Recent infrastructure policy and the integration of the metropolitan system in Spain: an analysis of winning and losing areas

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1. Introduction

Over the last five decades, Spain has undergone huge political, social and territorial changes, which have materialised territorially in a clear acceleration of the urban development process. At the beginning of the 21st Century, more than 80% of Spain's population lived in urban areas, which constitute the basic focal points of territorial organisation. We live in a world of networks, where we are witnessing the emergence of urban spaces, in a concentration-dispersion dynamic, as Oriol Nel.lo and Francesc Muñoz point out (Nel.lo, Muñoz, 2004).

Concentration, because at medium and macro level (state analysis level, for example), the population is leaving rural areas and moving to live in the main urban poles. Dispersion, because today the growth of these urban poles follows complex territorial patterns, where the unstoppable growth of the suburbs has to be added to the different growth cycles of the central or pericentral areas.

Spain is not foreign to these trends of "metropolitanisation" and conformation of large urbanised areas which transcend the narrow limits of the central cities. Spain's "developmentalist" growth in the 1960s and 70s centred above all on the large and medium-sized cities, within the limits of the traditional compact city. However, in the 1980s, a different scenario appeared, where the classic central cities stopped growing to give way to bordering boroughs. This situation has continued over the last three decades to the present day, where Spain's urban network map now has to be interpreted in terms not of cities, but metropolitan areas.

From an analytical point of view, the population which lives in Spain's urban areas is concentrated in several urban nuclei, as shown in Fig. 1.

The first large nuclei to be underlined is the urban area of Madrid, the capital of Spain. With 5,639,524 million inhabitants, it is Spain's main demographic agglomeration and the main political, administrative, economic and logistical centre of the country.

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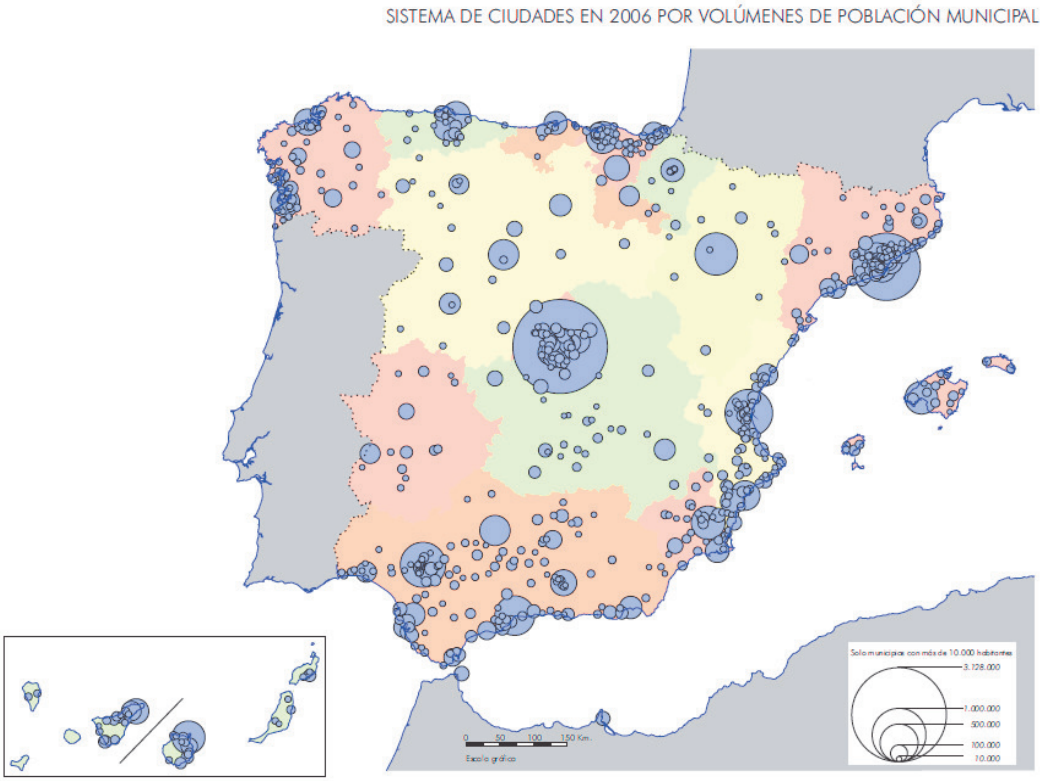

Figure 1. System of cities in 2006 in terms of municipal population volumes.

Source: Territorial Structure. Statistical Atlas of Spanish Urban Areas 2006, Ministry of Housing.

According to the Ministry of Housing, Madrid's urban area is made up of 52 borough councils, of which 9 have more than 100,000 inhabitants, 17 more than 50,000 inhabitants, which gives a good indication of the level to which the process of dispersion from the central city has developed. The central borough, Madrid, is also the most highly populated in Spain, with more than 3,100,000 inhabitants, forming an urban area which surpasses the limits of the Autonomous Region of Madrid itself (Autonomous Community of Madrid), due to the growing integration of small and medium-sized cities from other bordering regions, thanks to increased accessibility by road and rail. This is the case of Guadalajara, Segovia, Toledo or even Valladolid and Ciudad Real, cities located 200 kilometres from Madrid, but only fifty minutes away by high-speed train.

The urban area of Barcelona, in the Autonomous Region of Catalonia, is at present the second largest urban agglomeration in Spain. It has 4,842,703 inhabitants and is made up of 165 borough councils. 7 have more than 100,000 inhabitants and 18 more than 50,000 inhabitants. Barcelona and the nearby borough councils are the birthplace of Spain's process of industrialisation. Manufacturing activity was generalised by the end of the 18th Century, making the consolidation of an urban network possible, led by a city emerging on an international scale, Barcelona. The urban development of the entire coastline of the Autonomous Region of Catalonia, and easy access to Girona to the north and Tarragona to the south are leading to the conformation of a large lineal urbanised area along the Catalan coastline.

Among the hierarchy of Spain's large urban areas, Valencia is in third place, with more than a million and a half inhabitants. It is a more modest urban area than Madrid or Barcelona, with 45 borough councils where only the central city has more than 100,000 inhabitants.

The industrialisation boom and, later, the rise of the services sector, closely linked to tourist activity, explain Valencia's growth. The entire coastline of the Autonomous Region of Valencia enjoys great economic vitality and continuous urban development exists from the north (Castellón) to the south (Alicante-Elche). Indeed, the urban area of Alicante-Elche is the ninth most important in size demographically in Spain. It has a population of 656,384 inhabitants and has become a type of "conurbation" between the two cities, which are very near each other. Its vitality is shown by the fact that it was the seventh most important urban area in terms of absolute demographic growth in Spain over the period 1981-2006, as can be seen in Fig. 2.

