

**Inspire policy making by territorial evidence**

# Territorial Scenarios for Europe

Working Paper

Annex to the ESPON Policy Brief  
“Territorial Scenarios for Europe towards 2050”

September 2015

This paper presents a more detailed overview of the scenarios developed by the ET2050 ESPON project which was conducted within the framework of the ESPON 2013 Programme, partly financed by the European Regional Development Fund.

The partnership behind the ESPON 2020 Cooperation Programme consists of the EU Commission and the Member States of the EU28, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

The scenarios presented in this paper may not necessarily reflect the opinion of the members of the ESPON Monitoring Committee.

Information on the ESPON Programme and projects can be found on [www.espon.eu](http://www.espon.eu)

The web site provides the possibility to download and examine the most recent documents produced by finalised and ongoing ESPON projects.

This basic report exists only in an electronic version.

© ESPON 2020 Cooperation Programme

Printing, reproduction or quotation is authorised provided the source is acknowledged and a copy is forwarded to the ESPON EGTC in Luxembourg.

# Table of contents

|  |    |
|--|----|
| 1. Introduction.....   | 5  |
| 1.1 Aim .....  | 5  |
| 1.2 Recent development of territorial cohesion .....                       | 6  |
| 1.3 Methodology applied.....   | 6  |
| 2. The European Baseline.....  | 7  |
| 2.1 Approach.....  | 7  |
| 2.2 The Baseline faced to Critical Bifurcations .....                      | 8  |
| 3. Territorial Scenarios .....   | 9  |
| 3.1 Conceptual framework: Polycentrism at different scales.....            | 9  |
| 3.2 Scenarios facing the Critical Bifurcations .....                       | 16 |
| 3.3 Policy Assumptions of Scenarios.....                                   | 17 |
| 4. Findings of the Scenarios.....  | 20 |
| 4.1 Europe towards 2030: Unfolding trends and baseline scenario.....       | 20 |
| 4.2 Europe towards 2030: Likely impacts of the alternative scenarios ..... | 26 |
| 4.3 Europe towards 2050: Long-term territorial scenarios .....             | 29 |
| 5. Next Steps.....   | 31 |

## Table of Figures

|   |    |
|---|----|
| Figure 1 EU2020 Scenarios (JM Barroso, Informal European Council, February 2010) .....          | 7  |
| Figure 2 Spatial distribution of activities among ET2050 Scenarios.....                         | 9  |
| Figure 3 Illustration of Scenario A “MEGAs” .....   | 11 |
| Figure 4 Illustration of Scenario B “Cities” .....  | 13 |
| Figure 5 Illustration of Scenario C “Regions” .....   | 15 |
| Figure 6 ET2050 Scenarios facing Critical Bifurcations.....                                     | 17 |
| Figure 7 Synthesis of Scenario Assumptions on Exogenous Conditions and Policies .....           | 19 |
| Figure 8 Annual population change according to MULTIPOLES model for the Baseline scenario       | 21 |
| Figure 9 GDP Growth 2010-2030 according to MASST3 model for the Baseline Scenario .....         | 22 |
| Figure 10 GDP per capita in absolute terms and relative to EU27 for a few selected countries .. | 23 |
| Figure 11 Evolution 1981 to 2051 (GDP per capita and variation) according to SASI model.....    | 30 |

# 1. Introduction

## 1.1 Aim

Scenarios can be considered as a useful tool to support policy-making. They can be used to communicate insights and discuss potential territorial developments, the impact of territorially relevant policies, and the political choices to be made. By assessing and discussing different alternative scenarios ideas, opinions and possible agreements can be exchanged and the mindsets of policy-makers can be shaped.

The workshop “Territorial Scenarios and Visions of Europe for 2050” organised by the incoming Luxembourg EU Presidency on 23 April 2015 showed that territorial scenarios can be used to provide momentum for discussions on the territorial cohesion objective and on how to better operationalise it. Territorial scenarios can enrich policy processes and help them to become more effective and efficient by reflecting the territorial diversity of future developments. For scenarios to become useful, policy-makers at various governance levels need to be encouraged to use them to discuss the territorial dimension of policy initiatives and foster a better understanding how territorially-blind policies can benefit from making the best use of the diversity of territorial development potentials. The upcoming discussions related to the European Investment Plan (‘Juncker Plan’), the review of the Europe 2020 strategy, the Energy Union, the Digital Agenda, or the preparation for the next funding period ESIF 2020+ are identified to be of particular interest here.

