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Annexes

Regional Report
Catalonia

Targeted Analysis 2013/02/13

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Catalonia

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1. Description of the stakeholder and its position in national structure

1.1 General economic and political characteristics

Catalunya is one of the seventeen regions (Autonomous Communities) Spain is divided into since 1978. Catalunya, with a population of 7,5 million inhabitants in an area of approximately 32.000 km2, is one of the most developed communities in Spain. The Catalan GDP in 2010 was 209.727 million Euros, which represents almost 20% of the Spanish GDP. Catalonia is today a service oriented (71% of its labor force) and an open economy, which exports represent 26% of the total Spanish exports (Spanish Ministry of Industry, Tourism and Commerce, 2009). Catalonia has been one the industrial engines of Spain, and even today its companies are among the most competitive of the country, being also the destination of many international companies.

The administrative structure in Spain until the late seventies was quite simple, with a three level administration where the State was on the top and the municipalities (over eight thousand) on the bottom. A single level, the provinces, was the only intermediate administration, and they acted basically as peripheral entities of the territorial organization of the State.

The important growth of the most important cities (Madrid, Barcelona, Valencia, Bilbao) during the post Civil war (1936-1939) period led to a new metropolitan reality in their areas of influence, together with the necessity of specific administrative bodies covering the supramunicipal scope where the real city extended. This led to the creation of four metropolitan entities for each of these four areas, which had a high level of competences. After the death of Franco and the recovering of Democracy in 1975, this administrative structure was partially modified in order to attend the demands coming from the people. The 1978 Constitution recognised the existence of a regional reality in many parts of Spain. According to this recognition, Spain was divided into 17 Autonomous Communities (and two Autonomous Cities in the north of Africa: Ceuta and Melilla). This division, corresponding with the NUTS 2 European level, was superimposed over the earlier one into 50 provinces (NUTS 3), so that the Autonomous Communities or regions were delimited as a grouping of those.

The Constitution also determined that Autonomous Communities could internally divide their own territory. Catalunya was one of the few Autonomous Communities that early undertook this internal division. Thus, in 1987, on the passing of the Spatial Planning Acts, the Catalan territory was divided into 38 *comarques* (counties), that later became 41. There is also a project to divide the country into seven regions, that is, groupings of these *comarques*. The same Spatial Planning Acts passed in 1987 abolished the metropolitan government for the area of Barcelona that had been created in 1974, in a parallel process to the one occurred in Madrid, Bilbao or Valencia, as well as in some other cities in Europe. The fully provided metropolitan government for the area of Barcelona was thus replaced by two different entities, covering different areas and devoted to specific activities but never being of the importance of the former government.

These divisions (in counties, or in regions as planned, or any other model that may be created to solve specific issues such as the metropolitan areas) did not replace the existing ones into municipalities and provinces, but overlapped them. The new administrative structure in Catalunya is completed, finally, at a lower level with the same municipalities (8.111 throughout Spain, 946 in Catalunya) existing in the past. As a result, the Catalan territory as a whole bears a complex framework of administrative divisions with the corresponding institutions responsible for their management, and the resulting complexity in terms of sharing out competences.

1.2 The Catalan Planning System

The Catalan spatial planning system can be divided into three main categories: first, the General Territorial Plan of Catalonia, covering the whole of the region and the sectors that affect it; and, at a lower level, sectoral planning and regional plans. These develop policies of the General Territorial Plan, but while the former establishes regulations for single sectors throughout Catalonia, the latter establish criteria for each of the seven regions which Catalonia is divided into for this purpose. While sectoral plans, such as energy, highways and environmental facilities are supervised by the different departments in the Catalan Government with jurisdiction in each ambit, regional plans are prepared by the Department of Territory and Sustainability.

The main competence of the Catalan stakeholder (Department of Territory and Sustainability) is the region's spatial planning. After having recently passed 7 regional plans, the interest of the stakeholder is to develop a tool to monitor the accomplishment of the plans' regulations and proposals, with an eye on the inclusion of the four challenges of globalization, climate change, energy and demography.

With regard to organisation, the Catalan spatial planning system can be divided into three main categories: first, the General Territorial Plan of Catalonia, covering the whole of the region and the sectors that affect it; and, at a lower level, sectoral planning and regional plans. These develop policies of the General Territorial Plan, but while the former establishes regulations for a single sector throughout Catalonia, the latter establish criteria for each of the seven regions which Catalonia is divided into for this purpose. While sectoral plans, such as energy, highways and environmental facilities are supervised by the different departments in the Catalan Government with jurisdiction in each ambit, regional plans are prepared by the Ministry of Territory and Sustainability.

In this context, coordination between the three instruments of planning is essential, but so far the process of development of spatial planning has only established rather weak coordination mechanisms. Thus, the various government departments prepare their sectoral plans quite independently of regional plans, and the latter establish their regulations with strict adherence to sectoral laws and regulations. It could be said in this regard that the two instruments for planning co-exist, rather than achieve integration and mutual reinforcement in their provisions. Furthermore, the instrument that, over and above these other instruments, should facilitate this coordination has so far not had the opportunity of bringing them together. The only experience of general spatial planning in Catalonia corresponds to the document approved in 1995[1], which was unambitious in content and regulatory capacity. Suffice to say, in this regard, that the next revision of the General Territorial Plan of Catalonia, already under way, is an opportunity to put forward a document that coordinates and integrates regional and sectoral proposals.

Regarding the scope of regional plans, we need to understand the relationship between the spatial planning system (above the municipal level, prepared by the Catalan Government) and urban planning

[1] Law 1/1995 of 16 March, approving the General Territorial Plan of Catalonia. To consult documentation on current spatial planning in Catalonia: www20.gencat.cat/portal/site/

(approved by the Catalan Government, yet a municipal initiative). Regional plans have to respect current urban planning and they have no regulatory power for classifications and restrictions on land use. The criteria established in regional plans are not directly applied to land use but are articulated through urban planning. This relationship of dependency on urban planning, together with the coordination with sectoral planning, described above, means that it is not to be expected that Catalan regional plans adopt criteria that establish specific uses of land or sitting of specific facilities or services, but rather give an indication of locations and basic characteristics that must be established by other planning instruments.

Finally, it is important to consider the character of the current Catalan regional plans in the historical context in which they were introduced. Catalonia has a rich tradition of proposals for regional planning, in stark contrast to the lack of plans that have been passed into law. Apart from the scant experience of the General Territorial Plan of 1995, the oldest spatial plan currently in force dates from 2006. In a context of significant demographic and economic growth over the past 60 years, accompanied by intensive processes of urban sprawl, the lack of regional planning has had very negative consequences and has often led to dysfunctional situations and even chaos. We should consider this first generation of regional plans a necessary urgent response to the territorial disorder in Catalonia, which has made territorial planning a priority. They are, therefore, essentially physical plans, without the strategic dimension of spatial planning commonly found in other parts of Europe.

In this context, the Catalan Government set up the Territorial Planning Programme in 2004 with the goal of "providing tools for correcting the tendency to dispersion, specialisation and segregation of urban planning above the municipal level". It is important to understand the content and limitations of the seven recently passed regional plans for Catalonia within the planning framework, their precedents and the historical and territorial context. The plans show a marked concern for issues to do with the four global challenges we refer to in this document but they offer rather limited scope for action.

2. Analysis of the situation: Awareness of global challenges, future threats and opportunities

2.1 Climate change

Climate change will have a particularly severe impact on Catalonia. Its geographical location not only renders it extremely sensitive to climatic variations but also place it in a region with a great degree of uncertainty regarding future scenarios.

The two basic features of climate change in Catalonia will be, firstly, an increase in temperature and, secondly, altered rainfall patterns. In general, there is a consensus that the temperature rise will be exponential, that is, it will be greater in areas that are warmer already. As for rainfall, models agree that regions to the north of the Iberian Peninsula will experience a significant increase; while to the south rainfall will be much lower. In this context, therefore, Catalonia is in an area of uncertainty, where the different models fail to specify precisely how rainfall will change. Whatever the case, it seems clear that there will be greater irregularity.

A sharp increase in temperature and a significant variation in rainfall, at least in terms of regularity, will without doubt be matched by an increase in water stress. Some of the possible spatial consequences are:

- The physical structure of the territory will be affected by changes in climatic conditions through consequences for soil erosion, whether in the case of rivers, due to more erratic rainfall, with particularly violent episodes, or on the coast, with deterioration of beaches and fragile coastal areas, especially those under human influence: regression of deltas through construction of dams,

slowing the pace of deposits, or loss of beaches through the construction of ports that alter coastal dynamics.

- Natural areas will suffer changes in flora and fauna as a result of altering rainfall patterns, longer periods of drought or, simply, a modification in the cycle of the seasons. The alteration of cycles will give rise to the appearance of new species and the disappearance of those that cannot adapt to new conditions, through total extinction or displacement (migration). Whatever the case, there will be a change in the composition and diversity of species and in the functioning of ecosystems. In the case of Catalonia, the endemic risk of forest fire will probably also be affected by climatic perturbations.
- Agricultural activity in Catalonia is particularly exposed to risks deriving from climate change, not because of the many irrigation systems, some of which are still rather inefficient in their water consumption, but because of threats to traditional crops such as vineyards (which in the new climatic conditions could produce wine that is more alcoholic and unattractive to consumers) and fruit (which requires a period of winter frost for successful flowering in spring). Pests and invading species are other risks associated with changing climate conditions.

In Catalonia we find, moreover, specific characteristics regarding the climate change challenge. One issue is the **geography of the region**, positioned between two "climatic models" inside the Iberian Peninsula. On one hand the northern area which will experience a significant increase of rainfall and in the other the south, where rainfall will be much lower. Catalonia is in an area of uncertainty between the two, but whatever the case, it seems clear that there will be greater irregularity.

