

Ulysses

Using applied research results from ESPON as a
yardstick for cross-border spatial development
planning

Targeted Analysis 2013/2/10

Scientific Report for the Final Report

Multi-Thematic Territorial Analysis

of the

Working Community of the Pyrenees

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Chapter 1 – Executive summary

1.1. ULYSSES project in brief

ULYSSES is an experimental and innovative project supported by 18 European border and cross-border areas (hereafter CBA) that aims at using applied research results from ESPON as a yardstick for decentralised cross-border spatial development planning. Within this overall framework, a *targeted analysis* including high-quality, comprehensive and multi-thematic territorial analyses (hereafter MTA), has been performed on six specific CBA across Europe. One of these areas is the Working Community of the Pyrenees (hereafter WCP).

The MTA has focused on the main topics mentioned by Territorial Agenda of the European Union (EU 2006, 2011), namely (i) cross-border polycentric development, (ii) patterns of urban/rural relationship, (iii) levels of accessibility and connectivity, (iv) effects of demographic change (*territorial profile*), and (v-vi) level of attainment of Lisbon/Europe 2020 and Gothenburg objectives by the CBA (*territorial performance*). In parallel, an in-depth statistical analysis focused on the six CBA was performed as well. This analysis included (i) a catching-up analysis; (ii) a principal components analysis, and; (iii) a multiple regression analysis.

Additionally, a comprehensive cross-border institutional analysis has been included as well in every MTA. This analysis captured the diversity of governance frameworks existing within each CBA by paying regard to both the *structural dimension*, i.e. the overall framework that can hardly be influenced by the partners of cross-border cooperation, as well as the *activity dimension*, i.e. the intensity and continuity of institutionalised cross-border cooperation on the regional level.

All the abovementioned activities crystallised in a comprehensive diagnosis for each MTA area that was delivered as an annex to the Interim Report of ULYSSES. On that basis, an integrated analysis taking account of previous inputs was performed at a later stage of the project. From a methodological perspective, this integrated analysis adopted the form of a two-phase SWOT analysis that included (i) a *status-analysis phase* in which the findings derived from previous research tasks were organised and prioritised as main *challenges*, and; (ii) an *action-decision phase* in which a response to each one of the identified challenges was proposed as a potential *strategy*.

Both the challenges and strategies were discussed and eventually validated by stakeholders of the MTA areas. This SWOT analysis is also seen as the main contribution that ULYSSES may do to the Practical Guide that the Association of European Border Regions will develop in the near future.

1.2. Key analysis / diagnosis

Despite its border nature, the demographic indicators observed illustrate a high attractiveness of the CBA. Besides positive natural growth, the CBA has steadily gained population by means of migration and hence shows an overall positive population growth in the observed period. However, a closer look onto the evolution of net migration shows a pretty much skewed distribution of such growth, a steady decrease of net migration since 2005 and a significant drop since 2008.

The distribution of the urban population in the area is centrifugal in respect to the Pyrenees mountain range. The urban system on the French side of the CBA is more polycentric than the Spanish one, essentially due to the absence of a clearly dominant Functional Urban Area (hereafter FUA) such as Barcelona. Focusing only on the confining NUTS3 regions, the Spanish sector seems to rely on a denser network of medium and small-sized towns and cities, making this area more polycentric. French FUAs have more service-oriented economy, while the Spanish FUAs seem to rely more on manufacturing and construction sectors.

From 1990 to 2006, most regions within the CBA lost agricultural surface. The economic trend observed in relation to the agricultural sector suggests a decreasing weight of primary activities in relation to the economy as a whole, both in terms of Gross Value Added (hereafter GVA) and employment.

The analysis of accessibility relies on a set of proxy indicators mainly related to physical accessibility and internet connectivity at European level. Catalonia appears to be the most connected region according to both variables. Accessibility by road clearly shows that the Spanish sector of the CBA is comparatively much more isolated from European core areas than French regions. In terms of rail accessibility, those regions that have performed best are Spanish provinces instead of French departments. Concerning air accessibility, those areas ranked on top of the distribution are the most urbanised regions with international airports within

their boundaries. The most urbanised areas are ranked highest also in multimodal accessibility. Road density proved to be much higher to the French sector of the CBA, while the rail system seemed to be slightly more developed on Spanish regions. Connectivity between Spain and France through the Central Pyrenees is quite a complex issue. Rail lines are not coincident in some cases, and using high capacity roads is only possible on the most Western and Eastern extremes, where the most of the commercial and passenger exchanges take place. Broadband penetration and internet usage is above the European average in all NUTS2 within the CBA.

Concerning the Europe 2020 strategy, the disparities on both sides of the border within the CBA in terms of GDP per capita indexed to the leading region, are weakened if attention is paid onto the confining NUTS3 areas. The catching up analysis illustrates the outstanding position of ES211 Alava which is approaching to the leader, which can be considered as “steady catching-up region” matching London in 30 years time. Midi Pyrenees outstands clearly in total investment in R&D, followed by Languedoc Rousillon and Basque Country and Navarra at the Spanish side. The number of patent applications decreased markedly in both sides of the border in the last year. Social cohesion indicators show certain but not very pronounced disparities across de CBA.

As far as Gothenburg goals are concerned, the CBA is above the EU average in soil sealed areas per inhabitant, below the EU average on ozone concentration exceedances, shows good capacity for urban waste water treatment and shows significant percentage of NATURA 2000 areas. It also shows good values in solar energy resources, and minor and middle sensitivity to climate change regarding physical, social, economic and cultural aspects.

In the light of the results of factor analysis, it can be said that the Pyrenees CBA is characterized by few areas (Barcelona and its surroundings; Vizcaya) that outperform the others economically. It also reveals some important differences between the Spanish and French cross border areas. French Pyrenees CBA shows much higher concentration of public administration work and demonstrates much higher demographic dynamism level than the Spanish regions. Majority of the regions in the WCP are among the leading areas when research, development and innovation intensity is considered. This finding together with rather high level of immigration may imply that there are large expectations for future economic growth in this area.

1.3. Most relevant challenges and opportunities for the WCP

Current demographic trends and unemployment rates pose different challenges to urban and rural settings. **Metropolitan areas** are still subject to population growth and concentrate younger population. This is due to consequence of the changing structure of the economy with its stronger emphasis on services and high-tech and R&D activities, and also due to internal and international migrations.

Instead, ageing, depopulation and decline of economic activities are the main challenges in the **rural settings**. If this is sustained, marginalisation of those settings will be intensified. The foreseen modernisation of TEN-T and high capacity networks will not equally benefit all regions, creating potential bottlenecks in some areas while internal, rural and remote and mountainous areas will be discriminated from main transport infrastructures. A number of environmental challenges (increase of pollution and high sensitivity to climate change and its consequences) are expected in the CBA. A multi-level territorial governance scheme with a clear agenda and verification method is not a fact yet, threatening the entire cross-governance process and increasing the risk of achieving a fragmented view for the area.

It is worth highlighting that economic and social activity can be stimulated in those areas around the aforementioned trends. Population ageing is leading to new business opportunities linked to social assistance and medical research, but also those related to active ageing, such as leisure and tourism. Urban demand and out migration flows from large cities to medium and small towns and rural areas can also bring business opportunities to rural areas. High potential for renewable energy together with largely untouched cultural and landscape assets, as well as unexplored biological resources, make possible the development of a green economy in the WCP.

Existing endowment within all regions is thought to be generous enough as to maintain economic standards and even expand the economic fabric basing on R&D and other investments. In particular, Barcelona MEGA will consolidate its role as a global hub in a globalised economy and the entire CBA can benefit from this fact, especially if Mediterranean and Atlantic corridors are integrated to the 'area of concentration of flows and activities'. A number of smaller urban areas can continue attracting research activities and to link up with the main European and international centres of decision making. In the very remote low-density areas,

innovative communication systems will allow the local populations to be connected to mainstream information and communications.

1.4. Proposed strategies

After the diagnosis of the current status, strategies of different natures around the set of themes addressed by the MTA are suggested to reinforce the position of the CBA and commented among stakeholders. Those strategies are presented shortly after each topic, followed by the main input received from stakeholder during the validation process (particularly on the territorial profile aspects).

1.4.1. Demographic Change

The main global objective identified is to retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts. Several strategies are proposed to this end: (i) the application of family and smart migration policies aimed at retaining demographic dynamism and attracting young population, (ii) the promotion of the integration of minorities, in particular in metropolitan areas, and (iii) the adoption of a proactive approach towards existing social welfare systems. Lastly, (iv) the exploitation of new business opportunities derived from population ageing.

In the light of the mentioned strategies, the links between demographic trends and the overall economic activity and particularly to employment were emphasised during the validation process with stakeholders. Focusing on population settlement and urban-rural relationships, incentives to attract people to rural areas are considered essential by the stakeholders, and the concept of "territorial contract" arises as a potential tool to promote sustainable development and ensure survival of rural areas. Exploitation of emerging activity niches is considered as an essential condition to avoid "excessive" concentration of population and activities in specific urban areas. The stakeholders ended up by highlighting the need for a place-based approach that builds its strategic choices upon intrinsic characteristics.

1.4.2. Polycentric development

The major overall objective identified is to reinforce the polycentric nature of the urban network, through different actions such as (i) the implementation of tailored policies aimed at fostering small and medium urban centres; (ii) the connection of medium and small centres to nodes that give access to globalised markets and knowledge hubs, particularly Barcelona MEGA; (iii) Active territorial policies in order to ensure operative functional relations between smaller centres; (iv) Restrictive policies aimed at preventing further concentration of population and activities in a limited number of cities.

Complementarities among urban centres is regarded as essential and challenging at the same time by the stakeholders, when it comes to its implementation, as it requires a shared vision concerning potentialities and priorities. Urban multi-scale complexity becomes an issue that requires looking at the different scales and their role in the overall urban network in a supportive manner. Micro- centralities, supported by new technologies, can emerge as small nodes and play a significant role in this globalised context according to the stakeholders.

1.4.3. Urban/rural relationship

To achieve a new urban/rural relationship less biased towards the metropolitan domain was presented as the major objective, to be reached by (i) retaining and/or consolidating the existing agricultural and tourism potentials within most productive rural areas. The (ii) search for economic alternatives within the most marginal areas, exploring additional development opportunities related to new urban-rural relationships, such as telecommuting and retirement phenomena. Lastly, (iii) the expansion of the services and infrastructures available within such areas, particularly those related to health, housing, education, (internet) connectivity and multimodal accessibility was regarded as a condition for succeeding in the overall objective.

According to the stakeholders, the focus of policy intervention should be put on the achievement of compatible and simultaneous development of both areas, especially as there seems to exist a great range of intermediate situations between the most isolated rural areas and the urbanised regions.

1.4.4. Accessibility and connectivity

The major goal is to increase overall and internal accessibilities as a means to achieve a more balanced and competitive territorial structure. Specifically, the actions suggested are (i) to consolidate and improve existing communication networks and to emphasise overall multimodal accessibility; (ii) to make an effort to increase internal connectivity within the WCP and solve specific accessibility issues of certain cities and marginalised rural areas. An overall transport plan at the WCP level might help identifying local strategic objectives that could be linked to planned networks, either National or European.

Passengers and freight transport, logistics and the economic development and winter viability prevail as the elements to be addressed by the suggested strategies according to the stakeholders. Accessibility and multimodality become more relevant than in other areas in Europe, due to the mountainous character of this area. In this regard, the reorganisation of the road and rail networks remains an issue, in particular concerning railroad permeability of the Pyrenees through its central regions, which could offer an alternative to road transport.

1.4.5. Lisbon Strategy

To achieve higher living standards and social and territorial cohesion is the overall goal to be reached. The specific strategies proposed are (i) to seek economic synergies and take advantage of existing opportunities (i.e. place-based approach to regional development); (ii) to rethink the development model of the WCP by enhancing (smart) specialization, training, R&D and fostering economic diversity and collaboration, (iii) to offer specific support to the most deprived areas and; (iv) to adopt specific measures to minimise spatial segregation within cities.

1.4.6. Gothenburg strategy

The overall objective proposed was to take full advantage of natural assets while maintaining natural capital constant. To reach this goal, the actions suggested were: (i) wise management of natural resources (ii) to keep natural capital constant, supporting environmental and spatial policies and protecting the natural heritage (Natura2000 network); (ii) to support and apply awareness raising measures towards environment and fight against climate change and its consequences; (iii) to correct localised environmental problems and; (iv) to explore the possibility of investing in new environmental technologies.

1.4.7. Cross-border governance

The major objective was to increase cross-border cooperation to achieve a more balanced territorial development, by (i) consolidating the existing body of territorial cooperation schemes and (re)activating the process towards the production, updating and implementing a shared strategic vision focused on territorial development, and; (ii) reinforcing the existing territorial cooperation schemes in those areas in the need of further harmonisation and shared views, such as spatial planning, working towards common strategic territorial objectives for the area.

1.5. Further steps

The analysis and work realized during ULYSSES project could be considered as a starting point for further research and cross-border cooperation in order to have a wider knowledge of the CBA. The final goal is to support the economic and social development of the CBA as well as promoting and boosting the WCP, as a visible and regarded body.

Although some data gaps were faced, a general overview of the CBA has been reached. Nevertheless, analysis regarding NUTS4 (municipalities) would be highly interesting considering the characteristics of the population distribution. More specific and place-based strategies could be proposed if those data exist.

Political factors and the existence of specific regional interests play a significant determining role. The identification of shared issues and needs and a common vision for the CBA are considered essential for the development of the entire area. The "Strategic Plan for the development of the Pyrenees" carried out by

Navarra, was cited as an interesting and well documented experience that could be considered as an example for a common diagnosis for the development of the Pyrenees. The “Strategy of the Pyrenees” (CTP, Generalitat de Catalunya 2005) could be also further developed and be used to produce the upcoming Cross-Border Cooperation Programme 2014-2020 in order to make possible the use of it to reach the objectives proposed to develop this zone. Adopting a pragmatic position by addressing first the most widely shared action lines becomes essential. This entails a rigorous selection of projects to be implemented in first place, looking at variables such as added value and measurable economic impacts by using reasonable resources.

Chapter 2 – General overview

2.1. ULYSSES project in brief

ULYSSES is an experimental and innovative project supported by 18 European border and CBA that aims at using applied research results from ESPON as a yardstick for decentralised cross-border spatial development planning. Within this overall framework, a *targeted analysis* including high-quality, comprehensive and multi-thematic territorial analyses, has been performed on six specific CBA across Europe. One of these areas is the WCP.

The MTA has focused on the main topics mentioned by Territorial Agenda of the European Union (EU 2006, 2011), namely (i) cross-border polycentric development, (ii) patterns of urban/rural relationship, (iii) levels of accessibility and connectivity, (iv) effects of demographic change (*territorial profile*), and (v-vi) level of attainment of Lisbon/Europe 2020 and Gothenburg objectives by the CBA (*territorial performance*). In parallel, an in-depth statistical analysis focused on the six CBA was performed as well. This analysis included (i) a catching-up analysis; (ii) a principal components analysis, and; (iii) a multiple regression analysis. These analyses have been performed on different scales, so that the indicators of each CBA have been compared on different spatial levels (NUTS III, cross-border, national and EU27/ESPON levels). The data used in the analyses basically included ESPON datasets (e.g. morphological urban areas) and EUROSTAT indicators (e.g. demography indicators), together with additional information provided by local stakeholders.

Additionally, a comprehensive cross-border institutional performance analysis has been included as well in every MTA. This analysis captured the diversity of governance frameworks existing within each CBA by paying regard to both the *structural dimension*, i.e. the overall framework that can hardly be influenced by the partners of cross-border cooperation, as well as the *activity dimension*, i.e. the intensity and continuity of institutionalised cross-border cooperation on the regional level.

For the sake of simplicity and applicability, the *structural dimension* included factors like (i) the political status of the border (e.g. EU membership / historicity, Schengen status); (ii) the planning system (i.e. the planning culture family); (iii) the physical status (e.g. geomorphology), and; (iv) the language barrier (i.e. number of languages existing in the area). These domains have been combined in a synthesis score that allows saying if the borders function as *separation*, *interface* or *link*. In contrast, the *activity dimension* has taken account of: (i) the historicity of cross-border cooperation in general (i.e. earliest founding date of cross-border cooperation); (ii) the maturity of cross-border cooperation (i.e. INTERREG III participation); (iii) the institutional thickness in cross-border cooperation (i.e. number of permanent institutionalisations); (iv) the current activity in terms of European Grouping for Territorial Cooperation projects; (v) the cross-border spatial development on regional level (e.g. joint GIS tools), and; (vi) the existing cross-border transport projects (e.g. TEN-T corridors crossing the border). These domains have been combined in a synthesis score that classified the borders function as *integration*, *cooperation* or *separation*.

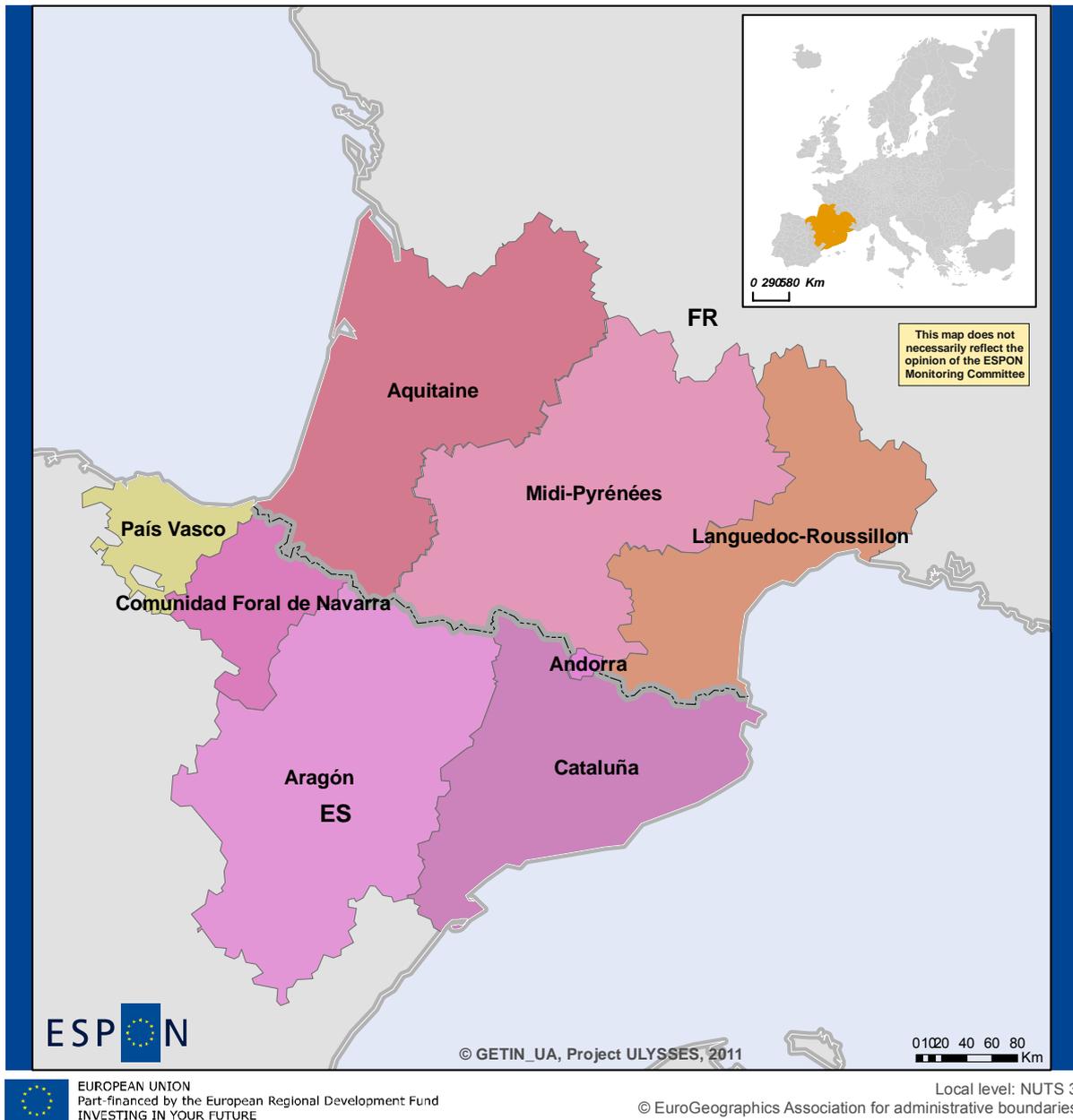
All the abovementioned activities crystallised in a comprehensive diagnosis for each MTA area that was delivered as an annex to the Interim Report of ULYSSES. On that basis, an integrated analysis taking account of previous inputs was performed at a later stage of the project. From a methodological perspective, this integrated analysis adopted the form of a two-phase SWOT analysis that included (i) a *status-analysis phase* in which the findings derived from previous research tasks were organised and prioritised as main *challenges*, and; (ii) an *action-decision phase* in which a response to each one of the identified challenges was proposed as a potential *strategy*.

Previous ESPON scenarios developed by ESPON 3.2 (ESPON n.d.) were taken into account as well while defining the opportunities and threats linked to any given CBA. In fact, the opportunities and threats identified in the aforementioned research work were contrasted with the scenarios developed by ESPON 3.2. Concretely, (i) the Baseline / trend scenario; (ii) the Danubian Europe / cohesion-oriented scenario, and; (iii) the Rhine-Rhone Europe / competitiveness-oriented scenario and their implications for the CBA under analysis were taken into account while designing the final opportunities and threats.

Both the challenges and strategies were discussed and eventually validated by stakeholders of the MTA areas. This SWOT analysis is also seen as the main contribution that ULYSSES may do to the Practical Guide that the Association of European Border Regions will develop in the near future.

2.2. General overview of the area

The WCP is composed by Spain (ES), France (FR) and Andorra (AD) countries, is produced by the 686.7¹ km borderline length between the three countries. The WCP is located at the North-Eastern part of Spain and the Southern part of France (Figure 1.1.). It comprises seven (7) NUTS2 administrative regions (ES21 País Vasco, ES22 Comunidad Foral de Navarra, ES24 Aragón, ES51 Cataluña, FR61 Aquitaine, FR62 Midi-Pirénées and FR81 Languedoc-Roussillon) and Andorra.