The study conducted by the ESPON ET2050 project follows up the tradition on prospective studies and political visions in spatial development elaborated in Europe, in particular the ESDP (European Spatial Development Prospective, 1999), developed after the Europe 2000 and Europe 2000+ (DGXVI, now DGREGIO, 1991, 1994), taking into account the evolution of the last two decades and future prospects, in the 2008 crisis aftermath. Most recent European policy framework documents are taken as starting points.

During the study main policy references are considered, such as: Europe 2020 Strategy, Green Paper on Territorial Cohesion, European Territorial Agenda 2020, Common Strategic Framework (CSF), ESIF 2014-2020 11 Thematic Objectives, as well as the roadmaps for Maritime Spatial Planning, Transport, Energy, and Resource Efficiency for 2050, together with relevant European legislative documents, such as the Single Market Act II. In addition, visions and territorial strategies defined at regional, national and trans-national scale in Europe, and neighbouring countries, were also considered.

Europe is now changing much faster than our capacity to adapt our previous expectations. This leads to forecasts becoming obsolete very fast, and new forecasts can be soon discredited by new events. In this context, the goal of the ET2050 project was not to predict how the future will look like in ten or fifteen years, but to explore alternative possible scenarios useful to support a high-level policy debate on strategic European policy reforms, particularly Cohesion policies, and on that basis contribute to the design and political ownership of an ideal long-term vision for the European territory.

The aim of this working paper is to present, as background to the Policy Brief “Territorial Scenarios for Europe towards 2050”, the narratives and results of the ESPON ET2050 Scenarios. It is based on material from the Final Report and the Vision Report. More details concerning the approach, assumptions, modelling and results can be found in the Final Report and its 15 Volumes that is available at the ESPON website. Details on the vision and pathways can be found in the ESPON publication “Making Europe Open and Polycentric: Vision and Scenarios for the European Territory towards 2050”.

## 1.2 Recent development of territorial cohesion

Until 2008 an increasing cohesion between countries and between regions (NUTS2 and NUTS3) was observed at European level, even if inside some countries we also registered a decreasing regional cohesion. During the economic crisis, from 2008 until 2013, disparities are increasing not only within countries but also between countries and between regions in the European Union.

A fundamental question to be answered is, therefore, to what extent the cohesion process observed before crisis was sound and sustainable over time, and what was the actual impact of the Cohesion and Structural funds. Either the crisis is temporary and the previous catching-up dynamics will be restored sooner or later, or the crisis reveals deeper structural weaknesses hard to be solved, and increasing disparities at regional and national level are to be expected at least for the coming decade.

In any case, in their way out of the crisis national economies are becoming more competitive and open to global markets, each one trading with different regions in the world for different sectors, and the increasing trade with emerging markets is producing increasing territorial concentration in large metropolis and main gateways. All together, in the crisis aftermath European policies will likely be reformed to be more effective, avoiding the risk and the associated costs of possible political fragmentation.

## 1.3 Methodology applied

The methodology applied is based on five successive steps:

- First, the Present Situation is studied, in relation to sectors most relevant to spatial development (e.g. demography, economy, transport, land use and environment) and considering the territorial diversity of Europe.
- Second, a Baseline scenario is defined by assuming no significant changes in current policies, available technologies and social behaviour. In a period of deep economic crisis, it is unavoidable that such a Baseline scenario becomes rather pessimistic in terms of economic growth, given the trends of the latest five years, and the nature of current macro-economic policies. The Baseline scenario is one of most likely futures for the coming few years, but it is also one of the less likely in the long run, because policies, technologies and behaviours will change, one way or another.
- Third, three alternative prospective scenarios (A, B and C) were defined for 2030 and also 2050, in order to support the discussion of a normative scenario, or Vision, as a most desired future for 2050. Scenarios are defined combining socioeconomic and technologic framework conditions together with different territorial strategies. An strategic policy evaluation is being carried out on the alternative territorial scenarios, in relation to their relative contribution to paramount goals (e.g. competitiveness, cohesion and sustainability).
- Fourth, taking the scenarios as reference, a Vision for the ideal situation of the European Territory in 2050 will be defined in a participatory process involving the ESPON Monitoring Committee and other relevant stakeholders (e.g. the European Commission, the European Parliament and the Committee of Regions) to be carried out during September-December 2013. To facilitate this process, the three A, B and C scenarios are combined with three extreme framework conditions more or less optimistic in terms of productivity increase because of new technologies (scenario variants 1 and 2) , and energy costs (scenario variant 3). The nine scenarios (A1,A2, A3, B1, B2, B3 and C1, C2, C3) define the boundaries in which the Vision for the European Territory in 2050 is discussed,
- Fifth, policy reforms needed to achieve the Vision will be defined and proposed as final recommendations, to be presented in February 2014.