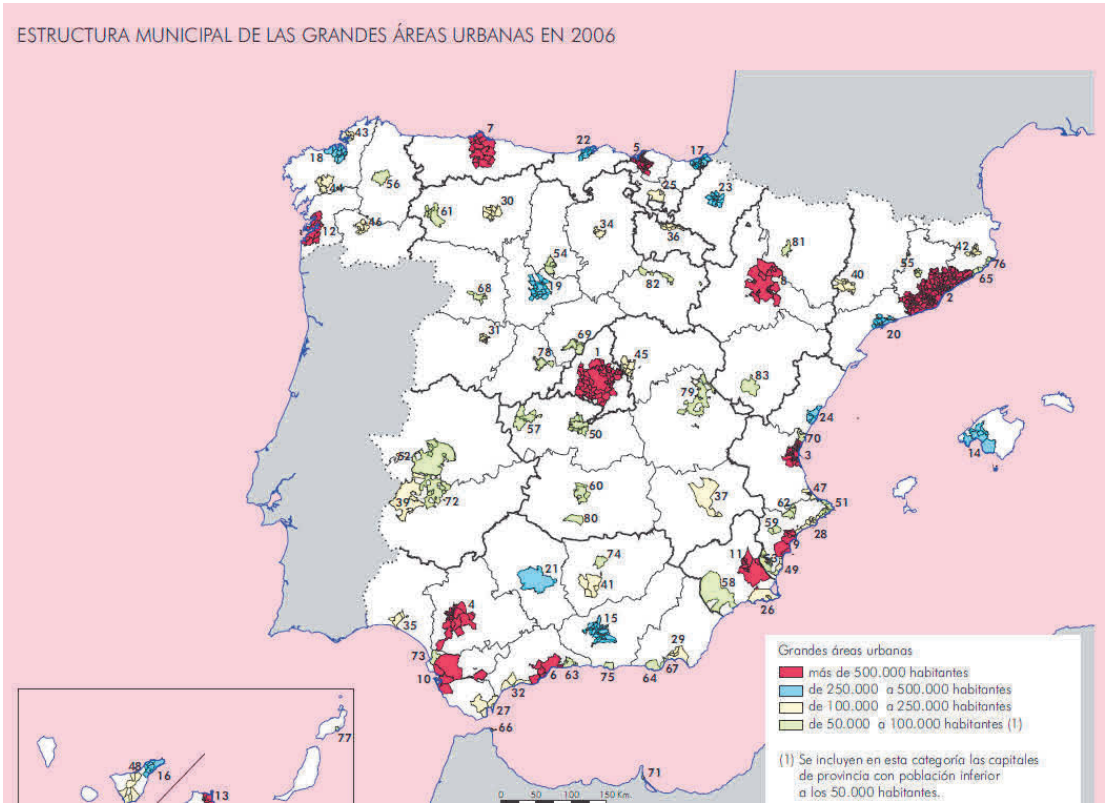

Figure 2. Spain's 25 large urban areas in terms of absolute and relative growth.

Source: Territorial Structure. Statistical Atlas of Spanish Urban Areas 2006, Ministry of Housing.

Andalusia is another of Spain's Autonomous Regions with large urban areas. Three of these areas (Seville, Malaga and Cadiz) are among the 10 most populated in Spain. At present, Seville is Spain's fourth largest urban area, with 1,236,713 inhabitants, followed by Malaga, with 876,446 inhabitants, and the Bay of Cadiz, with 617,468 inhabitants. Insofar as Seville is concerned, it is one of the Spanish urban network's most important cities, which was even the most densely populated in the Modern Age. Malaga is an interesting case of urban and peri-urban growth, associated not only with the success of

the central city (the port, industry) but with the tourism and services boom along the "Costa del Sol". Lastly, the development of the urban area of Cadiz has been historically linked to the importance of heavy industry and, more specifically, the naval industry. The economic vitality of these urban areas is clearly shown by Malaga, which recorded the third highest rate of absolute growth in terms of population volume in Spain's urban areas between 1981 and 2006, while Seville had the fourth highest rate, only behind Madrid and Barcelona, the undisputed leaders of Spain's urban system.

In fifth place on the map of Spain's large urban areas is Bilbao, one of the clearest examples of early metropolitan development in Spain. Today, Bilbao's urban area has 905,030 inhabitants, of which the borough of the central city makes up less than 40% of the total. Like Bilbao, the other Basque coastal province (Guipúzcoa) is also densely populated, thanks to the early development of the industrial revolution there. A similar case to that of Bilbao is the so-called "Central Area of Asturias" which has 822,329 inhabitants, divided between Oviedo (administrative city) and Gijón-Avilés, two traditional ports and industrial centres. Today, industrial restructuring has changed the urban functionality and image of these nuclei, which develop strategies to reinforce services and tourism.

The eighth largest urban area in Spain is Zaragoza, which holds an exceptional geostrategic position. It is situated in the middle valley of the River Ebro, halfway between Madrid and Barcelona, as well as between the Basque Country and Valencia. The reinforcement of Zaragoza's nodal and logistical role in an ever-more cohesive urban mesh network has been fundamental in explaining its present emergence, which stretches along the Ebro corridor in small urban settlements where the industrial employment is concentrated. With more than half of the population of the Autonomous Region of Aragon, today Zaragoza is a strong commercial and industrial and, above all, logistical, pole in the "golden quadrant" of Spain's urban system.

Within the Iberian Peninsula, the case of Galicia should also be underlined. Galicia is an autonomous region, where the so-called Galician Urban Atlantic Axis stands out. It is a highly urbanised area which has been developed axially, and concentrates 80% of the regional population (more than two million people in total), the backbone of which is a transport system in a meridional direction. The urban areas of Vigo (the twelfth largest in Spain) and A Coruña (eighteenth) are the most important in the Galician Urban Atlantic Axis. To them we can add the importance of Santiago de Compostela (forty-forth) and other urban support settlements. In any case, it is an increasingly urban reality outstanding within Spain's urban system, which connects directly with northern Portugal and its urban system (Porto-Braga-Viana do Castelo-Caminha-Valença), dominated by "Grande Porto", our neighbouring country's second largest agglomeration.

The logic of Spain's remaining urban areas can be explained to a greater or lesser extent by the standard development of administrative, political and commercial functions of many small and medium-sized cities, which orga-

nise their respective provincial territories. As opposed to the logic of metropolitanisation, the formation of networks or conurbations, in these cases we find more classic urban development models, where the urban is still very much linked to the traditional compact city, although in recent years new elements have been introduced (peripheral urbanisation, growth of a satellite nucleus, etc.), albeit still at an early stage. As novelties, we would underline the growing importance of a small urban axis formed by Valladolid-Palencia-Burgos, three Castilian cities in the Irun-Aveiro Peninsular Axis.

The three urban island areas are also quite unique situations, both in the Canary Islands as well as in the Balearics. The very fact of being insular creates determining factors and limitations when analysing metropolitanisation processes. In any case, we are looking at important urban areas at national level, where services and tourism are fundamental activities, together with port activities. Thus, Las Palmas de Gran Canaria, with 528,000 inhabitants is the thirteenth largest urban area in Spain, while Palma de Mallorca, with almost half a million inhabitants, is the fourteenth largest.

The formation of a truly cohesive network of Spanish cities based on the interaction of these metropolitan areas is fundamental (as occurs on a world scale, as Saskia Sassen underlines), and in fact it is a basic element to ensure the competitiveness of the Spanish urban system. Transport policy and, more specifically, infrastructure policy, has played a fundamental role in the historical conformation of such an urban network (today we talk of a network of metropolitan areas or urban regions).

It was in the second half of the 20th Century (after the Spanish Civil War and immediate post-war period) when Spain's road network was reformulated (not so the rail network, which would have to wait until later). The different road network plans from the Franco regime and the road sector plans that followed would subsequently culminate in two fundamental documents: the Infrastructure Management Plan (PDI) and the Strategic Transport Infrastructure Plan (PEIT). These documents, which were developed in the decades of 1990 and 2000, are especially interesting for our analysis, as for the first time in Spain an attempt to link transport (and mobility, although it was not formulated as such) policy with land planning and territorial development existed.

