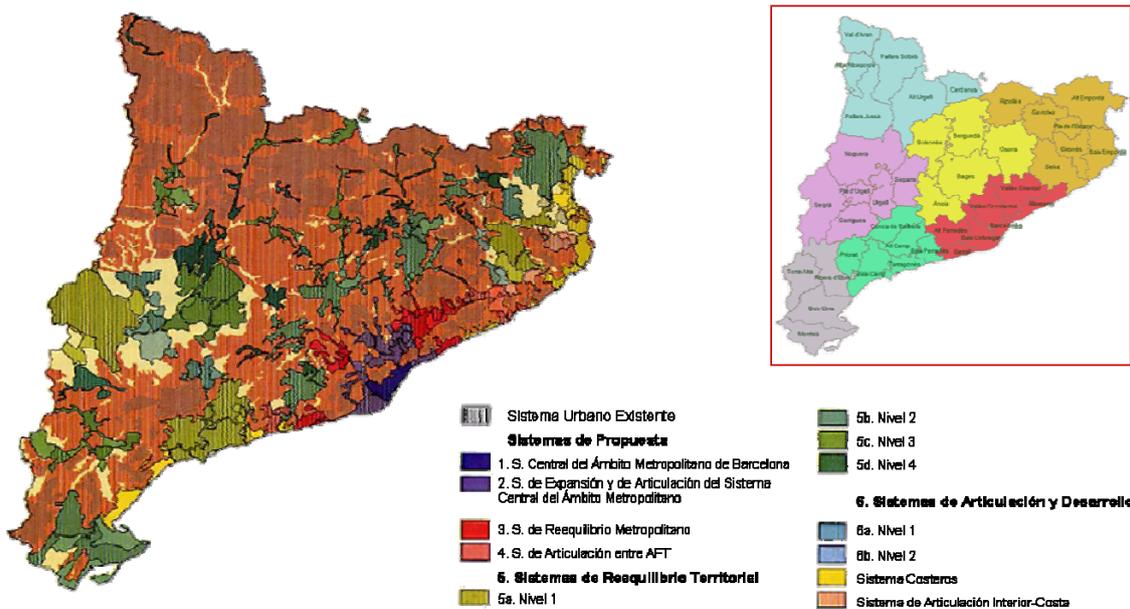
Actually, the economic activity within the region of Catalonia currently tends to be distinct and complementary between different urban systems. Each system *creates* their own cities, and thus also its capital and, in turn, each city has its own territory, which is structured around a specific set of features. But all these systems ultimately refer to Barcelona, which indeed assumes the role of unifying the entire territory. This fact, on the other hand, makes that the large relative weight that the city of Barcelona, with its metropolitan area has a territorial level in Catalonia represents an important position on the issue of the conceptual dichotomy between *policephaly-macrocephaly* understood above all as a concern from the functional point of view.

Therefore the territorial and urban planning in recent years has led, in response to this concern, the empowerment of alternative and complementary urban centers, with the aim of providing a multipolar or polycentric structure. In fact, already with the Master Plan of the Metropolitan Area of Barcelona¹⁵ of the '60s, it was argued the concept of City-Territory, while in 1976 the Metropolitan General Plan raised the development of cities around Barcelona to compensate and make counterweight to the macrocephalic development (Nel-lo, 2001). As underlined by Marmolejo y Stallbohm (2008), it is important to taking into account that above of the economic and social aspects that affect the processes of *spatial self-organization* of homes and businesses; there is the influence of public intervention which, in this case, has its highest realization in the territorial and urban planning policies. The Territorial General Plan of Catalonia

¹⁵ The laws of the Catalan Parliament in 1987 obliterated the Barcelona Metropolitan Corporation that managed the Metropolitan General Plan in the 1975 (27 municipalities affected), and created two metropolitan entities: the Environment Entity Ambient (18 municipalities) and the Metropolitan Transportation Authority (32 municipalities). In response to this policy carried out by the Catalunya Metropolitan Government of those years, a number of municipalities that had belonged to the former Metropolitan Corporation of Barcelona created the Association of Municipalities of the Metropolitan Area of Barcelona. At the time of its creation, the Commonwealth was formed by 24 municipalities. The area drawn by all the municipalities, included in some of these three new metropolitan institutions (36), sets the field that has been called the Barcelona Metropolitan Area or first metropolitan ring. During the first few next years this area will not have any kind of institutional recognition. The year 1987 was approved the Comarcal Ley, which established the Comarcas (41) as local government areas of Catalunya. The so call Barcelona Metropolitan Area includes the entire region of Barcelona and part of the Baix Llobregat, Maresme and Vallès Occidental. Despite the complexity posed by the simultaneity of metropolitan institutions and new districts, such districts had and still have their own governing bodies and exercise the powers granted by the Comarcal law (Haas and Riera, 2005).