The scenario-building process is supported by foresight models that were refined to take into account the present situation: MULTIPOLES (Demography), MASST3 (Economy), MOSAIC (Transport), METRONAMICA (Land Use), as well as SASI (Integrated Spatial Development), all disaggregated at regional and/or local scale. Other more aggregated cross-sectoral meta-models (TV+, PASH+) cover the rest of the world, by macro-regions.

## 2. The European Baseline

### 2.1 Approach

A Baseline Scenario is a projection of current trends in absence of neither new policies nor unexpected events. It should strive to generate consensus, with other baseline scenarios previously developed to be a useful reference. A Baseline Scenario will not likely comply with most official political targets, and therefore it can be understood as a realistic future ahead, especially in the short and midterm. A baseline scenario is neither the “worst-case” scenario, nor the “most likely future”.

The Baseline Scenario could be understood as a future evolution with no dominant drivers:

- no “technologic panacea”: Neither technology nor free markets are a solution
- no “Invisible hand”: spontaneous behaviour does not result in social self-organisation
- no “political reforms”, but small adjustments

The ET2050 Baseline Scenario sticks to the principles of **smart, sustainable and inclusive growth** as the leitmotif of European policies, and is built on the baseline scenarios developed in EU policy documents and recent studies. The European territory must be explicitly included in the scenario narratives in two complementary senses: as territorial impacts (passive factor that generates externalities) as well as territorial conditions (active factor that induces development).

The ET2050 Baseline Scenario is a structural description of the European territory, concentrating in particular changes in the following thematic areas: demography, economy, technology, energy, transport, land-use, environment and governance, and their independency with territorial dynamics.

The ET2050 Baseline Scenario assumes as starting hypothesis a Sluggish recovery pathway for the 2010-2020 period.

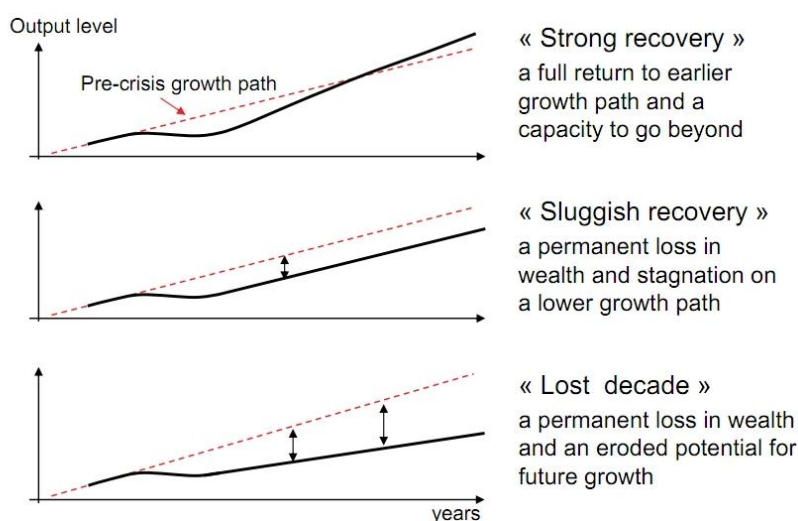


Figure 1 EU2020 Scenarios (JM Barroso, Informal European Council, February 2010)

## 2.2 The Baseline faced to Critical Bifurcations

Critical Bifurcations are points or questions where the definition of scenarios takes a choice and generates a particular future along a specific timeline. Different choices in these critical bifurcations lead to different futures. The Baseline is just one of these scenarios.

Ten Critical Bifurcations were used to define the Baseline Scenario. These 10 were complemented by 15 additional complementary bifurcation.

- 1) Will European national economies be able to adjust to structural transformations?

The Baseline assumes that structural transformations, requiring policy reforms beyond business-as-usual are not carried out as required. Therefore, economic growth is low and unemployment remains high, especially in Southern countries.

- 2) Will migrations continue to be necessary in Europe to shirking labour market?

The Baseline assumes that net international extra-European migration will be growing slowly, especially coming from Ukraine or Belarus, Arab Countries, former colonies, as well as from southern and south eastern Asia. Migration will be attracted mainly by cosmopolitan centres and urban agglomerations.

- 3) Will European countries be able to sustain their welfare system?

The Baseline assumes that the public welfare system will be reduced, and its management more privatised, forced by public financial constrains. There will be a process of harmonisation across European countries along these lines.

- 4) Will Europe (and its single countries) be able to find ways to finance its public debt?