However, in spite of their good intentions, critics of the PDI and the PEIT underline the distance between their theoretical principles and the results of their practical application as negative elements. Another very negative element generally pointed out is the absence of true intermodal integration and the privilege of individual ownership of a vehicle, which explains why Spain is at the very bottom in Europe regarding carbon emissions from the transport sector.

In any case, here we are analysing the positive and negative implications of these transport policies on metropolitan areas and Spain's urban system. We will pay special attention to the growing trend of territorial polarisation and the imbalances and problems that arise as a result of these unstoppable

movements in population concentration, resources and vitality with regard to Spain's main urban centres.

2. Brief historical analysis of the transport infrastructure network and its relationship with Spain's urban system

In the last two decades, Spain has witnessed the spectacular growth of its transport infrastructure. Deficiencies in the transport and communications system and a lack of internal structure were factors that limited territorial structure, economic growth and Spain's integration in Europe. Authors such as Nadal (1987), García-Fuentes De La Fuente (1999) or Nárdiz (1991) have researched not only the deficient internal communications and complicated accessibility in Spain, but also the consequences this has had, hindering modernisation and the creation of a competitive economy within the European context.

Spain was indeed late to embrace the Industrial Revolution, for several reasons. Among others, the difficulty of forming a true internal market in Spain, thus the incapacity to generate a capitalisation sufficient to accumulate surpluses, which would then have to be invested in an industrial take-off. Indeed, the difficulty in creating a genuine internal market is linked to the weakness of Spain's system of cities. Traditionally, the most dynamic areas have been the coastal ones (Basque Country, Catalonia, Levante, etc.) due above all to the opportunities of trading with other areas by sea. But these dynamic areas were like islands, unconnected between themselves. The topographic configuration of the Iberian Peninsula, with its large central plain and mountain ranges which separate it from the coastline, together with a more than deficient road network, are the main explanation for this.

There were clear difficulties in moving around the interior of the country. To travel from Madrid to A Coruña, for example, could take a difficult 7-8 days, with all kinds of setbacks, including being attacked by bandits or robbed. The Enlightened of the 18th Century, along with Lucas Labrada or José Cornide, also reflected this reality and were alarmed by the inexistence of competitive transport infrastructure which hindered or prevented trade altogether.

At the time, the map of Spain could easily be interpreted on the basis of an inland-coastline duality. Inland, the capital of the nation, Madrid, occupied the central geometrical and geographical position in the Iberian Peninsula and Spain. Madrid, where the royal and governmental institutions sat, was then an already-emerging city, due to the increasing importance of the administration and its very condition as central and nodal. At the same time, Madrid was beginning to stand out as the most important urban reference point in inland Spain, characterised in broad terms by the rural nature and debility of its urban network. For its part, the coastline was characterised by a series of regions with certain vitality, poorly connected, however, with each

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other and the rest of the country. The importance of maritime transport for trading explains why many of these regions looked abroad and across the seas, something undoubtedly fomented by the poor road communications at the time.

In the second half of the 18th Century, and as a consequence of the Enlightenment and its spirit, an event of vital importance occurred. The Spanish monarch Carlos III, influenced by the Enlightenment, made the decision to build a series of radial roads to link Madrid with the different peripheral regions. He was seeking to stimulate trade and other exchanges between the centre of the Peninsula (where agriculture and the cultivation of cereals was predominant, but where economic development was scant) and the peripheries, which were much more dynamic and diversified, in relation with the potentialities of an economy associated with the sea and marine resources. This decision can justly be considered as the beginning of contemporary transport system planning in Spain. Despite being advanced for the time, Carlos III's decision must indeed be understood as a clear attempt at land planning. The monarch was seeking to provide the country with an essential structure, in order to disenclave the central part of the country, improve accessibility between the coastal and inland areas and, of course, create improved communications between Spain's major cities.

The plan had a centralist vocation, as it considered Madrid as Kilometre 0, or fundamental node, of Spain's road network. Six Royal Routes out of the city to other peripheral areas were planned. These Royal Routes were designed not only with linking the peripheral areas with the nation's capital in mind, but also integrating important population nuclei in the road network, which would thus be integrated in the country's structural backbone. This clearly radial system was based on the concept of the State as centralist, in turn inspired by a similar model, the French model. Madrid, like Paris, established itself as a reference point, not only with regard to administering the territory but also channelling the main fluxes of people and goods by road.

Spain's newly-born road model, like the French model, was characterised from the very beginning by two fundamental problems. Firstly, it favoured the capital and the centre of the country to the detriment of the peripheries, by giving them maximum accessibility and a clear comparative advantage. Secondly, it completely ignored transversal connections, especially the disconnection and lack of accessibility by land between neighbouring coastal regions. This radial and centralist model which began with Carlos III would continue over the centuries to come and remained until recently. The radial and centralist scheme, as we will see, would be repeated mimetically and constantly up until the present. Only the recent conformation of the "State of Autonomies" and the process of decentralisation which prevailed in Spain after the 1978 Constitution was to bring a timid change, with the design and building of some transversal axes and, especially, the Mediterranean coastal axis, which created an alternative to the radial scheme that prevailed.