(Figure 11), approved by the Catalan Parliament in 1995, represents the instrument that defines the objectives of regional balance of general interest to Catalonia and, at the same time, the guiding framework of actions to promote, through the public interventions, the right conditions to attract economic activity in the appropriate spaces and getting that citizens have high levels of quality of life regardless of the territory where they live.

Figura 11. Territorial General Plan of Catalonia (left side) and the seven partial territorial planning ambits (right side)



Source: Department of Planning and Sustainability, Government of Catalonia.

The plan proposed as one of its main objectives *the slow down the present process of concentrations* in order to favor *those strenght aspects of the areas with the capacities to rebalance the territory* inside and outside the metropolitan area (Nel-lo, 2001). From the implementation perspective, the General Territorial Plan of Catalonia defines a development model based on the *target image* of the projection of the demographic distribution in Catalonia in 2026, moreover the Plan sets to run seven areas (Figure 9), based on the territorial functionality, in which it must be developed a Partial Territorial Plan: the Territorial Metropolitan Plan of Brcelona (aproved 2010); the Partial Territorial Plan of the *Comarques Gironines* (aproved 2010) Partial Territorial Plan of *Terres de l'Ebre* (aproved 2010); the Partial Territorial Plan of *Camp de Tarragona* (aproved 2010) the Partial Territorial Plan of *Comarques Centrals* (aproved 2008); the Partial Territorial Plan of *Ponent* (aproved 2007) Partial territorial Plan of *Alt Pirineu i Aran* (aproved 2006).

The plan especially focuses on those territorial variables which could most strongly be affected, and in which there is a greater technical capacity to develop agreed proposals in a short period of time. These aspects are articulated in the three basic territorial systems: open spaces, urban system, mobility Infrastructure. In order to stop the uncontrolled growth, are included within the category *no-developable soil* of the plan, a number of areas that are classified like scenic value,

such as natural heritage, ecological connectivity and agricultural values, geological heritage, and cultural goods of national interest. In detail, the territorial plan aims to achieve the zoning of the territory based on homogeneous socioeconomic characteristics and the potential development, the indication of those population centers which should exert a force of driving and re-balancing, the determination of natural spaces and natural elements to keep, in order to ensure the general interest of the whole country, the definition of specific agricultural and forestal lands which will be preserved or extended, the forecast of the location for major infrastructure, especially communications, energy and sanitation services and equipment of general interest. Moreover it is also indicated areas for promoting specific uses and the definition of the ambits of application for the partial territorial plans that will suit to the areas indicated in the territorial division of Catalonia¹⁶.

The territorial policies in Catalonia, according to the different local characteristics, and including the various structural components, provide, for the partial territorial plans, in addition to the provisions for urban planning, also a themed content similar to the territorial general plan, which bet for a balanced distribution of growth between different areas bounded by the planning and the definition of specific nuclei capable to develop a role so-called *nodal*, within the planned polycentric structure, in order to achieve an equal distribution of demographic weights, urban, and socio-economic development over the entire territory. Through partial plans, the objective is also the protection and enhance the urban heritage that vertebra the territory and the promotion of an effective housing policy to be urbanistically integrated within a new model of territorial development. It also aims to moderate the consumption of land and promote social cohesion within the territory, avoiding the spatial segregation of urban areas, and promote compactness and coherent growth. From a functional standpoint, the goal is to strengthen the nodal structure of the territory through public transport and by polarization and compaction of settlements¹⁷.