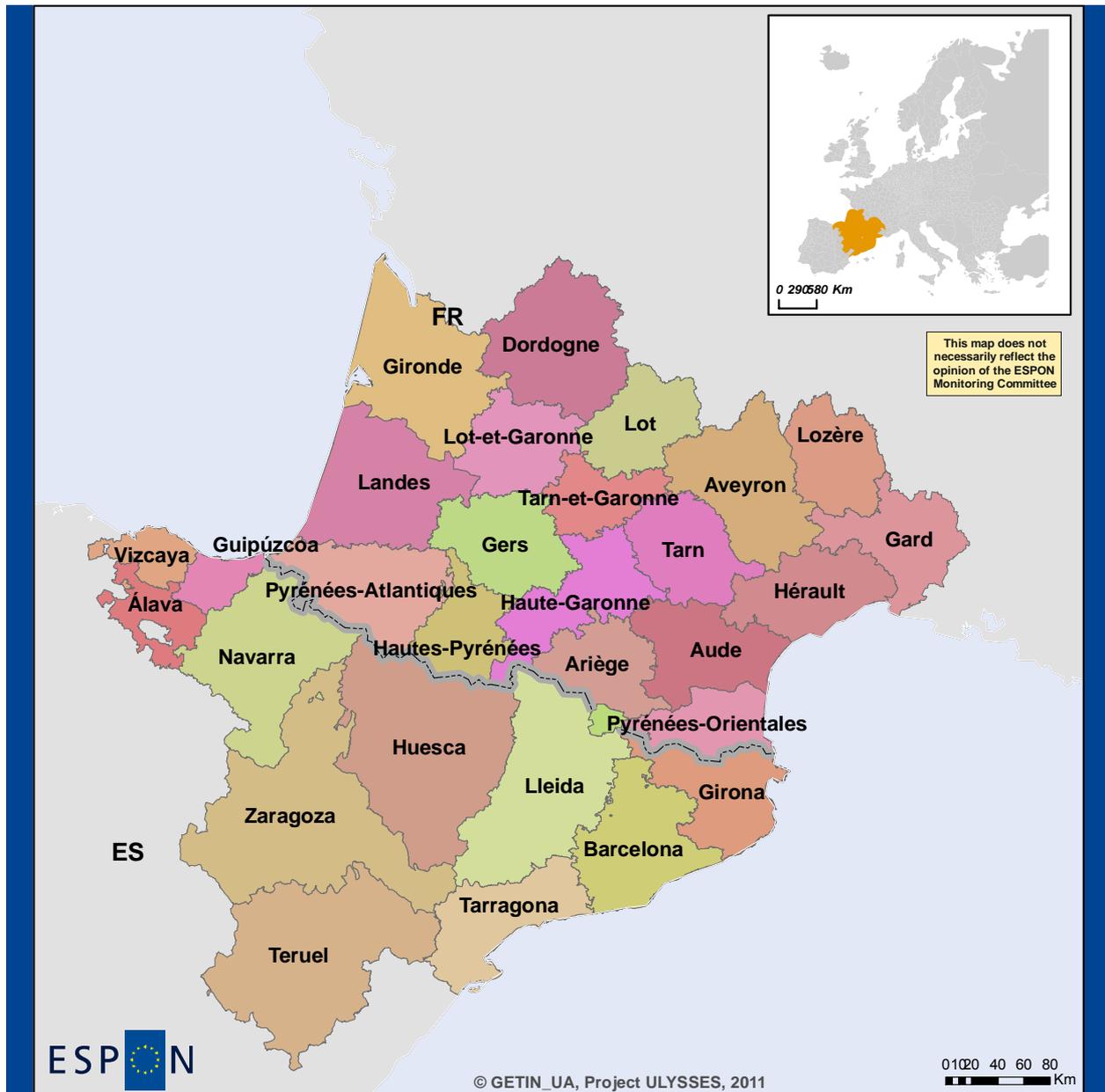


Map 1 NUTS2 level units of the WCP

The CBA occupies a total area of 211.959 sq km. Aragón, which covers an area of 47.720 sq km (i.e. 22.51%) and Midi-Pirénées which covers an area of 45.348 sq km (i.e. 21.39%) are the largest regions

¹ ES-FR: 623
AD-FR: 56.6
AD-ES: 63.7

(NUTS 2 level) in the CBA. These regions are closely by Aquitaine and Catalunya, which cover an area of 41.308 sq km (i.e. 19.49%) and 32.113.4 (i.e. 15.15%) respectively. Comunidad Foral de Navarra and País Vasco are the smallest regions in the CBA with 10.390.4 (i.e. 4.9%) and 7.235 (i.e. 3.41%). Each NUTS2-level is further divided into a number of NUTS3 level administrative districts: 11 NUTS3 administrative districts (provinces) in Spain and 18 NUTS3 administrative districts (departments) in France. Zaragoza (ES243) is the largest NUTS3 level unit of the CBA, occupying 17.274.5 sq km and Gipuzkoa (ES212) the smallest one occupying 1.980 sq km (Table 1.2)



Map 2 NUTS3 level units of the WCP

Chapter 3 – Demographic analysis

3.1. Concept and definition

This chapter aims to identify the behaviour of the cross-border region in terms of population spatial distribution and temporal dynamics. The main objective is to understand the influence of the border on the settlement and population patterns of the CBA. The key questions to be answered are: Which is the demographic situation in the CBA (i.e. fertility rates, life expectancy, health status/disabilities, population growth)? How to enhance the position of the CBA in the EU, in particular those of the NUTS3 areas along the Pyrenees and attract population? High quality of life, sustainable development opportunities and potential to attract new economy activities are outlined as some of the strengths of the area for that purpose. Which are the effects of an increasingly ageing society on the provision of services of public interest (e.g. administration, childcare, healthcare & educational services, public transport, waste disposal and management, freshwater provision and sewage treatment, post, etc.)?

3.2. Main demographic trends in the Working Community of the Pyrenees

In order to answer to the above questions, a set of indicators have been analysed, namely the CBA's total population; the population growth; commuters to other regions and other countries; the population density; the total and partial dependency rates; the ageing index; and the fertility rates. This chapter is oriented to highlight the major trends according to those indicators.

3.2.1. Total population

The total population in 2009 of the WCP was 20.115.885 inhabitants. This population represents approximately 4% of the total EU27 population. The population settled in the Spanish sector of the CBA represents 24.78% of the total population in Spain, the French sector represents the 13.48% of the total population in France (64.369.147 inhabitants). Cataluña is the most populated region in the CBA with 7.290.292 inhabitants, 36.24% of the total population of the CBA. Comunidad Foral de Navarra and Aragon (the largest region in terms of surface occupied) are the less populated regions in the CBA with 614.526 (3.055%) and 1.313.735 (6.53%) inhabitants respectively. A closer look at NUTS3 level units shows a significant concentration of population in Barcelona with 5.345.603 (26.57%) inhabitants. The population of border NUTS 3 areas represents 26.81% of the total population of the CBA.

3.2.2. Population density

Population density in the CBA (128.45 inhabitants per sq km) is significantly higher than the mean value of Spain (90.57) and France (101.72) and slightly higher than the EU27 value (116). Population density is higher in the Spanish sector of the CBA than in the French one, where Gironde and Haute Garonne are the only regions that exceed the CBA average, with 143.42 and 195.62 inhabitants per square km respectively. Population density appears mostly affected by the existence of urban centres as well as other determinants factors such as intensity of industry, being Barcelona and Bizkaia the regions with highest density. Mean population density of the CBA has increased from 116.26 inhabitants per square km in 2002 to 128.45 inhabitants per square km in 2009. Density in NUTS3 regions along the border is lower than the CBA average.

3.2.3. Population growth

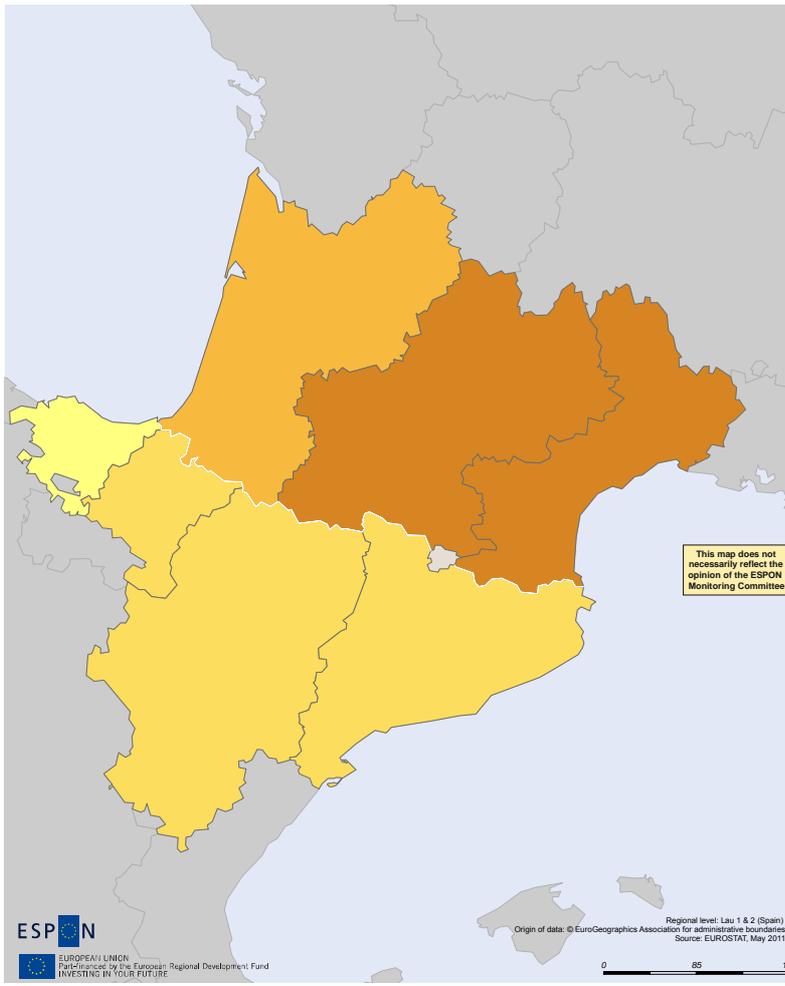
Population growth is the change in CBA's population over time. Overall, the WCP increased its population by 2.186.665 or 12.20% from 2000 to 2009. This growth almost doubles the population growth in France, (6.32%) but is below the Spanish value (14.43%). It is also by far above the EU27 population growth (3.51%). The Spanish side of the CBA as a whole increased its population in a greater manner (13.21%) than the French one (10.56%), while population growth has been particularly concentrated in larger regions, such as Barcelona and Midi-Pyrénées, together with Andorra.

Annual population growth rate has been used to undertake a deeper analysis at NUTS2 and NUTS3 level. Annual population growth rate is defined as:

$$\text{AnnualGrowthRate} = \left(\frac{V_{(tn)}}{V_{(t0)}} \right)^{\frac{1}{tn-t0}} - 1$$

Where $V_{(t0)}$ represents the original value, $V_{(tn)}$ the final value, and $tn - t0$ the time interval measured in years.

Every region in the CBA shows positive annual population growth rates in the analysed timeframe. Cataluña and in particular Girona (3.22%), Lleida (2.06%) and Tarragona (3.32%) are the Spanish CBA regions at NUTS3 level, where population has grown more intensely than in Spain (1.51%) as a whole. On the contrary, Bizkaia (0.16%) is the region with the lowest annual population growth. In France, Dordogne (0.58%), Aveyron (0.48%), Hautes Pyrenees (0.29%) and Lozère (0.49%) are the only regions where population has grown less than at country level (0.68%).



Legend
Total fertility rate 2008, NUTS 2

< 1,34	1,85 - 2,09
1,35 - 1,59	2,1 - 2,34
1,60 - 1,84	> 2,5

Map 3 Total fertility rates on NUTS2 level units (year 2008)

end of her childbearing years and bear children in accordance with current age-specific fertility rates. Fertility rates are reported only at NUTS2 level unit. Fertility rate in the French sector of the CBA is higher than in the other side (partly encouraged by the French government programmes), being 1.64 the mean fertility rate for the overall CBA. But still, fertility rates in the three French side of the CBA are below the country average (2.01). País Vasco exhibits the lowest fertility rate in the CBA (1.32 in 2008) followed by Aragon (1.45). Languedoc-Roussillon is the region with the highest fertility rate in the CBA (1.96). The temporal evolution of fertility rates at NUTS2 level for the period 1997 – 2008 shows a gradual increase of these rates in all regions of the CBA.

Population growth (ΔP) is determined by four factors, births (B), deaths (D), immigrants (I), and emigrants (E). Population growth may be determined using a formula expressed as:

$$\Delta P \equiv B - D + I - E$$

Net migration (immigrants-emigrants) is the main responsible for the population increase in the CBA and all the regions within it in both sides of the border. 16 regions at NUTS3 level out of the 29 that form the WCP show negative natural increase, while all of them show positive net migration. However, a negative trend of net migration is observed in every French region within the CBA but Tarn-et-Garonne, as well as in Barcelona, Bizkaia, Guipuzcoa and Álava / Araba / Araba. The significant decline of natural net migration in Barcelona in 2008, which dropped from 68 097 in 2007 to -18 148 in 2008, deserves to be mentioned.

3.2.4. Fertility rates

Total Fertility Rate represents the number of children that would be born to a woman if she were to live to the

3.2.5. Dependency ratios

The average proportions of total population of the CBA in the three age classes (0-14; 15-64; over 65) are as follows (2009): 15.48% between 0 and 14 years old, 64.77% between 15 and 64 years old and 19.75% over 65 years old. Similar proportions are found in the border NUTS 3 regions. The proportion of population over 65 years old in the CBA is higher than the country averages (16.65% in Spain and 16.50% in France). At the same time, the population in this age class is even higher than the CBA average in 16 NUTS3 level regions (out of the 29 that form the CBA). Population aged between 0 and 14 years old in every Spanish NUTS3 level region is lower than the average for the CBA (15.48%). On the contrary, population aged between 0 and 14 years old is over the CBA average in all the French NUTS 3 level regions, but Dordogne, Lot, and Hautes Pyrenees. However, they are all below the country average in France (18.51%).

The total demographic dependency ratio is the ratio of the combined youth population (0 to 14 years) and senior population (65 or older) to the working-age population (15 to 64 years). It is expressed as the number of “dependents” for every 100 “workers”:

$$\text{Total Dependency Ratio} = \frac{(\text{Number of people aged } 0-14) + (\text{Number of people aged over } 65)}{(\text{Number of people aged } 15-64)}$$

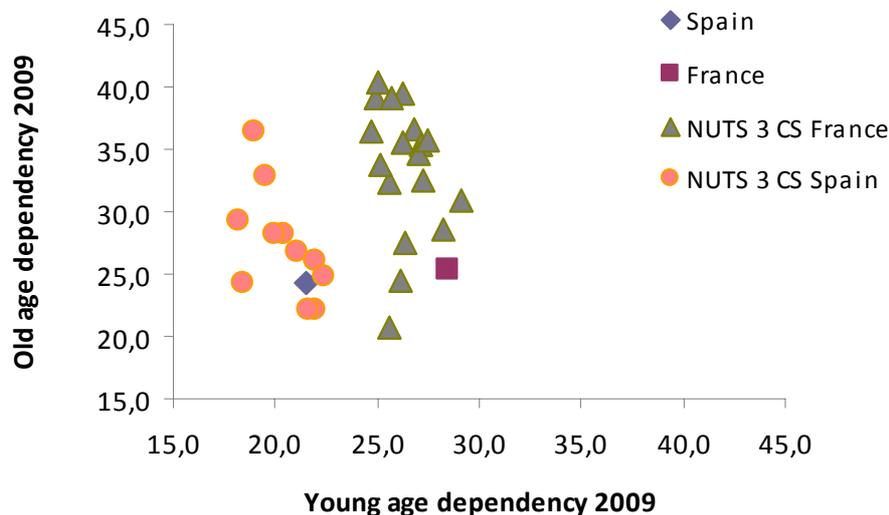


Figure 1 Scatter diagram of child vs. aged dependency ratios for year 2009 in WCP

Old age dependency varies significantly among regions in both sides of the border. This rate varies from 22.2% to 32.8% in the Spanish NUTS3 regions, while they vary from 20.7% to 39.4% in the French ones. Young age dependency just varies from 18.2% to 22.4% in the case of the Spanish regions and from 24.7% to 29.2% in the case of the French regions, showing that the French regions at NUTS3 level are more young age dependent than the Spanish ones. The majority of the regions are more old age dependent than their corresponding county average.

Chapter 4 - Polycentric Development

4.1. Concept and definition

According to ESPON 1.1.1 (ESPON, 2005 p. 37), polycentricity is a self-explanatory concept, as opposed to monocentricity, on the one hand, and dispersal and sprawl on the other. The concept has a twofold dimension with two complementary aspects: (i) morphological, i.e. the physical distribution of urban areas in a given territory, including the number of cities, their hierarchy and distribution, and; (ii) relational, referring to the functional links between the urban areas, i.e. the networks of flows and cooperation.

The morphological dimension operates more at the European, national and upper-regional scales. At these levels polycentricity occurs when the urban system is characterised by several cities at different levels, rather than just being dominated by one city. At the regional or local scales polycentricity occurs when two or more cities have complementary functions allowing them to co-operate and act jointly as a larger city. This means that polycentricity is a scale-dependant concept, assuming different meanings at each level (ESPON, 2005).

4.2. Cross-border polycentricity

According to ESPON 1.4.3 (ESPON, 2007) and to our own estimates², the WCP shelters 60 FUAs over 20.000 inhabitants. The FUAs have been defined by ESPON 1.1.1 as a municipality (or a cluster of municipalities forming an urban agglomeration) and its related labour basin. The FUAs found in the WCP are distributed almost equally on both sides of the border: France shelters 31 of them and Spain the remaining 29. However, in terms of population the Spanish FUAs have a bigger overall weight than the French ones. According to 2006 figures, almost 9.6 million people (61% of the total) resided in Spanish cities, as compared to the 6.2 million people (39% of the total population) dwelling within the French sector. This can be almost entirely related to the weight of Barcelona urban area, which accounts for almost half (46.3%) of the population residing in the FUAs falling to the Spanish side of the border, and to almost 30% of the entire urban population of the WCP.

All the FUAs in the CBA are distributed in a peripheral position, being the central sector occupied by the Pyrenees mountain range. The orientation of the Pyrenees chain imposes constraints not only on the distribution of the population over the area, but also on the flows of diverse nature that secularly have been concentrated on both extremes of the mountain chain, to the detriment of the central area. Indeed, the distribution of the urban centres is highly conditioned either by the slopes found in most sectors of the CBA as well as by the elevation itself, both of which act as major obstacles for urban development.

As a result of natural conditions, it can be evidenced that the distribution of the FUAs (as well as the urban population in general) clearly shows a triangular distribution pattern along three well-defined axes³: (i) the Garonne-Adour corridor; (ii) the Ebro corridor, and; (iii) the Mediterranean corridor. However, these corridors do not show comparable development in all section, as several gaps and lacks of continuity can be observed both in the Spanish and French sectors, particularly in the internal areas. All in all, and due to the influence of Barcelona FUA, the most urbanised axis in the CBA is the Mediterranean corridor (Tarragona-Montpellier) accounting for over 50% of the FUAs' overall population (51.2%), followed by the Garonne-Adour corridor (accounting for 27.5% of the population) and the Ebro strip (21.4% of the total population).

4.2.1. Morphological polycentricity

Size Index

² Any FUA has been considered to be part of the CBA (defined at NUTS2 level) if more than 60 % of its area is overlapping with that the CBA. The FUA have been ranked according to the estimated population in the year 2006. No FUA has been defined for Andorra, as no national FUA classification could be found for this country.

³ The axes have been defined as follows:

- Garonne-Adour corridor: Agen, Albi, Bordeaux, Arcachon, Auch, Bayonne, Bergerac, Cahors, Carcassonne, Castres, Libourne, Millau, Montauban, Mont-de-Marsan, Pau, Périgueux, Rodez, Tarbes, Toulouse, Villeneuve-sur-Lot.
- Ebro corridor: Bilbao, Donostia-San Sebastian, Durango, Eibar, Huesca, Mondragon o Arrasate, Pamplona, Tortosa, Teruel, Tudela, Vitoria-Gasteiz, Zaragoza.
- Mediterranean corridor: Agde, Alès, Barcelona, Béziers, Blanes, Girona, Cambrils-Salou, Figueres, Igualada, Lleida, Lunel, Manresa, Mataro, Montpellier, Narbonne, Nîmes, Olot, Perpignan, Pineda de Mar, Sant Pere de Ribes, Sète, Sitges, Tarragona, Valls, Vendrell, El, Vic, Vilafranca del Penedès, Vilanova i la Geltrú.

The first prerequisite of polycentricity is that there is a balanced distribution of large and small cities. The most commonly used indicator used to operationalise this concept is the *rank-size distribution* of the urban centres. The size of each city is measured by its population and the city with largest population has rank 1. the second rank 2. and so on. In general terms, the slope of the rank-size equation, given by the estimated β , indicates the level of hierarchy of the urban system, and thus the level of polycentricity within a region: the lower the absolute value of estimated β , the higher the level of polycentricity. If the so-called *Zipf Law* holds, the largest city in a region would be twice as large as the second, three times the size of the third..., and the slope of the rank-size equation would be -1.

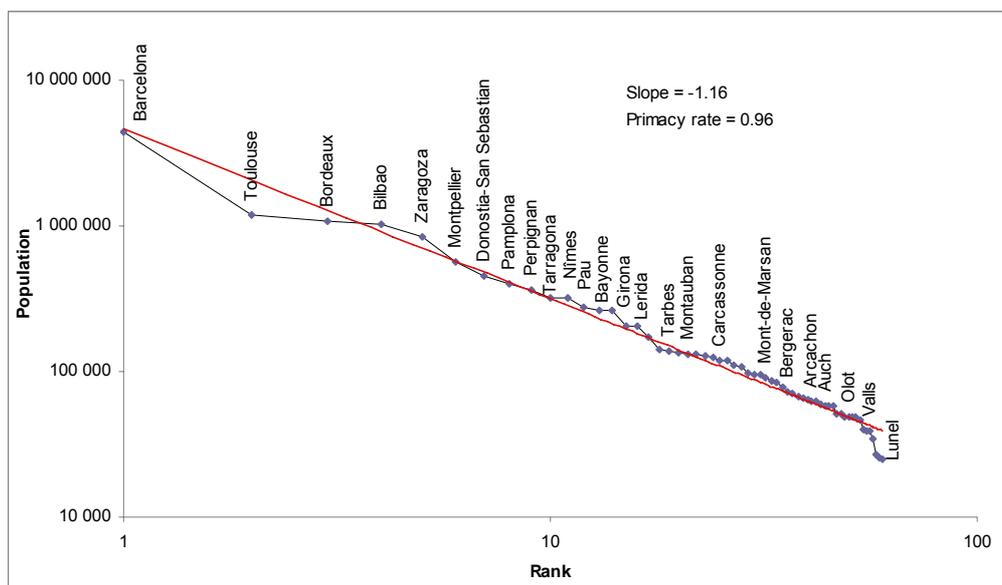


Figure 2 Scatter Rank-size distribution of the FUA population within the Pyrenees CBA (year 2006)⁴

For the entire ESPON space, $\beta = -1.0521$, which is very close to the value corresponding to the Zipf's law regularity. Equally to the ESPON area, in the Pyrenees CBA the rank-size distribution is also quite compatible with the Zipf's Law, being the slope of the regression equation -1.16. However, the distribution of the population among the FUAs seems to be more hierarchical than it could otherwise be due to the weight of Barcelona. This is confirmed by the *primacy rate*, which measures the degree to which the size of the largest city deviates from the regression line of the rank-size distribution of a given region, considering all but the largest city. The primacy rate is interpreted as population dominance. Regions in which one big city dominates the city system tend to have primacy rates with values above 1 or close to that figure. The opposite holds true for more polycentric regions. In the WCP the resulting primacy rate is 0.96, as compared to 0.14 in ESPON area.

In comparative terms, the Spanish cities found to the upper half of the rank-size distribution are bigger than the French ones. Not only Barcelona is much bigger than Toulouse, but also Zaragoza is meaningfully more populated than Montpellier (rank 3), San Sebastian is bigger than Perpignan (rank 4), Pamplona than Nîmes (rank 5) and so forth. The only exception to this general trend is Bilbao, which is slightly smaller than Bordeaux, on rank 2. Morphologically speaking, this suggests that the French sector of the CBA holds a stronger polycentric structure of its urban network. What is more important, the French FUAs to the lower end of the rank-size distribution are generally bigger than the Spanish ones, generating a more balanced distribution based on a denser network of small and medium-sized cities (hereafter SMC). As it has been previously argued by previous ESPON 1.4.1 project (ESPON, 2006), a stronger network of SMCs can contribute to the achievement of a more balanced territorial development and boost territorial performance.

However, focusing on those FUAs located in NUTS-3 regions over the France-Spain-Andorra border, all the smallest cities in this area belong to the Spanish sector. From this two conclusions can be drawn: Firstly, in contrast with the overall trend observed in the CBA as a whole, the sheer Pyrenean domain seems to adopt a more polycentric urban structure on the Spanish sector than on the French side, relying on a well developed network of medium and small -sized cities and towns. Secondly, the French area is allegedly

⁴ Own elaboration based on ESPON FUA database.

more ruralised in this sector in comparison to the Spanish one, as no urban centre adds up enough population to be considered a FUA. In fact, *microcentralities* play in the Pyrenean domain a major role in terms of territorial articulation. SMC such as Aoiz, Jaca, Ainsa, Benasque, Vielha, Naut Aran, Sort, La Seu D'Urgell, Bellver de Cerdanya, Puigcerdá, Bagá and Ripoll, in the Spanish sector, and Oloron, Lourdes, Bagnères-de-Bigorre, Foix-Pamiers, Ax-les-Thermes and Le Boulou, in the French sector, have been neglected by the FUA analysis and would require further and specific analysis in order to capture their relevant role within the mountainous area.

An additional perspective is given by comparing the actual rank-size distribution of all FUAs with their expected distribution if the CBA would follow the rank-size distribution of the ESPON countries taken as a whole. This exercise shows as the expected population of the primacy city is expected to be less than a half of Barcelona's present size (2 291 519 instead of 4 435 116), while there would be 73 FUAs instead of 60. These figures suggest that the WCP holds a more hierarchic and a less developed urban network in comparison with ESPON space. What's more relevant, the comparison suggests that the aforementioned lack of articulation of the urban network is particularly acute to the lower end of the rank-size distribution, where a number of FUAs 'are missing' and the existing ones are smaller than expected. Over the long run, this might bring about negative consequences on the territorial performance of the area, particularly on the rural areas served by smaller FUAs, such as (i) a potential isolation and exclusion of the least accessible areas; (ii) a weaker economic performance in general; (iii) inability to unlock local economic potentials and thus to improve the development perspectives, and ultimately; (iv) depopulation and social stagnation.

Location Index

The second prerequisite of a polycentric urban system is that its centres are homogeneously distributed over the territory. The *Gini coefficient of the Thiessen polygons* is a measure of how the FUA are spaced throughout the region: a number closer to 100% means greater inequalities in the FUA distribution while lower percentages means the FUA are more evenly spaced. As stated by the ESPON's 1.4.3 Final Report (ESPON 2007. p 230) this indicator should be understood as a way to evaluate whether the minimum amount of services that an urban agglomeration can provide is accessible throughout the region. From a WCP perspective, the Gini coefficient results 34.1, with strong internal differences. Indeed, the service areas show a more skewed distribution among the Spanish FUAs, in contrast to the French sector, where the differences in size between service areas are smaller. Analogously, the Mediterranean corridor and the Basque region have a denser network of FUAs than the remaining internal areas.