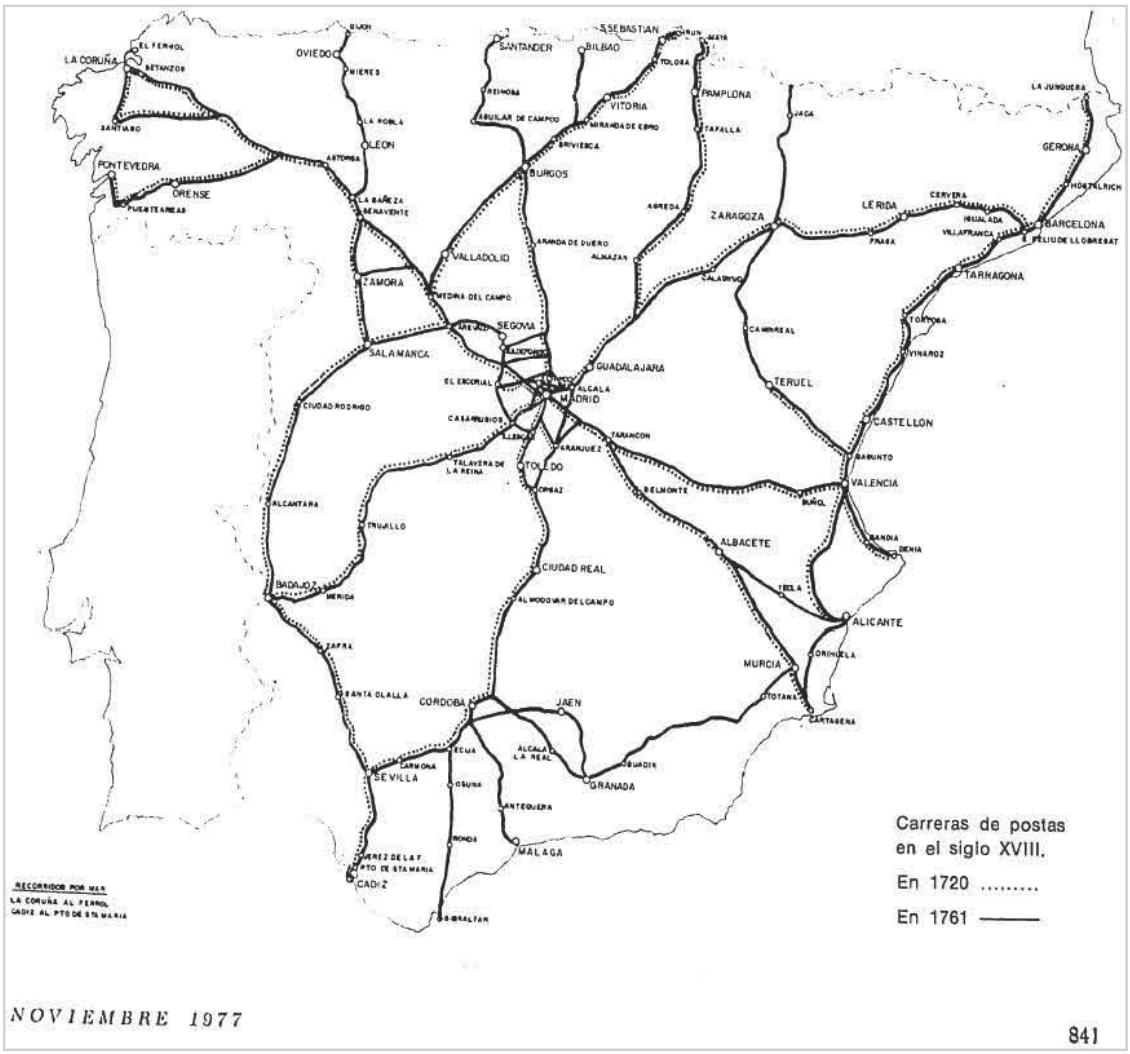

Figure 3. Spain's road network, 1761.

Source: URIOL J.I., 1977.

After the design of the six radial roads at the end of the 18th Century, the 19th Century and the first third of the 20th Century (until the outbreak of the Civil War), the planning of new infrastructures would basically focus on the railways. As occurred with the road network, the centralist model would be repeated, with Madrid as the country's main urban agglomeration and rail node for Spain as a whole.

After the Civil War, the State's nationalisation of the existing railways led to the creation of RENFE (Spanish National Railway Network), to continue with the closure of the less profitable axes, which were often transversal (Via de la Plata, i.e., Merida to Astorga), Zaragoza-Teruel-Valencia corridor, etc.).

In a context of autarchy and economic depression after the Civil War, the State sought to ease its burdens by eliminating the least profitable services. This policy continued in the following decades, during which the State opted to close unprofitable lines instead of investing in their modernisation and

adaptating to new times. This certainly had serious repercussions on Spain's urban network, as it entailed the marginalisation of many of the small and medium-sized cities, which were left outside the main axes of national mobility. Provinces such as Teruel, Soria, Cuenca or Cáceres, to name some significant examples, only became even more isolated and remained marginalised from Spain's main metropolitan and urban areas. This said, all of this has to be understood in a context in which rail transport had been falling into oblivion since the end of the Civil War, a trend which would only begin to be reversed in the 1980s (with the creation of local metropolitan rail networks, called "Cercanías" and, in 1992, with the inauguration of the first high-speed rail line between Madrid and Seville).

Figure 4. Map of the rail network. Spain (1865).

Source: www.wefer.com.

If Spain's rail network's importance was waning, the second half of the 20th Century saw the boom of road infrastructures. Indeed, the construction of the radial roads in the second half of the 20th Century and their subsequent conversion into radial motorways in the 1980s and 90s was carried out basically by superimposing the new infrastructures on the Royal Roads of the

18th Century. In the 19th Century, progress in road-building was only modest and occurred mainly in the first thirty or so years, given that the arrival of the railway had polarised all efforts and attention. It is thus clear that the State road planning of the second half of the 20th Century continued directly from that of the end of the 18th and beginning of the 19th Centuries. The layout of the motorways today were conditioned by the existence of clearly radial patterns from the very beginning and, as we have pointed out, it was only in the 1990s when high capacity infrastructures began to be built in transversal patterns (Via de la Plata), Léon-Burgos axis, Soria-Teruel-Valencia axis, etc.

As a consequence of this model of road planning, the most favoured Spanish cities (current urban and metropolitan areas) were undoubtedly kilometre 0 (Madrid) and those connected by one of the six main radial routes. Those which most benefited were the port cities linked to Madrid by the six radial roads, such as A Coruña, San Sebastián, Barcelona, Valencia or Seville, to name the clearest examples. As well as the strength of the marine economy and maritime trade, these cities already had the comparative advantage of being able to easily access intermodality and maritime-terrestrial trade. In fact, the growth of Spain's most energetic urban and metropolitan areas at present and their predominance in the Spanish urban network can be explained to a large extent by the superiority and comparative advantage they already held at the end of the 18Century, when they were fully integrated in the Spanish road system created at that time, something that would continue to the present day.

3. Transport policies or infrastructure policies? An analysis of their consequences on Spain's urban system during the past decades (1981-2010)

This chapter is the core of the present text. Here, to begin with, we will put forward some necessary considerations on the transport policies carried out in Spain during the past few decades, from a critical perspective. We will then develop in detail the ideas indicated, with a thorough study in time, during which we will analyse the consequences that the transport policies have had on the Spanish urban system, and especially on urban and metropolitan areas.

Our aim is to determine to what extent the transport policies developed during the past decades have allowed the internal and external installation (among them) of the Spanish metropolitan areas, as well as to verify if these transport policies have sharpened territorial imbalances, which we have graphically stated in the article's title as the opposition between winning and losing areas.