Other issue is how this **change in temperature will affect tourism**, one of the most important subsectors of the Catalan economy. In this case, however, the effects could be diverse, with a possible drop in the number of tourists during the hot season but with an increase in spring, autumn and even winter.
Finally, **the population and population centres**. Despite efficient use of water by the Catalan population, efficiency which has increased over recent years, we must take into account the population growth of the last few years (20% over the last decade) and the possible continuation of this growth (although probably at a lower rate) in the immediate future and the greater demand for water per person arising from the rising temperature. This increased demand will have to be satisfied with water resources undergoing significant variations in terms of river flow, replenishment of aquifers and chemical quality of water.
The increase in temperature will have consequences for the health of the population, either through appearance or reappearance of diseases currently limited to other geographical areas or through episodic heat waves, which though having less of an impact in Catalonia than in northern Europe, because of previous experience, will affect the most vulnerable in society.

By last, a specific characteristic of the Catalan region is in **the livestock sector**, which inside the agricultural sector is the one generating most emissions and waste in the form of pig slurry (waste from pork farming). One specific measure of the Framework Plan for mitigating Climate Change 2008-2010 is related to the creation of plants for biogas production from the anaerobic digestion of pig slurry that would achieve a mean annual reduction between 2008 and 2012 of 0,109 Mt CO2 eq/year.

AWARENESS

The analysis of the impacts of climate change in Catalonia has been studied by the Catalan Government, which has for some time been aware of the great implications of climate change for Catalonia and the need

for detailed knowledge of its effects, and with this in mind it commissioned the **1st Report on Climate Change in Catalonia**, published in 20052. In 2010 the Government of Catalonia, together with the Institute of Catalan Studies prepared a second version, the **2nd Report on Climate Change** in Catalonia. Its framework was endorsed by the *Interdepartmental Committee on Climate Change of the Generalitat of Catalonia* and its methodology is more highly verified than for the 1st Report.

The challenge is addressed and monitored in a very explicit way in the above mentioned documents, especially the second one which consists of a comprehensive analysis of the vulnerability of the Catalan biophysical environment to the impacts of climate change and its management, mitigation and measures for adaptation. Moreover, in 2008, the government approved the Framework Plan for Mitigating Climate Change in Catalonia 2008-2012, endorsed by the Interdepartmental Committee.

In the **Framework Plan for Mitigating Climate Change** in Catalonia 2008-2012 the Government of Catalonia decided to promote measures to reduce emissions of greenhouse gases in Catalonia, using Catalan executive powers. Specifically, the Plan established a reduction in emissions of 5.33 million tonnes of CO2 between 2008 and 2012. There is no forecast beyond 2012. A new framework for the period 2013-2020 should be issued but at the moment of writing this report there was no notice on when this would occur.

THREATS AND OPPORTUNITIES

The main threat from a governance perspective is related with the situation of strict budgetary adjustment that the new Catalan Government has implemented for the year 2011 and probably for 2012. This adjustment will probably affect some of the policies and programs developed by the Catalan Administration.

The main opportunity in the governance field is the closer cooperation with the Catalan Energy Institute in order the implementation of the actions and measures, which will improve their efficiency.
In spatial terms, main opportunities rely on the fact that the proposals contained in recently passed spatial planning in Catalonia show a marked concern for prevention that is, reducing energy consumption and thus emissions. From the standpoint of spatial planning, this means creating the spatial conditions necessary to minimise consumption.

The threats can be found in the lack of capacity of the spatial planning system to actually develop measures in the field of adaptation to climate change. Adapting to climate change in Catalonia will essentially involve adapting to a higher temperature and lower water availability, whether through reduced rainfall or rainfall of greater irregularity.

The contents of Catalan regional plans are rather poor in specific measures for harnessing the potential possibilities of the new situation and minimising its negative impacts. The creation of open spaces, which have established a high level of protection for 71,2% of Catalonia, has been more important for compensating emissions. But this benefit must be interpreted as a knock-on effect of actions designed for a different purpose.

[2] See: www20.gencat.cat/portal/site/canviclimatic/

2.2 Energy

Primary power consumption (directly from natural sources, without transformation) in Catalonia in 2007 was 26,840 ktep. Primary energy consumption in Catalonia has been restrained in the last four years . The cumulative increase in primary energy consumption in Catalonia was only 4.0% in the period 2003-2007, and even reached negative inter-annual variations. This implies an important change in trends compared to previous years. This behaviour is due mainly to two factors: firstly, moderation in final energy consumption experienced during the period 2004-2007 and, secondly, evolution of the Catalan electricity production mix, especially with regard to a significant reduction in nuclear power electricity production and combined cycle power plants, and low hydro-electric production, which was not offset by production from other power stations in Catalonia, but rather through imported electricity.
Renewable energy accounted for 2.7% of total primary energy consumed in Catalonia, most of this hydro-electric power, with 1.71%, but the total consumption of renewable energy other than hydro-electric power increased by 47.0% in the period 2003-2007, mainly as a result of the increased contribution of biofuels, wind power and biogas. This increase, however, has not made up for the significant decrease in the production of hydro-electric power, which fell 40.8% in Catalonia, as a result of the drought in the country during that period. The result of these two factors was a slight reduction in renewables in the Catalan energy balance, from 3.2% of primary energy consumption in 2003 to 2.8% in 2007.
Regarding final energy consumption (converted from primary sources to facilitate use and transport) one of the main manifestations of the energy challenge in this particular region is the excessive dependence on fossil fuels, oil and gas. Final energy consumption in Catalonia in 2007 was 16,173 ktep and, as for primary energy consumption, was characterised by moderation of growth experienced in previous years to an average annual growth rate of 1.8% between 2003 and 2007. Despite the significant increase in the proportion of renewable energy in recent years (increasing by 18% per year on average between 2003 and 2007), total consumption of energy from renewable sources was 3.8% and the remaining 96.2% came from fossil fuels and nuclear power, particularly diesel fuel with 31% of total final energy consumption. More than 96% corresponds to non-renewable sources, including in this category imported electricity. Use of diesel (in transport) predominates, followed by non-renewable electricity and natural gas. 75% of final energy consumption is in the form combustion fuels, with predominance of liquids. Electricity occupies second place, closely followed by gas combustion fuels (natural gas and liquefied petroleum gas). The use of heat from solar energy is very low. The largest sector for consumption of final energy is transport, with almost 40% of total final energy. Industry follows with 31.6%. The primary sector only consumes 3.5% of final energy in Catalonia.

The main spatial consequences and impacts come from the way the supply of energy is shaped in Catalonia, which can be summarized in two main factors:

- **Lack of a planning tradition**. The lack of comprehensive planning in the energy sector in Catalonia has a long history. Thus, since early industrialisation and the exploitation of energy resources in Catalonia, the situation has been characterised by the presence of a multitude of suppliers with different interests and areas of activity, without ever subjecting initiatives to any planning, beyond the sectoral provisions and requirements for this field. As a result, the Spanish energy map in general and the Catalan map in particular has traditionally been marked by lack of coordination and efficiency in production, transport and distribution. And, what is worse, an inability to anticipate future needs.
- **Mismatch between the localization of production and demand of energy**: Due to historical reasons the production of energy in Catalonia s concentrated in the southern region of Tarragona, while most of the demand concentrates in the municipalities of the Metropolitan Region of Barcelona. Moreover, the increase in demand has not been accompanied with an increase in internal production, which comes in more than ¾ parts from nuclear energy. As a consequence the Catalan energetic model depends increasingly of external sources, which demands more infrastructures for transportation, with a greater environmental impact.

AWARENESS

Since 1991 the region has its own institute for dealing with energy issues, the ICAEN (Institut Català de l'Energia). More recently, the awareness towards this issue was made more evident with the elaboration of a comprehensive energy plan for the period 2006-2015.

The main policy document dealing with the energy challenge in Catalonia is the **Catalan Energy Plan (2006-2015)**, passed in 2005 and revised in 2009. This is a very extensive plan that includes a prospective analysis of Catalonia for the 2030 horizon. This envisages six prospective scenarios with different sensibility for different issues (as nuclear energy) . The analysis includes the definition of a "Framework Scenario" and the visualization of the Catalan contribution to the Spanish and European compromises in energy and climatic change. The scenarios range from a very energy-consuming one to a more sustainable one.

For each of these six scenarios there are GDP and population forecast until 2030. From them, the following energy scenarios are settled:
- Final consumption of electrical energy
- Final consumption of fuel
- Total final energy consumption
- Evolution of the participation of different energy sources in the final energy consumption

Finally, there are scenarios of energy consumption for transportation, manufacturing, services, primary sector and private consumption.

In the 2009 revision, the Plan took into account the economic crisis, changes in European and Spanish legislation, as well as the need to revise the forecast of demand and supply of energy to take into account the new lines of action of the Catalan energy policy and other sectoral policies of the Regions related with energy. For instance the new revision mentions the pass of the **Plan for Mitigation of Climatic Change in 2008** or the future Management Plan of the River Basin District of Catalonia.

THREATS AND OPPORTUNITIES

The future threats come mostly in the form of the current economic crisis and the strict budget adjustment of the Catalan government which can affect the implementation of some of the measures.
Regarding spatial planning, the desired scenario will be one of greater integration of energy sector planning factors in regional plans would make it possible to include aspects of great significance in the three main stages of the energy process, that is, generation, transportation and distribution and consumption. Failure to do so could affect the correct development of the measures for energy saving.

2.3 Demography

The demographic challenge in Catalonia, as in many other European regions, has two main components: the ageing population and the high influx of immigrants.

There are several causes for these phenomena, principally the following three:

- First, the characteristics of Catalan r**eproductivity**, with a structural inability to maintain population levels, forcing the country into a permanent need to resort to immigration from outside. This need, which was manifest already in the eighteenth and nineteenth centuries, was a necessity throughout most of the twentieth century, with contributions from neighbouring Spanish regions first and later from more distant regions and even abroad, and this tendency has continued into the twenty-first century with the arrival of large contingents of foreigners, from almost every continent, mainly South Americans and East Europeans.
- Second, a **longer life expectancy**, which, logically, has resulted in an ageing population. This longer life expectancy has coincided with a series of sociocultural changes, as explained below, which have

affected a large part of the population that traditionally took care of the elderly, mainly children, and forced people to resort to foreign immigrants for the provision of this care.

- Third, a combination of various **socioeconomic factors** has also altered the demographic structure of the population.