4.2.2. Functional polycentricity

Similarly to population, a quite straightforward measure indicative of the distribution of economic roles of the FUAs across any given area is the rank-size distribution of the sum of goods and services produced. From this perspective, the slope for the GDP rank-size regression line is slightly bigger than the one obtained from the rank-size distribution of the population, suggesting a somewhat more concentrated distribution of the economic production and wealth in comparison to the population. The most dynamic FUAs are located over the main corridors, and the slope of the regression line is smaller in the French sector than in the Spanish one, depicting a more polycentric structure of the economic centres within the French area.

Another subject that deserves attention is the ranking alteration observed on the upper end of the regression line. Generally speaking, it can be observed a comparatively more dominant role of the Spanish FUAs in comparison to the French ones. While for the population distribution Bordeaux holds position 3 and Bilbao stands on rank 4. both FUAs exchange their ranks in terms of GDP. The same can be said about Montpellier and San Sebastian on ranks 6 and 7. Vitoria-Gasteiz, also in Spain, hops from position 14 in terms of population to rank 10 in terms of GDP. Tarragona, Mataro, Vic and Blanes also rank higher in the GDP distribution than in the population graph. It goes without saying that the French FUAs follow an opposite trend. Cities like Montpellier, Perpignan, Nîmes, Tarbes, Albi, Périgueux and Agen rank lower in terms of GDP than of population. Allegedly, the potential explanation for this asymmetric behaviour might be either (i) a higher weight of the Spanish FUAs in absolute terms (ii) a more spatially dispersed pattern of production on the French sector of the CBA, including also rural areas, or a combination of the two.

Given that the data used to build the functional polycentricity indicators have been extrapolated from NUTS-3 to FUA2 level by the research team responsible for completing the ESPON FUA Database in the assumption that economic activities distribute homogeneously over the territory, which is a bold assumption, much care has to be put while interpreting the available figures. In general terms it can be said that French FUAs have more service-oriented economy than the Spanish ones, whose economies seem to be more linked to secondary activities, remarkably to building and construction sectors.

Chapter 5 - Urban-rural relationships

5.1. Concept and definition

As in ESPON 1.1.2 - *Urban-rural relations in Europe*, (ESPON, 2003) urban-rural relationships are understood in Ulysses in terms of the comparative evolution of the two, thus as urban opposed to rural in the sense that the former compromises the very existence of the latter, or at least severely modifies its nature.

5.2. Urban-rural Typology

Regional typologies basing on a set of indicators have been one of the most used tools across all ESPON projects. The urban-rural typology developed in ESPON 1.1.2 was built basing on land cover, population density and status of the leading urban centre of each NUTS3 area (i.e. the presence of a MEGA). Depending on how those indicators combine in any given area, NUTS3 were classified into High / Low urban influence and High / Medium / Low human intervention. Another mainstream urban / rural classification has been developed by Eurostat basing on a pre-existing OECD methodology. This classification divided European NUTS3 regions into predominantly rural, predominantly urban and intermediate regions.

At the WCP level, both typologies are almost coincident as far as Eurostat's predominantly urban regions class is concerned. In this case, all NUTS3 regions but Zaragoza are classified by ESPON 1.1.2 as having high urban influence and high human intervention. However, in some regions internal differences are relevant, with strong contrasts between the more rural domain and the urban agglomerations. A number of more complex and difficult to interpret situations can be found for those regions classified by Eurostat as either intermediate or predominantly rural.

Focusing only on the confining NUTS3 regions of the CBA, only Gipuzkoa, located at the most western end of the tri-national boundary, and Haute-Garonne, on its centre, are classified as urban regions by Eurostat and ESPON. Four additional regions are classified as intermediate areas by Eurostat, of which three (Pyrénées-Orientales, Navarra and Gerona) under low urban influence and low human intervention, and only one under low urban influence and medium human intervention (Pyrénées-Atlantiques). The four remaining regions (Hautes-Pyrénées and Ariège in France, and Huesca and Lleida in Spain) are rural regions under low urban influence and low human intervention.

5.3. Land use data

Land cover and land use data provide insights on the comparative evolution of the urban and rural phenomena. In combination to other demographic and economic data, this indicator informs about the urbanising patterns in a given territory, quantifying urban sprawl and thus the degree to which any area is actually loosing agricultural fields and potentially valuable rural landscapes. As far as the agricultural dimension is concerned, land cover data also inform about the productivity of any given agricultural system.

The land cover analysis performed in Ulysses has relayed on CORINE Land Cover (CLC) datasets of 1990, 2000 and 2006. According to the analysis, the most agriculturally oriented regions are those regions to both sides of the border where the main water channels are found, especially the landlocked French regions alongside the Garonne River (Gers, Tarn-et-Garonne, Lot-et-Garonne and Haute-Garonne). Following, some other French and Spanish "riverside" NUTS3 regions hold more than 50% of their territories occupied by agricultural fields. These are Tarn, Zaragoza, Aveyron, Dordogne, Tarragona and Pyrénées-Atlantiques.

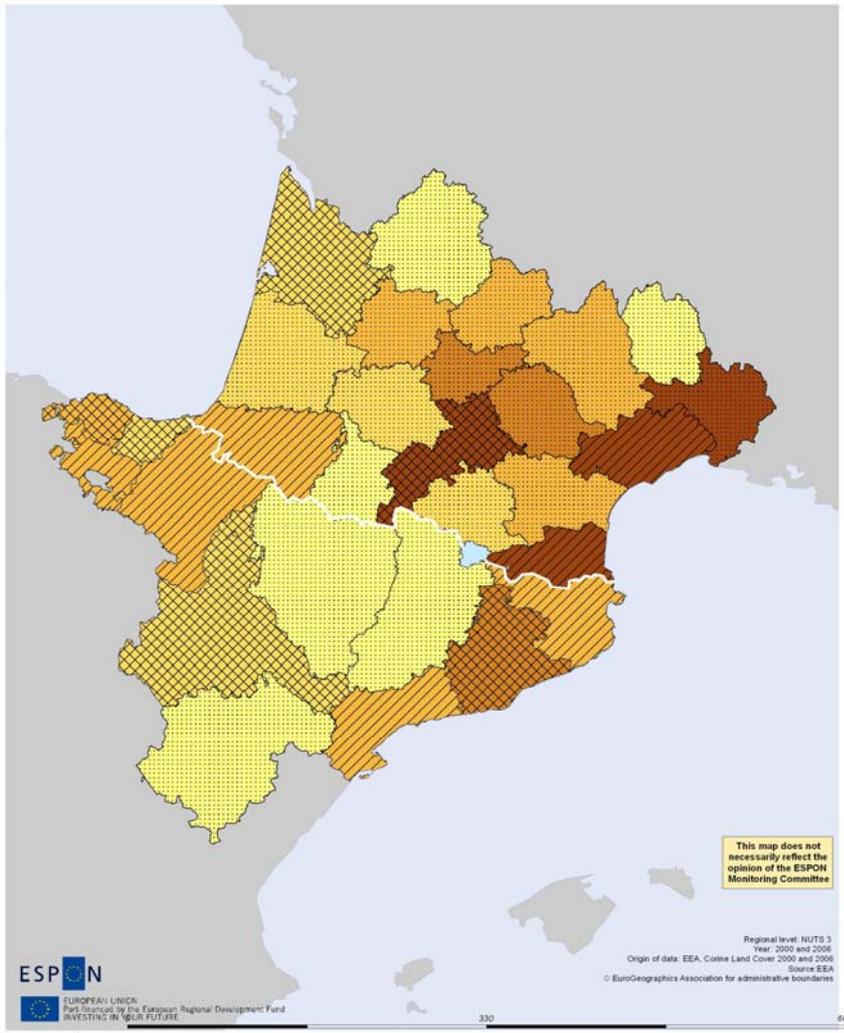
The analysis also showed as from 1990 to 2006 most regions within the CBA lost agricultural surface at a sustained pace, predominantly within the largely urbanised regions to both sides of the border, like Gard, Álava / Araba, Haute-Garonne, Navarra, Gipuzkoa, Bizkaia, Barcelona and Pyrénées-Orientales. Only some French Departments, namely Lozère, Landes and Aveyron showed annual increase rates on agricultural land cover.

Under an urban-rural perspective, the analysis proved as from 1990 to 2006 most regions within the CBA transferred agricultural lands to urban fabric at a sustained pace. Those areas that developed more agricultural have been some French departments found alongside the French Mediterranean coast like Gard, Hérault and Pyrénées-Orientales, together with Haute-Garonne, which ranked on top. Following, some landlocked French Departments with high proportions of agricultural lands, like Tarn, Tarn-et-Garonne and Lot-et-Garonne, together with coastal regions like Pyrénées-Atlantiques, Barcelona and Tarragona. The

reasons for this behaviour are complex enough and require further analyses for drilling into the main drivers that determine those changes. Allegedly, a combination of a decreased competitiveness of agrarian activities in relation to urban economies together with the proliferation of holiday homes in some areas might be to blame.

Analysing the issue from a different perspective, those areas that are more urbanised and have experienced more acute structural transformations linked to specific economic dynamics during the period 1990-2006 have lost more agricultural areas to the benefit of undefined artificial surfaces (Haute-Garonne, Barcelona, Álava / Araba, Tarragona, Hérault, Pyrénées-Orientales, Gard, Zaragoza, Tarn-et-Garonne).

The most urbanised regions have also been those where the net loss of agricultural lands has been mostly related to non urban drivers, especially in Barcelona, Álava / Araba and Haute-Garonne, where it was registered a net transfer of agricultural lands to artificial (non-urban) land cover over 30 per 10000.



Map 4 Urbanisation of agricultural areas (2008)

Legend

Urban rural typology

- Predominantly urban
- Intermediate regions
- Predominantly rural regions

Urbanisation of agricultural areas (per 10000), 2000 - 06

- <= 1,04
- 1,05 - 2,67
- 2,68 - 5,27
- 5,28 - 10,56
- 10,57 - 24,89
- >= 24,90
- <missing values>

EU27+CH+NO = 2,6
FR = 4,39
ES = 2,68

Regional level: NUTS 3
Year: 2000 and 2006
Origin of data: EEA, Corine Land Cover 2000 and 2006
Source: EEA
© EuroGeographics Association for administrative boundaries

for some core Pyrenean regions like Huesca, Ariège and Hautes-Pyrénées, where transfers of agricultural lands towards artificial surfaces have been more moderate (under 7 per 10000 in all cases) and mainly related to urban expansion.

5.3. Economic profile of the agricultural sector

Gironde is, by far, the region where the agricultural sector has a bigger relevance in absolute terms, with a GVA generated by agricultural and fishing activities over 1300 million Euros in 2008, mainly derived from wine production. Following, four Spanish provinces (Barcelona, Lleida, Huesca and Zaragoza), and one additional French department (Landes) hold a GVA generated by agricultural and fishing activities over 500 million Euro. In the opposite end of the distribution can be mentioned areas such as Gipuzkoa, Bizkaia, Lot, Teruel and Hautes-Pyrénées, with less than 200 million Euros, and especially the two French departments of Lozère and Ariège, where the annual output of the agricultural sector was under 100 million Euros in 2008.

In relative terms, Huesca, which is also very productive in terms of absolute GVA, and Gers, both with more than 11% of the GVA shared by agriculture in 2008, are the two regional economies that rely the most on primary activities. Following, Lleida, Landes, and some predominantly landlocked French departments, like Lozère, Aude, Tarn-et-Garonne, Aveyron and Lot, with more than 5% of the respective GVA linked to agriculture and fishing. Dordogne, Lot-et-Garonne, Teruel, Gironde, Pyrénées-Orientales, Tarn and Gard all obtain more than 3% of their respective GVA from the agricultural and fishing sectors, while Álava / Araba, Navarra, Zaragoza, Ariège, Tarragona, Girona, Pyrénées-Atlantiques and Hautes-Pyrénées all have more

than 2% of the overall GVA shared by these activities. Finally, the most urbanised regions, namely Hérault (1.7%), and particularly Gipuzkoa, Barcelona, Haute-Garonne and Bizkaia (<1%) are characterised by smaller weights of their agricultural sectors. Most mountainous regions within the Pyrenean domain get between 2% to 3% of their GVA from primary activities.

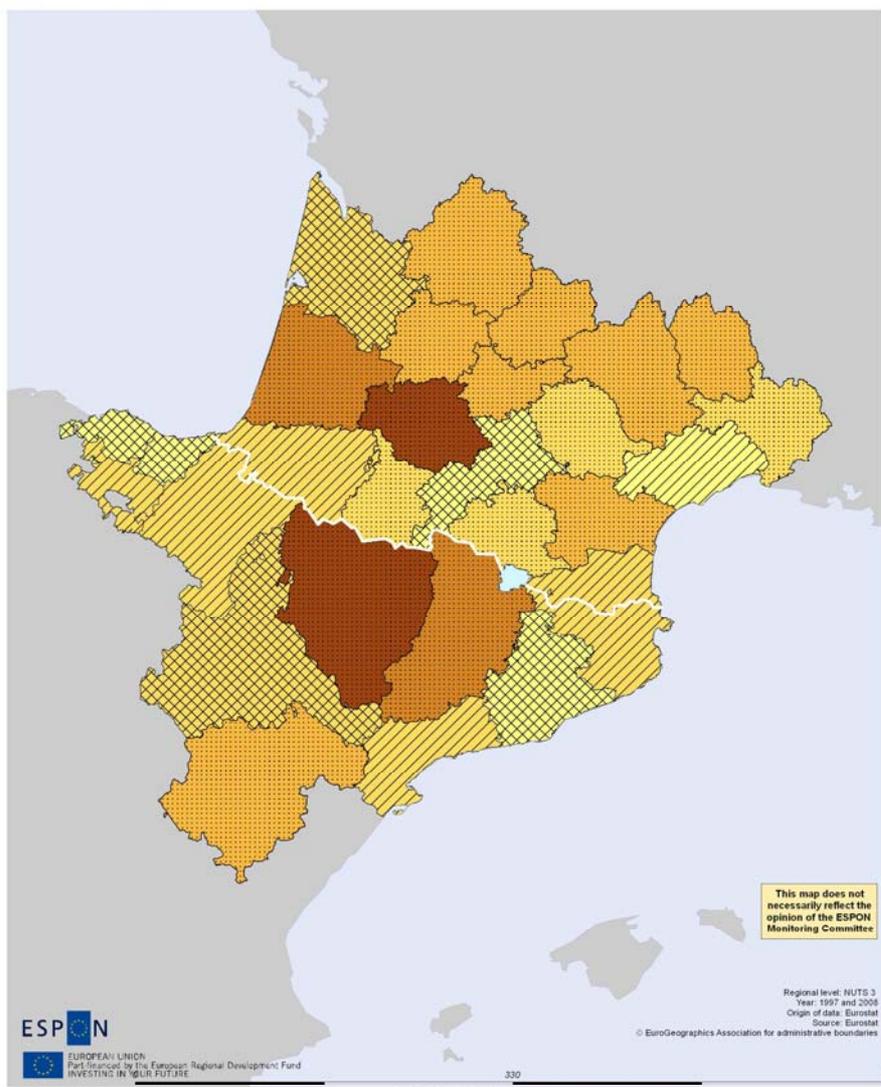
Dairy and beef farming systems to the most Western end of the Pyrenees (Gipuzkoa and Bizkaia), together with wine production areas (Gironde) and mixed Mediterranean farming based on wine, horticultural and fruit products (Barcelona, Girona, Pyrénées-Orientales), are the most spatially productive agricultural activities carried out within the CBA. Those regions penalised by adverse climatic and/or physiographic conditions, such as Aveyron, Zaragoza, Haute-Garonne, Ariège and Teruel show the smallest productivities per hectare.

In dynamic terms, the economic trends observed in relation to the agricultural sector of the CBA suggest a net loss of economic weight of primary activities in relation to the economy as a whole. In this respect, the relative growth weights of the share of GVA by agriculture and fishing 1997-2008 show as only the Spanish province of Alava / Araba / Araba experienced a slightly positive annual growth (1.2%) over the period 1997-2008, mainly due to wine production. In all the remaining areas agriculture lost relative weight in comparison to other economic activities, frequently at annual rates over 5%.

Employment in agricultural sector shows a similar distribution pattern and long run trend as the ones held by GVA by agriculture. Agriculture is losing weight within the global economic context also from the labour perspective.

Labour productivity of agricultural activities measured in Euro per employee show smaller differences between regions in comparison to areal productivity. In 2006 the most productive NUTS3 were the coastal French departments of Landes, Gironde, Gard and Aude. The less productive areas from the labour perspective were Ariège, Bizkaia, Aveyron and Tarragona.

From 2000 to 2006 agricultural productivity rates measured both in terms of Euro per hectare and Euro per employed person evolved in a very unpredictable way that should be interpreted in the light of each region's specificities.



Legend		Eurostat urban rural typology		Percent of GVA by agriculture and fishing by total GVA 2008	
	Predominantly urban		<= 1,75		6,30 - 10,10
	Intermediate regions		1,76 - 3,81		10,11 - 15,49
	Predominantly rural regions		3,82 - 6,29		>= 15,50
			<missing values>		

EU27 = 1,75
FR = 2,04
ES = 2,66

Map 5 Percent of GVA by agriculture and fishing (2008)

Chapter 6 – Accessibility and connectivity

6.1. Concept and definition

Communication and exchange of resources, goods, individuals and information are transferred between cities and regions via infrastructure networks. Access to those networks is increasingly becoming a crucial factor for territorial development (ESPON, 2004). Areas with better access to the locations of input materials and markets are more productive, more competitive and hence more successful than more remote and isolated areas (Linneker, 1997). This view implies that the quality of transport infrastructure in terms of capacity, connectivity, travel speeds, etc. largely determines the competitive advantage of locations relative to other locations, which is frequently measured in terms of potential accessibility.

There are numerous definitions of accessibility. An accepted designation is that accessibility refers to “the location of an area with respect to opportunities, activities or assets existing in other areas and in the area itself, where ‘area’ may be a region, a city or a corridor” (Wegener et al., 2002). Accessibility indicators can differ in complexity. More complex ones take account of the connectivity of transport networks by distinguishing between the networks themselves and the activities or opportunities that can be reached by them. These indicators always include in their formulation a spatial impedance term that describes the ease of reaching other such destinations of interest. The impedance can be measured in terms of travel time, cost or inconvenience.

Being a complex indicator, potential accessibility is based on the assumption that the attraction of a destination increases with size (e.g. of population or GDP) and declines with distance, travel time or cost. Taking all these variables into consideration, ESPON 1.2.1 (ESPON, 2004) determined the potential accessibility for each NUTS 3 of the ESPON space by relating the travel time between the centroids of all regions with the population, through different modes of transportation (road, rail and air). The multimodal accessibility synthesizes all the other modes. Regrettably, there is no information available about internal accessibility, on which to draw a coherent and evidence based description on the issue.

In parallel to physical accessibility, access to information and communication technologies (ICT) is critical to improve the competitiveness of European industry and to meet the demands of its society and economy. According to the European Commission (EC, 2010), wider deployment and more effective use of digital technologies will enable Europe to address its key challenges and will provide Europeans with a better quality of life through, for example, better health care, safer and more efficient transport solutions, cleaner environment, new media opportunities and easier access to public services and cultural content.

6.2. Physical accessibility

6.2.1. Road accessibility

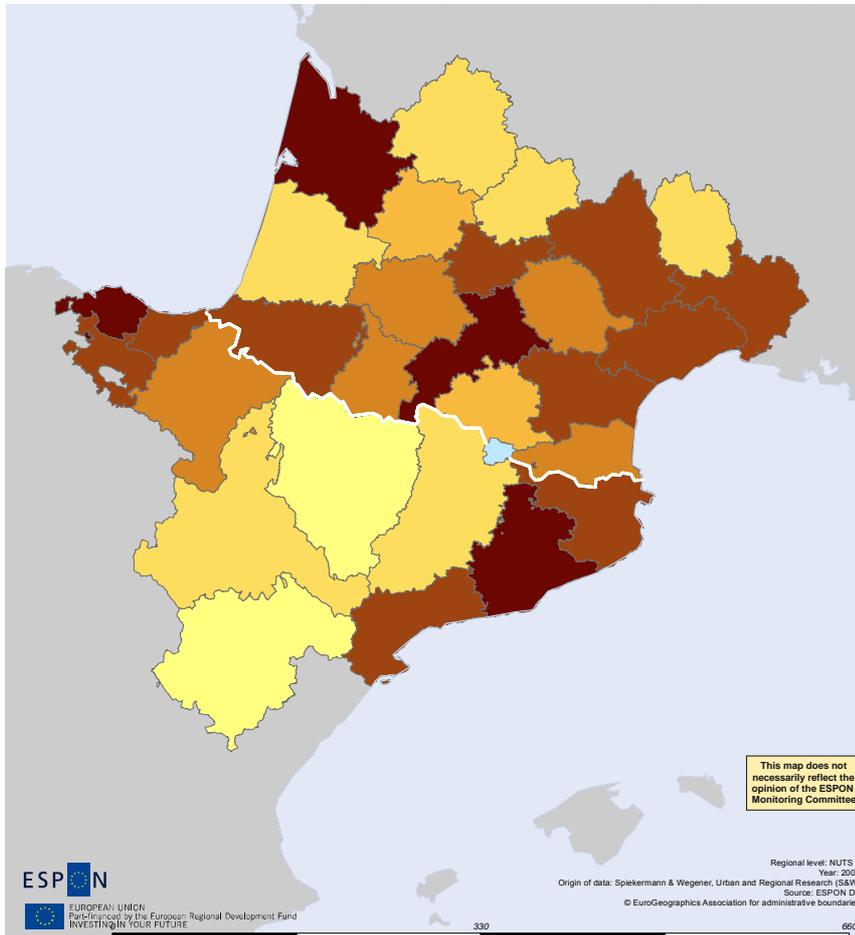
The most accessible regions within the CBA are those French areas standing over the Mediterranean coast and the Garonne valley, especially Gard and Hérault, thus two of the French departments found at greater distances from the Pyrenees. As a matter of fact, Gard is the only region within the CBA that holds an accessibility index above the ESPON space average. Also the French departments of Haute-Garonne, Lozère, Aude, Pyrénées-Orientales, Gironde, Tarn-et-Garonne, Lot, Dordogne, Lot-et-Garonne, Girona, Aveyron and Tarn are more accessible than CBA average, while all Spanish provinces, excluding Barcelona and Girona, show potential accessibility by road below the CBA average.

In dynamic terms, from 2001 to 2006 most areas increased their potential connectivity at comparable rates, particularly in some French regions such as Dordogne, Lot, Ariège and Tarn-et-Garonne, with net index changes of more than five points indexed to CBA average. Gironde, Haute-Garonne, Lot-et-Garonne, Zaragoza and Hautes-Pyrénées increased their respective accessibility values by less than 2 points, while the only areas to loss accessibility in relative terms were Hérault, Lozère, Aveyron and Gard. The variations observed between the dissimilar variation rates determined minor changes in the relative rankings of several regions.

Thus, in terms of road accessibility one can conclude that the Spanish sector of the CBA is comparatively much more isolated from European core areas than French regions. Particularly, remote Pyrenean areas and the ill communicated province of Teruel are the remotest areas within the WCP. However, most areas within the CBA have improved their accessibility by road from 2001 to 2006.

6.2.2. Rail accessibility

In terms of rail accessibility the divide between French and Spanish regions is even more evident. While the most accessible region by road performed less than three times better than the remotest one, in case of rail accessibility this value increased to 3.7 times. Again, those French regions closer to the Mediterranean and Atlantic coasts, and to a limited extent also along the Garonne valley, have bigger accessibilities in comparison to other (mainly Spanish) regions. The only Spanish regions with rail accessibilities slightly over the CBA average are Gipúzcoa and Barcelona.

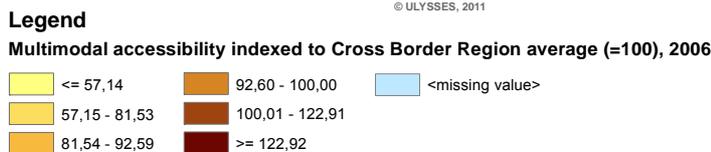


the CBA average are Gipúzcoa and Barcelona.

Contrary to road accessibility, over the years 2000 to 2006 Spanish provinces have performed better than French departments in terms of rail accessibility. All regions with a net increase of the accessibility index over 3 points belong to the Spanish sector (Álava / Araba, Zaragoza, Lleida, Gipuzkoa, Navarra, Bizkaia, Huesca and Teruel). In parallel, almost all regions that lost accessibility by rail over that period belonged to the French sector, of which two belonged to the core Pyrenean domain (Lozère and Pyrénées-Orientales).