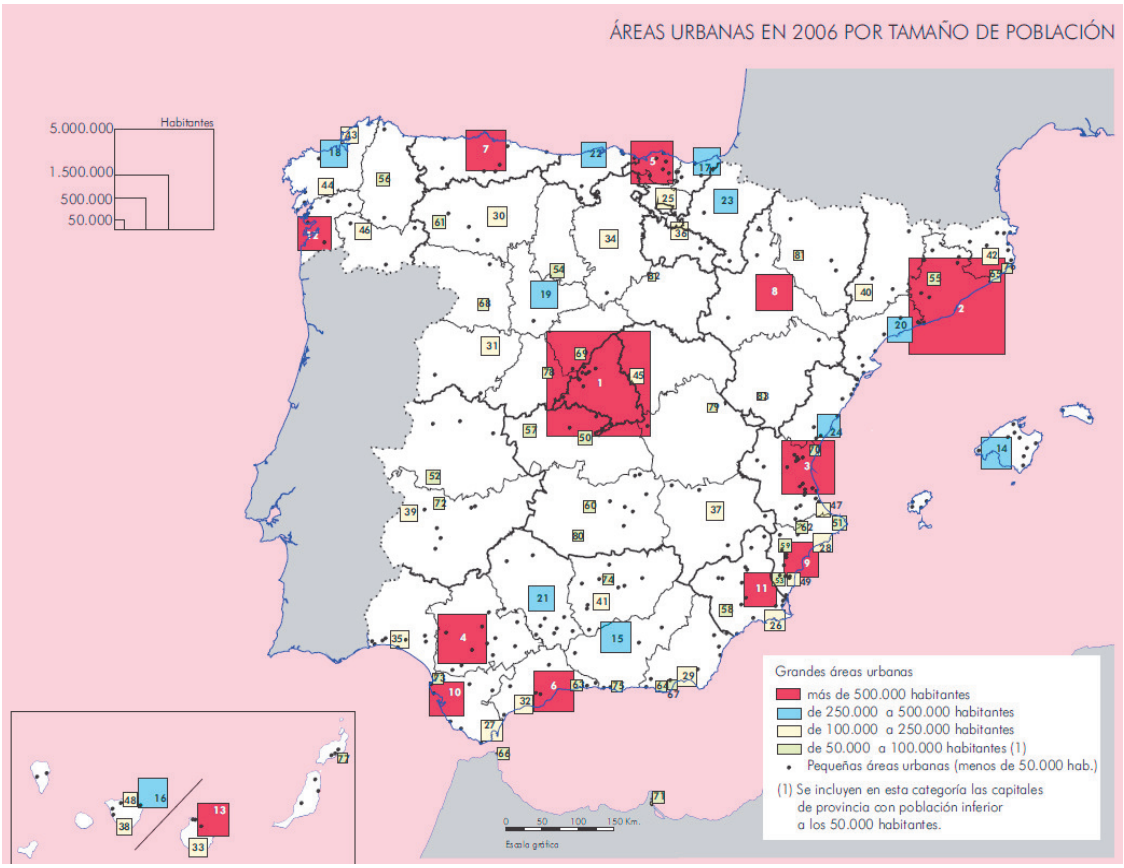

Figure 5. Systems of cities and metropolitan areas in Spain.

Source: PEIT, synthesis document.

3.1 Transport Policies vs. Infrastructure Policies in Spain: a necessary note

During the past three decades, Spain has undergone unprecedented growth as far as population movement is concerned, as well as regarding the movement of property and goods. Today, mobility is one of the major characteristics of developed societies, and it plays an important role not only in the day-to-day affairs of citizens, but also in the functioning of the economic system. In cities, this exponential growth in mobility has had very visible effects, favouring the development of peri-urban and suburban areas.

One type of growth has been through satellite nuclei around cities, where the offer of housing at lower prices than in the main city acted as a powerful attraction. This is the case of Getafe, Alcorcón, Leganés, Pinto or Parla, in Madrid; Hospitalet de Llobregat, boroughs of the Vallès area, Gavá or Rubí in Barcelona, Dos Hermanas in Seville, or Teo, Ames and Brión in Santiago de Compostela. A second, peri-urban type of growth has also been due to the middle-high class population's taste for living in houses or semis, in low density population areas, and with a degree of environmental quality, as opposed to the saturation and economic disadvantages of the agglomeration of large cities. Hence, there has been a transition from traditional compact cities to extensive cities, cities dispersed over the territory which, in cases such as Madrid or Barcelona, have evolved into genuine urban regions, held to-

gether by a tangle of motorways and railroads.

The increase in the Spanish citizens' capacity to move has been accompanied by an increase in their monetization and purchase power, which, since the 1960s and 1970s granted the middle classes with general access to the individual ownership of a car. The growth in mobility in Spain has been, as mentioned earlier, closely linked to the car, a fundamental means of transport in the era of "development", but which today is unanimously considered to be unsustainable. The persistence of this model raises major challenges today, given that Spain is one of the European countries that registers the lowest rates in the use of public transport and because the rates of automobile use indicate an even greater growth in the years to come.

During this period, this increase in the amount, frequency and duration of daily commuting would not have been possible without the parallel and spectacular growth of the Spanish road system, which sped up after Spain's entrance in the European Union in 1986. The former radial and national roads were beginning to become obsolete and were incapable of absorbing the interurban traffic. With regards to the theme of this article, these roads no longer played an efficient role as vertebrators of the urban and metropolitan areas, as they were clearly under dimensioned with respect to the increase of their use as internal roads and vehicle travel roads.

Indeed, during the 70s, many national roads (belonging to the government's main network), began to show clear symptoms of saturation in their passage through cities and more urbanised areas. In many cases, the urban crossing of national roads through a city had become a fundamental artery not only to channel long-distance traffic, but also the city's internal traffic. Many urban crossings had become the city's basic mobility axes and the overlapping of the city traffic flow with the crossing traffic flow created a situation of road collapse, and often one of chaos.

This unsustainable situation was given an "emergency" solution, with the construction during the 80s (and 90s) of bypasses or ring roads, which prevented the passage of traffic through cities. The main Spanish cities and population nuclei were endowed with these types of infrastructures, which channelled the greatest part of the "intercity" traffic. One of the main advantages of the ring roads was to prevent heavy load vehicles from driving through urban quarters. The location of the main industrial parks in the peripheries or city outskirts helped to relieve traffic in the main Spanish urban and metropolitan areas, which during the 80s had grown considerably. As an example of important bypasses in Spanish urban areas we must mention the different Madrid orbitals (M-30, M-40, M-45, etc), the Barcelona Ring Roads or Valencia's ring road system. As an anecdote, in this latter city, the construction of the outer orbital expressway ended in a major chronic traffic jam, caused by what is known as "Europe's Traffic Light", as a result of the absence of a bypass on the A-7 between the North and South areas of Valencia.

Since the end of the 70s, the metropolisation phenomenon can clearly be seen in Spain. The main urban agglomerations (Madrid, Barcelona, Valen-

cia, Bilbao, Seville) began to outgrow the narrow administrative borough boundaries of their corresponding main cities, and they expanded faster and faster through phenomenona of peri-urbanisation and metropolitanisation. Neighbouring frontier nuclei saw their population grow spectacularly, and in some cases new satellite cities were created in successive rings and axis roads to approach the cities. Logically, mobility flows increased and the old by-passes, together with the main approach roads to cities functioned from that moment onward as new roads of urban internal mobility. The role that they had been created for (to channel interurban traffic flow) was diluted by more and more metropolitan traffic. The best example is Madrid's M-30, an external ring road with a perimeter of 30 kilometres, which in only a few years time became another of the city's arteries, and lost the use for which it was created. This gave way to the need for the construction of new ring roads, which in time also became too small. The construction of the M-40 was followed that of the M-45 and following that, the M-50, in a seemingly never-ending process.

The process of conversion and recentralisation of Madrid's M-30 within the urban network is quite interesting. It reproduces the steps taken by other major world metropolises, such as Los Angeles, Tokyo, London, etc, where former orbitals have become city roads. The enormous real estate growth that has taken place during the past years (and which has led to the current economic slump situation) – together with the support given by the banking sector – can be pointed out as the real cause of this situation.

The example of Madrid and of the construction of successive ring roads (or orbitals) reveals the development logic of Spain's Transport Policies during these past years. Instead of a Transport Policy, we should be talking about an Infrastructure Policy. The answer to the growing challenges raised by the growth in the mobility of people and goods during the past three decades has been basically the construction of more and more kilometres of road network.

Something similar has taken place outside the urban and metropolitan areas, where the trend has also been to rely on roads and motorways. According to Sanz Alduán (2005), during this period of time in Spain, a recognisable transport or mobility policy has not been carried out. In fact, the different transport plans have not been integrated mobility plans, but programmed actions for transport infrastructures in the service of certain political and territorial strategies.

On the other hand, the transport policy has been neither complete nor global, because it has been based almost exclusively on road infrastructures and systems that affect mobility. Lastly, it has not been an integrated policy due to the fact that the actions have been carried out without coordination with the corresponding sectorial policies. Transport policies, as well as those for other areas such as Tourism, must be considered from a transversal point of view, and should be integrated within other sectorial policies such as Housing, Health, Education, etc.