Thus, although, as noted, Catalan fertility has tended historically to be insufficient to achieve internal replacement of the population, in recent years there has been an even sharper **decline in fertility**. Social conditions (incorporation of women into the job market, increasing value attached to activities outside the family, etc.) have been decisive for this low fertility. These recent social trends are unlikely to be reversed and low levels of fertility can be expected over the coming years.
Moreover, the decrease in the number of children per family, along with an increase in average income, has led to children delaying their age of emancipation and using this long period free of responsibility to prolong their training. This has given rise to **over-trainin**g of the Catalan population, which has had a decisive effect on the arrival of immigrants, as it has led to a failure of the indigenous population to meet the demand for labour in the economy, both in quantitative terms (because the younger generation which might have entered the job market was instead in training) and in qualitative terms (because, once trained, people do not want a job they consider below their educational station). This shift has been more serious because the Catalan economy has had much of its growth in sectors of low added value and low qualifications, such as construction and certain personal services.
At a time of strong economic growth, based on labour-intensive sectors (and in many cases with little training), the strong **demand for labour** coincided with a dramatic decrease in availability, because of the small number of people reaching a working age (those born in Catalonia in 1995 numbered less than half those born twenty years earlier) and because of the longer period of training. This imbalance has led to resorting to immigrants from abroad.

From a territorial perspective, the consequences of the demographic changes described above are diverse and on occasion profound.

The ageing of the population will lead to an increased need for care services and facilities for the elderly, and probably the need for special housing and types of urban planning for this group. The intense population growth experienced in Catalonia during the period 1950-1975 and the subsequent redistribution of the population across the territory focused on two types of territorial destination with two clearly differentiated urban typologies: the **intensive growth** in the first period took place mainly **in the large cities** and, consequently, focused on dense, compact urban typologies, while the **redistribution of the second period** consisted of outflow from these dense, compact urban areas to progressively more distant sites in a **low density sprawl**.

This pattern established two situations that later had repercussions on the capacity of the territory to meet the needs of the population. First, the growth of municipalities occurred in waves that affected areas increasingly distant from the large cities. Given that most population migration involves very specific age groups, it is easy to see how each municipality, depending on its location, tended to attract a certain age group and to foresee that as these people become older there will be a sudden ageing of the whole municipality. Thus, the ageing process is not homogeneous across the entire territory, dramatically affecting some municipalities while others still have a relatively young population . From the standpoint of the location of services and facilities, this variability in space and time makes it difficult, of course, to render them efficient.
The second major implication of the pattern of settlement of the population over recent decades has to do, not with unequal distribution across municipalities in terms of age, but rather **the urban typologies of the destination municipalities**. This type of low density dispersal was chosen by many migrants seeking lower house prices or an environment more suited to their wishes, attractive enough to compensate for the possible inconvenience of greater isolation: essentially, the increased need for travel, sometimes over quite large distances, for virtually any activity, making use of private vehicles unavoidable. In these cases,

the ageing population, with their gradual loss of faculties and often the need to give up driving, takes place in an environment far from facilities and where public transport is not efficient. As a result, most people see their access to services and facilities drastically reduced just at that stage in life when they have the greatest need.
The estimated need for services and facilities should take into account not only an increase in demand (because there will be more elderly people), but also problems of location: **an uneven and fluctuating distribution over time across different municipalities and problems of access in areas adapted primarily for use of private vehicles**.
Meanwhile, immigration usually brings with it the challenge of integration with the local population which, from the territorial viewpoint, means coexistence in the same areas or, conversely, segregation. Catalonia, with its long tradition as a host country, has managed to devise effective policies on immigration, with a territorial dimension, so that extreme segregation of immigrants leading to the formation of ghettos is a rare phenomenon, if not non-existent. **However, the endemic lack of spatial planning above the municipal level has made it difficult to combat spatial segregation at a regional level**.

AWARENESS

The first actions of the Generalitat of Catalonia concerning migration took place in the late eighties. Since then, the actions of the Generalitat of Catalonia in the field of immigration have grown into a global policy framework with particular emphasis on the integration of immigrants, in a mutual process that also Involves local inhabitants in a normal process facilitating access to services and resources under the same conditions as other citizens. Local administrations (municipalities) have also assumed responsibilities in the reception and integration of immigrants.

Catalonia has several resources for monitoring, analysis and forecasting of demographic variables. The **Statistical Institute of Catalonia**, under the Catalan Government, is the official body responsible for managing statistics on Catalonia and, therefore, provides statistics on population (and many other variables), makes forecasts of total population, school age population, active population and households, with time horizons and different levels of territorial breakdown for each type of projection. It also offers projections for migratory growth until 2021.

In parallel to the quantitative work of the Statistical Institute of Catalonia, several bodies report on the evolution of the main demographic variables and their possible effects. These bodies include the ***Centre for Demographic Studies***, a research consortium of the Generalitat of Catalonia and the Autonomous University of Barcelona. The Centre for Demographic Studies has three core areas of work: teaching, research and publishing.
Alongside it, there are many research centres with different origins, characteristics and objectives that monitor the evolution of the major sociodemographic variables, from a territorial, social and economic standpoint.
As explained in the section of “resilience of planning system”, the Program for Spatial Planning also used very precise forecasting of population and occupation from 2001 to 2026 in order to establish the need of land for different uses until that date. There is no evidence of use of supra-regional forecasting analysis regarding population or other demographic variables. There is no evidence that the forecasts are updated with changes in spatial dynamics. The main issue regarding demography, immigration, is object of attention and updated policies but without reference to specific monitoring of the forecasts.

THREATS AND OPPORTUNITIES

Future threats regarding immigration from a governance point of view are found mostly in the capacity of integration. Social and territorial integration is a process over several stages, with progressively closer contact between immigrants, local inhabitants and the host territory. Each wave of immigrants has traditionally been used to improve the lot of the people in earlier waves of migration: the new arrivals have always tended to do the lowest paid jobs and live in the poorest areas. The positive side to this sad reality is that the arrival of each new group allows for 'upward' mobility of those who have arrived earlier. In the case of recent immigration influxes, however, this replacement process has broken down and, probably as

a result of greater cultural and language similarities, people coming from Eastern Europe and from South America have tended to hold better jobs and live in better conditions than Moroccans, who were in the previous wave of immigration and which is still the largest group of foreigners in Catalonia (the number of Moroccans is 3 times the number of the largest South American nationality). Consequently, as well as overcoming the cultural gap that may exist with people from Morocco in particular and Africa generally, there is now a "glass ceiling" of new immigrants more quickly integrated into the host society, which puts limits on the possibilities of social promotion of Africans and Moroccans.
Another important future threat is the budget restrictions that have been recently approved and which could affect some of the programs created for instance to facilitate care of old and depending persons. Also the recent elections at municipal level, with the new presence of a xenophobe party in certain municipalities might mean the end of policies that at local level were working to ensure integration of foreigners, as the cultural mediator figure.
Spatially the challenge is how spatial planning can help fight social and spatial segregation and facilitate creation of urban environments accessible for elderly.

2.4 Globalization

As everywhere else, globalisation in Catalonia has four consequences: environmental, demographic, cultural and economic. Since the factors affecting the first two have been analysed in the previous sections of this document, and since the most obvious consequences of sociocultural transformations associated with globalisation have little bearing on territorial aspects, this section focuses on the economic aspects of globalisation and its territorial component.

Catalonia already has an internationalised economy, the result of historical industrialisation processes since the early twentieth century. During the sixties, when the Spanish economy started to open up, Catalonia played a key role (and still does), concentrating Spain's most important export sectors. The position of Catalonia for access to Europe and the quality of life here have made Catalonia an attractive region for foreign investment. Attraction of foreign investment has become a key factor in boosting local companies that can act as suppliers of products and services to multinational companies. Catalonia has competed with similar European regions in attracting foreign investment, either in the form of purchase of existing companies (particularly in the eighties), entry of international companies, creation of joint ventures with local firms or attracting Asian companies seeking an entry point at a European level, as has become more common in recent years.

The ability to attract foreign investment has been accompanied by Catalan investment abroad, which in addition to increased international flows of capital has also contributed to the increase in movement of goods and services. Catalonia now has 3,500 manufacturing companies with a minimum of 50% foreign capital. The competitiveness of Catalonia over other locations is based on a concentration of different competitive factors. Although Catalonia is not a world leader in any specific area, it is competitive because of its good position in all of them, and it is all these factors taken together that is the main competitive advantage. Issues involved include quality of life, advanced facilities (synchrotron, biomedical research park, business schools) and the diversity of Catalan small and medium enterprises in various sectors that can act as service providers for foreign companies here. The capital city, Barcelona, is attractive to university students and business executives from around the world and this is also an asset for foreign companies.

In this general context, the situation in Catalonia in terms of globalisation of the economic structure has these specific features:

- Growth. Since the late nineties and until very recently Catalonia had strong economic growth. Between 1995 and 2001 Catalan Gross Value Added had a mean annual growth rate of 4.17%. This growth rate is much higher than the average growth rate of 1.9% of GDP for the Euro Zone in 2001

and is higher than the growth rate in other comparable European regions. For example, between 1986 and 1997 Catalan GDP grew by 3.67% while in Baden-Württemberg growth was 2.02% and in Lombardy 1.65%. This higher growth was maintained until 2007, before the outbreak of the financial crisis. Since 2008 Catalonia (and Spain) has greatly suffered the consequences of this crisis, resulting in a decrease in GDP growth and high unemployment. According to stakeholders in the Catalan Government, in this context of contraction of domestic demand, Catalonia needs to invest especially in economic sectors that target foreign markets, since these will allow it to become more competitive.