6.2.3. Air accessibility

Air accessibility offers a completely different picture as compared to land accessibility. From this perspective the key factor in terms of potential accessibility is made by the presence of an international airport instead of the physical distance to the Pentagon. Consequently, those areas ranked as more accessible are the most urbanised regions (Barcelona, Haute-Garonne, Bizkaia, Gironde ...), all of which



Map 6 Percent of GVA by agriculture and fishing (2008)

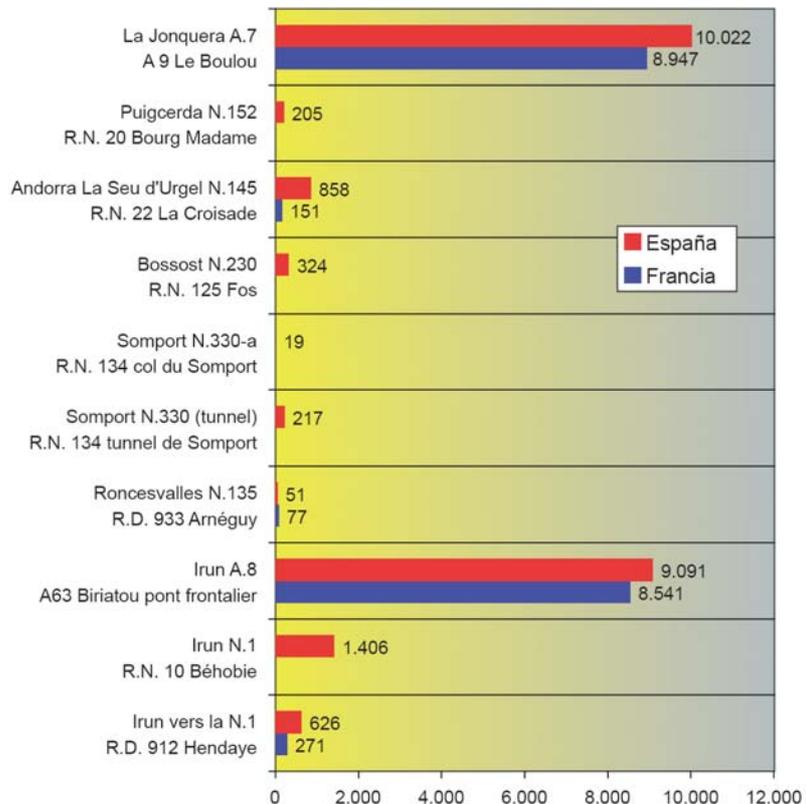
show accessibilities by air over ESPON average. Oddly, Zaragoza, another important regional FUA within the CBA, ranked under the average.

In 2006, the most accessible region within the core Pyrenean domain was Haute-Garonne. Toulouse airport is obviously an essential asset for the entire mountainous region and its potential to serve not only confining French regions but also some isolated mountainous areas from the Spanish and Andorran sectors should be considered as well in any future cross-border spatial cooperation scheme, provided that internal accessibility by land transport in that area is enhanced as well.

In dynamic terms, from 2001 to 2006 Tarragona, Hautes-Pyrénées, Girona, Lleida, Teruel and Aude increased their accessibility by air in absolute terms. The only French region that showed a comparable trend was the department of Aude, which increased its air accessibility by more than 6 points measured in percentage of ESPON average for 2006. Still, this former department remained under CBA average in absolute terms. In opposition, some areas lost track in recent years in terms of air accessibility. Particularly Pyrénées-Orientales, Dordogne and Zaragoza showed a very negative behaviour. Also Tarn-et-Garonne, Barcelona, Landes, Huesca, Haute-Garonne, Hérault and Gard performed quite badly.

6.2.4. Multimodal accessibility

Multimodal accessibility combines the three types of transport accessibilities in one indicator, which appears somewhat biased towards air accessibility to the extent that the former indicator almost mirrors the latter. Also those areas that showed a better behaviour in recent years in terms of air accessibility are those ranked best with regard to multimodal accessibility. Thus, the most accessible regions in terms of multimodal accessibility seem to be Barcelona, Haute-Garonne, Gironde and Bizkaia, all of which show multimodal accessibility indexes above ESPON average, while some other regions like Tarn-et-Garonne, Hérault, Gipuzkoa, Pyrénées-Atlantiques, Aveyron, Gard, Tarragona, Girona, Álava / Araba and Aude are more accessible than CBA average, but less than ESPON average. Those areas remaining under ESPON average in terms of multimodal accessibility are Landes, Zaragoza, Lozère, Dordogne, Lleida, Teruel and Huesca, the former two below 50% of ESPON average. Hence, multimodal accessibility seems to be higher along the Mediterranean and Garonne corridors and lower over the Ebro corridor.



6.2.5. Internal connectivity

Figure 3 Average annual daily traffic intensity of heavy vehicles (2008)⁵

In terms of international connectivity there are no less than 27 different alternative road crossings between the three countries. However, the only high capacity routes connecting Spain and France (Andorra do not have high capacity motorway at all) are traced close to the Mediterranean and Atlantic coasts. Thus, most vehicles, both light (67%) and heavy (92%), use peripheral crossings to the detriment of the central alternatives.

As far as rail connectivity is concerned, most rail lines ending within the mountainous domain on both sides of the border (Huesca-Canfranc and Montréjeau-Gourdan-Polignan-Bagnères de Luchon) do not link both countries (Andorra does not have a single rail track in its territory), but end in the Pyrenees. This is understood as a major obstacle hindering the development of the area, particularly of the Southern central regions, especially considering that the Central Pyrenees Crossing still does not seem to be on the agenda.

6.3. ICT connectivity

Broadband accessibility data could not be obtained at the same spatial level on both sides of the border. While on the Spanish sector this indicator was obtained at NUTS2 level, to the French side the index was only available at NUTS1 level. In any case, the available figures showed that in 2009 Cataluña was the only NUTS2 region with more than 60% of its households with broadband internet connection. However, all the remaining areas, that is, other NUTS2 regions in Spain and the two NUTS1 regions included in the WCP on the French sector, showed a broadband penetration above the European average in all cases.

⁵ Source: Observatorio hispano-francés de Tráfico en los Pirineos, 2010. Differences between Spanish and French data are given mainly by the different distance of the gauging stations of both countries.

Chapter 7 – Gothenburg and Lisbon/Europe 2020 strategy

7.1. Contextualisation of the Strategic framework and aims of the study

“To become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion by 2010”

This was the main heading of new strategic goal for the European Union, agreed on 23 and 24 March 2000 by the European Council. The “Lisbon Strategy”, as it is commonly known, is a ten-year strategy and a commitment by the EU governments to concentrate their efforts on a single overarching goal to bring about economic, social and environmental renewal in the EU.

As a complement to the “Lisbon Strategy”, the EU adopted an ambitious strategy for sustainable development at the Gothenburg Summit in 2001, hence also known as the “Gothenburg Strategy”. The Gothenburg European Council added the environmental dimension to the Lisbon process as its “third pillar” to be added to economic and social reform. The priorities were: combating climate change, ensuring sustainable transport, addressing threats to public health and managing natural resources more responsibly.

The new Europe 2020 Strategy, formally approved by the European Council on 17 June 2010, responds to the European attempt to overcome the shortcomings and poor results of the Lisbon Strategy launched in 2000, by the fulfilment of some targets for 2020 and objectives.

This chapter aims to identify the behaviour of the WCP with regard to the abovementioned strategies in terms of economy and employment, social cohesion, innovation and research, and environment by means of the analysis of several indicators and specific methodologies.

7.2. Analysis of indicators affected by Gothenburg and Lisbon/Europe 2020 strategy

7.2.1. Economy and Employment

According to 2008 figures, all regions of the CBA have comparable GDP per capita values. In fact, CBA shows less internal disparities than France and Spain, which have lower internal disparities in comparison to ESPON area taken as a whole, according to the **coefficient of deviation of GDP per capita**. The disparities in GDP per capita have remained stable over the years (1997-2008) in France, while they have been slightly reduced in Spain and especially at EU level. Within the CBA income disparities have increased slightly from 2005 onwards.

In terms of the **GDP indexed to the leading region**, which involves the indexation of GDP per capita in each NUTS3 to the value of the leading region in 2008 (100.0), half of NUTS3 areas within the CBA were classified as *middle Income Regions* (51%), especially in the Spanish side (90.9%) in comparison to French side (27.7%), while 70% of bordering areas are considered as *middle income regions* and only 30% of them are *less developed region*. Consequently, these regions are better-off than the remaining ones, especially in the French case, as this area is the wealthiest within the French sector of the CBA.

In terms of the speed of **catching-up with the leading region**, (i.e. setting the relative position of each NUTS3 and its relative trajectory up to the level of 95% of the GDP of the leading region in 50 years), Spanish and French NUTS3 regions within the CBA show very diverse situations. The catching up analysis shows that during over the period 1997-2008 the French NUTS3 within the CBA behaved as *diverging regions*, while the Spanish NUTS3 were classified as *steady catching-up regions*. A closer look at confining regions shows as, contrary to French regions, Spanish NUTS3 grew up comparatively faster than EU27's leading region (which in 2008 was Greater London). Consequently, confining regions in the Spanish sector were classified either as *steady catching-up regions* or *slow catching-up regions*, while French regions were classified as *diverging regions*. However, as a result of the economic trends experienced after 2008 financial crisis, this picture has surely changed and should be updated with most recent figures for capturing the actual effects of current economic crisis in the area, which has hit particularly hard the Spanish sector.

Gross value added by sector helps to evaluate the overall contribution of the different economic sectors to the total output of the regions. The share of Gross Value Added by NACE is very different depending on the region considered, as every single NUTS 3 has its own characteristics and potential in terms of natural endowment (natural parks, skiing areas, etc), specific crops (vineyards, etc), Industries (aeronautics, etc.), gastronomic products (cheese, wine...), which shape the economic activity and evolution of the area. All in all, in the French sector of the CBA the main contribution to GVA is due to both financial intermediation and real estate on the one hand, and public administration and community services or activities of households on

the other hand. On the Spanish side, some regions have an industrial specialisation while other areas focus on construction, wholesale and retail trade or hotels and restaurants. In most NUTS3 agriculture and fishing represent less than 5% of share of GVA. This sector clearly is not the basis of the economy of the CBA. The CBA is not a very industrial area either, in comparison to some other European areas. Services as a whole represent the most important sector of the CBA, which contributes to 70-80% of the GVA. Again, these figures should be updated in the light of recent economic trends. In particular, the current economic downturn seems to have affected particularly intensely the Spanish building and construction sector.

Annual growth rate of GVA has increased much more in the Spanish sector (6-8 % annual growth rate) than in the French area (1-2 % annual growth rate). Construction sector has experienced the highest growth, especially in Spanish regions, where it has grown above 10% annually. Agriculture and fishing sector has increased just slightly its GVA contribution in some regions but has decreased in some other areas. The remaining sectors have grown around 5-8% annually in the Spanish sector of the CBA, with similar growth patterns across regions and sectors. In French NUTS3 the remaining sectors have small growth figures (0-1%), except financial intermediation or real estate, which has grown 2-4% annually depending of the region.

In order to assess the importance of the different sectors in the composition of the workforce, it was analysed the **share of employment by sectors**. This indicator depicts similar patterns to the ones shown by the share of GVA. The industrial workforce generally is bigger in the Spanish side of the border than in the French one. The wholesale and retail trade sectors employ more people in Spanish regions, especially in Cataluña, than other sectors. In France, on the contrary, the leading sector is public administration, followed by wholesale and retail trade. France holds circa 35-40% of workforce in the public sector, but this sector's contribution to the GVA is of 25-30%, contrary to the financial intermediation sub sector, which employs only 10-15% of the workforce, contributing 25-30% to the GVA.

Regarding the **annual growth rate of employment by NACE**, it results that total employment has increased differentially from 2000 to 2008. The Spanish sector of the CBA's workforce has increased at a 2-3% annual rate while employment in the French side shows a growth rate of 0-1%. However, it has to be mentioned that, as occurs with the overall economic growth rate, these figures may have worsened comparatively more in the Spanish sector after 2008 so that not clear conclusions can be drawn at this stage.

7.2.2. Research and innovation

In order to assess the competitiveness of the CBA for future economic wealth and growth, indicators such as the total intramural R&D expenditures, EPO patents and Employed persons in high and medium tech manufacturing activities were analysed.

The **total R&D expenditure** in 2007 was higher in France than in Spain. The same happens when comparing the French and Spanish NUTS2 level units within the CBA. Within the French side, Midi-Pyrenees outstands considerably among the remaining regions, while in Spain 3 out of 4 Autonomous Communities have similar values, although lower than French ones. Navarra with 1.88% is the region with the highest expenditure among the Spanish regions, together with the Basque Country. By sector of performance, the private sector (companies and private non-profit organisations) has the highest percentage of the R&D total expenditure, followed in importance by the higher education sector, and finally, public administration.

Regarding **EPO patents**, France develops many more patents than Spain, although the Spanish number of patent publication is growing, so that Spanish NUTS 2 have caught-up their neighbours, being Navarra the region with the highest annual growth average (12.6%). Nevertheless, after steady growth until 2006, the number of patent applications in Spain and France decreased markedly in 2007.

The **employment in high and medium technology** manufacturing activities depicts a very different picture on both sides of the border, both at national and at CBA level, highlighting the diverse reality on economic and social scene. All in all, contrary to Spanish NUTS2, French regions are below the EU average.

7.2.3. Social Cohesion

Social and territorial disparities at both regional and national level have increased in the enlarged Union. At the CBA level, disparities exist but are not very pronounced, although it is worth mentioning the situation of Languedoc-Roussillon, which is the weakest in all the variables analysed in this chapter (i.e. long-term unemployment rate, youth unemployment rate, etc).

Unemployment rate in the CBA is higher than in the EU, being especially high in Cataluña and Languedoc-Roussillon. **Youth unemployment**, on the contrary, is quite high in Languedoc-Roussillon and Spanish side, especially in Cataluña, with a 40% rate. **Long term unemployment** is low in the entire CBA but in Languedoc-Roussillon. **Infant mortality rate** has decrease steadily in the last 10 years in all CBA, while the **population with tertiary education** has increased, except in Languedoc-Roussillon.

Besides the standard demographic variables, the **population at risk of poverty** within the CBA is below the EU average, especially in the Spanish subsector. The extent to which inequality in the distribution of income and in the risk of poverty varies across regions is a relevant issue. In France the variation is smaller, but the proportion of people with income below the poverty line still amounts to 20% along the Mediterranean corridor, which has one of the lowest levels of income per capita in the CBA.

All in all, Languedoc-Roussillon and Cataluña are the two areas where social cohesion is more at risk, especially in the former region. The rest of the areas in the CBA show medium social cohesion indicators while the Basque Country and Navarra, for example, enjoy higher social cohesion values.

7.2.4. Environment

The CBA is quite well positioned considering environmental issues and regional capacity in exploiting alternative energy sources, according to indicators considered in the analysis.

In terms of **soil sealed area** per inhabitant more than half of the NUTS 3 of the CBA is above the EU average (214 sqm per inhabitant of soil sealing). Similar values are found in France, but not in Spain, where only four out of eleven NUTS3 are above the national average (198.44spm).

Regarding **ozone concentration exceedances**, France (7.82 days/year) and Spain (4.68 days/year) are below the EU average of 9.99 days/year with ground-level ozone concentration above 120 µg/m³. The region of Midi-Pyrenees, Navarra and Aragón concentrates the lowest values, while Languedoc-Roussillon and Cataluña are ranked at the top.

The CBA seems to have good capacity for urban **waste water treatment** reaching 100% of the capacity. French and Spanish averages are higher than the EU's one, and every NUTS2 of the CBA reaches 100% of urban waste water treatment capacity, except Aragon, although it shows optimal treatment capacity (91%).

The CBA also has an important and significant percentage of **NATURA 2000 areas**. Spain seems to have a higher percentage of protected areas (28.88%) comparing to France (11.81%) and the EU average (14.24%) On the French sector of the CBA, Languedoc-Roussillon shows very high values, up to 40%.

The WCP is quite well positioned regarding **solar energy potential**, as it shows values above the EU average, especially in the Spanish sector and the French Mediterranean façade, which holds important solar infrastructures such as the solar oven of Odeillo Font-Romeu. In terms of **wind energy potential**, both France and Spain are below the EU average, but there are specific NUTS3 with high potentials. Navarra, for example, covers 70% of its internal energy demand with renewable energy. In France, Aquitaine and Languedoc-Roussillon are the two areas ranked top from this perspective.

7.2.5. Climate

Following ESPON Climate (ESPON 2011b), combined physical sensitivity, combined social sensitivity, combined economic sensitivity and combined cultural sensitivity have been analysed to know how climate change affects different aspects important for territorial development. Along these lines, the CBA shows marginal **physical sensitivity**, i.e. climate change affects slightly human artefacts important for territorial development. Barcelona and Gironde show the highest value and Teruel and Lot the smallest ones. In terms of how climate change affects human settlements, the CBA as a whole shows middle **social sensitivity** to climate change, being Barcelona the most sensitive area and Teruel the less sensitive one. On the French side, Haute-Garonne and Gironde show the highest values, contrary to Landes and Lot. In terms of **economic sensitivity** (i.e. economic activities or sectors that are especially sensitive to climatic changes), Barcelona and Teruel outstand in the Spanish side, while In the French sectors there is not a clear trend in this respect. Finally, the CBA has relatively low **cultural sensitivity** to climate change (i.e. cultural assets like museums and internationally recognised historic sites that may potentially be damaged or destroyed due to climate change). From this perspective, Zaragoza and Gironde exhibit the highest sensitivity, due to the fact that many old cities and historic sites are located along major rivers, Ebro and Garonne-Dordogne, respectively.

Chapter 8 – Factor analysis

The objective of the integrated territorial analysis is to examine the relation between the territorial characteristics and the performance of the cross border area from the perspective of Lisbon/Europe 2020 Strategy and Gothenburg objectives. The rationale of this type of analysis is that the performance of the CBAs may be conditioned by the territorial characteristics of the region and that there may be potential to improve some of the characteristics via policy actions and thus improve the regional performance. Two sets of indicators were established: one for territorial profile variables and one for territorial performance variables. The first set considered variables linked to overall territorial characteristics of the different regions, on the themes considered (demography, land use, accessibility, industry structure, innovation, sensibility to climate change). The second set considered variables linked to the performance of the regions concerning indicators related economic and employment performance of the region.

In order to analyse the relations between (i) the territorial profile (Centrality; Research, development and innovation; Public administration; Demographic dynamism expresses; Sensitivity to climate change; Trade, tourism and transport; Immigration; and Construction sector), and; (ii) the territorial performance (Unemployment; Convergence dynamism; Economic development), two different analysis were performed:

- First, a factor analysis for each set of indicators.
- Second, several multiple linear regressions having as independent variables each factor of the performance indicators and as dependent variables all the factors of the territorial profile.

The objective of the territorial analysis was to combine the various variables describing territorial characteristics and territorial performance to combined indicators or factors. As a result of the factor analysis, we looked more closely to eight factors related to territorial profile and three factors related to territorial performance. Lastly, we combined these two sets of factors in order to find out if the territorial performance could be explained by some characteristics of the area.

Based on the factor analysis, the Pyrenees CBA can be described as limitedly central area with couple of “hot-spots” that are characterised by easy access by air, rail and road and with high share of employment in high tech and financial services. However, vast majority of the Pyrenees CBA is not that well connected to urban centres. Although the Pyrenees CBA as whole may not be the most urbanised area, it is performing relatively well when indicator related to research, development and innovation is considered. In fact, majority of the regions belonging to Pyrenees CBA show higher R&D&I intensity than the corresponding national averages. This shows that regions with less central location can compensate the least favourable geographical position with high level of inputs in knowledge creation.

Within the Pyrenees CBA there are also vast differences between the two countries (Spain and France) analysed. First of all, it can be said that the majority of French Pyrenees CBA regions can be characterised as high importance of public sector employment whereas majority of Spanish regions show high importance of manufacturing industry for employment and economic output. Similarly, when demographic dynamism is considered, there are quite big differences between French and Spanish regions analysed. French regions show relatively high levels of demographic dynamism (i.e. young age dependency rate, the crude rate of natural population increase and the total fertility rate), whereas majority of the Spanish area demonstrate much lower rate of change in demographic dynamism. In any case, when compared to other areas of Europe, the Pyrenees CBA is in general characterised by relatively high levels of immigration.

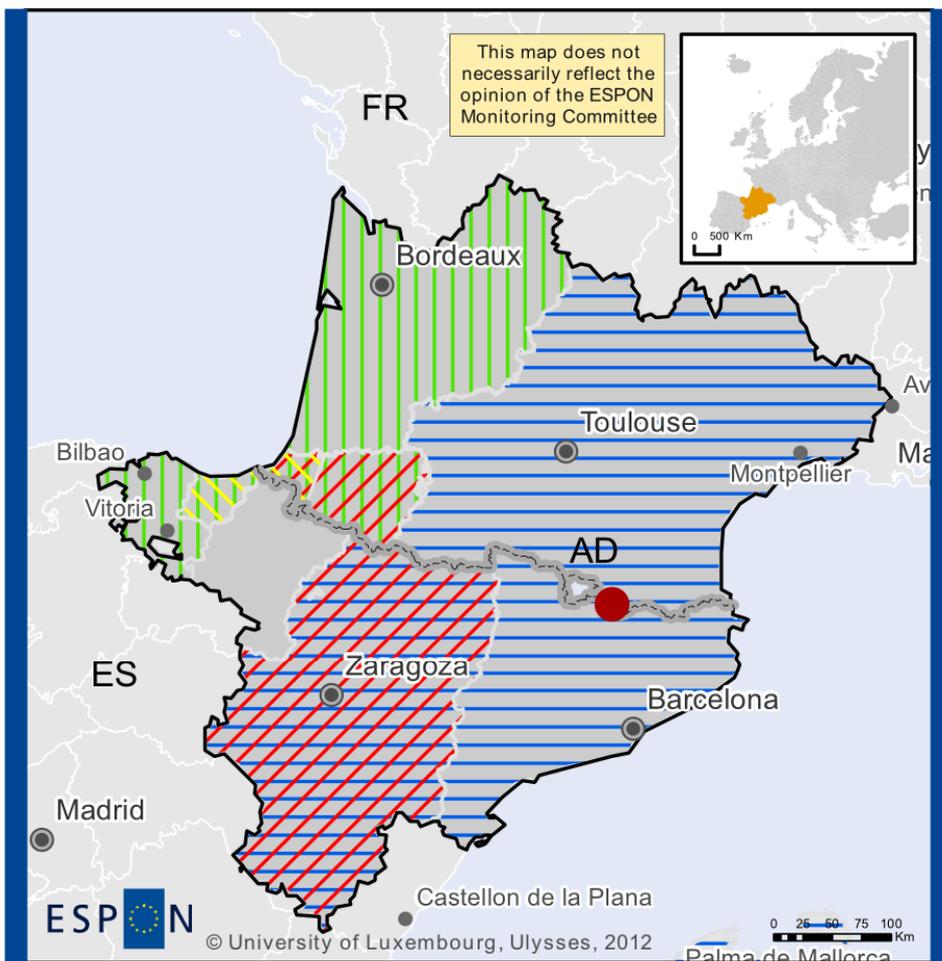
In Pyrenees CBA, the importance of tourism and service sector is rather modest in general, although there are some areas of Spain (especially Cataluña, but also Bizkaia) that are concentrations of service sector businesses. Construction sector seems to have high importance in whole Pyrenees CBA – in Spanish CBA however less than in Spain in average, but in French CBA more than in France in average. The climate change exposure is an important characteristic of some of the Pyrenees CBA regions as majority of Spanish and some French CBA regions the environmental, social and cultural sensitivity to climate change is rather high.

When the territorial performance is considered, the results are two-fold. There are some Spanish regions (Barcelona and Bizkaia) that are performing rather well even in European level, when the performance indicator GDP per capita is considered. . But on the other hand, French area Languedoc-Roussillon seems to be quite affected by unemployment. In general, the whole CBA shows rather low levels of convergence implying of slow growth of GDP with the exception of some Spanish regions (Áragon and País Vasco).

Taking these territorial profile and territorial performance analysis as a starting point and looking at whether the territorial performance is associated with territorial profile, it can be said that in general:

- It seems that the high levels of unemployment have a strong negative relation to the high investments in R&D, the demographic dynamism and the high levels of immigration. This implies that dynamic innovation centres with little immigration have lower levels of unemployment. The question remains however whether the unemployment is result of, or cause for e.g. demographic dynamism and immigration. On the other hand, areas with high levels of unemployment are positively associated with public administration centers and increased construction activity. We may argue that as the construction sector is very vulnerable to economic fluctuations; both the high unemployment and the high importance of construction sector could actually be associated to economic down turn in general.
- The convergence dynamism is negatively related to centrality and public administrative centres. On the other hand, in central Europe the regions which perform best in this indicator are the ones located in the 'blue banana' and, even in Eastern Europe, the top performing regions tend to be the more central ones.
- The overall picture shows that the factors related to centrality and R&D investments are positively associated to economic development. It is also interesting to see that the central location explains much more of different economic development levels than the investment in R&D. The weight of the construction sector is considerably negative, probably meaning that, at a certain stage, high economic development is more linked to a strong service sector than infrastructural development.