It is also necessary to coordinate transport and mobility policies with urban and territorial planning policies. Not surprisingly, the close relationship that exists between the transport models and the use of land completely conditions key matters such as the allocation of infrastructures, the urban-metropolitan transport system and, all in all, citizens' quality of life. Large urban and metropolitan areas have been constantly developing since the 60s in a rather spontaneous and organic manner. The scant urban planning carried out during Franco's dictatorship was focused on the major cities, and did not take into account the interaction between the pair formed by transport and city. With democracy, urban planning spread to municipal level and later to other levels, but the relationship between transport and city was not dealt with in depth. As a consequence, cities expanded rapidly, without a real plan for infrastructures and public transport services.

Next, we will carry out an analysis of the implications between transport policies and the development of Spanish urban areas, where we will be able to see that there is still a long road ahead before achieving the metropolitan governance of transport and mobility. We will focus on two major documents created to date: the PDI (*Plan Director de Infraestructuras* - Infrastructure Management Plan) and the PEIT (*Plan Estratégico de Infraestructuras de Transporte* - Strategic Plan for Infrastructures and Transport).

3.2 The Transport policy since the arrival of Democracy until the Infrastructure Management Plan (PDI)

The arrival of democracy to Spain in 1975 and the Constitution of 1978 represented a new political and management framework which had major consequences on the definition of a new transport policy. The decentralisation that took place in Spain meant the creation of regional governments with competencies in matters of transport, infrastructure and mobility policies. The autonomous and regional governments can, since the 80s, design regional transport plans, and through the management of their own budgets, build and carry out infrastructures of regional or autonomic interest. This regional or autonomic dimension is very important, for the Government continues to save for itself the construction, management and operation of the infrastructures known as "Of General Government Interest". Included here are the roads, expressways and motorways which among them connect all the capitals of provinces, as well as the main population nuclei. In turn, the Railway Infrastructure Manager (ADIF), included in the Ministry of Public Works, manages and operates practically all railway infrastructures. The major ports and almost all Spanish airports are managed by the Government (Pazos Otón, 2009).

The government, therefore, builds and maintains the main interurban roads, which in many cases also act as cohesive elements for the self-same urban and metropolitan areas. This creates a rather undesirable situation, where the local and regional powers have little room to manoeuvre in the planning and management of transport infrastructures, which play a crucial role in the daily mobility of urban and metropolitan areas. The Metropolitan

Transport Consortiums, where the different administration levels tend to be present, constitute an attempt to contribute solutions that are not always successful. Examples of Consortiums that function successfully are those of Madrid, Barcelona or Bilbao, among others. In the case of railways, the situation is similar. The commuter rail services for the major Spanish urban and metropolitan areas are managed by the Government, who operates them through RENFE. This situation implies that very important decisions concerning the mobility of urban areas are taken at government level, which is quite distant from the cities which are, ultimately, the leading figures.

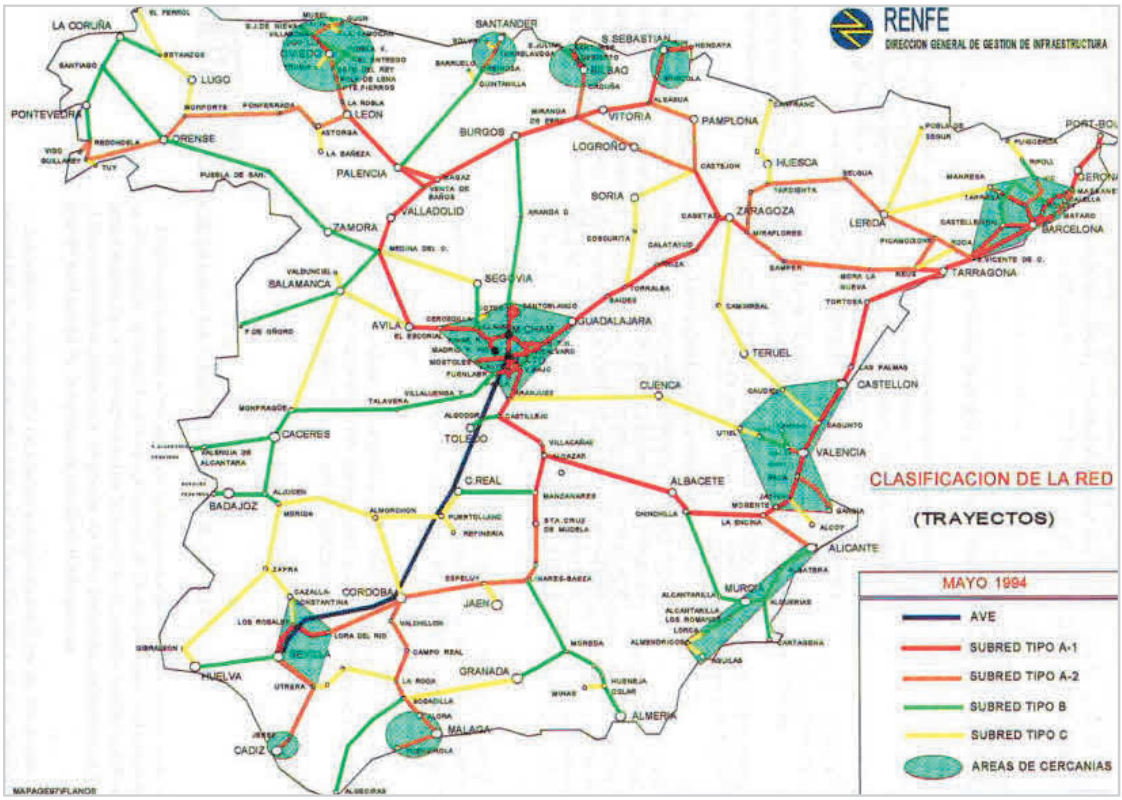

Figure 6. Renfe network in 1994.

Source: RENFE.

Currently, the commuter rail system operated by RENFE includes: Madrid, Barcelona, Asturias, Santander, Bilbao, Guipúzcoa, Valencia, Zaragoza, Alicante, Murcia, Málaga and Seville. In the case of Barcelona, competencies have been transferred to the Catalan autonomous government, and although for the time being the services are operated by RENFE, the public concession will be tendered out in two year's time.

The complexity of the current political and administrative situation in Spain and the deficient coordination between administrations is, therefore, one of the main obstacles towards the achievement of a true mobility policy in urban and metropolitan areas (Pazos Otón, 2009). The existence of three major administration levels with competencies on transport and mobility (lo-

cal, regional and national) is not the real problem. The weak point is the absence of structures for coordination and cooperation, despite the existence of transport consortiums in the major metropolitan areas. The situation becomes worse in those metropolitan areas where the political parties that govern at different levels are of a different colour, because multilevel dialogue and cooperation is a lot weaker. On the contrary, areas where the political colour of the different levels of administration coincides, tend to be favoured thanks to a greater coordination and a greater allocation of investment in transport and mobility policies.

This complex situation where genuine institutional dialogue that favours the governance of transport is not taking place is what has led authors such as Sanz Alduán to state that, frankly, to date there has not been a true mobility policy in Spain. According to this author, the only precedent that can be considered as such is the White Paper on Transport. Directives for a New Transport Policy, presented by the government of UCD (Central Democratic Union) in May 1979.

Figure 7. Road structuring network. Situation in 2004.

Source: PEIT, 2005.