- Sectoral composition. The excessive importance of construction (compared to other similar regions) for jobs and GDP growth has been a feature of Catalonia since the late nineties and has meant that the economic crisis has had a greater impact in the region, following the bursting of the house price bubble. The economic crisis has also affected the country's industrial base and has resulted, for example, in the relocation of multinationals and large-scale redundancies. These are the two sectors that have suffered the greatest number of job losses since the start of the crisis, with a reduction in employment of 33% in construction and 22% in industry between 2008 and 2010. The tertiary sector has also been affected by the economic crisis, but because of its heterogeneity the impact has been uneven across its various subsectors.
- Two sub-sectors in Catalonia particularly affected by globalisation, tourism and advanced business services, need a mention apart. Tourism accounts for about 10% of GDP and employment in Catalonia and is therefore a key sector for the economy. Catalan tourism is a quality product, because this is a country with variety, with countryside, beaches and historical and cultural heritage, but management of tourism over recent decades has been uneven. Demand centres on sun and beach resorts (the Costa Brava and the Costa Daurada accounting for 56% of hotel occupancy by foreign visitors to Catalonia), which are often overcrowded as a result of development that for many years put quantity before quality. This model of tourism makes it more vulnerable to competition from other destinations that can offer new experiences, lower prices and less congestion, and are now equally accessible to tourists from developed countries. For their part, advanced business services, such as financial services, data centres, business consulting and legal services, account for only a small proportion of total services, around 14%, similar in size to the retail trade or catering. These services are not very internationalised, which could reduce their level of competitiveness.

The main **spatial characteristic** of Catalonia with a spatial impact on economic competitiveness is the **high concentration of economic activity in the metropolitan area of Barcelona**. This currently accounts for 80% of the population and about 70% of Catalan GDP (2009). This has implications at a territorial level because economic concentration in the metropolitan area offers competitive advantages in economies of location (expertise in the metropolitan area being crucial in some sectors) and also urban development. Proof of this competitive advantage is that concentration in other areas, in some cases for important sectors such as food in Lleida and the chemical industry in Tarragona, has not been as competitive in international terms.
In fact, one of the **problems** mentioned by experts on the territorial impact of globalisation is precisely this **"centralising" tendency of foreign companies** that might invest in Catalonia. These companies, albeit with some variations in specific sectors, tend to invest in the metropolitan area of Barcelona and do not even consider other locations that might offer the same degree of accessibility and expertise. Despite government efforts to "rebalance" the territory and ensure that foreign investment reaches everywhere, the preference of these companies for the metropolitan area is basically due to the existence of a critical mass for many productive sectors, manufacturers and services. In fact, 80% of all foreign companies in Catalonia are located in the metropolitan region of Barcelona. Outside this area, only very specific areas are attractive, such as for the chemical industry in Tarragona and the food sector in Terres de l'Ebre. The **metropolitan area, therefore, suffers from a lack of spaces available** for activities (or at least that is the perception of companies) and areas for activities available outside the metropolitan area are not attractive enough to foreign investment.

Another spatial impact affects the position of Catalonia in the global economy is related with the **provision of infrastructure**. There are some clearly positive aspects, such as the strategic location of Catalonia at the heart of the Mediterranean corridor, at the intersection with the Ebro valley, with good communications with Zaragoza and the Basque Country. Nevertheless, other factors limit the capacity for internationalisation of the Catalan economy, mainly the preponderance of goods transport by road and the low use of rail, saturation of some roads, and Spanish state or private ownership of major infrastructure hubs connecting with other countries (the airports of Barcelona, Girona and Reus; the ports of Barcelona and Tarragona; motorways and railway lines), which puts limits on the reach of the Catalan Government.

AWARENESS

The challenge of globalization is addressed in an explicit way with specific policy strategies developed by the Catalan Ministry of Enterprise and Labour and the Catalan Ministry of Economy and Knowledge. As part of these Ministers, different agencies and institutions deal with topics as foreign investment, R&D, High Education policies, etc.

The Catalan government has developed over the past 20 years, several policies and programs to help the internationalization of the Catalan economy. These policies cover different areas:
On one hand, since the mid-nineties the Generalitat of Catalonia has conducted studies on the presence of clusters in Catalonia, helping to identify competitive sectors in different parts of Catalonia. This policy of defining clusters has been maintained and has evolved to the stage of defining, for example, manufacturing systems and establishing specific policies for each of them in accordance with the guidelines of the European Union. Since 2004 Territorial Innovation Plans have been created for territories (counties, cities) to prepare economic development plans in specific areas of the territory, including participation of town councils and county councils.

There are other strategies and publications that analyse prospective of foreign markets for Catalan enterprises, published every year. This is the case of the publications done by the Observatory of Foreign Markets . In general there seems to be a coherent approach and well divided tasks among this different policies and programs, and especially since 2005 there has been an effort to unify the different initiatives in the single “umbrella” of the Agency for the competitiveness of Catalan enterprises agency called ACCIO.

The Catalan Ministry of Economy and Knowledge is responsible for defining the economic policy of the Catalan Government and its management (public finances, public debt, budgets, etc.) and also for promotion of research. This ministry makes growth forecasts for the Catalan economy and periodically publishes a series of macroeconomic indicators (GDP, employment, etc). These forecasts have a short time horizon, only until 2012. No evidence that these forecasts are shared with stakeholders. The forecasts also include those that the Spanish and European institutions publish for Spain and other European countries. For specific policy strategies as the one about clusters, the Catalan Government has followed the guidelines of the European Union.

The most recent policy document dealing with globalization is the ***Strategic Agreement for Internationalisation, Quality of Employment and Competitiveness of the Catalan Economy*** (AEC). This document defines specific measures, with monitoring indicators. However, there is no specific mention to forecasting methods beyond 2011.

THREATS AND OPPORTUNITIES

As mentioned in the previous challenges, the main threat n the first years of the 2010 decade is the economic crisis, with a high unemployment and high public deficit. However, Catalonia continues to keep its exporting capacity and currently about 40% of the exports of Catalan companies are to the rest of Europe and the world.

In spatial terms, one important issue is how to achieve territorial equilibrium between Barcelona and the rest of Catalonia. Spatial planning could help in this respect. Catalan regional plans could go further in

making decisions closely related to the promotion of economic activity, in general terms and for issues strictly related to globalisation. As mentioned, the lack of strategy in approved regional plans is largely responsible for this orientation. But here, once again, the next revision of the General Territorial Plan of Catalonia is an opportunity for the inclusion of these strategic factors. If this opportunity is taken, the future Plan should address issues such as assigning a certain level of productive specialisation to each of the Catalan regions, in line with their characteristics and comparative advantages; the location of activities and specific infrastructure in certain areas, beyond the mere provision of land; consideration of and coordination with proposals for development of neighbouring regions (Valencia, Aragon and the south of France), especially with regard to transport infrastructure, whether on land, by sea or by air; coordination with the initiatives undertaken by other Catalan Government ministries, such as ACC1Ó territorial innovation plans and strategic plans to create territorial innovation systems in different territories.

3. Methodological report

3.1 Fields of policy interest of the stakeholder

As mentioned in section 1, the stakeholder recently passed all the 7 regional plans that addressed the future of the territory[3]. The main interest of the stakeholder is twofold: in one hand it intends to get ideas for the development of a monitoring tool for these plans and on the other to include the challenges and its indicators in the now under revision General Territorial Plan of Catalonia.

In first place, therefore, the monitoring tool should be used to measure the accomplishment of the Territorial Planning Programme goals in the new urban plans produced in Catalonia since its approval: when a municipality starts a new urban plan it has to ensure that it follows the directives approved in the regional territorial planning. There is already a proposal for long-term monitoring indicators that will be analyzed here, and to which the missing “challenge oriented” indicators could be added in order to complete it in its future implementation.

On the other hand, the revision of the General Territorial Plan on Catalonia strikes as an opportunity to integrate spatial planning and the sectoral proposals made by the Departments that address in a more direct way issues of globalization, demography, climate change and energy. This project has been used therefore to raise awareness in the spatial planning stakeholders of the importance to include aspects not directly referring to the physical dimension of the territory but with a direct relation to it.

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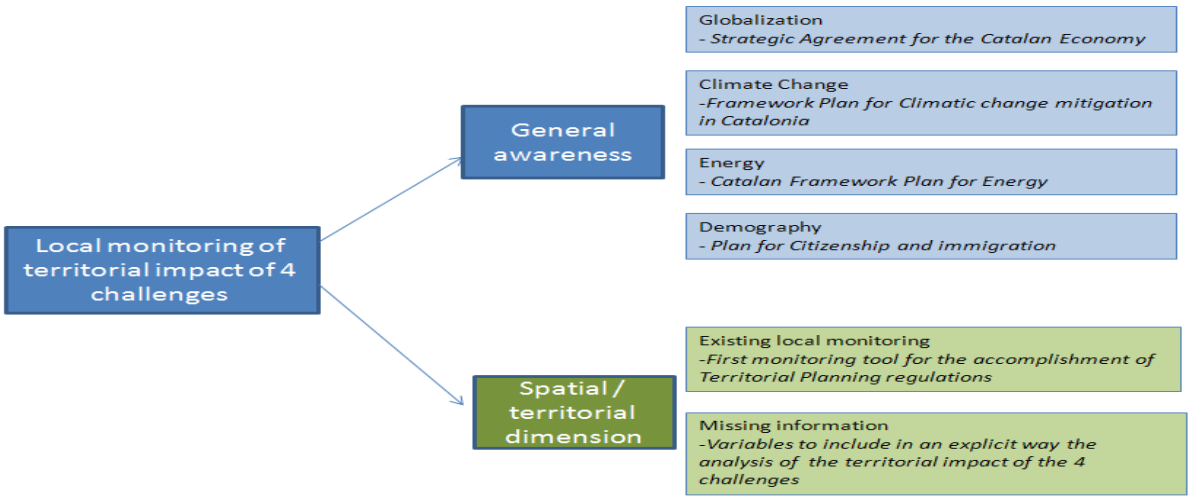
[3] NEL·LO, Oriol (2011): "El planeamiento territorial en Cataluña" (Spatial Planning in Catalonia) in *Cuadernos geográficos.* 2011, Number 47/2 [in press]. For a comprehensive description of the criteria that guided the Spatial Planning Programme for Catalonia see: *Planejament territorial*. *Criteris.* (Spatial Planning. Criteria) Secretariat for Territorial Planning of the Department Regional Policy and Public Works, Generalitat of Catalonia. Barcelona, January 2006. www20.gencat.cat/portal/site/ptop. For a justification of these criteria and an overview of the contents, objectives, constraints and development of the Programme see also: NEL·LO, Oriol (2007), "La nueva política territorial en Cataluña (2003-2006)" (New territorial policy in Catalonia (2003-2006)), in Joaquim Farinós and Joan Romero, editors, *Territorialidad y buen gobierno para el desarrollo sostenible (Regions and Good Government for Sustainable Development),* Valencia, Publications of the University of Valencia (pages 191-236); ESTEBAN, Juli (2006): "El Programa de Planejament Territorial: continguts i mètode" (The Spatial Planning Programme: content and method), in *Espais,* 52 (pages 14-24), and ESTEBAN, Juli (2009): "La planificazione territoriale in Catalogna*" (Spatial Planning in Catalonia), in Tria. Rivista internazionale semestrale di cultura urbanistica* , 3 (pages153-167). To consult the specific regulations for each of the mentioned items, see the documentation of the seven Regional Plans at www20.gencat.cat/portal/site/