Chapter 9 – Territorial cooperation: governance framework and institutional mapping



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Local level: LAU2
Source: ULYSSES, 2011
Origin of data: ULYSSES, 2011
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Cross Border Cooperation in the Pyrenees

- Working Community of the Pyrenees
- Euroregion Aquitaine Euskadi
- Espacio Portalet (EGTC)
- Euroregio Pyrénées-Méditerranée (EGTC)
- Hospital de Cerdagne (EGTC)
- Eurocité Basque (EGTC in preparation)
- Ulysses Study Area (NUTS 3)
- National borders

Map 7 Institutional Mapping Pyrenees

9.1. Methodology

The institutional analysis differentiates two dimensions: On the one hand, the **structural dimension** means the overall framework that can hardly be influenced by the partners of inter-regional cross-border cooperation. The **activity dimension** addresses the intensity and continuity of institutionalised cross-border cooperation on the regional level.

For the sake of simplicity and applicability, the *structural dimension* included factors like (i) the political status of the border (e.g. EU membership / historicity, Schengen status); (ii) the planning system (i.e. the planning culture family); (iii) the physical status (e.g. geomorphology), and; (iv) the language barrier (i.e. number of languages existing in the area). These domains have been combined in a synthesis score that allows saying if the borders function as *separation*, *interface* or even as a *link*.

Dimension	Indicators	Quantification	Main Sources	Weighting
Political status of the border	EU membership / historicity	Ordinal scale 4 = EU 12/15 3 = CH 2 = EU 25/27 1 = external borders (NB: highest score country counts)	ESPON Typologies (pp. 26 ff.) ESPON Geospaces	2

			(Interim Report map 13)	
	Schengen status	2 = participating in free travel zone 1 = not participating in free travel zone		1
Physical status of the border	Geomorphology	Ordinal scale 3 = other borders 2 = mountainous (dominant of the high mountains classification) 1 = sea border	EPON Interact cross-border cooperation (18 final report)	1
Institutional status: Planning culture	Being mentioned as member of the same planning culture families in different studies	Numerical scale 0 = strong differentials 0.1-1.0 1.1-2.0 2.1-3.5 = weak differentials	ESPON 2006/2.3.2; Newman 1996; CEC 1997; Nadin/ Stead 2008	3
Language barrier	To what extent is language barriers existing in the area	Ordinal Scale 3 = Same language 2 = Similar language (semi-communication possible) 1 = Very different language	Literature, e.g. Beekes 1995	1

Table 1 Methodology to assess the territorial character of the border (*structural dimension*)

In contrast, the *activity dimension* has taken account of: (i) the historicity of cross-border cooperation in general (i.e. earliest founding date of cross-border cooperation); (ii) the maturity of cross-border cooperation (i.e. INTERREG III participation); (iii) the institutional thickness in cross-border cooperation (i.e. number of permanent institutionalisations); (iv) the current activity in terms of operative European Grouping for Territorial Cooperation (hereafter EGTC); (v) the cross-border spatial development on regional level (e.g. joint GIS tools), and; (vi) the existing cross-border transport projects (e.g. TEN-T corridors crossing the border). These domains have been combined in a synthesis score that classified the borders function as *integration, cooperation or separation*.

Dimension	Indicators	Quantification	Main Sources
Maturity of cross-border cooperation	Interreg III participation	4 = Long-standing cooperation with a very high or high level of maturity 3 = Long-standing or experienced co-operation with a medium-high level of maturity 2 = Experienced or more recent co-operation with a medium-low level of maturity 1 = More recent co-operation with a low level of maturity	ESPON Geospecs Interim report
Historicity of cross-border cooperation in general	Earliest founding date of cross-border cooperation	4 = 1960-1990 3 = 1991-2000 2 = 2001- today 1 = none	div.
Institutional thickness in cross-border cooperation	Number of permanent institutionalisations (Euregions, city networks, Eurodistricts etc.)	4 = > 3 institutionalisations 3 = 2 institutionalisations 2 = 1 institutionalisation 1 = none	div.
Current activity	EGTC	3 = existing EGTC(s) 2 = EGTC(s) in preparation 1 = no EGTC activity	Committee of the Regions; national and regional sources
Cross-border spatial	Joint tools	2 = yes 1 = no	Diverse regional sources

development on regional level	Joint spatial development document	3 = yes, younger than 2005 2 = yes, from 2000-2005 1 = no, or older than 2000	div. regional sources
Cross-border transport projects	TEN-T corridors crossing a border in the perimeter of the regions	Number	EU DG Transport, TEN-T Executive Agency
	important cross-border projects on the regional scale in preparation or established (esp. rail)	Number	div. regional sources

Table 2 Methodology to assess the territorial character of the border (*activity dimension*)

9.2. Structural dimension

The cross-border cooperation in the Pyrenees region is very much characterised by the presence of the mountainous barrier. The situation can be regarded as the most exemplary case of a 'natural' border. The dominant languages of this large border region – Spanish and French – do both belong to the Romantic languages, but still they make up a certain language barrier (which is being complemented by regional languages such as Basque and Catalan). From a political point of view, the border along the Pyrenees is an 'old' (EU15) border, even if the status of the small state Andorra is a particular one.

With regard to territorial development and spatial planning, the two systems of France and Spain are quite different. From an institutional point of view, France has a much more centralised system even if the local level does have a considerable influence. Spain is much more focussed on the autonomous communities. On the content side, France traditionally has focussed on the comprehensive approach of *aménagement du territoire* whilst Spain is following to some extent a land use regulation approach without an excessive degree of regulation. So though the region as a whole is often seen as belonging to a Romanistic tradition, the differences should not be underestimated.

9.3. Activity dimension

In this region, the earliest cross-border cooperation institution in the modern sense has been funded in 1983 – the Communauté de Travail des Pyrénées – which is until today a key institution. The importance of this institution is in particular underlined as it is commissioned to carry out the current European Regional Development Fund (hereafter ERDF) programme of territorial cooperation. In this function, the perimeter is not linked to the Communauté de Travail itself but to the programme perimeter POCTEFA, which is not shown here as it currently is a pure programme structure.

Beyond the Communauté de Travail, a series of cross-border institutions have been established, as shown in the map. Most remarkably, perhaps, is the high activity with regard to EGTCs. The Pyrenees have very early explored this new instrument and still new EGTCs are being established. As on all the institutional mappings, the programme structures are not shown here, so also the Euroinstitut Catalan is not mapped, that is linked to the current ERDF funding. Amongst other objectives, the objective of this institution is to offer courses on the administrative details of 'the other side of the border', one of the most pressing concerns in many cross-border regions.

9.3.1. Spatial development

With regard to spatial development, two tools should be mentioned: Firstly, the statistical atlas for the Pyrenees offers some interactive cartography for the border area in a stricter sense. Even if not all kind of data is available yet, the tool is a good starting point for the territorial understanding in the region. Moreover, some years ago, the Observatoire des Trafics à travers les Pyrénées has started to publish the development of the Pyrenees traffic, but in recent years only few publications have been released.

With regard to strategic territorial development documents, most available documents are linked to the European programmes. In programming and evaluation documents, the territorial dimension is very present. With regard to a joint territorial vision on the interregional level, in 2005 the study "l'Avenir des Pyrénées dans le Contexte Européen" has built the basis for a political spatial development concept.

9.3.2. Transport

Because of the high barrier effect of the Pyrenees mountain range, the transport policy is of crucial importance within this region. In recent years, the efforts have been very high in order to make progress in this respect. These endeavours have been successful in particular with regard to the TEN priorities (priorities no. 3 and 16): Not less than three TEN corridors cross the Pyrenees' border, amongst them the Central Pyrenees Crossing that still has to be concretised.

On the regional level, a series of political meetings has taken place. Already in 2006, a joint declaration on transport in the Pyrenees Euroregion has underlined the importance of this policy. Some regional projects have been started, in particular the renovation and reopening of the Pau-Canfranc train connection and the EU co-funded renovation of the Tunnel Bielsa Aragouet. Still, also in this region, a comprehensive joint cross-border development concept has yet not been detailed.

9.3.3. Quantification and categorisation

Quantifying the above mentioned aspects by means of the series of indicators described in the methodology chapter, we can state the following: From the structural point of view, the border has to be considered as part of the category 'Interface', thus, the mediate category with regard to cooperation obstacles. The so obvious barrier function of the mountain range is relativised: In particular the related languages and planning systems of the region still provide a fruitful ground for cross-border cooperation.

The quantitative score with regard the activity dimension belongs the category 'integration', thus, the category of cross-border activity with the most intensively intertwined areas from either side of the frontier. In the case of the Pyrenees region, the high degree of institutional thickness and the numerous efforts to foster strategic development influence the analytical score. The Pyrenees region is in that sense comparable to the Upper Rhine region, one of the most experienced and most advanced regions in terms of cross-border governance.

Chapter 10 – Integrated analysis and scenarios

10.1. Objectives and methodology

This chapter highlights the main conclusions of the integrated analysis, which combines elements of the previous chapters aimed at describing the current status and identifying the most relevant challenges faced by the Working Community of the Pyrenees.

A traditional SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) has been the framework to analyse the territory's current status based on two axes, present/future factor (or internal/external), and positive/negative influence, to decide what action should be taken (suggested strategies are developed under Chapter 11). Strengths and weaknesses (combination of present factor and positive/negative influence) show the current status and were drawn upon the research done in the set of themes addressed in previous chapters. Opportunities and threats (combination of future factor and positive/negative influence) identified in the aforementioned research work were contrasted with the *ESPON 3.2. Spatial scenarios and orientations in relation to the ESDP and Cohesion Policy scenarios* (namely Baseline/trend scenario, Danubian Europe or the cohesion-oriented scenario and Rhine-Rhone Europe or the competitiveness-oriented scenario) and their implications for the CBA under analysis. All this work led to the Final Opportunities and Threats, which set the basis for the identification of the most relevant challenges of the Working Community or the Pyrenees. The results of this SWOT analysis (included in annex, together with the SWOT itself) were circulated among relevant stakeholders in the WCP and validated in the workshop celebrated on 14th of February 2012 in Zaragoza. Main findings of this analysis shown as follows in this chapter:

- The current status of the WCP is described in sub-chapter 10.2., combining the set of themes under research. This is mainly based on the opportunities and weakness identified.
- The main trends and driving forces identified for Europe by *ESPON 3.2. Spatial scenarios and orientations in relation to the ESDP and Cohesion Policy scenarios* are adapted to the WCP context, and the implications or influence of the prospective policy scenarios elaborated by this project described in sub-chapter 10.3.
- Main challenges for the WCP are described in sub-chapter 10.4. Challenges reveal opportunities and the main ones are also described in this sub-chapter. This is mainly based on the final opportunities and threats elaborated by the ULYSSES research team.

10.2. Current status of the Working Community of the Pyrenees

Looking at main demographic indicators, the CBA shows slightly positive annual overall population growth rates due to positive net migration and the slight increase of fertility rates recorded in the early 2000. However, population growth rate, although being still positive, is declining mainly due to the negative trend of net migration in the last years. Population is distributed in an unbalanced manner across the CBA, which is also posing severe challenges, in particular in marginal rural areas and mountainous sectors, which are struggling with severe ageing and depopulation.

A well-developed urban network exists in the CBA, with cities like Barcelona MEGA, plus Bordeaux, Toulouse, Zaragoza or the ones located in the Basque Country providing grant access to a big market, specialised services and access to global networks, favoured by acceptable connection to high capacity infrastructures. But the uneven distribution of the urban population poses gaps and lack of continuity within the urban network. The scarcity of relevant urban nodes in the Pyrenees and the relative weak structural network of small and medium sized towns intensify the previously mentioned challenges in those marginal rural areas and mountainous sectors which are challenged by unemployment, marginalisation and lack of competitiveness in certain cases. Important landscape and cultural assets in those areas and very productive agriculture acknowledged in some regions can lead to innovative solutions (Further explained in following sub-chapters and Chapter 11) to preserve the attractiveness and competitiveness of rural areas. Acceptable overall accessibility (especially in the French subsector) is acknowledged, although the WCP is a peripheral area in relation to the Pentagon and the internal accessibility and connectivity between Spain and France is hindered by the Pyrenees.

The CBA shows relatively strong and diversified economy with growing investment on Research and Innovation, and high levels of social cohesion (with some areas with meaningful social vulnerability,

particularly over the Mediterranean corridor). But still, strong internal disparities in GDP per capita are observed, with strong localised dependencies on specific economic sectors.

Despite language and geographic barriers and different institutional systems hinders cross-border cooperation, high degree of institutional thickness and numerous efforts to foster strategic development, including a first strategic document (“L’avenir des Pyrénées dans le Context Européen”) are acknowledged in the CBA..

10.3. ESPON 3.2. scenarios and the Working Community of the Pyrenees

This chapter is aimed at looking at the three scenarios 2030 elaborated by *ESPON 3.2. Spatial scenarios and orientations in relation to the ESDP and Cohesion Policy scenarios* and understand how they would influence the Working Community of the Pyrenees.

10.3.1. Integrated baseline (trend) scenario

This scenario is based on the continuation of trends and on the principle that no major changes occur in mainstream and ongoing policies applied which have played a part in shaping them.

The former pentagon of the early 2000s, grouping the areas of concentration of flows and activities has expanded, mainly along the main transport corridors, in the direction of important MEGAs like Barcelona. The basic characteristics of settlement systems in terms of polycentrism have not fundamentally changed. The trend towards marginalisation of various rural areas, such as the ones along the Pyrenees, already observed in the early 2000s, has continued. Accelerating globalisation has affected a significant number of industrial regions with low or intermediate technologies (which is the case of certain areas in the WCP), exposing the risk of declining activities. External immigration (legal and illegal) has continued, with immigrants settling mainly in metropolitan areas. The CBA under analysis is among the areas with high potential for tourism and retirement, due to specific geographical attributes (coast and mountain regions). The CBA is also subject to the impacts of natural hazards of various natures.

10.3.2. Danubian Europe: Integrated cohesion-oriented scenario

This is a prospective, policy-oriented scenario. In this scenario, the main priorities of public policies at EU level, in a context of growing globalisation, are focused on economic, social and territorial cohesion and not on global competitiveness.

This scenario reveals a less concentrated, but more widespread pattern regarding attraction and polarisation of metropolitan areas in 2030, which can benefit the CBA. The area of concentration of flows and activities can be expanded to not only Barcelona MEGA but also other metropolitan areas in the CBA. Urban settlements are characterised by a more polycentrism, stretching over larger parts of the territories. The number of areas at risk of marginalisation and of declining activities is comparable to that prevailing in the baseline scenario, but their size is reduced and intensity lowered. As in the baseline scenario, the CBA shows high potential for tourism and retirement. The impacts of natural hazards are much lower than in the baseline scenario. The CBA can emerge as a peripheral integrated zone and benefit from the wider reach of the area of concentration of flows and activities.

10.3.3. Rhine-Rhone Europe: competitiveness-oriented scenario

This is a prospective, policy-oriented scenario. It is based on the assumption of a significant reshaping of EU policies originating in the disappointing results of the implementation of the Lisbon Strategy during the period 2002-2005.

The attraction and polarisation potential of metropolitan areas is particularly strong and concentrated in the traditional Pentagon, to the detriment of peripheral areas such as the WCP. The area of concentration of flows and activities is much more limited than in the baseline scenario, although this does not seem to affect the relevance of Barcelona MEGA. The risk of rural marginalisation is much more intense than in the baseline scenario. The areas at risk of declining industrial activity are more extended than under the baseline scenario and will presumably affect certain areas of the CBA in a substantial manner. External migration

flows are particularly intense. As in the baseline scenario, the CBA has high potential for tourism and retirement, but certain remote rural areas are affected by severe population ageing and marginalisation. The resulting impacts of natural hazards are more intense than under baseline assumptions.

10.4. Most relevant challenges for the Working Community of the Pyrenees

10.4.1. Most relevant challenges

If current demographic trends continue, population in working ages will inevitably shrink as there will be insufficient entrants to replace those leaving. This will be intensified if present unemployment rates are sustained. In this context, economic expansion is difficult to sustain and welfare levels hard to preserve. In consequence, the current social security systems will be challenged.

Further concentration of population and economic activities in largest urban areas, at the expense of small and medium towns, is a common phenomenon in Europe. Strong-out migration towards bigger metropolitan areas can challenge the current reasonably consistent urban network and threaten polycentric development and internal cohesion. All these dynamics pose different challenges to urban and rural settings. Despite general population ageing and decelerating population growth, **metropolitan areas** are still subject to population growth and concentrate younger population. This is not only a consequence of the changing structure of the economy with its stronger emphasis on services and high-tech and R&D activities, but also internal and international migrations. Economic, socio-cultural and educational integration of population groups becomes an issue in those largest urban settings. Instead, ageing, depopulation and decline of economic activities are the main challenges in the **rural settings**. If this is sustained, marginalisation of those settings will be intensified. The foreseen modernisation of TEN-T and high capacity networks will not equally benefit all regions, creating potential bottlenecks in some areas while internal, rural and remote and mountainous areas will be discriminated from main transport infrastructures.

Increased pollution and high sensitivity to climate change and its consequences, namely floods, reduced snowfall, landslides, water stress, habitat degradation and fragmentation, loss of cultural and natural landscapes (also due to new energy models), and decline of biodiversity, among others, are the environmental challenges that the WCP will have to face.

Finally, a multi-level territorial governance scheme with a clear agenda and verification method is not a fact yet, threatening the entire cross-governance process and increasing the risk of achieving a fragmented view for the area.

10.4.2. Most relevant opportunities

Population ageing is leading to new business opportunities linked to social assistance and medical research, but also those related to active ageing, such as leisure and tourism. Urban demand can also enhance leisure activities, new energy production, agriculture quality products, biotechnology products, wellness, and beauty goods and services, among others, both in rural and urban areas. Out migration flows from large cities to medium and small towns and rural areas is also a relatively new phenomenon that can bring business opportunities in those rural settings. Consequently, economic and social activity can be activated in those areas. High potential for renewable energy (including solar, wind and biomass production), together with largely untouched cultural and landscape assets, as well as unexplored biological resources, gives room for the development of a green economy in the WCP, particularly in the rural areas.

Barcelona MEGA will consolidate its role as a global hub in a globalised economy and the entire CBA can benefit from this fact, especially if Mediterranean and Atlantic corridors are integrated to the 'area of concentration of flows and activities'. A number of smaller urban areas have experienced significant growth in GDP per head in the last decades and seem to have a population and economic potential strong enough to continue attracting research activities and to link up over time with the main European, and even international, centres of decision making. Existing endowment within all regions is thought to be generous enough as to maintain economic standards and even expand the economic fabric basing on Research and Development and other investments. All this contributes to reduce disparities among countries. In the very remote low-density areas, innovative communication systems will allow the local populations to be connected to mainstream information and communications.

Chapter 11 – Suggested strategies

11.1. Objectives and methodology

This chapter highlights the main strategies of different natures identified for each topic included on Phase 2 of the SWOT analysis. These strategies are based on the status analysis performed in previous steps, which are explained in previous chapters.

As it has been said before, a SWOT (Strengths, Weaknesses, Opportunities, and Threats) has been the general framework to reach the **Action-Decision Phase**. The analysis of Opportunity and Threats on one hand and Strength and Weakness on the other, as well as the analysis of the combination of these factors, has been the basis to suggest some possible actions jointly with the involved stakeholders.

The combination of Strength/Opportunity shows strategies to maximise strength under the opportunity (SO-strategies). Strength/Threat combination shows strategies to avoid threats by taking advantage of strength, (ST-Strategies). Weakness/Opportunity shows strategies to take advantage of the opportunity by complementing the weakness (WO-Strategies) and finally Weakness/Threat combination which shows strategies to face present problems in the face of foreseeable downturns (WT-Strategies)

The results of this Action-Decision Phase of the SWOT were discussed in the workshop celebrated on 14th of February 2012 in Zaragoza. The main findings of this process are presented in the following sections:

- Presentation of the possible actions: description of the strategies of different natures identifies for each topic included in the SWOT analysis. (Sub-chapter 11.2)
- Validation of the proposed actions: This validation was proposed as a proactive participation by the stakeholders, who were empowered to suggest and include relevant modifications if needed. A colour card participation technique was used in order to have an operative and agile validation process. (Sub-chapter 11.3)

11.2. Presentation of the possible actions for each topic analysed

11.2.1 Demographic Change

The main global objective identified was to Retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts. Therefore, it was proposed to consider several strategies such as (i) the application of family (childcare support, tax incentives, etc.) and smart migration policies (selective and focused on the long term, like integration measures, mobility partnerships, “brain gain”) aimed at retaining acceptable overall demographic dynamism and attracting young population, particularly within/to rural areas. Other strategies discussed were (ii) the promotion of the integration of minorities, in particular in metropolitan areas, and (iii) the adoption of a proactive approach towards existing social welfare systems that are currently threatened due to current demographic (and economic) trends. Lastly, (iv) the exploitation of new business opportunities derived from population ageing. In particular, within the rural areas good services oriented towards the elder people and active ageing might attract retirees from other regions that could underpin and diversify local economies through new economic activities related to leisure, tourism, wellbeing, social assistance and medical research markets, among other sectors.

11.2.2. Polycentric development

The major overall objective identified was to reinforce the polycentric nature of the urban network, through different actions such (i) as the implementation of tailored policies aimed at fostering small and medium urban centres, preferably those located in the mountainous domain and those crucial for the articulation of most isolated rural areas. Other actions were (ii) the connection of medium and small centres to nodes that give access to globalised markets and knowledge hubs, particularly Barcelona MEGA. (iii) However, active territorial policies should ensure operative functional relations between smaller centres and not only between small cities and big FUAs. Finally, the last action proposed was (iv) to apply restrictive policies aimed at preventing further concentration of population and activities in a limited number of cities.

11.2.3. Urban/rural relationship

To Achieve a new urban/rural relationship less biased towards the metropolitan domain was presented as the major objective, to be reached by (i) retaining and/or consolidating the existing agricultural and tourism potentials (quality wine production, ski resorts, etc.) within most productive rural areas. The (ii) search for economic alternatives within the most marginal areas, exploring additional development opportunities related to new urban-rural relationships, such as telecommuting and retirement phenomena, namely new crops, biomass production, wellness and beauty goods and services, tourism and leisure activities, etc., particularly in the mountainous area was proposed as a second action. Lastly, (iii) the expansion of the services and infrastructures available within such areas, particularly those related to health, housing, education, (internet) connectivity and multimodal accessibility was regarded as a condition for succeeding in the overall objective.

11.2.4. Accessibility and connectivity

The major goal in terms of accessibility and connectivity in the WCP is to increase overall and internal accessibility as a means to achieve a more balanced and competitive territorial structure. Specifically, the actions are (i) to consolidate and improve existing communication networks, making an effort to connect the main cities and corridors of the WCP (Garonne-Adour, Mediterranean, Ebro and Atlantic), to avoid bottlenecks in most congested sections, and to emphasise overall multimodal accessibility over individual transport modes, taking advantage of the foreseen investments on new infrastructures, such as the TEN-T, and existing international air hubs, and; (ii) to make an effort to increase internal connectivity within the WCP and solve specific accessibility issues of certain cities and marginalised rural areas as a means to put in place a more synergic and complementary development model within the area. An overall transport plan at the WCP level might help identifying local strategic objectives that could be linked to planned networks, either National or European.

11.2.5. Lisbon Strategy

To achieve higher living standards and social and territorial cohesion was presented as the overall objective. The specific strategies suggested are (i) to seek economic synergies and take advantage of existing opportunities emphasising local competitive advantages (i.e. place-based approach to regional development); (ii) to rethink the development model of the WCP by enhancing (smart) specialisation, training, R&D and fostering economic diversity and collaboration, aiming at increasing internal economic resilience; (iii) to offer specific support to the most deprived areas (tailored measures to foster alternative economic activities) and regions that are lagging behind (rural areas, mountainous areas, declining industrial regions), and; (iv) to adopt specific measures to minimise spatial segregation within cities.