Among the regional plans it is of strong interest the Territorial Metropolitan Plan of Barcelona¹⁸ (PTMB) that comprises 164 municipalities. The PTMB refers to a territory which, despite representing only 10% of the territory of Catalonia (3.236 km²), contains almost 70% of the population (4,8 million) and generates an equivalent proportion of domestic product Gross. The metropolitan area is thus the cornerstone of the Catalan regional structure. With regard to the system of settlements and, as highlighted in precedence, according to the Territorial General Plan, the PTMB aims the configuration of a metropolitan region of Barcelona with polinodal character, and with a regional impact. That is, rejects both excessive centralization and formless dispersion, and articulates the metropolitan space on a system of cities (Nel-lo, 2001). The hierarchical system, but polycentric, which is set basically from the Barcelona metropolitan area, is also structured on dynamics of functional urban areas of Girona, Tarragona, Lleida, Manresa, Tortosa, the Seu d'Urgell and other cities in the territory of Catalonia. Several authors have shown how migration *intrametropolitanas* has origins and destinations always farther from the central municipality (Nel-lo, 2001). That is, the polycentric network, centered in Barcelona, which has been provided in Catalonia, tends to expand its area of influence on the whole territory, and migration of the population, in the regional space, generates phenomena of *tertiarization*, *decentralization* and *flexibility* of the economic structure (Nel-lo, 2001).

¹⁶ Department of Planning and Sustainability, Government of Catalonia

¹⁷ Department of Planning and Sustainability, Government of Catalonia

¹⁸ On 20 April 2010 the Government of the *Generalitat* of Catalonia approved the Territorial Plan of Barcelona.

5.1 The urban master plan for the coastal system (PDUSC)

It is clear that the proximity to the sea and the availability of beach areas as tourist attractors, acts as a *modeling factor* on the form of the cities and their way to occupy the ground, being that the territory, due to its dynamic nature, tends to transform and adapt to the most feasible (economic?), and spatial needs. Whatever human installation, such as Industry, construction, transport, tourism, may change the balance of interactions land-sea. The recent phenomenon of speculation in place along the Spanish Mediterranean coast, clearly demonstrates that geographical conditions also impact on growth phenomena, as well as the appearance and definition of new *forms* of cities and territories. The superposition of different structures, the complementarity between different punctual and linear objects with the urban structure, the spatial syntax and geography, combined with speculative dynamics, often generate new patterns of urbanization. So the change and the growth in demand for coastal land, in the post-modern scenario, is one of the main problems of connection between planning and environmental sustainability of the coastal zone.

Difficulties in managing a really complex territory, and fragmentation of the municipal map of Catalonia which has 947 municipalities for an area of 32.118 km², often makes the municipal urban planning being at a too small scale to develop effective strategies management of land use (more than 156 municipalities are still without planning). Therefore, for realizing the territorial planning purposes, the Department of Planning has considering of great importance the development of a set of Urban Master Plans, which have accompanied and sometimes preceded the adoption of territorial plans. So, in the same period of the drafting and adoption of spatial plans, the Catalan government has promoted a total of 37 urban master plans, which, at the end of 2010, 28 were finally approved, 3 had the initial approval, 3 were in development, and other 3 plans were waiting for award contest.

Master plans are organized in six groups: coastal protection, mountain regions, preservation and management of heritage and landscape, urban areas, infrastructure, and strategic residential areas (Nel-lo, 2011), and are configured as a supramunicipal coordination tool, above all, to protect the territory, to manage mobility and implement infrastructure. In accordance with the revised text of the Town Planning Act, to urban master plans is responsible, among other things, the following: establish guidelines to coordinate the urban planning of a territory at a supramunicipal scale, set determinations on sustainable urban development, the mobility of people and goods and public transport, measures of protection of undeveloped land, specify and delimitate land reserves for major infrastructure, and policy programming supramunicipal of soil and housing, agreed with the municipalities affected. Importantly, in order to achieve these objectives, master plans include guidelines for municipal planning, which provide a useful tool for the coordination of municipal plans affected by common objectives and problems¹⁹.