3.2 Assessment of the regional indicator systems completeness

3.2.1 Existing indicator system

Catalonia counts with several programs that measure and analyze different indicators related with the four macro-challenges and are useful to study the general awareness that the region has regarding them. These programs, coordinated from different departments of the Catalan administration, are exhaustive regarding each issue individually but lack coordination among them. Moreover, even if some of the programs have certain spatial dimension, this is not included on an explicit way.
The only regional indicator system containing a clear territorial dimension is the Territorial Planning Programme of the Department of Territory and Sustainability. As mentioned above, the Territorial Planning Programme designed a series of indicators that should be part of a future monitoring system for the follow-up of the accomplishment of the goals and regulations of the Partial Regional Plan of the Barcelona Metropolitan Region.
The figure bellow shows the sources of the indictors gathered, those with a territorial dimension and those on a more general scale.

FIGURE 1. DESCRIPTION OF THE MAIN MONITORING SYSTEMS REGARDING THE FOUR MACRO-CHALLENGES IN CATALONIA



Hereby we analyse the main programs addressing the macro-challenges and then we focus in more detail on those indicators emerge from the spatial planning, which have, obviously, a clear territorial dimension, and defines whether they address any of the four challenges, as well as the way of measuring them, its spatial scale and its direction.

GENERAL AWARENESS

Climate change

As mentioned in section 2 of this report, the climate change challenge is well addressed and monitored the main policy documents on the issue, a comprehensive analysis of the vulnerability of the Catalan biophysical environment to the impacts of climate change and its management, mitigation and measures for adaptation. Moreover, the **Framework Plan for Mitigating Climate Change** framed the promotion of measures to reduce emissions of greenhouse gases in Catalonia, using Catalan executive powers.

Energy

The main policy document dealing with the energy challenge in Catalonia is the **Catalan Energy Plan (2006-2015)**, (see section 2), a very extensive plan that includes a prospective analysis of Catalonia for the 2030 horizon. Well detailed prospective scenarios were defined, ranging from a very energy-consuming one to a more sustainable one. The plan also includes a "Framework Scenario" and the visualization of the Catalan contribution to the Spanish and European compromises in energy and climatic change.

Demography

The two issues that have generated more awareness in the regional policy have been immigration and ageing of the population. There are well developed resources to the analysis and forecasting of demographic variables. The Statistical Institute of Catalonia[4], under the Catalan Government, is the official body responsible for managing statistics on Catalonia and, therefore, provides statistics on population (and many other variables), makes forecasts of total population, school age population, active population and households, with time horizons and different levels of territorial breakdown for each type of projection. It also offers projections for migratory growth until 2021.

Globalisation

As explained in section 2, the challenge of globalization is addressed in an explicit way with specific policy strategies developed by the Catalan Ministry of Enterprise and Labour and the Catalan Ministry of Economy and Knowledge. This ministry makes growth forecasts for the Catalan economy and periodically publishes a series of macroeconomic indicators (GDP, employment, etc). These forecasts have a short time horizon, only until 2012. The forecasts also include those that the Spanish and European institutions publish for Spain and other European countries. For specific policy strategies as the one about clusters, the Catalan Government has followed the guidelines of the European Union.

The most recent policy document dealing with globalization is the Strategic Agreement for Internationalisation, Quality of Employment and Competitiveness of the Catalan Economy (AEC). This document defines specific measures, with monitoring indicators. However, there is no specific mention to forecasting methods beyond 2011.

[4] www.idescat.cat

MONITORING SYSTEM WITH A SPATIAL DIMENSION

The previous section has described the main programmes addressing the four challenges in Catalonia and its monitoring systems. As explained, they hardly include a spatial dimension and moreover they are directed by departments of the Catalan Government different from the stakeholder. This has led to focus our attention to the analysis of the Territorial plans approved by the Department of Territory and Sustainability and the desired tool that should be developed for their monitoring.

In this respect, the first task was to analyze a first sample of this monitoring system in order to check to whether it included reference to any of the four macro challenges. The monitoring system here analyzed tries to monitor the accomplishment of the objectives settled by the Spatial Planning Programme by a series of indicators, so it could be easily seen if there was an explicit or implicit reference to energy, climate change, globalization or demography[5]. Table 1 shows the objectives of the spatial planning programme (marked in blue) and the indicators proposed to measure their accomplishment. Each of the objectives and its associated indicators address one or more of the challenges identified in this project. The desired direction of the indicators established the desired result of its implementation. For instance indicator number 6 “density of residential areas to be developed” can have a positive or negative consideration depending if the urban plan being analysed proposes an increase or decrease of the density of that municipality. As the objective to be accomplished is the moderation in land consumption, an increase in density would be considered positive and decrease negative.

The majority of the indicators address climate change and energy challenges, some of them address issues linked with the globalization challenge and only few address the demographic challenge, given the strong physical dimension of the territorial plan monitored by this system. The analysis also indicates that most of the indicators have a strong qualitative nature and have to be collected by the municipalities that need to accomplish the Partial Plan regulations in their new urban developments.

5 In the table Energy has been syntethised in EN, Climate Change in CCH, Demography, Dem and Globalisation in GLOB

Table 1. FIELDS ALREADY COVERED IN THE LOCAL SPATIAL MONITORING SYSTEM						
Objective of the Spatial Planning Programme	**Indicator**	**Challenge Addressed**	**Spatial level of the indicator**	**Measurement**	**Availability**	**(desired) Direction of the measure**
Protection of natural and agricultural areas	1.New land included in the open spaces system that has special protection' (highest, medium or lower level)	CCH	natural and agriculture areas	increase of such protection (in hectarees)	municipalities /Department of Agriculture	+
	2.Establishing protection on natural connectors at risk	CCH	natural and agriculture areas	environmental evaluation	municipalities /Department of Agriculture	+
	3.Urban developments on corridors at risk	CCH	urban areas	analysis of risk in new urban developments	municipalities /Department of Agriculture	-
Satisfaction of housing demand	4.New housing units/ population increase	DEM	municipality	quantitative	population register (for mew population) / statistical office (for new housing units in a year)	+
Moderation in land consumption	5.Type of new land to be developed (residential, industrial, services, mixed, logistics)	CCH, EN	municipality	Quantitative / qualitative	control of the Urban Plans	+
	6.Density of residential areas to be developed (increase or decrease)	CCH, EN, DEM	municipality	Quantitative: change in density of the municipality after the development	control of the Urban Plans	Density increase: + Density decrease: -
	7.Density of economic areas to be developed (increase or decrease)	CCH, EN	municipality	Quantitative: size of the new polygons	control of the Urban Plans	Density increase: + Density decrease: -
Compactness and closeness of new developments	8.Proximity of residential and mixed areas to be developed to existing urban land (contiguous, nearby or scattered)	CCH, EN	municipality	Quantitative / qualitative	control of the Urban Plans	Contiguous: + Nearby: + Scattered: +
	9.Size of economic activity areas to be developed (bigger or smaller than existing areas in the municipality)	CCH, EN, GLOB	municipality	Quantitative / qualitative	control of the Urban Plans	Bigger: + Smaller: -
Nodal structure of the territory	10.Developments produced on nodes: Areas with a 'metropolitan node strengthen' strategy	CCH, EN, GLOB	municipality	qualitative	Survey to municipalities	+
	11.Developments produced on nodes: On nucleus with a promoted growth strategy	CCH, EN	municipality	qualitative	Survey to municipalities	+
	12.On nucleus with a medium growth strategy	CCH, EN	municipality	qualitative	Survey to municipalities	+
	13.On nucleus with a moderated growth strategy	CCH, EN	municipality	qualitative	Survey to municipalities	+
	14.Rest of developments	CCH, EN	municipality	qualitative	Survey to municipalities	+
Functional balance	15.Balance between jobs and residence at the municipal level	CCH, EN	municipality	quantitative	Survey to municipalities	+
Social cohesion	16.Percentage of public housing	DEM	municipality	quantitative	Survey to municipalities	+
	17.Income level	DEM	municipality	quantitative	Survey to municipalities	+

	18.Education level	DEM	municipality	quantitative	Survey to municipalities	+
Support to economic activity	19.Development of strategic functional areas	GLOB	municipality	Quantitative / qualitative: new such areas created	Survey to municipalities	+
	20.Companies and jobs created	GLOB	municipality	Quantitative / qualitative: new jobs and companies created	Survey to municipalities	+
Development of transport infrastructure: Railway	21.Kilometres of local trains network	CCH, EN, DEM	regional /national	quantitative	Department of territory and Sustainability	+
	22.Kilometres of underground network	CCH, EN, DEM	regional /national	quantitative	Department of territory and Sustainability	+
	23.Kilometres of tram-trains network	CCH, EN, DEM	regional /national	quantitative	Department of territory and Sustainability	+
	24.Number of covered nucleus	CCH, EN, DEM	regional /national	quantitative	Department of territory and Sustainability	+
	25.Covered population (within 1.000 metres of a train station)	CCH, EN, DEM	Municipal	quantitative	Department of territory and Sustainability	+
	26.Kilometres of train network with special features (high speed, etc.)	CCH, EN, DEM	regional	quantitative	Department of territory and Sustainability	+
	27.Kilometres' of freight trains network	CCH, EN, DEM	regional	quantitative	Department of territory and Sustainability	+
	28.Kilometres of tram and exclusive bus lanes network	CCH, EN, DEM	metropolitan	quantitative	Department of territory and Sustainability	+
Favouring public transport	29.Share of movements using public transportation	CCH, EN	metropolitan	quantitative	Enquesta Mobilitat Quotidiana de Catalunya (Catalan Mobility Survey)	+
	30.Lines in service	CCH, EN	metropolitan /regional	quantitative	Entitat Metropolitana del Transport (Metropolitan Transportation Entity)	+
	31.Kilometres of the network	CCH, EN	metropolitan /regional	quantitative	Entitat Metropolitana del Transport (Metropolitan Transportation Entity)	+
	32.Number of covered nucleus	CCH, EN	metropolitan /regional	quantitative	Entitat Metropolitana del Transport (Metropolitan Transportation Entity)	+
	33.Covered population (within 500 metres of a bus stop)	CCH, EN	metropolitan /regional	quantitative	Entitat Metropolitana del Transport (Metropolitan Transportation Entity)	+