11.2.6. Gothenburg strategy

The overall objective proposed was to take full (economic and social) advantage of natural assets while maintaining natural capital constant. To reach this goal, specific actions were suggested, such a (i) wise management of natural resources, making a sustainable use of natural and biodiversity assets, including for example health and cosmetic use of forest species and a sound expansion of renewable energy potentials though tailored policies. Other actions proposed were (ii) to keep natural capital constant, supporting environmental and spatial policies and protecting the natural heritage through the expansion of protected areas (Natura2000 network); (ii) to support and apply awareness raising measures towards environment and fight against climate change and its consequences; (iii) to correct localised environmental problems, especially in urban areas, and; (iv) to explore the possibility of investing in new environmental technologies.

11.2.7. Cross-border governance

The major objective suggested to stakeholders was to increase cross-border cooperation as a means to achieve a more balanced territorial development. This could be achieved by means of (i) consolidating the existing body of territorial cooperation schemes and (re)activating the process towards the production, updating and implementing a shared strategic vision focused on territorial development, and; (ii) reinforcing the existing territorial cooperation schemes in those areas in the need of further harmonisation and shared views, such as spatial planning, working towards common strategic territorial objectives for the area.

11.3. Validation of the proposed strategies

11.3.1. Demographic Change

The main global objective identified regarding demography is to retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts.

In this respect, stakeholders considered emphasised the importance of the links between demographic trends and the overall economic activity, and particularly to employment. In parallel, when analysing the demographic phenomenon the dualism between rural and urban areas should be taken into account, as both issues are intertwined in many ways. Indeed, urban-rural relationship is a conditioning phenomenon clearly related to demographic issues, with obvious linkages between population settlement systems, on the one hand, and employment, delivery of public services, housing and social policy, on the other.

Focusing on population settlement and urban-rural relationships, incentives to attract people to rural areas are considered essential. In this sense, the concept of "territorial contract" arises as a potential tool for promote sustainable development and ensure survival of rural areas by improving not only economic but also social and environmental factors that shape those sectors. This would also entail economic support by local authorities and compensation mechanisms aimed at mitigating the population and income declines in those areas.

As a key element of this strategy, employment generation by means of the exploitation of emerging activity niches is regarded as an essential condition to achieve a well-balanced spatial development scheme and thus avoid "excessive" concentration of population and activities in specific urban areas to the detriment of the rural setting. However, for the sake of a territorial rebalancing the two spheres (i.e. urban and rural) are not expected to have the same roles and significance, nor the urban context be penalised to the benefit of the rural sphere. Instead, this strategy should build upon the intrinsic characteristics of each area under a place-based approach. In other words, the objective should be to achieve high economic attractiveness and dynamism both in urban and rural areas to tackle current demographic trends and reach greater territorial balance. In truth, strengthening the urban network should be an essential component of the agenda, given that cities are the basis for any territorial development, increase overall competitiveness and provide essential services also to rural areas.

11.3.2. Polycentric development

Complementarity among urban centres is regarded as essential and challenging at the same time when it comes to its implementation, as this concept requires a shared view concerning territorial potentialities and development priorities. This shared view would be the starting point to reach the initial partnership necessary to lay down some initial linkages that can be the seed towards an enhanced territorial balance. On this basis, balanced territorial development patterns and feasible strategies supporting polycentricity should be identified and put in place, respectively.

Territorial multi-scale complexity is regarded as an element that highly impacts urban polycentricity. Accordingly, addressing this issue requires analysing the role of each node of the urban network under a scale-based approach. Along these lines, urban partnership is seen as a valuable tool supporting territorial balance, while micro-centralities, supported by new technologies, can play a significant role in most remote areas that should not be ignored.

11.3.3. Urban/rural relationship

The stakeholders consider that to a large extent still remains a widespread view of "rural" as an identity and conservative phenomenon, opposed to urbanisation and suspicious of the penetration of the "urban" phenomenon. This attitude, frequent within some mountain rural areas, is seen as opposed to the urban reality, which would be more opened to change.

In this regard, it was agreed that this view would have to be somehow dismissed and that the actual focus of policy action should be put on the achievement of compatible and simultaneous development of rural and urban areas, especially as it appears to be a great range of intermediate situations between the most

isolated rural areas and the urbanised regions. The focus should be specific, differentiating rural zones where there is an active economy and rural zones conceived as a second home. The "Strategic Plan for the development of the Pyrenees" carried out by Navarra is an interesting and well documented experience that could be considered as an example for a common diagnosis for the development of the Pyrenees.

Finally, it was emphasised that the lack of political leadership and neighbourhood disputes should be addressed, while the greater influence of urban areas on politics in comparison to rural zones should also be tackled.

11.3.4. Accessibility and connectivity

Passengers and freight transport, logistics as well as winter viability stand out as the elements to be addressed by the suggested strategies. Accessibility and multimodality become more relevant than in other areas in Europe, due to the mountainous character of this area, which shapes specific cultural and socio-economic peculiarities and intensifies the remoteness of certain regions.

In this regard, the reorganisation of the road and rail networks remains an issue, in particular concerning railroad permeability of the Pyrenees through its central regions, which could offer an alternative to road transport. However, such interventions are strongly conditioned and hindered by specific regional interests and political factors.

Once more, complementarities and balanced spatial development between different territories, together with the assessment of social profitability emerge as essential factors for decision-making. In short, it was concluded on the need to prioritise projects according to specific criteria and bet on telecommunications as they require fewer investments than other physical infrastructures.

11.3.5. Lisbon Strategy and Gothenburg strategies

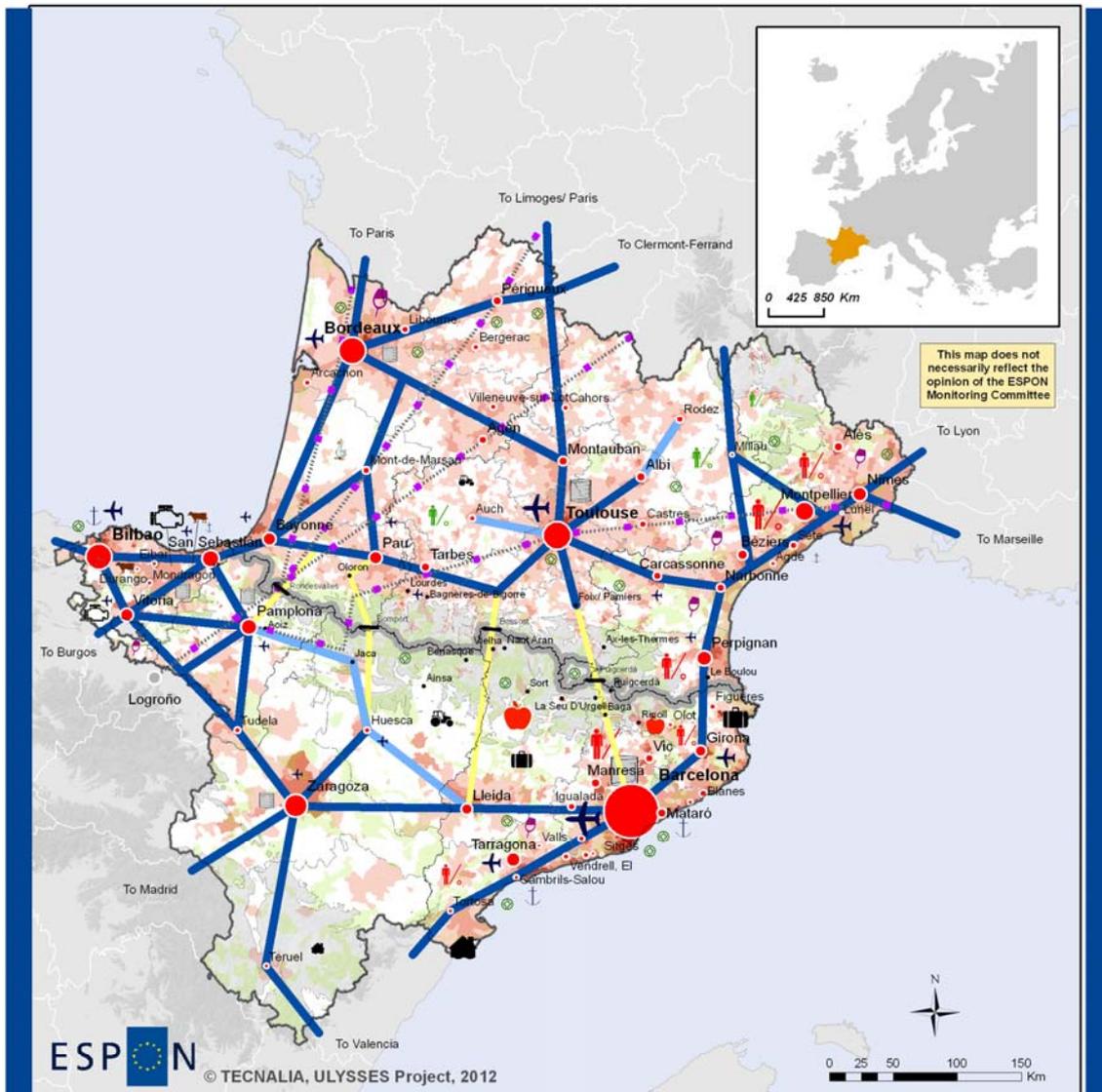
Lisbon and Gothenburg strategies were not explicitly discussed as such, as there are clear overlaps between the variables included in them and the issues already discussed.

11.3.6. Cross-border governance

Considering the spatial and sectoral imbalances existing within the area, the main goal regarding governance is to increase cross-border cooperation as a means to achieve a more balanced territorial development. In order to strengthen the cooperation on both sides of the border, all the governance agents involved in this area at the local, regional and national levels are expected to be a good example of cooperation and exchange (good practices) in all its forms and manifestations.

As a general conclusion, it was suggested to build on the "Strategy of the Pyrenees" (WCP, Generalitat de Catalunya 2006). Adopting a pragmatic position by addressing first the most widely shared action lines becomes essential. This entails a rigorous selection of projects to be implemented in first place, looking at variables such as added value and measurable economic impacts by using reasonable resources. The upcoming Cross-Border Cooperation Programme 2014-2020 could be built around such a strategy and the ULYSSES outputs and experience.

Chapter 12 – General conclusions



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Local level: NUTS3/LAU2 Source: Various sources, various years © EuroGeographics Association for administrative boundaries

Territorial profile

Population density measured in inhabitants per square km (LAU2)
 20 100 500 1,000 2,000 5,000

Population of main FUA centres (inhabitants)
 • 100,000 • 1,000,000

• Urban microcentralities¹

Territorial performance

Unemployment rates (NUTS3, 2009)⁸
 🟢 < 7% 🟡 > 14%

EPO patents⁹
 📄 NUTS2 regions with more than 40 EPO patents per million inhabitants

Cultural and natural heritage
 🗺 St. James' Way 🌐 UNESCO sites
 🌿 Protected areas in Natura 2000 network

Agricultural specialisation of most productive areas⁷

- Poultry products
- Fruit
- Beef/ Dairy
- Wine

Statistical outliers by main employment sector (NUTS3 - NACE, 2008)^{6,7}

- Agriculture/ fishing
- Industry
- Construction
- Commerce, tourism and transport

Legend

- International border
- Areas above 1,000 m over sea level
- Main transport corridors²
- Secondary transport corridors³
- Secondary Trans-Pyrenean corridors⁴
- Airports¹⁰
- Ports¹¹

¹This label refers to the urban centres in the Pyrenean domain that do not qualify as FUAs but have an important role as service-providers in the mountain area. Only cities with more than 1,000 inhabitants are accounted.
²Main transport corridors represent the main transport corridors according to the combined road/railroad transit capacity.
³Secondary transport corridors represent those corridors with road infrastructures that are being currently upgraded to high capacity lines and/or already count on high capacity sections.
⁴Secondary Trans-Pyrenean corridors represent the four main road crossings within central Pyrenees. Of them, only Somport can be considered also a railroad crossing, although it is currently closed to international traffic.
⁵This category includes those NUTS 3 areas with an agricultural productivity over 1,400 Euro per agricultural hectare.
⁶These symbols identify those regions showing atypically high shares of employment in specific economic sectors, according to the 1.5(IQR) criterion.
⁷The symbol size of agricultural specialisation and main employment sectors are graduated according to the Gross Value Added (GVA) of the respective sectors.
⁸The symbol size of unemployment rates are graduated according to the overall workforce (in France) and unemployed people (in Spain) registered in 2009, according to national statistical offices. For comparability reasons, unemployment rates themselves have been obtained from EUROSTAT Regional Database (fst_r_ru3r).
⁹Only those NUTS 3 regions showing unemployment rates under 7 % and over 14 % are represented on the map.
¹⁰The symbol size of research and development are graduated in terms of the overall number of EPO (European Patent Office) patents issued in 2009, according to EUROSTAT data (pat_ep_rot).
¹¹Only those areas with more than 30 EPO patents per million inhabitants are represented on the map.
¹²The symbol size of airports are graduated in terms of the overall number of passengers boarded in 2010, according to EUROSTAT data (avia_pasa).
¹³The symbol size of maritime ports are graduated in terms of the overall amount of goods handled in 2010 (measured in tonnes), according to EUROSTAT data (mar_go_ea).

Map 8 Territorial overview of the Working Community of the Pyrenees

Map 8 synthesises some of the most relevant territorial trends observed in the WCP. The first and most obvious dimension that deserves attention is that we are actually dealing with a quite complex and diverse area conditioned by various elements, such as:

- Geography: the presence of the Pyrenees mountain range still is a determining element in the territorial structure of the area, limiting human activities and sheltering natural heritage at the same time. At the same time, the area is located in a geo-strategic position between two major seas, the Mediterranean Sea and the Atlantic Ocean.
- International border: the existence of an international border and three countries in this area still is a major feature within the territorial structure of the area, with clearly perceivable border effects measurable both at the national and regional levels.

Both factors, among many others, condition the distribution of the population over the space, which is highly conditioned by the presence of the mountain range and the different settlement patterns on both sides of the border. From this latter perspective, it clearly emerges a much more balanced territorial structure in the French sector, where the population density in rural areas tend to be over 20 inhabitants per square kilometre, in contrast to the Spanish side, where population is pretty much concentrated around urban hot-spots. In contrast, Spanish rural areas and landlocked regions, particularly Huesca and Teruel, show very low population densities.

This pattern should be analysed in combination with the overall demographic trends recorded in the area over the last decade, which seem to suggest that the slightly positive annual overall population growth rates due to positive net migration and the modest increase of fertility rates recorded in the early 2000 are currently reversing in some NUTS3 regions, particularly in Spain. This trend is a consequence of the recent decline in immigration inflows, to the point that in 2008 emigrants already exceeded immigrants in several regions, namely Barcelona, Bizkaia and Gipuzkoa.

Broadly speaking, this demographic behaviour can be understood as one of the consequences of the current economic downturn, and particularly of growing unemployment rates, which have increased dramatically in recent times, especially along the Mediterranean corridor. In fact, in 2009 unemployment was already an issue in many Spanish and French NUTS3 areas, with overall unemployment rates over 14% (Girona, Tarragona, Barcelona, Hérault, Pyrénées-Orientales and Gard). The opposite holds true for some inner NUTS3 in the French sector (Lozère, Aveyron, Gers) that could be defined as the 'employment diagonal' of the WCP if it was not for the modest share of the overall workforce that those areas represent (which is suggested by the small size of the symbols represented on the map).

In spite of the CBA having a relatively strong and diversified economy with growing returns of Research and Innovation investments (Navarra, País Vasco, Cataluña y Midi-Pyrénées produce more than 40 EPO patents per million inhabitants), strong internal disparities in GDP per capita are observed, with severe localised dependencies on specific economic sectors and activities.

All in all, the areas that are suffering the most from a social cohesion perspective are the Mediterranean regions (i.e. Languedoc-Roussillon and Cataluña), which by contrast are the most urbanised ones and shelter the biggest FUA. In fact, cities along the Mediterranean corridor concentrate more than 50% of the urban population, Barcelona alone accounting for more than 46% of the total urban population of the WCP. This means that the area holds a quite hierarchic urban network, mainly attributable to the proportional weight of Barcelona. However, if this city is excluded from the analysis, a much more polycentric urban structure emerges, particularly on the French sector, where FUAs are also distributed more evenly over the space.

In general, it can be said that a well-developed urban network exists in the WCP, with cities like Barcelona MEGA, plus Bordeaux, Toulouse, Zaragoza or the ones located in the Basque Country providing access to a big market, specialised services and global networks. Still, the uneven distribution of the urban population, together with some gaps and lacks of continuity in the urban network in some areas (e.g. the central sector of the Ebro corridor), and the scarcity of relevant urban nodes in the Pyrenees, challenge the objective of a balanced territorial development within the area.

To some extent, this is due to the unsolved internal accessibility issue within the area, which can be summarised by saying that despite the urban nodes within the WCP are reasonably well connected to high capacity infrastructures, with acceptable overall accessibility, especially in the French subsector, the connectivity between Spain and France through the central Pyrenees is still difficult for road traffic and

virtually impossible for railroad traffic. Internal connectivity and accessibility should definitively be in the agenda of any future spatial strategy if a balanced territorial scheme is to be sought for the area.

Partly as a consequence of this connectivity problem, the internal mountainous area is lagging behind in many respects. The scarcity of relevant urban nodes in the Pyrenees and the relative weak structural network of small and medium sized towns intensify the previously mentioned challenges in those marginal rural areas and mountainous sectors, which are challenged by unemployment, isolation and lack of competitiveness in certain cases. However, the presence of important natural, landscape and cultural assets, together with the difficult-to-capture-but-essential role of urban *microcentralities* in those areas, is regarded as a real development opportunity for the future.

In sum, population patterns, in combination with the territorial structure as well as the most recent demographic and economic trends, pose severe challenges to the WCP: while marginal rural areas and mountainous sectors are struggling with isolation, severe ageing and depopulation, most urbanised sectors are currently facing serious socio-economic problems, such as higher rates of long term unemployment rates and increasing share of population under the poverty line.

However, in interpreting these overall features it has to be taken into account the limits imposed by the regional delimitation and scale of analysis. From this twofold perspective, while some NUTS 3 areas included in the WCP fall outside the actual range of measurable cross-border effects (e.g. the French department of Lozère and the Spanish province of Teruel appear to be under totally different territorial dynamics not directly related to the Spain-France-Andorra border), the delimitations of NUTS 3 regions on which ULYSSES has based hide internal differences linked to specific territorial domains (e.g. depopulated mountain areas and densely populated plains and valley bottoms included in the same NUTS 3).

From a cross-border governance perspective, while language and geographic barriers and different institutional systems and planning traditions hinder cross-border cooperation, the high degree of institutional thickness and the numerous efforts to foster strategic development, including a first strategic document for the area ("L'avenir des Pyrénées dans le Contexte Européen"), are acknowledged to be a suitable institutional framework for expanding the current cross-border cooperation within the WCP.

In response to all the abovementioned challenges and opportunities, the SWOT analysis performed in ULYSSES has pinpointed a number of potential cross-border development strategies that aim at achieving the following list of overall objectives:

- Retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts.
- Reinforce the polycentric nature of the urban network.
- Achieve a new urban/rural relationship less biased towards the metropolitan domain.
- Increase overall accessibility, especially internal multimodal accessibility as a means to achieve a more balanced and competitive territorial structure.
- Achieve higher living standards, and social and territorial cohesion.
- Take full (economic and social) advantage of natural assets while maintaining natural capital constant.
- Increase cross-border cooperation as a means to achieve a more balanced territorial development.

In order to successfully achieve these goals, data and evidence-informed policy making seems essential. In view of the scarcity of public and private financial resources available, the identification of priorities for individual regions and the development of various forms of practical collaboration between those agents is more than ever a priority itself. The WCP should definitively invest resources in developing a detailed strategic vision (e.g. a spatial development plan) positioning the area in respect to the challenges expected in the years to come.

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Glossary

CBA: Abbreviation for Cross-Border Area, representing the Working Community of the Pyrenees

CLC: Abbreviation for CORINE Land Cover, a geographic land cover/land use database encompassing most of the countries of the European Union and the majority of the Central and East European countries and parts of the Maghreb.

EGTC: Acronym of European Grouping for Territorial Cooperation. It allows public entities of different Member States to get together under a new entity with full legal personality.

ERDF: Abbreviation for European Regional Development Fund.

EPO: Abbreviation of European Patent Office.

FUA: Abbreviation for Functional Urban Area, that is to say, the municipality (or a cluster of municipalities forming an urban agglomeration) and its related labour basin.

GVA: Abbreviation of Gross Value Added, which is a measure in economics of the value of goods and services produced in an area, industry or sector of an economy.

LAU: Abbreviation of the Local Administrative Units, a low level administrative division of a European state, ranked below a province or region. LAUs are basic components of Nomenclature of Territorial Units for Statistics regions (see NUTS below). For each EU member country, two LAU levels are defined:

LAU1: LAU1 were previously called NUTS-4 until the NUTS regulation went into force in July 2003. For some countries, the LAU-1 level is not defined, and thus equivalent to the NUTS-3 level.

LAU2: LAU2 were previously called NUTS-5. until the NUTS regulation went into force in July 2003. LAU 2 represents the lower administrative level (formerly NUTS level 5), corresponding to municipalities or equivalent units in the 27 EU Member States (Parishes in Andorra, *Communes* in France and Municipalities in Spain).

MTA: Abbreviation of Multi-Thematic Territorial Analysis

NACE: Abbreviation of *Nomenclature Statistique des Activités Économiques dans la Communauté Européenne*. The Statistical Classification of Economic Activities in the European Community is a European industry standard classification system consisting of a 6 digit code.

NUTS: Abbreviation of the Nomenclature of Units for Territorial Statistics. It represents a 'geocode standard' for referencing the subdivisions of EU space for statistical purposes.

NUTS0: First level definition of the EU space, corresponding to countries.

NUTS1: Second level definition of the EU space, corresponding to groups of regions or states.

NUTS2: Third level definition of the EU space, corresponding to regions (Regions in France and Autonomous Communities in Spain).

NUTS3: Fourth level definition of the EU space, corresponding to districts (Departments in France and Provinces in Spain).

POCTEFA: Acronym of *Programa Operativo de Cooperación Territorial España Francia*.

SMC: Abbreviation of small and medium-sized cities.

Total Dependency Ratio: Represents the ratio of the combined youth and senior population to the working-age population.

Total Fertility Rate: Represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with current age-specific fertility rates.

WCP: Abbreviation of the Working Community of the Pyrenees, a legal cooperation entity formed by the three French Regions (Aquitaine, Midi-Pyrénées, Languedoc-Roussillon), four Spanish Autonomous Communities (Catalunya, Aragón, Navarra, Euskadi) and the Principality of Andorra.