The Baseline scenario assumes that financial debts will remain as a permanent burden for most European countries; even if future public expenses are reduced and debts are better managed, debts will not be significantly reduced. Each country will still stand alone for its own debt, increasing the costs for all.

- 5) Will Europe be able to compete with emerging countries in high-value sectors?

The Baseline scenario assumes that European technological advantages will be progressively reduced overtime, since emerging markets will be able to adapt and integrate new technologies easier than European countries; therefore, hardly European companies will not be able to compete in new sectors.

- 6) Will Europe be decarbonised and decentralized energetically, reducing GHG emissions?

The Baseline scenario assumes that fossil fuels will still be the most important energy sources, despite the important increase in RES, and a decrease in GHG emissions even though targets will not be met, and a gap will develop between Northern and Southern Europe contribution to improvement.

- 7) Will Europe will be able to tap the untapped potential of its regional diversity richness?

The Baseline scenario assumes that disparities will grow in Europe, as they are growing in the rest of the World. Inequalities at local or regional level will become more dramatic than at national level. Public support to less developed regions will become more scarce and will produce limited, sometimes even contradictory, effects.



8) Will territorial development and settlement structures be more polarised?

The baseline assumes no relevant policy reforms taken over the next decades, with a continuation of the urbanization process and the development towards larger urban centres, and increased territorial unbalances.

9) Will Europe be politically more integrated?

The baseline assumes no significant advancement of European political integration, in a more complicated and variable institutional geometry.

10) Will decision and management processes of EU key policies be more decentralised?

The baseline assumes that EU governance will still be mostly top-down, and that the territorial decentralisation of decision and management processes and the empowerment of local communities will remain limited.

### 3. Territorial Scenarios

The purpose of the Territorial Scenarios was based on investigating Territorial Cohesion issues, in terms of how different territorial structures and patterns could influence the social and economic future evolution of Europe, and vice versa. Therefore, the latest revision of the initial scenarios was focused on emphasising *territorial balance and polycentricity* as the key dimension of the scenarios.

#### 3.1 Conceptual framework: Polycentrism at different scales

Polycentricity is the overarching concept behind the Territorial Cohesion goal, from the ESDP to the *Territorial Agenda 2020*. Its first priority says that *promoting polycentric development is the precondition of territorial cohesion and a strong factor of territorial competitiveness*.

Polycentricism as a concept is understood by the territorial scenarios at three different geographic scales: the global (A), national/macro-regional (B) and regional scale (C). Based on the polycentricity concept, the type of regions to be promoted under each scenario is defined based on population density criteria: Metropolitan Global Areas - MEGAs (A), Cities (B) and Regions (C). The specific spatial development pattern for each of the territorial scenarios is synthesised in Figure 5.

|  | A Scenario<br>(Promoting MEGAs)   | B Scenario<br>(Promoting CITIES)   | C Scenario<br>(Promoting REGIONS)   | BASELINE  |
|--|---|--|---|---|
| <b>Spatial distribution of population, and economic growth, (and territorial governance)</b> | Relative accessibility and connectivity to international transport networks and agglomeration economies attract growth, following spontaneous market tendencies. Global cities, mostly MEGAs grow bigger. | Large cities attract both more people and activities because effective public policies promoting them at National scale. Internal migrations from sparsely populated areas to urban centres. | Medium-size cities and towns attract people based on their cultural and environmental quality, and strong public policies and incentives. Change in consumer behaviour favouring proximity and self-sufficiency. Intense decentralisation at local and regional level. Limited external migrations. | No relevant modification on actual spatial patterns |