3.2.2 New needs of information

Even if the above mentioned Territorial Planning Programme included in an implicit way reference to the four challenges and how spatial planning could act to influence them, there is still room for improvement. In this sense, the qualitative analysis made evident that spatial planning should include measures to fight climatic change, energy consumption and to deal with demographic changes and issues related with globalization. However, these measures were not included, due in most cases to the fact that they are often the responsibility of other policy department of the regional administration. In other cases, these measures could be easily adapted to the legal framework of the spatial planning competencies. What is clear is that future spatial planning should include more explicit reference to the measurement of the challenges' territorial impact, and at the same time offer answers to correct or orient them when needed (always in a territorial scale).

The following table (table 2) indicates the missing indicators that would allow for a better monitoring of the four challenges, indicating which steps are needed in order to include them in the spatial planning in a more direct and explicit way. Most of these measures refer to state and perspectives of the region but few of them have a more "policy oriented" character, and their inclusion indicates that they are needed in order to deal with the impacts of the challenges at spatial level. For example, one important issue that rose during the interview with experts was the need for spatial planning to facilitate the location of sources for renewable resources and guarantee reservation of certain areas based on territorial criteria. In this sense, the proposed indicators 5 to 7 highlight the need to create maps of wind farms, photovoltaic installations and biomass installations that are nowadays missing. The localization of the already existing installations would allow a better planning in case of future energy requirements.

The inclusion of these measures requires also the cooperation of experts from other departments of the regional government, mainly the Department of Agriculture and the Catalan Institute of Energy, as well as the participation of the municipalities.

Table 2. MISSING INFORMATION IN THE LOCAL MONITORING SYSTEM					
Objective of the Spatial Planning Programme	**Indicator**	**Challenge Addressed**	**Spatial level of the indicator**	**Measurement**	**Availability**
To protect the coastline in front of erosions produced by episodes of violent storms	1.Specific protection of the coastline	CCH	Regional	New km of coastline protected	Department of Territory and Sustainability (DTS)
Reduction of water consumption in the areas more threatened by drought	2.Restriction of water intense crops in areas affected by drought	CCH	Regional	+ Surface restricted (quantitative)	Department of Agriculture
Improve the efficiency in the location of energy generation centers	3.Identification and location of major infrastructures for energy generation based on territorial factors	EN	Regional	+ New locations decided (qualitative)	DTS / Institut Català de l'Energia (Department of
Minimize the need for transporting energy	4.Promotion of small scale energy generation infrastructure close to urban areas	EN	Municipal	+ New infrastructure created	DTS / municipalities
To facilitate the location of sources for renewable resources and guarantee reservation of certain areas based on territorial criteria	5.Map of wind farms	EN	Regional	qualitative (final realization of the measure)	region /municipality
	6.Map of photovoltaic installations	EN	Regional	qualitative (final realization of the measure)	region /municipality
	7.Map of biomass installations	EN	Regional	qualitative (final realization of the measure)	region /municipality
To ensure provision and efficient layout, taking territorial factors into consideration	8.Identification of corridors for energy transportation and distribution	EN	Regional	qualitative (final realization of the measure)	DTS / Institut Català de l'Energia (Department of
	9.Layout of energy transportation and distribution infrastructure	EN	Regional	Energy Evaluation Plan in the Urban Plans that should be approved	Energy Evaluation Plan in the Urban Plans that should be approved
	10.Environmental requirements for the layout of energy transportation and distribution	EN	Regional	Nº of new developments coordinated	DTS / Institut Català Energia / municipalities
To ensure the viability of the urban developments in energy terms	11.Validation of the viability of energy supply for new urban developments	EN, DEM	Municipal	Energy Evaluation Plan in the Urban Plans that should be approved	DTS / Institut Català Energia / municipalities
	12.Coordination /Programming of new urban developments with energy supply needed	EN, DEM	Municipal	Nº of new developments coordinated	DTS / Institut Català Energia / municipalities
	13.Validation of the viability of energy supply for new infrastructure	EN	Municipal	nº of such facilities created in the municipality	Municipality
	14.Coordination /Programming of new urban developments with energy supply needed	EN, DEM	Municipal	qualitative	Generalitat / municipality
Improve the accessibility of citizens with reduced mobility to basic facilities, avoiding commuting	15.Provision of specific facilities for the elderly	DEM	Municipal	qualitative	Municipality
Foresee the degradation risk of an urban area or its "gethoization"	16.Identification of areas that could be object of regeneration actions	DEM	Municipal	qualitative	Municipality
Ensure efficiency of the land reserved for economic activity	17.Establishment of guaranteed minimum employment levels when initiating development of industrial estates	GLOB	Municipal	Qualitative /quantitative	Municipality
	18.Deciding the location of specific production activities based on spatial factors, in coordination with the Department of Economy	GLOB	Regional	Qualitative	Municipality /DTS/Department of Economy
Ensure the conservation of heritage and its use as a resource for tourism and economic activity, with spatial efficiency criteria	19.Promotion of areas and items of great natural, cultural, visual value as a resource	GLOB	Regional	areas declared of special interest	municipality /region
Ensure coherence of the proposed infrastructure and promotion of productive activities	20.Consideration of the spatial development strategies of neighboring regions	GLOB	Municipal	Qualitative	Municipality

3.3 Additional indicators / information and harvesting expert opinion

The various interviews done to different experts allowed to know better the situation of Catalonia regarding the challenges and to identify areas of cooperation with different institutions in order to gather in a qualitative form the missing information and indicators. The problems found relate to difficulty of establishing a more formal or institutionalized form of cooperation that would allow for a more systematic recollection of data. In this sense, surveys could be an option that needs to be further considered by the relevant stakeholder. Existing studies are another source of information, which was widely used in the realization of the qualitative report and that shed light on many indicators from other areas that could be used in the monitoring of spatial planning. The table in the previous section has analysed the new information needed and which institutions and administrations could provide with such data.

The need to coordinate with other relevant actors of the regional administration with competencies in the issues of globalization, energy, climate change and demography was made evident through the qualitative interviews done. The harvesting of expert opinion took place in 10 semi-structured interviews with representatives of different departments of the Catalan government involved in the challenges and other institutions relevant in them. After the interviews we are now working in establishing more long-term and periodic collaboration with these departments, something crucial to gather most of the indicators identified as missing information (see table 2).

4. Resilience of the spatial planning system

4.1 Strategic capacity of the planning system and relation with the macrochallenges

The Territorial Planning Programme was born with a clear vision: to provide the tools to deal with the territorial challenges that the Catalan region faces and to foster the opportunities it has. This general vision is articulated in three main principles: a compact territory (avoiding sprawl), complexity (of the uses of the territory) and cohesion (avoid segregation). These three principles are used to deal with three basic areas: open spaces, urban settlements and infrastructures. These principles were defined by the Ministry of Territorial Policy and Public Works (currently changed to Ministry of Territory and Sustainability).
This vision was stated by the Catalan Government in 2004 and has guided the regional plans until its completion in 2010. The new government wants to continue this work with the revision of the General Territorial Plan of Catalonia, and in its government plan states that the Catalan territory should have a structure that is efficient, sustainable and with cohesion.
The Partial Regional Plans had a time horizon of 25 years, from 2001 to 2025. The revised General Territorial Plan of Catalonia is expected to be valid until 2050, but this is still in discussion. During the elaboration of the plans there was a revision of the demographic and labour market forecasts that were used by the Programme, just to ensure they were still valid.

The three principles that guided the Territorial Planning Programme were then articulated in 15 more specific principles that have guided all the regional plans. This meant that all plans had to follow these guidelines as a framework to organise its different proposals. The principles referred to issues as favouring the diversity of the territory, to moderate land consumption, to facilitate public transportation, facilitate housing policy, etc. They were inspired in the European Territorial Strategy, and were defined again by the responsible Ministry and even if they were implicitly shared by the Catalan Government as a whole, there was no direct participation of other departments in their definition. Other stakeholders (civil society, other administrations) were not directly involved in the definition of these 15 criteria, but all along the process of drawing up of the different plans there were different participation mechanisms to consider the stakeholder's opinions.

The different plans approved have, as said in the introduction, a marked concern for issues related with the four challenges, but their action is limited to the spatial elements of them.

In the case of climate change, regional plans have the potential for proposals both in prevention and adaptation. In all cases, however, the scope of proposals will be limited, logically, to the territorial component. That is, it will affect those variables related to location, shape or density of elements, while aspects such as efficiency (of people, companies, farms, etc.) in energy or water consumption correspond to other sectoral policies. Because of their physical rather than strategic nature, current regional plans do not include specific proposals aimed at adaptation to climate change, only in an indirect way.

Current spatial planning in Catalonia has not yet exploited the whole range of possibilities for influencing the spatial configuration of energy supply. Territorially, the limited room for manoeuvre results in an inability to influence the infrastructure of energy production and distribution beyond the establishment of spatial requirements that these infrastructures must meet. This is done through the establishment of criteria for environmental adaptation, or identification and delimitation of areas where they must be located.