Annex I – SWOT analysis

AI.1. SWOT analysis – Synthetic tables

	Strength	
	Slightly positive annual overall population growth rates due to positive net migration and the slight increase of fertility rates recorded in the early 2000	
Opportunity	Overall comprehensive strategy for DEMOGRAPHIC CHANGE	Threat
New business opportunities within sectors like leisure, tourism, social assistance and medical research, among others, linked to current demographic trends such as population ageing and out migration flows generated by large cities (retirees and self-employed)	<p><u>Retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts.</u></p> <ol style="list-style-type: none"> 1. Apply family (childcare support, tax incentives, etc.) and smart migration policies (selective and focused on the long term, like integration measures, mobility partnerships, “brain gain”) aimed at retaining acceptable overall demographic dynamism and attracting young population, particularly within/to rural areas. 2. Promote the integration of minorities, in particular in metropolitan areas 3. Adopt a proactive approach towards existing social welfare systems that are currently threatened due to current demographic (and economic) trends 4. Exploit new business opportunities derived from population ageing. In particular, within the rural areas good services oriented towards the elder people and active ageing might attract retirees from other regions that could underpin and diversify local economies through new economic activities related to leisure, tourism, wellbeing, social assistance and medical research markets, among other sectors 	<p>Challenged social welfare systems due to shrinking population in the working age.</p> <p>High risk of further concentration of population and economic activities in the urban areas to the detriment of the rural setting, which might eventually lead to a complete marginalisation of the latter</p>
	Weakness	
	Declining population growth rate; unbalanced distribution of population; out-migration of young people, severe ageing and depopulation in marginal rural areas and mountainous sectors	

	<p style="text-align: center;">Strength</p> <p>Well-developed urban network. Barcelona MEGA, plus Bordeaux, Toulouse, Zaragoza and Basque cities, grant access to a big market, specialised services and access to global networks.</p>	
<p style="text-align: center;">Opportunity</p> <p>Mediterranean and Atlantic corridors could be integrated to the 'area of concentration of flows and activities'. Barcelona MEGA will consolidate its role as a global hub in a globalised economy.</p>	<p style="text-align: center;">Overall comprehensive strategy for POLYCENTRIC DEVELOPMENT</p> <p><u>Reinforce the polycentric nature of the urban network</u></p> <ol style="list-style-type: none"> 1. Implement tailored policies aimed at fostering small and medium urban centres, preferably those located in the mountainous domain and those crucial for the articulation of most isolated rural areas. 2. Connect medium and small centres to nodes that give access globalised markets and knowledge hubs, particularly Barcelona MEGA. 3. However, active territorial policies should ensure operative functional relations between smaller centres and not only between small cities and big FUAs. 4. Apply restrictive policies preventing further concentration of population and activities in a limited number of cities. 	<p style="text-align: center;">Threat</p> <p>Increasing hierarchisation of the urban network. Marginalisation of small and medium towns, with strong out-migration towards bigger metropolitan areas. Social conflicts might grow in large cities.</p>
	<p style="text-align: center;">Weakness</p> <p>Uneven distribution of the urban population. Gaps and lacks of continuity within the urban network. Scarcity of relevant urban nodes in the Pyrenees.</p>	

	<p style="text-align: center;">Strength</p> <p>Very productive agriculture in some regions. Important landscape and cultural assets in mountainous and remote areas.</p>	
<p style="text-align: center;">Opportunity</p> <p>New economic opportunities expected for rural areas driven by urban demand: leisure activities, new energy production, agriculture quality products, biotechnology products, wellness, and beauty goods and services, among others.</p>	<p style="text-align: center;">Overall comprehensive strategy for URBAN/RURAL RELATIONSHIP</p> <p style="text-align: center;"><u>Achieve a new urban/rural relationship less biased towards the metropolitan domain</u></p> <ol style="list-style-type: none"> 1. Retain and/or consolidate the existing agricultural and tourism potentials (quality wine production, ski resorts, etc.) within most productive rural areas 2. Search for economic alternatives within the most marginal areas, exploring additional development opportunities related to new urban-rural relationships, such as telecommuting and retirement phenomena, namely new crops, biomass production, wellness and beauty goods and services, tourism and leisure activities, etc., particularly in the mountainous area. 3. The previous point calls for an expansion of the services and infrastructures available within such areas, particularly those related to health, housing, education, (internet) connectivity and multimodal accessibility. 	<p style="text-align: center;">Threat</p> <p>Increased urban bias: further demographic and economic decline of rural regions. Depopulation and ageing might reach a point of no return.</p>
	<p style="text-align: center;">Weakness</p> <p>Relative weak structural network of small and medium sized towns. Unemployment, marginalisation, depopulation, lack of competitiveness in most remote rural areas.</p>	

	<p style="text-align: center;">Strength</p> <p>Urban nodes within the WCP reasonably well connected to high capacity infrastructures. Acceptable overall accessibility, especially in the French subsector.</p>	
<p style="text-align: center;">Opportunity</p> <p>Planned transport projects will dramatically increase rail accessibility and route options for freights and individuals, through the two TEN-T corridors. In the very remote low-density areas, innovative communication systems will allow the local populations to be connected to mainstream information and communications.</p>	<p style="text-align: center;">Overall comprehensive strategy for ACCESSIBILITY AND CONNECTIVITY</p> <p><u>Increase overall accessibility, especially internal accessibility as a means to achieve a more balanced and competitive territorial structure</u></p> <ol style="list-style-type: none"> 1. Consolidate and improve existing communication networks, making an effort (i) to connect the main cities and corridors of the WCP (Garonne-Adour, Mediterranean, Ebro and Atlantic), (ii) to avoid bottlenecks in most congested sections, and (iii) to emphasise overall multimodal accessibility more than individual transport modes, taking advantage of the foreseen investments on new infrastructures, such as the TEN-T, and existing international air hubs. 2. Make an effort to increase internal connectivity within the WCP and specific accessibility issues of certain cities and marginalised rural areas as a means to put in place a more synergic and complementary development model within the area. An overall transport plan at the WCP level might help identifying local strategic objectives that could be linked to planned networks, either National or European. 	<p style="text-align: center;">Threat</p> <p>The foreseen modernisation of TEN-T and high capacity networks will not equally benefit all regions. Internal, rural and remote and mountainous areas will be discriminated from main transport infrastructures, creating potential bottlenecks. Internal connectivity within the WCP is in the agenda at upper levels.</p>
	<p style="text-align: center;">Weakness</p> <p>The WCP is a peripheral area in relation to the Pentagon. Internal accessibility is conditioned by the Pyrenees: connectivity between Spain and France through the central Pyrenees is not easy.</p>	

	<p style="text-align: center;">Strength</p> <p>Relatively strong and diversified economy. Growing investment on Research and Innovation, and high levels of social cohesion.</p>	
<p style="text-align: center;">Opportunity</p> <p>Existing endowment within all regions is thought to be generous enough as to maintain economic standards and even expand the economic fabric basing on Research and Development and other investments. This way, disparities among countries could be reduced.</p>	<p style="text-align: center;">Overall comprehensive strategy for LISBON STRATEGY</p> <p style="text-align: center;"><u>Achieve higher living standards, and social and territorial cohesion</u></p> <ol style="list-style-type: none"> 1. Seek economic synergies and take advantage of existing opportunities emphasising local competitive advantages (i.e. place-based approach to regional development). 2. Rethink the development model of the WCP by enhancing (smart) specialisation, training, R&D and fostering economic diversity and collaboration, aiming at increasing internal economic resilience. 3. Specific support to the most deprived areas (tailored measures to foster alternative economic activities) and regions that are lagging behind (rural areas, mountainous areas, declining industrial regions, etc). 4. Specific measures to minimise spatial segregation within cities. 	<p style="text-align: center;">Threat</p> <p>High exposure to strong cyclic downturns. Coexistence of dynamic hot-spots with high concentrations of population and activities together with large economically empty spaces that threaten internal cohesion and might increase marginalisation of remote rural areas.</p>
	<p style="text-align: center;">Weakness</p> <p>Strong internal disparities in GDP per capita, with strong localised dependencies on specific economic sectors. Significant social vulnerability, particularly over the Mediterranean corridor.</p>	

	<p>Strength</p> <p>Remarkable environmental and landscape assets that are still intact to a large extent.</p>	
<p>Opportunity</p> <p>High potential for renewable energy, including solar, wind and biomass production, together with largely untouched cultural and landscape assets, as well as unexplored biological resources. Room for the development of a green economy, particularly in the rural areas.</p>	<p>Overall comprehensive strategy for GOTHENBURG STRATEGY</p> <p><u>Take full (economic and social) advantage of natural assets while maintaining natural capital constant</u></p> <ol style="list-style-type: none"> 1. Wise management of natural resources, making a sustainable use of natural and biodiversity assets, including for example health and cosmetic use of forest species and a sound expansion of renewable energy potentials through tailored policies. 2. Keep natural capital (landscape and biodiversity assets) constant, supporting environmental and spatial policies and protecting the natural heritage through the expansion of protected areas (Natura2000 network). 3. Support and apply awareness raising measures towards environment and fight against climate change and its consequences. 4. Correct localised environmental problems, especially in urban areas. 5. Explore the possibility of investing in new environmental technologies 	<p>Threat</p> <p>Increased pollution and high sensitivity to climate change and its consequences, namely floods, reduced snowfall, landslides, water stress, habitat degradation and fragmentation, loss of cultural and natural landscapes (also due to new energy models), and decline of biodiversity, among others.</p>
	<p>Weakness</p> <p>Localised environmental problems (ozone concentration, soil sealing, etc.)</p>	

	<p style="text-align: center;">Strength</p> <p>High degree of institutional thickness and numerous efforts to foster strategic development, including a first strategic document: “L’avenir des Pyrénées dans le Context Européen”.</p>	
<p style="text-align: center;">Opportunity</p> <p>No additional instruments are needed to consolidate a joint territorial vision and implement an active multi-level territorial governance scheme.</p>	<p style="text-align: center;">Overall comprehensive strategy for CROSS-BORDER GOVERNANCE</p> <p><u>Increase cross-border cooperation as a means to achieve a more balanced territorial development</u></p> <ol style="list-style-type: none"> 1. Consolidate the existing body of territorial cooperation schemes and (re)activate the process towards the production, update and implementation of a shared strategic vision focused on territorial development. 2. Reinforce existing territorial cooperation schemes in those areas in the need of further harmonisation and shared views, such as spatial planning, working towards common strategic territorial objectives for the area. 	<p style="text-align: center;">Threat</p> <p>A multi-level territorial governance scheme with a clear agenda and verification method is not a fact yet, threatening the entire cross-governance process and increasing the risk of achieving a fragmented view for the area.</p>
	<p style="text-align: center;">Weakness</p> <p>A ‘natural’ border hurdles cross-border cooperation: language and geographic barriers, different institutional systems.</p>	

AI.2. SWOT analysis - Phase 1 (Status-Analysis Phase)

		ESPON 3.2 SCENARIOS											
		Preliminary opportunities and threats		Baseline (trend) scenario		Danubian Europe: the cohesion-oriented scenario		Rhine-Rhone Europe: the competitiveness-oriented scenario		Final opportunities and threats			
strength	weakness	opportunity	threat	opportunity	threat	opportunity	threat	opportunity	threat	opportunity	threat		
<p>Demographic analysis</p> <p>Positive annual population growth rates driven by show positive net migration, as well as a gradual increase of fertility rates.</p>		<p>In the presence of proactive and strategic policies involving adequate policy mixes (not only demographic policies, but also social, rural, transport, economic, etc.), economic diversification and specialisation opportunities in areas such as health and leisure ('active ageing') and tourism might emerge in the following years, particularly in the rural areas.</p>		<p>By 2030, the CBA will show the most favourable situation in Europe in terms of life expectancy at birth. Southern France will have a median age under the European average.</p>		<p>A proactive social policy is put into place at the EU level. This entails stimulating domestic fertility rates via measures such as childcare support and tax incentives, introducing stricter immigration controls for non-EU countries, and promoting the integration of minorities into mainstream European society. Despite the restraints on external migration, fertility is on the rise and population ageing less acute than in the baseline scenario.</p>		<p>Despite family policies, relevant ageing problems will remain within the rural settings of most Spanish provinces of the CBA, particularly the Basque provinces and Navarra. Compared with the baseline scenario, the cohesion-oriented scenario foresees that population ageing (median age of the population in 2030) will be less strong in Spanish provinces of the CBA but somewhat stronger in southern France.</p>		<p>Regions with metropolitan areas and large cities like Barcelona, Toulouse, Bordeaux, Bilbao and Zaragoza will be clearly favoured in demographic terms under this scenario, showing stronger population growth or lower population decline, particularly thanks to the opening of external EU borders to (selected) immigration and new measures are taken to increase fertility rates (family policy), which will be particularly successful in the urban settings.</p>		<p>Under this scenario, the least favoured regions will be the most rural and mountainous areas, such as those included in the Pyrenees CBA, which will face significant demographic decline. However, the median age of the population will be much higher in the Spanish regions of the CBA than in the French sector. The demographic potential (Index of sustainable demographic development) will show a rather reverse picture.</p>	
		<p>Slowed down population growth mainly due to the negative trend of net migration in the last years; population ageing and unbalanced distribution of population, with the mountainous rural areas along the Pyrenees suffering out-migration of young people and in consequence, severe ageing and depopulation.</p>		<p>Challenged social welfare systems due to shrinking of population of working ages; Additional pressing challenges to mountainous rural areas concerning how to attract or retain people (employment creation, business opportunities, etc.) due to the polarisation of the population in certain (mostly urban areas) areas of the CBA.</p>		<p>The territorial differentiation of demographic structure (younger generations in metropolitan areas and more retirees in rural areas) will be reinforced. Consequently, population ageing and even depopulation might reach a critical level in certain rural areas of the Pyrenees, particularly in North-West Spain. Illegal immigration will continue, with immigrants settling mainly in metropolitan areas, where social conflicts will grow.</p>		<p>Under current trends, population might grow moderately (in particular within most urbanised areas) due to modest but sustained immigration trends. If a proactive social policy is to be applied, which would mainly entail stimulating domestic fertility rates and support selective immigration, population structure could also guarantee demographic replacement and ensure sustainability of social security systems. In any case, new relevant economic opportunities related to population ageing will emerge in the following years.</p>		<p>Allegedly, the persistent out-migration of young population towards (biggest) urban centres will deepen territorial differentiation of demographic structure, with younger generations in metropolitan areas and aged cohorts in smaller cities and rural settings. Consequently, population ageing and even depopulation will become a major issue in most marginal rural contexts within the Pyrenees. Illegal immigration will mainly affect metropolitan areas, where spatial segregation and social conflicts might grow.</p>			

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Polycentric development	<p>The Pyrenees CBA has a well-developed and quite dense urban network with a good number of medium to big cities. Although Barcelona metropolitan area makes the urban network of the CBA more hierarchic than expected, the presence of this city, plus other smaller centres like Bordeaux, Toulouse, Zaragoza and the Basque urban system, has a positive impact on the region, offering a big market, specialised services and access to global networks.</p>	<p>The distribution of the urban population in the area is uneven and centrifugal in respect to the Pyrenees mountain range. In this sector, the scarcity of relevant urban nodes hinders rural development as much as urban development itself. The urban network elsewhere shows gaps and lacks of continuity, particularly on the Spanish sector.</p>	<p>The existing network of small and medium - sized towns (~ 10-15 k inhabitants) grants many areas in the region access to urban services that may offer additional opportunities for a regionally balanced development. In parallel, the role of the dominant city as a global hub, connecting the CBA to international knowledge networks has not been fully exploited yet, in part due to internal connectivity problems.</p>	<p>The scarcity of relevant urban nodes in the inner parts of the Pyrenean domain, together with increased depopulation, poses severe challenges to local development in this sector, which will allegedly have to face additional constraints in the near future derived from existing trends that might consolidate its subsidiary role and further concentrate population and activity on biggest centres. In absence of specific measures supporting medium and small cities, rural and mountainous areas will become more isolated and marginalised.</p>	<p>At the European level, the Pentagon of the early 2000s, grouping the areas of concentration of flows and activities has expanded, mainly along the main transport corridors, in the direction of important peripheral MEGA like Barcelona and along the Atlantic coast down to the Basque urban network, which by 2030 might be integrated within the core economic area of Europe.</p>	<p>The basic characteristics of settlement systems will remain constant. Bigger cities and metropolitan regions will be the main engines of growth, consolidating the hierarchisation of the urban network. Large cities also attract the majority of unskilled immigrants. The gap between rich and poor within cities will also widen, producing social strife and sometimes erupting into violence.</p>	<p>The dominance of metropolitan areas as growth centres will be less pronounced. The 'area of concentration of flows and activities' will include Barcelona, Bordeaux, Toulouse and the Basque urban system. Towns within the CBA will take advantage from out migration flows generated by large cities (retirees, self-employed) and from tourism and other activities. Integration efforts will limit social and physical segregation in cities and the resulting feeling of insecurity.</p>	<p>As the global growth rate generated by the cohesion scenario is rather modest, it can be questioned whether a sustained cohesion policy is realistic for the long-term. It is not unlikely that the process of territorial differentiation between metropolitan and non-metropolitan areas shown in the baseline scenario takes over after 2015. thus reinforcing the primacy of metropolitan regions within the CBA.</p>	<p>Regions with large metropolitan areas will progress comparatively more than others. Barcelona will reinforce its role as a major European pole, attracting population from the entire CBA, especially from the Spanish sector. Old industrial areas of the CBA such as the Basque conurbation will have lower populations, but will upgrade into modern high-tech, capital-intensive industrial regions. The networking of metropolitan areas progresses significantly, driven by large companies.</p>	<p>Much of the top-level innovative economic activities will continue to take place in larger metropolitan areas of Europe. In fact, the growth will be remarkably concentrated in the central 'Pentagon' area of Europe in general and in metropolitan areas in particular, together with national 'champion' cities. Consequently, smaller cities within the CBA, especially in the most rural regions, will be further marginalised, with strong migrations towards the bigger metropolitan areas inside and outside the CBA, even abroad.</p>	<p>At the European level, in the following decades most cities from the Mediterranean and Atlantic corridors, particularly Barcelona FUA, will be integrated to the 'area of concentration of flows and activities' (the present Pentagon), thus increasing overall polycentrism. As a consequence, Bordeaux-Bilbao and Montpellier-Barcelona corridors will enlarge their relative weight within the CBA. Indeed, Barcelona MEGA will consolidate its role as a global hub in a globalised economy.</p>	<p>At the CBA level, biggest FUAs will continue growing comparatively more than smaller centres in the following years, thus increasing urban hierarchisation within the region. This implies that most small and medium towns within the CBA will be marginalised, with strong out-migration towards bigger metropolitan areas, particularly of skilled young people. Large cities will also attract the majority of foreign immigrants, where social conflicts will grow.</p>

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Urban-rural relationships	Some regions of the CBA, particularly those along the main water channels, have a very productive agriculture. In contrast, mountainous and remote areas are endowed with important landscape and cultural assets that enhance the economic dynamism of many rural communities in different ways.	Rural-urban relations are penalised by a relative week structural network of small and medium sized towns. This has increased the remoteness of many rural areas, which have already been largely depopulated. In parallel, agriculture and fishing face a general lack of competitiveness, with declining contributions to VAT and employment that further reinforces urban economies to the detriment of the rural ones.	According to the observed trends, the introduction of new energy crops , together with the generalisation of organic farming and quality products might contribute to further consolidate the agricultural sector within the most productive areas. In parallel, mountainous areas have important development opportunities in the field of tourism and leisure sectors , derived from vacation flows and out-migration from urban areas (retirees, self-employed) that are largely unexploited.	Most areas in the mountainous setting and most regions in the Spanish subsector of the CBA will be further impacted by a net loss of competitiveness of their agricultural models . In absence of other economic alternatives, this will increase the on-going population ageing and land abandonment. The expected CAP reform can be considered another factor of uncertainty that might impose additional disturbances on the agricultural sector of the area.	Most parts of the rural settings of the CBA have a high potential for higher value agricultural activities such as quality agricultural products and energy crops, as well as emerging non agricultural activities such as tourism and retirement linked to intrinsic geographical attributes (coastal, lake and mountain regions) and the ageing characteristics of the European population in general. The combination of the latter two factors will allegedly boost the proliferation of retirement homes in the CBA.	High risk of rural marginalisation in some large areas of the CBA (mainly mountainous areas and less productive agriculture). Jobs will become a highly scarce resource, population will shrink and grow older. Accordingly, socio-economic disparities will grow between metropolitan regions and peripheral rural regions. Where the demographic situation, production conditions and the appeal of the natural landscape are unfavourable, marginalisation and abandonment will progress.	Urban-rural relationships and partnerships will intensify more in rural areas, and around medium-sized and small towns than in more urbanised regions around metropolitan areas. The growing demand for cultural landscapes will provide opportunities for new economic activities . Thus, the depopulation of rural areas will be less marked . Market forces and energy crops will favour highly productive agriculture in fertile areas, especially within the French subsector of the CBA.	Despite all efforts, the socio-economic viability of some rural areas will lag behind . These are rural areas where the demographic situation (high level of population ageing), the production conditions (low level of soil fertility, increasing drought) and the attractiveness are very unfavourable, and are to be found mainly on the Spanish sector of the CBA.	Diversification of the economic base takes place mainly around metropolitan areas where commuters and enterprises locate, with intense urban-rural relationships . Attractive mountain areas will also diversify their economic base through residential and tourism sectors. In the very remote low-density areas, innovative systems of flexible and mobile service provision will allow the local populations to profit from modern services. In fertile rural regions, agriculture will strongly intensify, thanks to energy crops.	Traditional economic activities (agriculture, forestry, handicraft, traditional industries) will decline , contributing in turn to an acceleration of the demographic decline seen in numerous mountain areas and inevitable population ageing . Employment in agriculture, in particular, will further decline, and sparsely populated rural areas will be increasingly abandoned and in the process of desertification , including most rural regions within the CBA.	Under current trends, more economic opportunities driven by urban demand , i.e. urban-rural relations, such as occasional tourists, retirees, and self-employed leaving most congested FUAs, or new energy and production models linked to expanding green economies, are foreseen in rural areas. If supported by wise policies, fields such as energy production, agricultural quality products, biotechnologies, wellness, and beauty markets will become a real option for remote rural areas in the following years.	In absence of specific policy actions, the urban bias will continue to prevail . Thus, the majority of rural regions within the CBA will further decline in demographic and economic terms, as young generations will migrate to the city, given that most employment opportunities will be based on urban contexts. In some areas, depopulation and ageing might reach a point of no return , where the critical mass needed to exploit the few existing opportunities cannot be pulled together anymore.

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Accessibility and connectivity	Most urban nodes within the CBA are reasonably well connected to high capacity infrastructures, both by land and air transport systems, while the French central Pyrenees area is also well connected to the European Pentagon and international networks through Toulouse airport. All in all, the overall accessibility of the Pyrenees CBA is good enough to support local economy and social needs in most NUTS3 regions, despite some specific intra-regional situations might suggest otherwise.	In terms of land accessibility the Pyrenees are a very peripheral area in relation to the Pentagon , especially the Spanish sector. In turn, internal accessibility is pretty much conditioned by the mountainous chain : rail connectivity between Spain and France through the central Pyrenees is not possible today, and there only exist two high capacity road crossings, both of them peripheral. Air accessibility is also quite poor in some FUAs, such as Zaragoza.	Recent trends seem to indicate that, all in all, transport accessibility will continue to improve in most regions in the near future. Important infrastructures, such as the TEN-T corridors , and high speed train lines will become reality in the years to come, increasing overall connectivity and accessibility to European and global nodes. Modern ICT technologies will also play a major role in increasing accessibility to most remote regions through virtual networks.	Accessibility will not be increased at the same rate in all areas. The preliminary design of European TEN-T corridors that has been recently published will further reinforce the peripheral nature of the flows that transverse the France-Spain border , which could eventually lead to traffic congestion on those corridors and strengthen the marginalisation of central regions and mountainous sectors, especially on the Spanish side of the border.	The infrastructure investments will widen the radius of high-accessibility areas in Europe, including most regions in the CBA and particularly the connections between major cities . Also a greater emphasis will be placed on mass transit , due to the escalating energy prices.	The sustainable character of increasing energy prices (in particular of oil) will be a major constraint for the transport sector, both for goods and people's transport, considering the remoteness of most regions of the CBA.	In addition to major corridors, support is also given to a number of strategic regional transport axes (particularly railroads) in the context of rural development plans, so as to connect as many medium-sized and small towns as possible to the trunk networks. The Pyrenees will be among the most favoured regions at the European level and will contribute enhancing internal connectivity within the CBA . In parallel, the 'democratisation' of remote forms of mass communication (ICT etc.) also plays a part in re-establishing the viability of rural, semi-rural and some remote areas.	In terms of Europe-wide accessibility measured by transport costs, the regions more favoured than in the baseline scenario are mainly the regions of the Pentagon, a number of more peripheral regions such as western France and the western regions of the Iberian Peninsula, but some areas within the CBA might benefit only marginally from those trends, depending on how the new and improved transport networks are traced.	In the competitive scenario, transport is also meant to contribute to European competitiveness globally and transport policies are shaped accordingly. Significant EU resources (much more than in the baseline scenario) are injected in the TEN-T and into research and technological development , in order to counteract the progressing oil depletion and the related price increase of fuel. This increases multimodal accessibility in all regions within the CBA.	Regarding accessibility, it is generally felt that the market should dictate where links are most needed, but that priority should be given to linking together economically strong metropolitan areas as this would produce the most added value. Accordingly, most large cities within the CBA will be fully connected to the European core though high capacity infrastructures, but many regions will gain only little benefit from the modernisation of Trans-European road and rail networks, remaining mere transport corridors.	According to current trends and programmed investments, internal and external accessibility within the CBA will be further enhanced in the following years. Huge transport projects will dramatically increase rail accessibility and route options for freights and individuals. Remarkably, the main FUAs will be connected to the two TEN-T corridors that will cross the CBA, increasing economic opportunities for cities, while in the very remote low-density areas, innovative communication systems will allow the local populations to be connected to mainstream information and communications, granting access to new economic opportunities.	The planned modernisation of TEN-T and high capacity networks will not equally benefit all regions within the CBA. Indeed, such modernisation will add less value in internal, most rural, remote and mountainous areas within the CBA. These areas will be clearly discriminated from the design of biggest transport infrastructures , which will reinforce the peripheral nature of international communications, creating potential bottlenecks for Iberian exchanges with the continent. Internal connectivity within the CBA does not simply seem to be in the agenda .