Hereupon, according to Sanz Alduán, a series of infrastructure sectorial plans have taken place, such as the Road Plan (1984-1991), the Railway Transport Plan (1988-2000) or the Commuter Rail Transport Plan (1990-1993). These documents have been developed progressively, as the territory

demanded an increase in the road, railroad, or commuter rail services network's capacity due to the great increase in the flow of mobility experienced during the past decades. However, these are planning documents that are independent from each other; they are disconnected and were started at different moments in time, which proves that what we are faced with is a "patch up" policy, based on solving problems as they arise, not with a global and integrated mobility policy, as we stated at the beginning.

At the beginning of the 90s, and in view of the situation described, it seemed necessary to create a forward-looking document which would bring together the transport sectorial policies which were being carried out so far, and which would try to integrate them from a global perspective. The Administration became aware of the seriousness of the situation and decided to turn it around by approving the Infrastructures Management Plan (from now on PDI), valid from 1993 to 2007.

According to Iglesias Pérez (1994), the PDI «introduced certain novelties in the prospects for infrastructure planning in Spain, beginning with the strategic and global nature of the plan». The author himself points out that it is a Master Plan which does not define actions in detail nor does it programme them, whereby it has to be developed through sectorial plans. Some of these sectorial plans, as we saw earlier, had already been in execution for several years, so the PDI emerges as a legitimising and unifying document for the different sectorial policies in operation.

A major novelty compared to previous sectorial policies was that in its declaration of intent, the PDI was based on the idea of infrastructure policies as instruments for territorial competitivity, and included actions in 6 major chapters: interurban transport, urban transport, hydraulic structures, environment and coastal infrastructures, and R&D. In spite of the theoretical importance which was given to mobility (still referred to as "transport") in both chapters, the truth is that the PDI's intermodality was based once again on the total supremacy of roads as the system's basic mode of operation. In fact, the PDI witnessed the construction of over 5,000 km of new motorways and expressways, and its target was to reach 11,000 km upon its expiry, through a mammoth investment (5.5 billion euros). The PDI was focused almost exclusively on road infrastructures, and as far as the railway was concerned, it relied only on the high-speed stretch between Madrid, Barcelona and the French border, while it maintained minimum investment levels in matters of ports and airports.

In spite of the goodness of its statement, and the desire to bring together the different levels of transport planning and management, the general impression once it expired, was that it had basically been an interurban plan, whose aim was to give structure to the urban network for all of Spain, while leaving aside other important aspects such as the consolidation and structuring of the urban areas from the inside.

From its start, the PDI was a document that was burdened by its own conception of simply being an infrastructure plan. At a time when the word

"transport" had practically disappeared from the task list at European level, giving way to "mobility", from official Spanish instances, a planning document was launched whose aim was the programming, sequencing and periodization of major transport infrastructures (basically motorways and high-speed railways). Instead of taking the path towards the optimisation of the existing resources, an opposite task list was chosen, devoted to millionaire budget sums for the construction of costly infrastructures.

In fact, the real leading figures of the PDI are transport infrastructures, which practically become an end in themselves, and the fact that the aim should be to guarantee universal, sustainable and quality mobility for all citizens is ignored. Therefore, mobility is sacrificed in favour of transport, and the local in favour of the global and the Government's general interest.

Spain's deficient baseline scenario in this matter and the abundance of European funds from 1986 onwards are factors that can explain the "road fever" suffered at the time. But we must also pay attention to an important element, which is the electoral feasibility of investing in infrastructures and the lack of response by the civil society, who has, to a great extent, uncritically joined the policy for "more asphalt", mistakenly comparing it to "greater mobility". In this way, in only two decades (1990-2010), Spain has gone from being one the EU countries with the least kilometres of high capacity (roads and railways) to the completely opposite situation, heading the construction of kilometres of motorways and, above all, of high-speed rails, leaving France, the traditional European leader, far behind.

In spite of this, no doubt it is worth making a positive interpretation of the role played by the PDI in the cohesion of the Spanish territory and, especially, in the integration of an urban network that historically had been quite fragmented and disconnected. Let us remember that historically, the main obsession of the 19th century learned men and men of progress was the need for the creation of an internal market with enough power to guarantee the accumulation of wealth. This was possible only thanks to an efficient transport network, which was not achieved until the end of the 20th century in our country.

On the other hand, it is important to highlight the importance of a modern network of transport infrastructures to progressively integrate the regional urban systems. Throughout these past two decades, an undeniable role has been played by motorways and expressways in the cohesion of the urban networks in Galicia, Asturias, Basque Country, Andalusia, Castilla y León or the Autonomous Community of Valencia, to mention only a few significant examples. The PDI believed in guaranteeing interurban connectivity, endowing the territory with a complete network of motorways and expressways, which permitted the integration of polycentric urban systems, such as the Galician Urban Atlantic Axis (Ferrol - A Coruña - Santiago de Compostela - Pontevedra - Vigo) and the Basque Y (Bilbao - San Sebastián - Vitoria/Gasteiz). In the case of these northern Spanish regions, the structuring role that the Government's General Interest Network has played on the

emerging metropolitan areas is quite clear.

However, this optimistic interpretation is worth contrasting with another more pessimistic one. No doubt, one side of the coin are the metropolitan areas, which have come out strengthened thanks to the PDI and the aforementioned actions. They have updated their transport infrastructures (but not their public transport systems) and they have temporarily and partially solved their mobility problems. The metropolitan growth of Spain's major cities or of the aforementioned areas would not have been possible without the series of actions contained in the PDI. These are the "winning areas".

The other side of the coin is made up of a series of "losing areas", constituted by the areas that are more disconnected from the main urban nodes, whose centrality has indeed been strengthened. Many rural and mountain regions, which had already suffered several decades of demographic and economic decline, particularly stand out. Among them are practically all the provinces of Soria and Teruel, as well as a large part of the provinces of Extremadura, such as Cáceres and Badajoz. The disconnection of the main axes of transport in Spain and the lower public investments compared to other provinces has given way during the last decade to the appearance of citizen platforms. One of the most famous is "Teruel exists" (*Teruel existe*), which seeks to draw attention to the abandonment and marginalisation suffered by this southern territory of the Autonomous Region of Aragón.

3.3 The Transport Policy since the PDI to the present day

Once the validity period for the PDI had expired, the next step in Spain's transport planning was the Strategic Infrastructures Plan (from now on PEIT). From the beginning, the PEIT set out objectives that were very similar to those of the PDI: seeking territorial cohesion, promoting the improvement of territorial accessibility and planning and programming future actions in matters of transport infrastructures. As opposed to its predecessor, which was entirely devoted to the construction of road infrastructures, the PEIT focused mainly on railway infrastructures, and believed in spreading the high-speed network to the whole Spanish territory. Also, the PEIT continued paying attention to road infrastructures, proposing the construction of new motorways and high capacity roads to continue along the path previously started by the PDI. Similarly, it contemplated prominent actions in ports and airports.

The PEIT presented the novelty of being a "strategic" document, that is, it tried to offer a global view of transport within the economic and territorial system, offering a forward-looking perspective. The strategic quality is also accompanied by the fact that, for the first time, it speaks of "Transport" explicitly and not only of "Infrastructures". In spite of the fact that the word "Mobility" is still missing as a basic concept in the official policy, the fact that it reflects the need for strategic planning in transport is in itself a noteworthy step forward.

From the territorial point of view, the structuring of the Spanish urban areas was seen as an absolute priority in the technical and political agenda. The PEIT tried to echo the need to achieve an integrated, intermodal vision, and at different levels of analysis, where the urban scale could be complemented by the traditional view offered for the whole of Spain.