Spatial planning has addressed demographic issues (basically an increasing population but changes in age and nationality distribution), unevenly, depending on available powers and needs and priorities. Sectoral policies for the ageing of the population and migration have little or no relation to the territorial dimension. This does not mean, however, that spatial planning does not take demographic variables into account when proposals are drawn up. On the contrary, the analysis of the current and future profile of the Catalan population was a factor of special importance in the Spatial Planning Programme of the Generalitat of Catalonia launched in 2004. The Programme was endowed from the moment of its creation with its own tool for forecasting the country's demographic evolution: the V15-CAT model. This model permitted development of various scenarios relating the three main variables considered: the population, the job market and housing. The period of validity is until 2026. The initial assumption is that the independent variable that determines demographic evolution is the dynamics of economic development (evolution of annual GDP) and, more specifically, the part of this that corresponds to an increase in jobs. The demographic dynamics consist of a vegetative and a migratory component. The vegetative component is conditioned by the age profile, and the migratory component depends mainly on jobs that are available, because they are not taken up by the insufficient number of young people already resident.

Use of this model allows us to consider population growth, immigration and age profiles, but it does this for Catalonia as a whole and only refers to smaller territorial areas to propose total population distributions, without taking into account the differences in population locations and characteristics at the local level, let alone the impact that these differences may have.

Regional plans also include measures to combat social segregation, which is one of the fifteen basic criteria behind all the proposals in the plans. However, the measures only establish minimum thresholds for subsidised housing in certain urban developments, with a limited effect on combating social segregation
Regional plans passed in recent years in Catalonia, despite the limitations of their physical approach, include a series of decisions closely related to the promotion and internationalisation of economic activity. Firstly, regional plans ensure that there are sufficient land reserves for productive activity. The lack of a strategic approach, however, means that the plans do not make specific proposals for certain sectors at the expense of others and therefore do not identify specific areas for promoting particular activities. However, each plan, based on the specific region where it is applied and in accordance with the expected evolution of the population and economic activity, described above, and includes various hypotheses for evolution of the sectoral composition of the economy and, on this basis, the need for industrial land and service facilities. This is not a question of which land or facility should be used for a specific activity but rather ensuring that there is a minimum of space available so that economic activities, whatever the sector, can

be carried out. Catalan spatial planning is limited to offering spatial conditions, as the future evolution of economic activities falls outside its scope.

Secondly, along with land reserves for specific activities, Catalan regional plans emphasise the configuration of a system of open, well-articulated spaces. This system is not conceived as a counterpart to the area used for urban development, but as an asset in itself, playing a particularly important role in promoting activities. In a case such as Catalonia, where a large proportion of earnings from abroad comes from tourism, the preservation of areas of great natural value is vital. Along the same lines, there is the identification, preservation and promotion of cultural and architectural heritage.

Thirdly, regional plans identify the transport infrastructure needed to support the activity of each region in particular and the country in general. The layout of the highway network ensures internal access and segregates local and international transport of goods, whether on a large scale by building roads primarily for local traffic (such as the Ronda del Vallès), reducing traffic in the major corridors (AP-7 and AP-2 motorways and the east-west Eix Transversal), or on a smaller scale, by deciding to put major production and logistics centres near high capacity roads. An even greater interest in facilitating transport of goods is the case of rail infrastructure, which as well as providing a passenger service connects the main centres for generation of goods (such as major industrial areas and the ports of the metropolitan area of Barcelona and Tarragona) and provides good connections through the territory. Port and airport facilities, despite being state-owned, are also important, in terms of transport of passengers and goods.

Fourthly, owing to their conceptual framework, the regional plans of Catalonia favour urbanization economies. The model of complex, compact cities, with sufficient access to ensure the operation of the whole network of cities, promotes the diversity and exchange that make it possible for companies with specific urban development needs to prosper. The growing importance of these contextual factors in an increasingly knowledge-based economy is supported by a territorial model based on planning.

4.2 Horizontal and vertical coordination

The level of horizontal integration was medium. In certain issues (as the open spaces) there was a close collaboration between the Department of Public Works and the Department of Environment (that have in the current government been merged into one). The cooperation with the rest of departments and institutions of the Catalan Government (Economy, Energy, etc) was much lower or non existing. The planning system had a very much spatial orientation and it left to the competent department the elaboration of sectoral plans for instance in the area of energy or telecommunication infrastructure.
The vertical integration, especially with lower administrative levels as the municipalities, was better. In the case of the PTMB there was an specific will to have the plan elaborated in close cooperation with the municipalities and local entities of the metropolitan region. A Commission of Territorial Planning was constituted, with 22 members representing the Catalan and local governments. The provincial administration and the state-level administration were invited too to participate in this Commission.

4.3 Cooperation and participation

There is no specific episode or tool to allow cooperation with the private sector in regard spatial planning. If any, there are measures that make compulsory that certain urban developments need to have a minimum threshold for subsidized housing.
The participation and cooperation with NGOs and citizens has been articulated mainly through the processes of public consultations, but this has been somehow a “top-down” approach.

5. Effectiveness of policy bundles

In this section we briefly analyse the main policies and programs that have been developed recently in Catalonia to address the challenges identified by the TPM project. The analysis of these programs and policies has allowed us to identify better the shortcomings of the spatial planning regarding the challenges and also possible ways to include them, as has been explained in section 3.

5.1 Energy

Mandatory energy planning in Spain is limited to the transport networks for electricity and gas, through the document Planning for the Electricity and Gas Sectors 2008 -2016. Development of transport networks, approved in May 2008, whiles other planning serves merely as guidance. In this context, and given the lack of a comprehensive energy plan in Spain, the Spanish Government, in addition to the aforementioned planning for transport networks for electricity and gas, prepared two strategies for two specific aspects of the energy system . First, the National Action Plan for Renewable Energy in Spain (PANER) 2011-2020, approved on 30 June 2010 in response to Directive 2009/28/CE of the European Parliament and the Council, of 23 April, on the promotion of the use of energy from renewable sources. This document establishes basic goals for Spain, particularly that renewable energy should account for 20% of gross final energy consumption by 2020. Previously, on 26 August 2005, the Plan for Renewable Energy 2005-2010 had been passed. Moreover, in November 2003 the Strategy for Energy Saving and Efficiency in Spain (E-4) 2004-2012 had been passed.

In Catalonia, in contrast, within the framework of its own powers, it was decided that there should be a comprehensive energy plan, so in 2005 the Catalan Energy Plan 2006 - 2015 was passed in order to "set out on a path towards a new model based on sustainable development" through promotion "of cleaner and more efficient energy technologies, and taking into account the profound changes in consumption patterns in society". This plan, revised in 2009 and currently pending a new review, is proposed as a mission for moving "towards an energy system with low energy intensity and low carbon emissions, being innovative, competitive and sustainable". In addition to sections for diagnosis and future prospects, the Plan gives details of a series of strategic actions that affect energy saving and efficiency as well as renewable energy, competitiveness, research and technological innovation, and planning of electricity and natural gas infrastructure.

The vision of the Catalan Energy Plan is updated to take into consideration recent changes for instance in economy (economic crisis) and legislation. The revision of the plan in 2009 shows the willingness to keep it updated.

The **main goal of the Catalan Energy Plan is to moderate the increase of energy consumption at the end of 2030**, the final date of the implementation period, and to induce a change of attitude and habits regarding energy consumption. One of the main ways of achieving this goal is the **promotion of renewable energy**, also as a way to reduce the dependence on combustion fuels. Therefore, the Plan is addressing in a direct way some of the challenges identified in the region.

Regarding the **promotion of renewable energies**, initiatives have helped boost these alternative energies in an unequal manner, with **greater emphasis on wind energy and solar thermal energ**y for water heating in housing. For wind energy, its greater profitability has been a decisive factor for growth, but in Catalonia implementation has been more difficult, mainly as a result of greater rigidity in environmental and location regulations for sources of supply. For solar thermal energy, the possibility of regulating use (by making incorporation into new buildings mandatory) has been the main advantage. Meanwhile, photovoltaic

energy is still uncompetitive and other technologies such as cogeneration with biogas, waste recovery or use of biomass are alternatives with a long way to go, especially in Catalonia. In all these cases, existing facilities, besides being few, lack the right dimensions to ensure profitability.
It is worth mentioning, in this regard, the predisposition of the management of the electricity transport network to the incorporation of production from renewable sources. However, in a context of increasing importance for wind energy, transport and distribution will need to cater for new needs, as the sources of supply of such energy are sited and grouped in a very different way to what was previously the case.

Regarding **measures to promote energy saving and increased efficiency**, which receive more emphasis in the Catalan Energy Plan, there are two main lines of action: information and awareness-raising; and actions that have an influence through decisions and specific regulations for the three main vectors of consumption: industry, the residential-tertiary sector and transport. For the first vector, because consumption affects production costs, industry has already gone some way in taking measures to reduce consumption and increase energy efficiency. With regard to the residential-tertiary sector, measures to be taken are on a more detailed level, in urban planning or even building regulations. Finally, the transport vector is where spatial planning can have the greatest impact, through direct decisions on infrastructure and transport services (transferring individual transport flows to collective transport flows) and particularly through organisation of territorial units to reduce the need for travel.

5.2 Climate change

As has been indicated, the analysis of the climate change impacts has been studied by the Catalan Government since 2005, with the elaboration of the 1st and 2nd Reports on Climate Change in Catalonia (2005 and 2010). These documents are part of a wider strategy of the Catalan Government articulated through two formal instruments to address climate change in Catalonia: the Catalan Office for Climate Change and the Interdepartmental Commission on Climate Change.
On 2008 the Interdepartmental Committee on Climate Change endorsed the first version of the Framework Plan for Mitigating Climate Change in Catalonia 2008-2012 and agreed to send it to the Government of Catalonia. The Plan was finally approved in October 2008. Therefore, one can say that the approach is coherent and coordinated.

The vision of the policy strategies is well defined and based on previous research (the Reports on Climate Change). The measures proposed in the Framework Plan for Mitigating Climate Change in Catalonia 2008-2012 are based on the main objective of reducing CO2 emissions in 5.33 million tonnes of CO2 between 2008 and 2012. This objective is coordinated with the Spanish and European objectives of climate change mitigation.