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<p>Every single NUTS 3 level unit has its own intrinsic characteristics that have conditioned past activities and the economic evolution of the area as a whole, having given place to a relatively strong and diversified economy. In parallel, the area is quite well positioned in terms of Research and Innovation, with an expanding expenditure on innovative research in every sector analysed. In relation to Social Cohesion, although disparities exist among regions, those disparities are not very pronounced.</p>	<p>There CBA holds strong internal disparities in GDP per capita, with strong localised dependencies on specific economic sectors. According to the pre-crisis figures on which Ulysses analysis was based, the worst situation in social terms was located in the Mediterranean French sector. However, after the financial shock of 2008, the subsequent economic downturn and the debt crisis that followed, which hit particularly hard the Spanish side, the most vulnerable area in social terms is now the Mediterranean <i>Spanish</i> corridor, with unemployment rates over 20% in some areas.</p>	<p>All regions have specific potentialities for particular and diverse products, activities, sectors ... All in all, this background can be considered a good starting point for achieving higher economic dynamism based on local assets, under a place-based economic approach. In other words, the economic structure of the CBA is diversified enough and has enough expertise and local assets as to be competitive at the global level, once the current decline in the economy ends.</p>	<p>In the current context of recession, there is a risk that certain regions will be left behind (low ability to create opportunities to overcome the crisis, low investment in R&D and education ...). Therefore, the most direct threats in such areas are increase of unemployment, low quality jobs (particularly among young people) and the increase of the share of population at risk of poverty. Social Cohesion is at risk in regions like Cataluña and Languedoc-Roussillon, the worst positioned areas in relation to variables such as youth unemployment, long-term unemployment, population at risk of poverty and tertiary education.</p>	<p>The French southern belt will show stronger economic performance than most regions in the pentagon. In the Spanish sector, higher than average or medium growth rates are expected in regions with large metropolitan areas, such as Barcelona and the Basque region.</p>	<p>In general all Pyrenean regions will deteriorate their situation with respect to the EU average, the loss being higher in rural areas. All in all, the Spanish sector of the CBA will show weaker economic performance. Here, unemployment will remain substantially higher than in the core areas of the EU.</p>	<p>The cohesive scenario provides a more diffused development, especially in rural regions, peripheral regions, and regions with a medium-low income level. Most NUTS 2 included in the CBA will show a sustained growth rate. Cataluña would be the most dynamic region in economic terms, together with Languedoc-Roussillon.</p>	<p>The approach consisting in concentrating policy support in locations within peripheral regions where a certain minimum of innovative capabilities, social capital, and sectoral concentration already exists, would lead to a growing differentiation between regions. In this line, some areas along the Ebro valley and most French regions of the CBA (with the exception of Pyrenees Atlantiques and Landes), particularly those over the Mediterranean coast, could be penalised by the overall economic trends described by this scenario.</p>	<p>Resources will be diverted from the CAP and Structural Funds towards R&D, technological development, ICT, education and training, improvement of the external accessibility of Europe. Among the most benefiting regions of these new policies are those which already showed a good endowment, thus those with large metropolitan areas, like Barcelona and, to a lesser extent, also the Basque cities, Toulouse, Bordeaux and Zaragoza.</p>	<p>The overall absence of a strong cohesion policy will lead to a situation where the majority of the economically weak border regions remain in a status of backwardness, with high unemployment rates. This will make growth less inclusive in most regions of the CBA, especially those included in the mountainous domain. In parallel, most industrial nodes both in the Spanish and French sectors will be more exposed to delocalisation trends and other associated risks than under the baseline scenario.</p>	<p>Arguably, under the current development model the CBA as a whole, as well as every NUTS2 region individually, can expect a sustained growth rate in the following years, once the current crisis is left behind. Existing endowment within all regions is thought to be generous enough as to maintain economic standards and even expand the economic fabric basing on Research and Development and other investments. In general, disparities among countries will be reduced.</p>	<p>Business as usual would expose CBA's economy to strong cyclic downturns, such as the one that we are currently facing, while some specific areas within the region, namely those more ruralised and isolated, including mountain areas, would be penalised by much inferior growth rates and even de-growth, depopulation and eventually marginalisation. Social performance indicators such as long-term unemployment and population at risk of poverty will mirror the spatial distribution of economic implementation that as it has been said before will be characterised by increasing regional and intra-regional differences.</p>

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<p>Gothenburg Strategy</p> <p>Although Europe is suffering from an overall loss of biodiversity and ecosystem fragmentation, the CBA is quite well positioned considering variables such as soil sealed area, ozone exceedances, waste and water treatment, overall surface of Natura 2000 protected areas, solar energy and wind potentials. All in all, the CBA is endowed with remarkable environmental and landscape assets that have remained intact to a large extent.</p>	<p>The most urbanised regions of the CBA, particularly those along the Mediterranean corridor, show the highest values of ozone concentration exceedance, symptomatic of high pollution levels. Urban areas also hold the worst figures in terms of soil sealing per inhabitant, while almost all French regions within the CBA are below the EU27 average with respect to Natura 2000 surface.</p>	<p>Solar, wind energy and biomass potentials are very high in some regions of the CBA, suggesting further employment opportunities and more sustainable pathways within those areas. There are also large well-preserved areas with low urban pressure where leisure and tourism activities related to landscape assets might be further exploited. This could eventually lead to additional protection and even expansion of current assets.</p>	<p>The main threats related to Gothenburg strategy are found in urban regions, especially in those areas located nearby the main water channels. These sectors have a greater vulnerability to climate change and its consequences, such as floods and storm events, while most Southern Spanish NUTS3 regions have higher sensitivity to other events related to climate change, such as recurrent droughts. Mountain areas will also be severely affected by climate change (reduced winter tourism, summer wildfires, silviculture, etc.)</p>	<p>The chequered implementation of Natura2000 will result in checking, but not reversing, the decline in biodiversity. Very relevant environmental (and cultural) assets will remain in the mountainous domain of the CBA.</p>	<p>Climate change could make some areas in the Pyrenees inhospitable, particularly in the Spanish sector, which will struggle with perennial water shortages. Inter-regional tensions for the appropriation of water resources will emerge in some areas to the South on the Pyrenees while the mountainous domain will face recurrent floods and winter tourism will be impacted, with a transfer of winter sport activities to higher altitudes and latitudes.</p>	<p>Due to the implementation of adaptation measures, the effects of climate change will be much less severe, and the resulting impacts of natural hazards (drought, fires, floods) are much lower than in the baseline scenario. Wider use of solar energy and of biomass and bio-fuels contributes to the improvement of the environmental quality of the area. In the mountain domain, the protection of forests will contribute to the production of biomass, whilst preserving traditional landscapes.</p>	<p>The magnitude of climate change, despite the environmental legislation to counteract it, will remain the same. In rural regions, the higher level of energy self-sufficiency does not automatically mean that the environmental quality will be improved overall. In the case of wind energy damage to natural and cultural landscapes cannot be excluded. The mass production of energy crops may also endanger the environment in the most agriculturally-oriented regions. The impact of climate change on winter tourism will also be severe.</p>	<p>A number of new technologies, such as hydrogen production and coal gasification, have positive environmental impacts, particularly in most urbanised areas. The same is true for the use of hybrid cars.</p>	<p>Environmental concerns will play a very subsidiary role within this scenario, to the point that:</p> <ul style="list-style-type: none"> - wetlands and other natural areas near urban areas will be transformed for urban development - agriculture will almost disappear in some areas most acutely affected by climate change; - the decline in biodiversity will be slowed but not stopped; - nature will be literally marginalised and species forced to move to less habitable areas, if they could. - the revival of nuclear electricity production will bring with it issues of security 	<p>High potential for renewable energy, including solar, wind and biomass production, together with largely untouched cultural and landscape assets, as well as unexplored biological resources, which could be exploited rebalancing CBA's economy towards new sustainable pathways based on win-win strategies within a general green economy approach.</p>	<p>The main challenges faced by the CBA, as far as environmental protection is concerned, are increased pollution and transformation of certain areas due to urban and tourism development, together with climate change and energy production impacts, namely: floods, reduced snowfall, landslides, water stress, habitat degradation and fragmentation, loss of cultural and natural landscapes due to new energy models, decline of biodiversity, energy risks linked to nuclear power.</p>

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Governance and existing cross-border cooperation schemes	High degree of institutional thickness and numerous efforts to foster strategic development. Beyond the Communauté de Travail, a series of cross-border institutions have been established, including several EGTCs. With regard to a joint territorial vision on the cross-border level, in 2005 the study "l'avenir des Pyrénées dans le contexte européen" has built the basis for a political spatial development concept	From the structural point of view, the border is a 'natural' border that may hinder cross-border cooperation: the languages (including Basque and Catalan) of this large border region make up a language barrier; from an institutional point of view France has a much more centralised system than Spain; with regard to territorial development and spatial planning, while France traditionally has focussed on the comprehensive approach of <i>aménagement du territoire</i> , Spain is following to some extent a land use regulation approach without an excessive degree of regulation.	The so obvious barrier function of the mountain range could be relativised by cross-border cooperation itself: In particular the related languages and planning systems of the region still provide a fruitful ground for cross-border cooperation. The condition , however, is that a common view of the territorial dimension of the cross-border area is further consolidated through periodic revision of the strategic documents generated so far.	Cross-border cooperation has achieved in the Pyrenees a level from which not many additional governance instruments could be found missing. All the preliminary preconditions needed to develop a common understanding of the problems faced by the cross-border region have been met, while the most relevant and recent policy instruments have also been implemented in the area. Still, a fragmented and ill-coordinated narrative could emerge from those initiatives if a widely accepted and periodically reviewed territorial strategy for the entire area is not adopted and implemented.	Increasing cooperation between cross-border regions, through increase in multi-level and cross-sectoral approaches,	Cross-border cooperation will be limited to specific programmes mainly focused on rural development	Active multi-level territorial governance , particularly in areas supported by structural funds, with: - Strong role of public actors in territorial governance - Stronger role for the European Commission	This scenario includes the abolishment of barriers to cross-border cooperation, with: - Less public intervention - Wider application of the Open Method of Coordination - Increased role of private sector in decision making	The emphasis will be on expanding and improving the common market rather than deepening cooperation between the member states (in the case of the CBA, Spain and France).	The CBA seems to be at a crossroad with regard to cross-border cooperation: a preliminary strategic vision has been agreed upon within the area and a number of institutional tools have been put in place supporting the process, to the extent that no additional instruments would be necessary to consolidate a joint territorial vision and implement an active multi-level territorial governance scheme aimed at the consecution of very concrete territorial development objectives.	However, the agreed view lacks of an implementation program , i.e. a strategic plan, with specific milestones and clear objectives, while the strategic document itself should be updated at regular intervals. This way, and despite all the available instruments, a multi-level territorial governance scheme with a clear agenda and verification method is not a fact yet, threatening the entire cross-governance process and increasing the risk of achieving a fragmented view for the area.

AI.3. SWOT analysis - Phase 2 (Action-Decision Phase)

	SO-Strategy	WO-Strategy	ST-Strategy	WT-Strategy
Demographic change	<p>Apply smart migration policies and promote the integration of minorities, in particular in metropolitan areas, and enact policies designed for improving the quality of life within all layers of the demographic pyramid. Support to business opportunities that the expansion of life expectancy will bring along in areas such as leisure and tourism markets, overall consumption, etc.</p>	<p>A proactive social policy. This entails simulating domestic fertility rates (particularly on the rural settings) via measures such as childcare support and tax incentives, delivering smart migration schemes and addressing social cohesion issues (linked to migration but also ageing). Support to business opportunities that may improve quality of life, such as social assistance or medical research)</p>	<p>Implement tailored policies aimed at retaining acceptable overall demographic dynamism and attracting young population within/to rural areas. Population ageing can also be understood as a business opportunity for many sectors. Particularly, in rural areas services oriented towards the elder people might attract retirees from other regions that could underpin and diversify local economies.</p>	<p>Apply family and smart migration policies aimed at retaining and attracting young population, particularly within/to rural areas. Adopt a proactive approach towards existing social welfare systems that are currently threatened due to current demographic (and economic) trends.</p>
Polycentric development	<p>Reinforce the existing network of FUAs, particularly of medium and small nodes, while taking advantage of the opportunities that big cities, particularly Barcelona and the Toulouse-Bordeaux corridor offer in terms of competitiveness at the global scale. Multifunctionality and complementarity should be the driving forces of this kind of policies.</p>	<p>Implement tailored policies supporting small and medium urban centres, preferably those located in the mountainous domain, and connect such small nodes to cities nodes that give access globalised markets and knowledge hubs. Active territorial policies should ensure that this access is equally provided to smaller centres through operative functional relations between cities.</p>	<p>Reinforce the polycentric nature of the urban network preventing further concentration of population and activities in a limited number of cities and fostering the development of medium and small centres.</p>	<p>Apply restrictive policies preventing further concentration of population and activities in a limited number of cities while implementing sound territorial policies aimed at fostering the development of medium and small centres, particularly those crucial for the articulation of most isolated rural areas.</p>

<p>Urban/rural relationship</p>	<p>Retain and/or consolidate the existing agricultural and tourism potentials (quality wine production, ski resorts, etc.) within most productive rural areas and explore additional development opportunities related to new crops, biomass production, quality products and complementary rural activities such as new tourism trends and leisure activities, which have much room for development consolidation in the mountainous area.</p>	<p>Search for economic alternatives within the most marginal areas, exploring additional development opportunities related to new crops, biomass production, quality products and complementary rural activities such as tourism and leisure activities, which have much room for development and consolidation in the mountainous area.</p>	<p>Retain and consolidate the existing agricultural and tourism potentials within most productive rural areas, and explore ways of reversing the ageing dilemma into economic opportunities: if supported by smart policy actions, the expected flow of retirees attracted by high quality of life standards and low prices can increase job opportunities in the sectors of health care and of social and cultural services for the elderly that could retain young population and increase economic dynamism in most lagged rural areas.</p>	<p>Seek for economic alternatives within the most marginal areas, aiming at identifying new economic niches (either related to primary activities or not), and orienting the opportunities generated by new urban-rural relationships, such as telecommuting and retirement phenomena, to the most marginal areas. This calls for an expansion of the services and infrastructures available within such areas, particularly those related to health, housing, education, (internet) connectivity and multimodal accessibility.</p>
<p>Accessibility and connectivity</p>	<p>Consolidate and improve existing land communication networks, particularly those connecting the main cities along the most dynamic corridors of the CBA (Garonne-Adour, Mediterranean, Ebro and Atlantic), taking advantage of the foreseen investments on new infrastructures, such as the TEN-T, and existing international air hubs.</p>	<p>Make an effort to increase internal connectivity within the CBA and specific accessibility issues of certain cities and marginalised and rural areas as a means to put in place a more synergic and complementary development model within the area. An overall transport plan at the CBA level might help identifying local strategic objectives that could be linked to planned networks, either National or European.</p>	<p>Consolidate and improve existing communication networks, making an effort to, (i) avoid bottlenecks in most congested sections, and (ii) emphasise overall multimodal accessibility more than individual transport modes.</p>	<p>Produce a comprehensive transport plan at the CBA level to increase internal connectivity within the CBA as a means to put in place a more synergic and complementary development model within the area, (i) avoiding bottlenecks in most congested sections, (ii) connecting marginalised rural areas to the main transport corridors, and (iii) emphasising multimodal accessibility and more efficient transportation systems.</p>

Lisbon Strategy

Seek economic synergies and take advantage of existing business opportunities, emphasising local competitive advantages (i.e. implementing a **place-based approach** to regional development). Reinforce and strengthen the positive R&D investment and overall social cohesion trends.

Rethink the development model of the CBA, which is characterised by the coexistence of dynamic hot-spots with high concentrations of population and activities together with large economically empty spaces that threaten internal cohesion. All **regional potentialities** should be expanded through both **(smart) specialisation** (profiting from the most dynamic sectors) and at the same time fostering economic **diversity and collaboration** among regions.

Support to economic and social policies focusing on regions that are lagging behind (rural areas, mountainous areas, declining industrial regions, etc.) **exploiting their potentialities** and fostering new activities and **diversifying the economic structure** within those areas. Apply specific measures aimed at **minimising spatial segregation** within cities.

Rethink the development model of the CBA by exploiting local potentialities, **(smart) specialisation** and by fostering economic **diversity** and **collaboration**. Specific support to the most deprived areas through tailored measures aimed at fostering **alternative economic activities**.

Gothenburg strategy

Protect and enhance the natural heritage of the area with further expansion of the protected areas (i.e. Natura 2000 network) and wise management of the natural resources. The latter includes making **sustainable use of** existing natural and **biodiversity assets** (e.g. health and cosmetic use of forest species) and a sound expansion of renewable energy potentials through tailored policies.

Correct localised problems related to the environmental dimension of sustainability. **Keep natural capital constant**, including **landscape and biodiversity assets** by protecting and expanding Natura 2000 network, especially in mountainous areas, and support environmental and spatial policies to partially bet CBA's future on renewable energies.

Support awareness raising measures towards environmental conservation and **fight against climate change and its consequences** (such as flood and drought prevention). Additionally, exploring the possibilities of investing in new environmental technologies could contribute to strengthen the economic structure of the area under an **emerging green economy scenario**.

Address specific environmental problems in certain areas. Protect and expand Natura 2000 network, especially in mountainous areas. Prevent climate change impacts (floods, droughts, affection on winter tourism, etc.) through specific measures and **local-based investments** and apply awareness raising policies towards environment.

<p>Cross-border governance</p>	<p>Consolidate the existing body of territorial cooperation schemes and (re)activate the process towards the production of a shared strategic vision on spatial planning.</p>	<p>Reinforce existing territorial cooperation in those policy areas in the need of further harmonisation, such as spatial planning, working towards a shared spatial vision.</p>	<p>Consolidate the existing body of territorial cooperation schemes and (re)activate the process towards the production, update and implementation of a shared strategic vision focused on territorial development.</p>	<p>Reinforce existing territorial cooperation schemes in those areas in the need of further harmonisation and shared views, such as spatial planning, working towards common strategic territorial objectives for the area.</p>
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Annex II – Summary of the SWOT validation process

All.1. Context

On February 14 2012. a workshop under the ULYSSES project between the science team Tecnalia Research & Innovation Foundation and stakeholders of the Working Community of the Pyrenees-WCP (Navarra Government, Government Basque Government of Aragón and Languedoc-Roussillon and the Consortium of the TAC) members of the six border areas involved in the project, in particular, the Working Community of the Pyrenees took place in Zaragoza.

The overall goal of the workshop was the presentation of the outcome of the multi-thematic territorial study carried out by Tecnalia on that area, a study that is part of the ULYSSES project (ESPON 2013), as a result of a proposal by the Association European Border Regions (AEBR / AEBR) to ESPON.

A comprehensive diagnosis of this Multi-thematic Territorial Analysis (MTA) was delivered to the concerned stakeholders as an annex to the Interim Report of ULYSSES. On that basis, an integrated analysis taking account of previous inputs was performed at a later stage of the project. From a methodological perspective, this integrated analysis adopted the form of a traditional SWOT analysis structured in a two-phase analysis that included (i) a status-analysis phase in which the findings derived from previous research tasks were organised and prioritised as main challenges, and (ii) an action-decision phase in which a response to each one of the identified challenges was proposed as a potential strategy.

During the workshop, the TECNALIA research team presented the results of those two steps per topic addressed by the project, in order to discuss, validate, complete and amend accordingly the MTA to be included in the ULYSSES Draft Final Report. An example concerning the topic demographic change is shown below:

 SWOT analysis - Demographic Change		
	Strength Slightly positive annual overall population growth rates due to positive net migration and the slight increase of fertility rates recorded in the early 2000	
Opportunity New business opportunities within sectors like leisure, tourism, social assistance and medical research, among others, linked to current demographic trends such as population ageing and out migration flows generated by large cities (retirees and self-employed)	Retain and/or consolidate acceptable levels of demographic dynamism, social cohesion and wellbeing in the WCP, both within urban and rural contexts 1. Apply family (childcare support, tax incentives, etc.) and smart migration policies (selective and focused on the long term, like integration measures, mobility partnerships, "brain gain") aimed at retaining acceptable overall demographic dynamism and attracting young population, particularly within/to rural areas. 2. Promote the integration of minorities, in particular in metropolitan areas 3. Adopt a proactive approach towards existing social welfare systems that are currently threatened due to current demographic (and economic) trends 4. Exploit new business opportunities derived from population ageing. In particular, within the rural areas good services oriented towards the elder people and active ageing might attract retirees from other regions that could underpin and diversify local economies through new economic activities related to leisure, tourism, wellbeing, social assistance and medical research markets, among other sectors	Threat Challenged social welfare systems due to shrinking population in the working age. High risk of further concentration of population and economic activities in the urban areas to the detriment of the rural setting, which might eventually lead to a complete marginalisation of the latter
	Weakness Declining population growth rate; unbalanced distribution of population; out-migration of young people, severe ageing and depopulation in marginal rural areas and mountainous sectors	


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The presentation of the main outcomes of the diagnosis phase in the form of main challenges was followed by a description of the strategies and policy options suggested by the research team to face those challenges. Stakeholders had the opportunity to discuss and go into the policy options concerning the territorial profile aspects. Main outcomes of this discussion, which should serve as a starting point for future

projects and joint actions in order to strengthen a common strategic vision of Pyrenees, are summarised below. Annex I shows the results of the workshop in a graphic manner.

All.2. Discussion

Addressing **demographic change** and suggesting solutions for the main challenges such as ageing and depopulation in certain rural areas calls for considering other topics such as economic activity in general and employment in particular, as well as social aspects. Employment, housing and social policies have much to say in the population establishment dynamics. In turn, urban rural relationship becomes essential when tackling demographic issues.

There is still much to do regarding territorial balance in terms of avoiding excessive concentration and / or depopulation of the different zones. Reinforcing the current urban network and working on its reorganisation is underlined as a primary goal in order to compete globally. This urban system balance should respond to specialisation and complementarities factors, in order to reinforce polycentrism and ensure the overall competitiveness of the urban network and the CBA at large.

Concerning the rural reality, policies oriented to attract investment and employment in rural become essential if the business opportunities derived from the SWOT analysis are to be exploited. Housing and social services have to be also addressed. "Territorial agreement", understood as a tool to promote sustainable development of rural areas, is suggested to improve the economic, social and environmental reality that shape rural sustainability. Based on territorial model ideas, "territorial agreement" seeks for funding (e.g. local authorities) and compensation mechanisms oriented to slow down the decline in population and income of these areas.

Enhancing complementarities among different urban realities is considered one of the most fundamental challenges when coming down to **polycentricity** issues. This requires a shared vision about the Working Community of the Pyrenees and reaching an agreement concerning potentialities and collaboration in order to complement each other. Urban multi-scale complexity becomes an issue that requires looking at the different scales and their role in the overall urban network in a supportive manner. Micro-centralities, supported by new technologies, can emerge as small nodes and play significant role in this globalised context. Improving knowledge about the urban system should be considered for the next programming period.

Concerning **urban-rural relationship**, the dualistic reality is still a fact. There is a vision of rural as an identity and conservative phenomenon, suspicious to the penetration of urban elements versus the urban reality which is opened to changes and poses greater influence capacity. However, diverse rural realities coexist in the CBA that range from certain rural areas with active economy in the surroundings to those which are being markedly depopulated. Specific policy measures are required if territorial development is a goal. These measures should be oriented to provide housing, infrastructure and services in those areas, but also oriented to change ways of thinking so that living in rural areas is positively considered by new generations. "Territorial contract" should be considered as a measure to achieve that territorial balance and territorial quality (e.g. river system) as an argument to initiative those mentality changes. Concerned stakeholders should take the lead of building the future of those areas, by undertaking bottom-up processes. The "Strategic Plan for the development of the Pyrenees" carried out in Navarre is considered as an interesting and well documented experience that could inspire for the development of the Pyrenees.

As regards **accessibility and connectivity**, a response to challenges concerning personal mobility, freight transport, logistics and the related economic development is required while addressing winter viability in particular in road transport becomes a must. Accessibility and multimodality become more relevant than elsewhere in Europe due to the mountainous character of the area, which shapes cultural and socio-economic peculiarities of the area and entails the existence of remote areas. Reorganising the road and rail networks is essential, and permeability and penetration of the Pyrenees (in particular with reference to the central crossing via e.g. Canfranc), as an alternative to highways and freight transport is a priority. This leads to a reflection on the existing political conditional factors, even at European level. In view of the diversity of opinions and interests among all the concerned stakeholders, a pragmatic approach becomes a must. Measures to be adopted have to respond to a prioritisation exercise and bet on telecommunications as they require less investment than other infrastructure.

Regarding **governance** issues, although the Working Community of the Pyrenees is working actively on achieving an overall policy that contemplates Pyrenees as a territorial unit and considers the existing spatial

and sectoral imbalances, there is still much to do. Cross-border cooperation has to be strengthened and a common vision of the area is needed in both sides of the border. Taking up and addressing the “Strategy of the Pyrenees” is suggested to build such a shared strategic vision. Adopting a pragmatic position by addressing first the most widely shared action lines becomes essential if durability of such cross-border governance actions is to be ensured. This entails a rigorous selection of the projects to be implemented in first place, looking at variables such as added value, measureable economic impacts by using reasonable resources. The upcoming Cross-Border Cooperation Programme 2014-2020 could be built around such a strategy and the ULYSSES outputs and experience.

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The ESPON 2013 Programme is part-financed by the European Regional Development Fund, the EU Member States and the Partner States Iceland, Liechtenstein, Norway and Switzerland. It shall support policy development in relation to the aim of territorial cohesion and a harmonious development of the European territory.