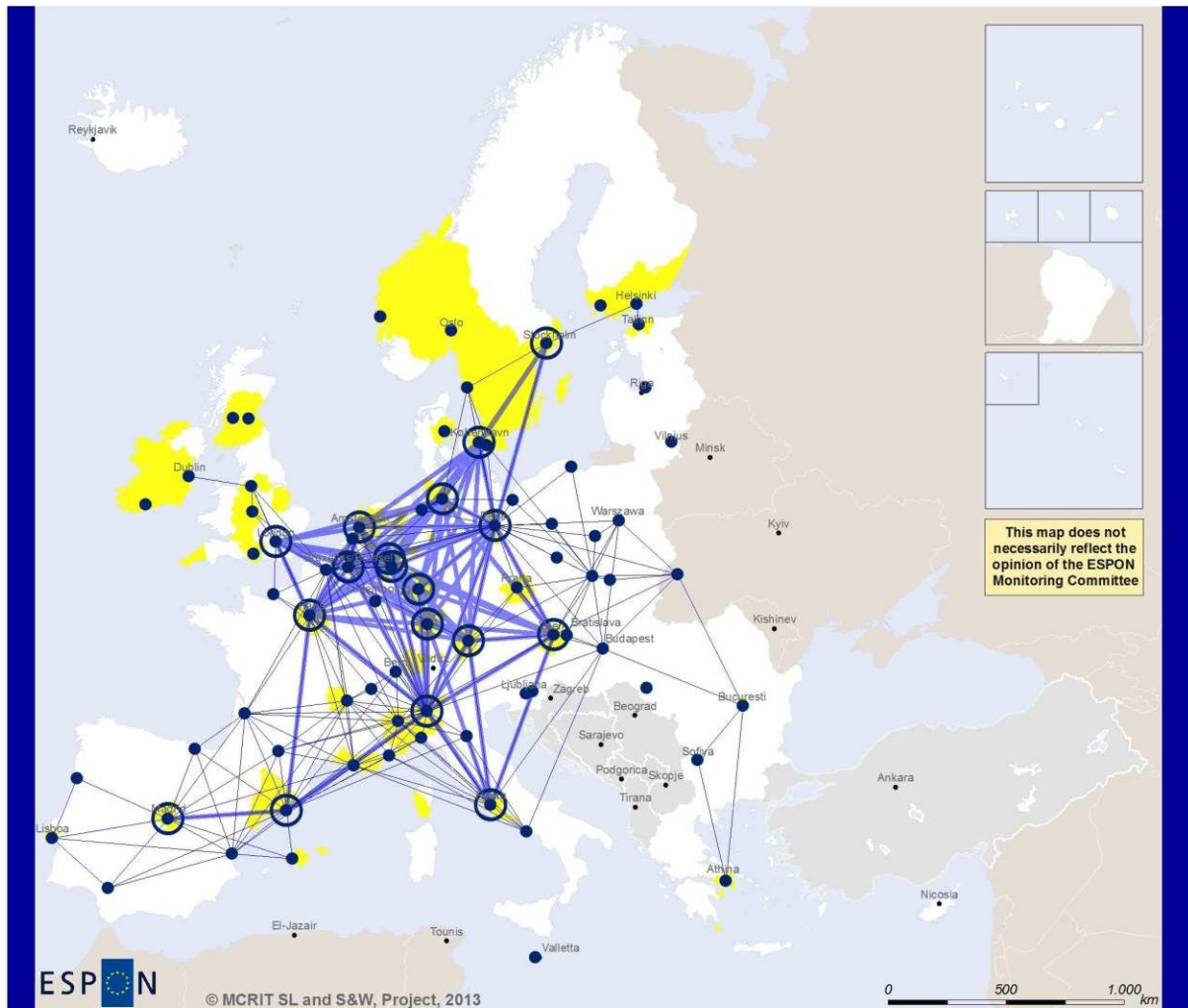
**Figure 2 Spatial distribution of activities among ET2050 Scenarios**

### **Scenario A (Territorial Strategy: Promotion of Metropolitan Global Areas)**

National and European policies would promote polycentricity at global scale making use of the size and agglomeration advantages of European larger metropolis, to ensure European successful economic competitiveness linked to knowledge sharing and technologic innovation. Therefore, public policies are foreseen at European and National level to promote higher agglomeration economies in largest metropolis and transport nodes and corridors (Mega-cities and Mega-corridors, so to speak) or at least removing constrains to their spontaneous growth.

This scenario follows the **Europe 2020 strategy** in relation to the global competitiveness of Europe by facilitating the economic development of the largest metropolitan regions of global importance in Europe, i.e. the around 76 existing Metropolitan European Growth Areas (MEGAs) defined in ESPON 1.1.1 (2005, 118). The policies applied are mainly investments in MEGAs supporting high-level R&D as well as European transport infrastructure, such as high-speed rail, and enhancing connections and long distance networks, favouring more efficient technologies and management strategies. More integrated trans-national zones emerge by the networking of cities in cross-border areas, and transport and energy corridors link major European centres of production and consumption with neighbouring countries and the rest of the World.

This scenario provides an image of Europe in which the territory is more dynamic, flexible and adaptable to technological, social and economic change.