¹⁹ Already within the coastal strategic plan of the RMB of 2005, promoted by the Government of Catalunya, Barcelona Provincial Council, Port Authority, municipalities of the AMB (Metropolitan Area of Barcelona), and coastal municipalities, were featured contents such as the recovery of the overall quality of the coastal landscape based on the protection and restoration of non-urban space, forming a continuous network for linking all protections local, district and metropolitan, ranging from urban parks and gardens to the natural areas; the reconstruction of urban fabrics in order to increase moderately the densities by integrating new economic intensive activities that increase the self-containment of workers. Also promote infrastructure and equipment and better urban integration of the industrial sites that would tend to

Among the master plans, the Urban Master Plan for the Coastal System (PDUSC)²⁰ is the instrument that aims to protect and add value to the Catalan coast system, by ordering the development and avoiding the urbanization of the empty spaces (Burns et al., 2011). The scope of the PDUSC affects a strip of 500 meters starting from the interior shore of the sea, and over the whole of the Catalan coast. In this space the Master Plan proceeded to suspend whatever pending or license which could involve moving towards the use of soils, that did not dispose of urban planning finally adopted. At the time of writing the PDUSC, 46,5% of the soil was classified as urban, 39,6% was protected, and 5,7% was developable while 8,2% was undevelopable. The intention of the plan was that almost all the undevelopable land, and much of the developable not delimited soil, located on the coast, would be excluded from the urbanization process in order to ensure the connectivity among the protected spaces, to avoid the phenomena of conurbation of the urban nuclei, to open the inland protected spaces toward the sea and to ensure that any urbanization was not situated on the river mouths.

The bet was so strongly directed about protecting the Catalan coast. Such urban master plan has four main objectives, which means: the prevention of a consolidation of continued edification which could arrive to cover a substantial part of the coast (urban objectives); the preservation of the coastal areas for their values and their landscapes, both cultural and symbolic (patrimonial); the enabling of the preservation of a particularly fragile environment such as the coastal, and ensure continuity between land and sea ecosystems (environmental); the managing of coastal space as an essential resource for economic development and, in particular, for the touristic activity (economic) (Burns et al., 2011). The main directives of the PDUSC, referring to building land, impose limits on the gross floor area for the urbanizing areas, and also obligate to respect the easement area of protection in accordance with applicable law as to costs. Moreover the Plan sets standards of protection for public spaces, in accordance with general or local urban systems, in order to strengthen the protection and public access of the waterfront, and preserve the natural connection in the sense sea-mountain, also ensuring the functionality and urbanistic rationality.

The derived planning for developing the sectors will ensure, through appropriate landscape studies, that the admitted buildings, intended for any use, will be according to a type appropriate for the natural and urban landscape in which are inserted, also to prevent the formation of the architectonic barriers and heaps of volumes, in respect of the standards provided by the master plan. Consistent with the overall objectives of territorial planning, the plan calls for the preservation of soils that have not undergone a significant urban transformation, raising municipal soils reserves in protected areas of urban activity. The Master Plan identifies little more of 24.500 ha. of area, located on the first Catalan coastline, which deserve to be preserved. If we consider that for 24.500 ha., only 7.000 ha were already protected previously, with the Plan of Natural Interest (PEIN), it is clear the importance of this intervention that comes to protect more than triple the area formerly defined (Burns et al., 2011).

provide more diverse activities, and generate new centers with tertiary activities in connection with new railway stations and public transport.

²⁰ Prepared in accordance with the Catalan urbanistic planning legislation - the Urban Planning Law 2/2002 of March 14, as amended by Law 10/2004 of 24 December.

6. Final remarks

Undoubtedly, massive urbanization, accompanied by the rapid expansion of sprawled fabric is one of the most important transformations in the landscape, and a phenomenon that generates a priority concern for governments and urban analysts for finding the best way to measure such transformations, and thus quantify it according to the best possible way. Much of the *explosive* growth that has been allowed in the last century is now a priority European concern about controlling low-density urbanization and environmental consequences in terms of energy and loss of agricultural land (Marambio et al., 2011). But more than measure, and then simply limit urban growth in terms of occupied area long as it corresponds to a real demand, the aim is to rationalize the growth in respect of sustainable development models from all points of view, either environmental, economic, or social.