The policies and strategies developed by the Catalan Government to fight climate change can be considered coherent among them, as the explanation of how the different initiatives work will illustrate: The Catalan Office for Climate Change provides technical support to the Interdepartmental Commission on Climate Change6. The Office is responsible for ensuring the implementation of measures against climate change and compliance with the Kyoto Protocol. The Catalan Office for Climate Change opened in February

[6] The contents of this section have been prepared from information provided by the Catalan Office for Climate Change: www20.gencat.cat/portal/site/canviclimatic/

2007 as a formal response, providing administrative and technical reinforcement of actions initiated in 2004 for managing this issue.

The Government of Catalonia agreed on the objectives and the composition of the Interdepartmental Commission on Climate Change, the body that coordinates Catalan Government action in this area. This Commission makes decisions and promotes actions in the Catalan executive to combat climate change and, given its interdepartmental nature; it has broad influence across all areas of government. The Commission's four objectives are:

- Coordinating the actions of the Government of Catalonia to combat climate change.
- Promoting actions across different departments to facilitate adaptation to climate change and reduction of its impact in Catalonia.
- Promoting actions across different departments to reduce emissions of greenhouse gases, which are responsible for climate change.
- Monitoring and assessment of previous actions.

Lastly, this Commission issued the Framework Plan for Mitigating Climate Change in Catalonia 2008-2012, approved by the Catalan government in 2008.

The policy strategy is articulated in the above mentioned Framework Plan. There, specific measures are defined to achieve the three strategic objectives of the plan, articulated through three programmes, which are:

- Programme 1: Reduction in emissions in diffuse sectors, also known as Programme 5.33, as it corresponds to actions outside the market for trading emissions rights and, therefore, the Government has relevant powers. The programme classifies actions into eight basic areas: agriculture, construction and use of housing, the service sector, industry not subject to the Directive, prevention and treatment of waste, transport and mobility, voluntary agreements and pilot offset domestic experiences, and fluorinated gases. For each of these subprogrammes the Plan identifies the departments of the Generalitat of Catalonia responsible for implementing the corresponding actions.
- Programme 2: Support for facilities covered by the Directive on emissions trading, which includes both support to improve production processes and promotion of the progressive introduction of alternative fuels, saving of electricity, reducing emissions in the energy sector and encouraging participation in mechanisms for greater flexibility.
- Programme 3: Actions across different fields for mitigation, including fields such as research, awareness-raising and environmental education, and good practice in public administrations, among other initiatives.

5.3 Demography

The Department of Social Welfare and Family of the Catalan Government is the main responsible for the design and implementation of policies in the area of ageing, immigration and families. Regarding ageing, there is no specific policy document, but there are several measures that try to stimulate the birth rate. There are also policies in the social and health assistance for elderly, but they are not strategic but responding to specific needs (day assistance, care homes, etc.)

Immigration is a much more debated issue, and there have been several documents with strategic policies to manage this topic. The planning, proposals and assessment of policy guidelines on immigration, within the framework of powers of the Generalitat of Catalonia, have been carried out by the General Directorate for Immigration since its creation in 2001. This work was done under three Interdepartmental Immigration Plans: 1993-2000, 2001-2004 and 2005-2008. The last plan issued covers the 2009-2012 period.

In the case of ageing, the policies are oriented, as said to the stimulation of the birth rate. Then, at Spanish level, the recent reform of the pensions system by the Spanish Government answers the need change the parameters to transfer of resources between population age groups, by increasing the retirement age to 67 years of age. It is not obvious the articulation of this policy with other policies or if it is framing regional dynamics in a wider territorial perspective.

Policies specifically to stimulate the birth rate are based on two initiatives: a "universal child benefit" and a "universal benefit for birth, adoption or multiple fostering". Subsidies are very small compared with those of most countries in the European Union, both in terms of duration (three to six years) and amount. Recently the new government has reduced this subsidy only to families with economic problems, in the package of measures to reduce public debt. Alongside this, in 2007 the Spanish Government introduced a grant of 2,500 euros for the birth of a child, in addition to tax relief of 100 euros per month. The so-called "baby cheque" was discontinued in 2011 as one of the measures taken by the Spanish Government in 2010 to reduce the public deficit. Such measures have often been regarded as ineffective for increasing the birth rate, not because of the amount involved, its duration or its universality in benefiting in the same way social groups with very different income levels, but because of the need to combine them with other policies, such as increasing the number of free childcare centres or other measures that could reconcile work and family life.

Regarding immigration, there is a clear vision and objectives based on different plans, agreements and documents that organize the policy strategy. These different instruments are coherent among them as one usually depends on the other. To exemplify this, at the end of the **Third Interdepartamental Immigration Plan 2009-2012**, the Catalan Government and various economic and social partners signed the National Pact for Immigration (19 December 2008) in order to meet the demands on Catalan society of the demographic transformation caused by migration and its consequences. Once the National Pact for Immigration had been signed, approval was given to the current Plan for Citizenship and Immigration 2009-2012. The Plan includes various programmes and actions to be undertaken by all Catalan Government departments.

The elaboration of these plans and pacts have been made in close cooperation with stakeholders, specially local government and NGOs that work since long in the integration of immigrants.

5.4 Globalisation

The most recent explicit policy strategy addressing the globalization challenge is the above mentioned **Strategic Agreement for Internationalisation, Quality of Employment and Competitiveness of the Catalan Economy (AEC)**. This agreement covers the 2008- 2011 period, and is an update of a previous agreement covering the 2005-2007 period.

There is a close relationship between academy and policy regarding this challenge. In the elaboration of the different documents there is the participation of university professors that deal with the scientific coordination of the documents. It is the case, for instance, with the documents elaborated by the Observatory of Foreign Markets. Moreover, the current Minister of Economy and Knowledge is a famous economist and former professor at the University Pompeu Fabra.

The AEC, the Observatory and the agency ACCIO are all concerned with the position of Catalonia in the European and international context, framing correctly the regional dynamics into this wider context. Another issue is whether the policies are sufficient to deal with international dynamics that space the competencies of the Catalan Government.

As mentioned, the different strategies developed by the Catalan government are coherent among them, especially since their unification in the ACCIO agency, created specifically with this purpose of coherence.

The AEC is an agreement between the Catalan Government, the two main trade unions and the major business associations in Catalonia, therefore the main stakeholders in this particular area have been involved in the elaboration of the policy strategy.

The *Strategic Agreement for Internationalisation, Quality of Employment and Competitiveness of the Catalan Economy* (AEC) has seven blocks, addressing seven objectives: innovation and knowledge, training and education, infrastructure, business competitiveness, economic activity and the environment, quality of employment, and social cohesion. Each of these blocks is divided into several lines of action and territories for these are defined where possible. Block 1 includes lines as innovation and technological transfer, R&D, attraction and retention of talent. Block 2 lines include, among others: professional training and university policies. Block 3 includes the promotion of strategic infrastructures and mobility policies. Block 4 wants to simplify administrative procedures for business, develop cluster policy, programs for internationalization, industrial land policy, etc. Block 5 refers rational use of resources and sustainable development and climatic change. Block 6 includes lines as immigration and labour market, occupation policies or model of competitiveness. Finally block 7 refers to the promotion of social cohesion.

The objectives and lines are therefore well articulated and content wise as they have been grouped according to the different lines of actions and goals to achieve.

The AEC establishes for each measure a calendar (between 2008 and 2011) for their accomplishment but there is no specific priorization of the different measures among them. Each measure has a budget assigned that has to be covered by the government department responsible for that measure. For instance, the measure “develop and promote the network of technological transfer in Catalonia”, belonging to the Block 1 has a budget of 23,4 Million Euros. The total budget for the 2008-2011 Agreement amounted to 33.168 M€.

In addition, there is a structure for monitoring the implementation of the measures established. 93% of the 443 measures envisaged in this agreement have been carried out, leaving only 14 incomplete, mainly owing to lack of funding.

As mentioned before the ACE was agreed upon the Catalan government, the main trade unions and the major business associations in Catalonia. There is no involvement so far of NGOs or other private actors in the process.

5.5 Coherence of the content of the objectives and relation with the Spatial Planning

In general, there is a good effectiveness of the different policies addressing the four macro-challenges, with clear objectives and indications for their implementation. However, what is lacking is a higher interdepartamental coordination to identify those objectives and tools that have an inter-thematic character. This also applies to the Spatial Planning program, which objectives coincide very often with those of the policies dealing with demography, energy, climate change and globalization. Moreover, it has been identified how spatial planning can be of great help in the implementation of these objectives, as can be seen in the case of finding available land for new economic developments or alternative energies installations.
In this sense, the revision of the General Territorial Plan of Catalonia, under the direct supervision of the Department of Territory and Sustainability (the stakeholder of this region) is seen as an opportunity to create ways of collaboration with the relevant departments and their policies to better coordinate the inclusion of the four macro-challenges in the proposals and regulations of this new spatial plan.

List of experts interviewed

- **Joan Josep Berbel Sánchez,** Head of the Invest in Catalonia Agency, of the Generalitat of Catalonia.

- **Josep Maria Carrera Alpuente ,** Coordinator of the Territorial Plan of the metropolitan region of Barcelona, Generalitat of Catalonia.

- **Albert Casanova Cebrian,** Programme Head for Energy Planning and Regulation of the Catalan Institute of Energy, Generalitat of Catalonia.

- **Andreu Domingo Valls,** Assistant Head of the Centre for Demographic Studies, Autonomous University of Barcelona.

- **Juli Esteban Noguera,** Head of the Territorial Planning Programme of the Generalitat of Catalonia, 2004 - 2010. Coordinator of the revision work for the General Territorial Plan of Catalonia, Generalitat of Catalonia.

- **Joan Esteve Reyner,** Head of Energy Planning of the Catalan Institute of Energy, Generalitat of Catalonia.

- **Iñaki Gili Jáuregui,** Technical secretary of the Catalan Office for Climate Change, Generalitat of Catalonia.

- **Sandra Jiménez Arteaga,** Coordinator of the Executive Secretariat, ACC1Ó, Generalitat of Catalonia.

- **Gustavo Rodríguez Ferrer,** Head of Energy Infrastructure of the Barcelona Region, Metropolitan Agency for Urban Planning and Infrastructure.

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