 EUROPEAN UNION  
 Part-financed by the European Regional Development Fund  
 INVESTING IN YOUR FUTURE

Regional level: NUTS 3  
 Source: MCRIT, 2013  
 Origin of data: SASI model, 2013  
 © EuroGeographics Association for administrative boundaries

### Illustration of Scenario A

Based on results obtained by SASI forecast model (2050)

-  MEGA category 1
-  MEGAS
-  MEGA (category 1)-MEGA (category 1) links and length < 850 km
-  All MEGAS- all MEGAS links and length < 850 km (where population origin and population destination/length > 5000)
-  Relative increases in GDP 2051 per capita Scenario A/Baseline average over 50 (100=EU31 ave)
-  No data (No ESPON space)

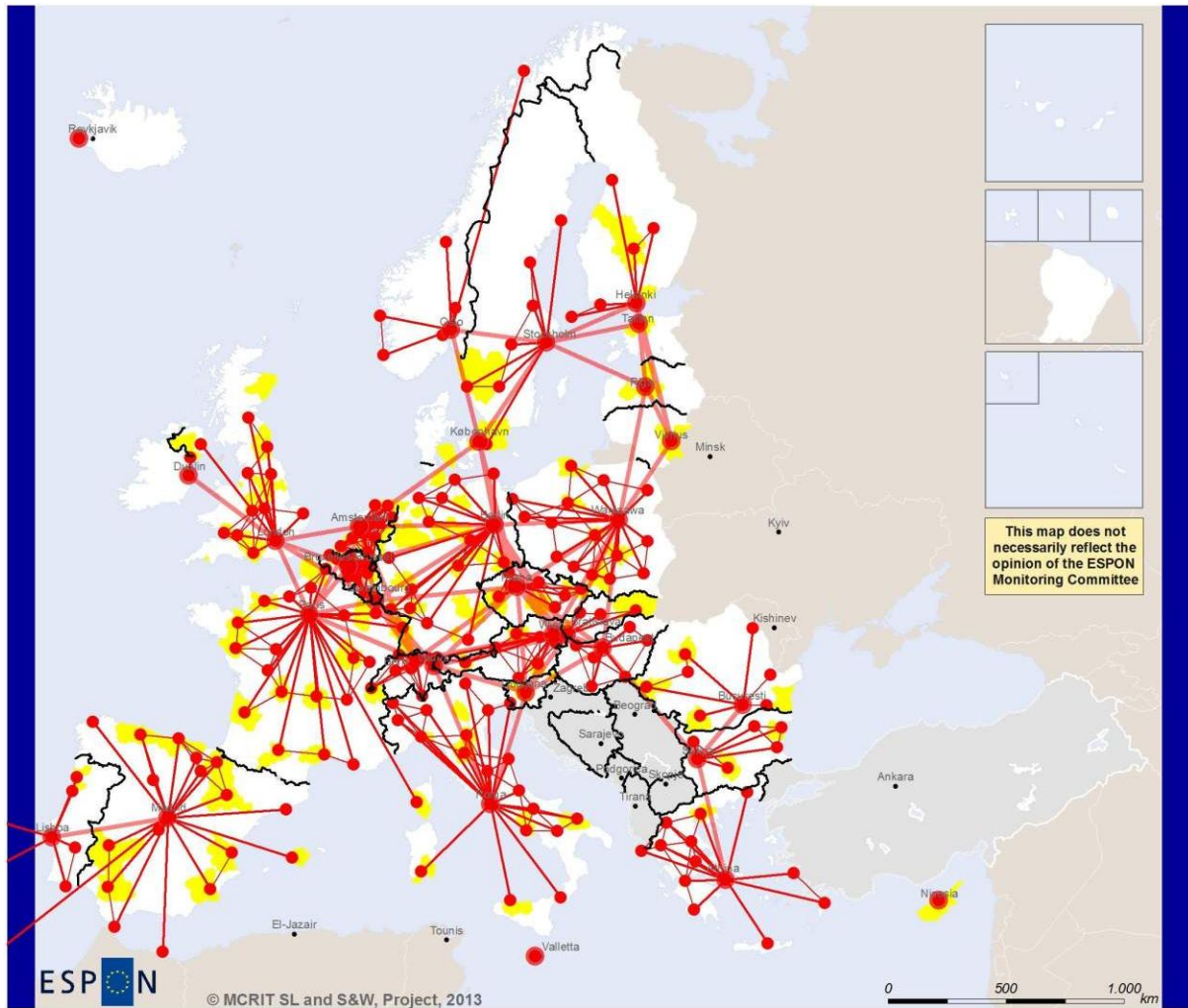
**Figure 3 Illustration of Scenario A “MEGAs”**

### **Scenario B (Territorial Strategy: Promotion of Cities)**

This scenario provides an image of the European territory in which economic and population growth, as well as most private and public investments, take place within national capitals and major regional capitals, involving a geographic reorganisation and specialisation of global gateways. The promotion of urban regions and second rank cities well connected to global metropolis, as well as to smaller cities and more rural areas, with relatively diversified economic activities, and social inclusiveness, would be the preferable political option in Europe. This would not necessarily mean producing less economic growth.