The main aim of recent urban politics and local planning in Catalonia, rely on a polycentric model structured on the peculiarities of each territorial structure, looking for functional and social complexity and consistently putting all the system's nuclei in mutual relationship, and with their own peripheries. So the new periphery is a complex space: at the macro scale it appears like a large diffuse structure and netlike, whereas in the micro scale each *node* of this network reveals specific characters, and individual identities, and therefore the main principles of spatial organizing (Dematteis, 1998). Since the industrial revolution the urban peripheries have been the sites of innovation and change, but only recently have begun this vocation to be considered as a positive value and essential attribute of a metropolitan area. Large metropolitan areas are rich and complex spaces where the real city goes beyond administrative boundaries and urban space becomes a network of municipalities that establish joint strategies for economic and social development to their territory and strategies for linking them to the global networks.

Beyond the administrative boundaries, which may not coincide with the definition of an urban landscape, whether it is plausible to say that we consider a compact city for its tissue composition (with its formal features), and the sequence of neighborhoods; on the other hand we refer to the characteristics of *compactness* of urbanized territory, by using the concept of polycentricity, it means a balanced distribution of densities and integrated mobility. We then could talk about polarization, instead of territorial compactness. And, if there is no doubt that Catalonia has undergone a process of expansion and urban sprawl, especially until the nineties, however urban development and territorial, is currently experiencing a more advanced stage of metropolization that due to natural cycles growth, but also to the urban planning policies, that bet on sustainable development, with a good level of polarization and redistribution of weights, either economic, demographic, and urbanistic along the whole region, providing a metropolitan system.

The dreaded *misconfiguration*, is then directed to a *new configuration* (though still not met), based on different patterns of development, and on a new model of territorial structure still in transformation. So the process of expansion of the city over the territory provides generation of metropolitan space, always broader, which may be accompanied by phenomena of demographic and economic decentralization and especially by a relative homogenization, according to dynamics and growth phases of development typical metropolitan: absolute

concentration, relative concentration, relative decentralization and absolute decentralization²¹ of population and activities²². Among the major Spanish cities, Barcelona, Madrid, and Bilbao are in the later stages of this evolution, while Valencia and, above all, Sevilla, Malaga and Zaragoza are still in early stages (Nel-lo, 2001).

We seem very appropriate the words of Nel-lo for concluding our discussion: The simple extrapolation of trends often leads to absurd conclusions, while more complex analysis requires clairvoyance to distinguish between structural and circumstantial elements. And, even if this is achieved, we must be also able to find out what factors prevail over the others, in a very changing world, in order to advance hypotheses about which of the numerous and possible futures, will be concretized. So, in trying to predict the future based on current trends, there is a risk to project, especially one's own fears and hopes. The future of a city can not be predicted, but can be designed. We can not say with certainty what the city will be, but we can decide what we want it to be (Nel-lo, 2001).

Acknowledgment

The authors of this paper acknowledge the research funding provided by the Spanish Ministry of Education and Science (SEJ2006-09630), the Spanish Ministry of Science and Innovation (CSO2009-09057), the Spanish Ministry of Development (E08/08), and the Spanish Ministry of Housing. Acknowledgements are also due to the European Union through the INTERREG IIIB Program (South Western Europe). For technical support the authors strongly acknowledge Montserrat Moix, Carlos Marmolejo, Jorge Cerda, Alejandro Marambio, Malcolm Burns, staff members at Centre of Land Policy and Valuations (CPSV) of the Technical University of Catalonia (UPC) (Barcelona TECH).

Similarly the authors would like to thank Nancy Helena Ruiz, Giuseppe Pagliarulo and Valentina Galatone.

²¹ Paul Cheshire in "A New Phase of Urban Development in Western Europe. The Evidence for the 1980's", published in *Urban Studies* XXXII, 7, in 1995, underlines the possibility of phenomena of recentralization after decentralization absolute phase (Nel-lo 2001).

²² Meter Hall y Dennis Hay, *Growth Centres in the European Urban System*, Londres, Heinemann, 1980. Leo Van Den Berg et al., *Urban Europe. A study of Growth and Decline*, Oxford, Pergamon, 1982. Paul Cheshire & Dennis Hay, *Urban Problems in Western Europe. An Economic Analysis*, Unwin Hyman, 1989. Elisabet Sau, *El creixement del sistema urbà de Catalunya (1950-1991). De la concentració a la desconcentració metropolitana?*, Documents d'Anàlisi Geogràfica, 27, 1995.

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