Another of the PEIT's weak points regarding the lack of political action with regards to cross-cutting issues in transport can be pointed out. Failure to apply the concept of Mobility explains this fact, taking into account that the Transport policy has been designed unilaterally by the Ministry of Public Works. Having chosen to use the concept of Mobility in the strategic planning would have permitted the entrance of other ministries with important roles in the definition of the future model of mobility (Education, Health, Environment, etc).

In accordance with Sanz Alduán (2005), it seems important to point out the need for a new Mobility culture, «which demystifies transport and its infrastructures and (...) speed without limits». During these past two decades in Spain, the idea has spread that transport infrastructures alone are a sufficient enough factor to generate wealth and development. Actually, as theoreticians such as Biehl (1989) or Quinet and Wickerman (2004), argue, transport infrastructures are a necessary but not sufficient enough condition to generate economic and territorial development.

The unusual agreement between the political class and citizens on the goodness of the construction of large transport infrastructures – with the intervention of the media – can be explained by the high electoral feasibility of transport infrastructures and the great visibility that these investments offer. On the other hand, we must not forget that during these past decades the Spanish economy has been highly specialised in the construction sector, which has favoured the bidding of public works by the government as a way of maintaining thousands of jobs and not destroying employment. Another very important factor is the close relationship between the political, financial and corporate construction powers, and the survival of substantial budgetary allocations that the public administration devotes to public works. A study of the main bids resolved in the past decades shows the concentration of a small number of construction companies that form a lobby and exercise great political, economic and social influence.

Cities and urban areas, as power concentration centres and headquarters for major companies, have greatly benefited from the substantial investments that during the past years have taken place in the public sector with regards to transport infrastructures. However, apart from a few exceptions (Barcelona, Málaga, Valencia), the largest part of the public funds have been devoted to major infrastructures instead of to promoting genuine systems for urban and metropolitan mobility.

The survival of these investing schemes in transport infrastructures has been quite conditioned, as we mentioned earlier, by the existence of substantial European funds. Today's economic slump scenario, together with the

disappearance of the European Cohesion Funds, will create a very different scenario, where it will be necessary to move from Transport policies to Mobility policies. Until now it seems clear that transport infrastructures have been used to strengthen already central and emerging territories, which has added to widening the gap between the "winning" areas and the "losing" areas. The first are undoubtedly the urban and metropolitan areas, which concentrate more and more population, resources, employment and innovation, as opposed to the numerous rural areas that continue to be immersed in the situation of economic strain that they have been in for several decades, when the massive rural-to-urban migrations began in Spain.

4. Conclusions

At the beginning of the 21st Century, and in the context of economic crisis, it would seem more necessary than ever to reflect on public policies and their territorial consequences. In the end, investment and public spending drawn on the State Budget ought to guarantee equal opportunities for every Spanish citizen, as is established in the Spanish Constitution of 1978.

From the point of view of Urban Geography, it is very interesting to study what has occurred in recent decades (the last half century) in Spain's metropolitan areas with relation to transport policy. The significant growth of Spanish cities in the 1960s and 70s and their metropolitanisation after the 1980s was due to a series of key economic factors, among which we would underline economic diversification and, above all, the transformation from a rural and primary society to an industrial and services society, which for the most part lives in cities.

There is an element, however, to which special attention has been paid to date when interpreting the consolidation and compression of Spain's current urban network. We are referring to transport infrastructure, which has been built in tandem with the demographic, residential and economic growth of the country's main urban agglomerations. Frequently, this road and rail development has occurred "on impulse", and there has been no true transport policy, even less so a mobility policy. Economic and real estate "developmentalism" in Spain in the 1960s and 70s found its parallel in another "developmentalism" regarding transport infrastructures. The lack of a clear transport and mobility model has been a constant feature to the present day, not so much at interurban but at urban and metropolitan level. In this scale of analysis, the diversity of actors and agents and the problems involved in achieving interaction at the different administrative levels are important barriers to action.

The "patch-up" policy described sought to accompany the significant and abrupt urban growth, trying not to strangle the expansion of cities. The creation of modern roads and, later, motorways placed Spain in a European context, where the road (although not the rail) network was the physical

support for the rapid processes of urban growth. They were concrete actions, not included in a general plan, the aim of which was to resolve specific problems that arose in particular areas, ensuring the dynamism of the system.

However, it was not until the 1980s when a real transport policy understood as such was thought up. The restoration of democracy in Spain brought an awareness of the need to at least minimally plan land. Transport and mobility were the key elements for avoiding the strangulation of the economic system in the country's main economic centres, and ambitious road and motorway programmes were initiated.

In most cases, the pre-existing road network was consolidated, which derived in transversal connecting roads after an already-existing radial system established in the 18th Century by King Carlos III, which has defined what Spain's main corridors and axes were. The role of history and inertia were important when defining what the main high-capacity road axes would be in 20th Century, and therefore 21st Century, Spain. The radial solution, adopted century after century, became tradition and norm, eventually leading to a clear scenario of social segregation and marginalisation within the city.

By opting for continuity, the nodal role of Spain's large metropolitan areas was clearly reinforced. The winning areas became stronger while the losing areas were weakened. The Infrastructure Management Plan and the Strategic Transport Infrastructure Plan were based on sound theoretical estimates, and were even territorially sensitive. However, in practice many areas were losing their importance, becoming less easy to access from the main urban centres and more disconnected. The future high-speed rail line would accentuate these imbalances, polarising accessibility, comparative advantages and locational rent around the large cities and metropolitan areas. It is no coincidence that the so-called "tunnel effect" (which explains the lack of positive impact on a transport infrastructure on the territory it crosses, and which serves as a mere physical support) is much greater in the high-speed rail networks than in the high-capacity road networks.

In Spain it will be necessary, therefore, to reflect on the consequences of a transport planning model that is far from achieving territorial cohesion and impartiality. Linking back to the beginning of these conclusions, it is necessary to manage public investment with the greatest care, in order to guarantee not only the continued vitality of the winning areas, but above all to prevent the exponential widening of the gap which separates them from the losing areas.

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Riassunto

Apartire dal 1960, in Spagna sono stati registrati numerosi e importanti cambiamenti politici, sociali e territoriali, parallelamente a un forte processo di sviluppo urbano. In questo lavoro, in particolare, viene fornito un quadro delle trasformazioni rilevate nella rete infrastrutturale e dei trasporti, in relazione alle esigenze delle realtà urbane. Inoltre, l'analisi considera le politiche che hanno portato a tali modifiche, soprattutto nel corso del periodo 1981-2010. Tra i principali obiettivi, vi è quello di evidenziare la necessità di organici modelli progettuali e di apposite linee guida, al fine di garantire un'oculata e proficua gestione dei fondi.

Résumé

Apartir des années 60, en Espagne on constate un certain nombre d'importants changements politiques, sociaux et territoriaux, qui vont de pair avec un développement urbain de grande envergure. Dans cet article, en l'occurrence, on présente un tableau des transformations du réseau infra-structural et des transports, relativement aux exigences de la réalité urbaine. Par ailleurs, l'analyse prend en considération les politiques qui ont mené à de telles modifications, en particulier durant les années 1981-2010. Parmi les objectifs principaux, il faut mentionner celui qui concerne la nécessité d'avoir des modélisations holistiques des projets, afin de promouvoir une gestion attentive et productive des fonds.