It is a place-based scenario that follows the priority of the **European Spatial Development Perspective** (1999) and the two Territorial Agendas (2007; 2011) for balanced polycentric urban systems at the macro-regional or national scale for the 261 cities of European or national significance defined in ESPON 1.1.1 (2005, 114). Policies applied are mainly in the fields of Cohesion funds being mostly targeted to cities, including urban renewal and re-urbanisation, and R&D investments distributed among cities, and promotion of regional and national transport networks. It will lead to economically strong and compact cities as centres of excellence. The increasing concentration of added-value activities in cities does not necessarily imply a process of rural decline, but its increasing functional dependency on large cities.

This scenario provides an image of the European territory in which economic and population growth, as well as most private and public investments, take place within existing cities that give structure to the European territory: national capitals and major regional capitals as driving forces.




 EUROPEAN UNION  
 Part-financed by the European Regional Development Fund  
 INVESTING IN YOUR FUTURE

Regional level: NUTS 3  
 Source: MCRIT, 2013  
 Origin of data: SASI model, 2013  
 © EuroGeographics Association for administrative boundaries

### Illustration of Scenario B

Based on results obtained by SASI forecast model (2050)

- Capital NUTS0
- Capital NUTS2 (NUTS1 only Germany and United Kingdom)
- NUTS0 boundaries
- NUTS0-NUTS0 links and length <650km
- NUTS0-NUTS2 links intra NUTS0 (except Germany and United Kingdom)
- NUTS0-NUTS1 links intra NUTS0 (only Germany and United Kingdom)
- NUTS2-NUTS2 links intra NUTS0 and length <200km (except Germany and United Kingdom)
- NUTS1-NUTS1 links intra NUTS0 and length <200km (only Germany and United Kingdom)
- Relative increases in GDP 2051 per capita Scenario B/Baseline average over 100 (100=EU31 ave)
- No data (No ESPON space)

**Figure 4 Illustration of Scenario B “Cities”**

### **Scenario C (Territorial Strategy: Promotion of Regions)**

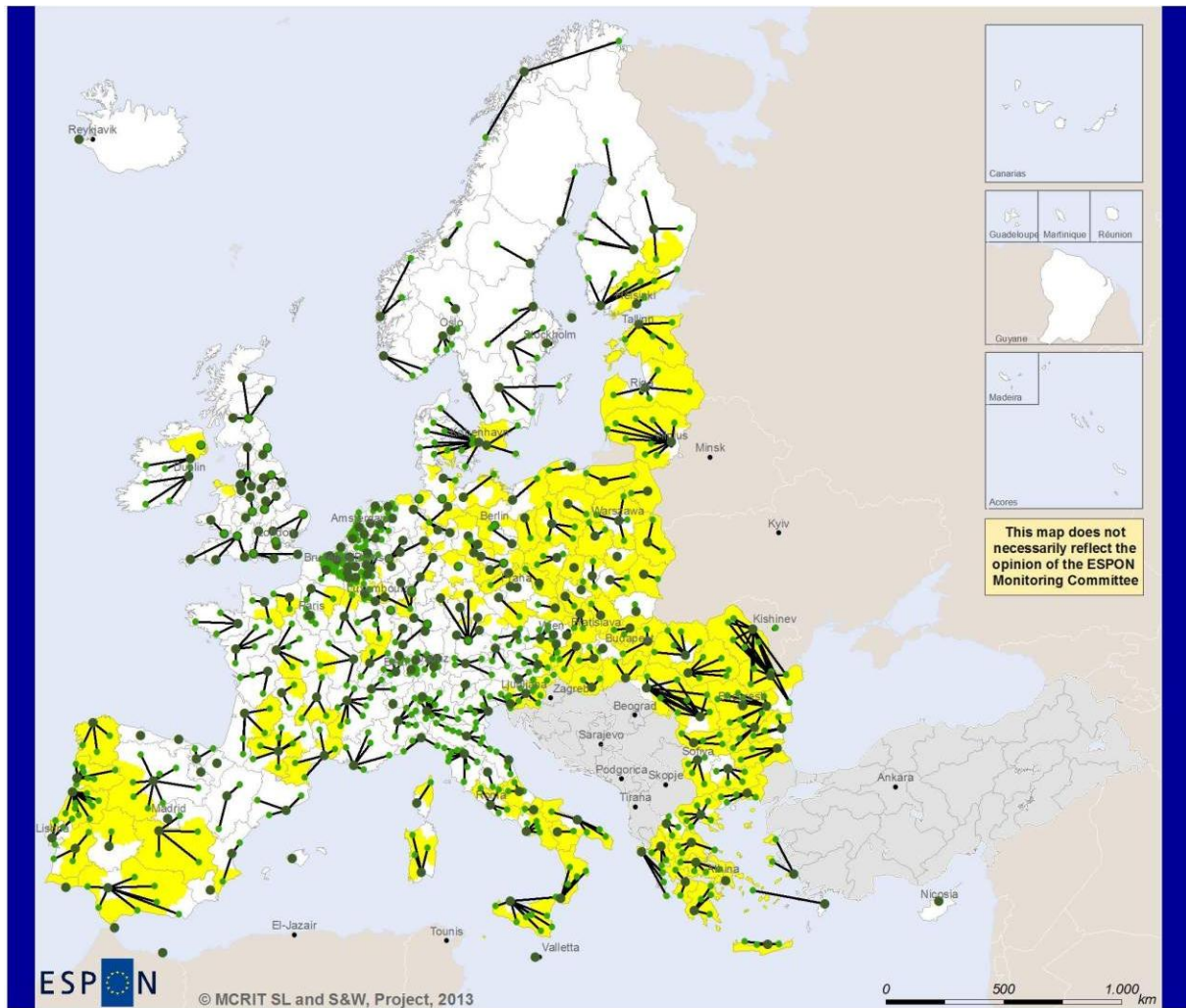
Public policies would strongly promote local and regional scales favouring geographic proximity, supporting endogenous development and increasing economic resilience in a world with increasing economic vulnerability and scarce and more expansive transport and energy. It could lead to zero growth in the short-term. European Cohesion policies should be targeted to small and medium-size towns and rural regions, especially in less developed countries, favouring changes in people and corporative behaviour. This territorial policy will support emerging alternative economic practices such as consumer cooperatives, agro-ecological production networks, social currency networks, seed banks, etc, therefore balancing the strong de-territorialisation trends of contemporary global financial capitalism.

This scenario responds to the challenges of energy scarcity and climate change expressed in the **Territorial Agenda 2020** (2011) by promoting small and medium-sized cities as centres of self-contained and economically resilient regions with more sustainable mobility patterns yet taking account of the necessary economies of scale of services of general interest and the prospects of an ageing society.

Policies applied are mainly from the fields of cohesion funds targeting mostly rural less developed areas, and transport investments focused on local and regional networks. The focus lies on promoting medium-sized cities and reducing the existing imbalances at the medium and lower level of the urban hierarchy and their functions for the surrounding regions. Policies aim at organising the settlement systems in a more polycentric approach, economically resilient, at regional scale.

Local production and local markets gain much importance, migration of skilled people from large cities to rural areas accelerates localism, large cities become further decentralized into more productive, slow neighbourhoods. Strengthening the social and economic balance of Europe at the regional level, promoting endogenous development and empowering regional institutions may lead to more efficient provision of public services. Many of the changes in this scenario are much lead by changes of values and behaviour of new generations, policy becoming a support for these.

Scenario C provides an image of the European territory in which urban and rural territories form a mosaic of different regions and types of territories with identities nourished by local and regional governments able to cooperate in areas of common interest.




 EUROPEAN UNION  
 Part-financed by the European Regional Development Fund  
 INVESTING IN YOUR FUTURE

Regional level: NUTS 3  
 Source: MCRIT, 2013  
 Origin of data: SASI model, 2013  
 © EuroGeographics Association for administrative boundaries

### Illustration of Scenario C

Based on results obtained by SASI forecast model (2050)

- Capital NUTS 2
- Capital NUTS 1 (only Germany and United Kingdom)
- Capital NUTS 3 (except Germany and United Kingdom)
- NUTS1-NUTS2 links intra NUTS2 (only Germany and United Kingdom)
- NUTS2-NUTS3 intra NUTS2 links (except Germany and United Kingdom)
- Relative increases in GDP 2051 per capita Scenario C/Baseline average over 100 (100=EU31 ave)
- No data (No ESPON space)
- NUTS2 Boundaries

**Figure 5 Illustration of Scenario C “Regions”**

### 3.2 Scenarios facing the Critical Bifurcations

|  | Scenario A   | Scenario B  | Scenario C  | Baseline   |
|--|--|---|---|--|
| 1. Will European national economies be able to adjust to structural transformations?       | Reduction of Public Administrations. Further opening and deregulation of markets. Private-Public Partnerships. Public support to R&D | Policy reforms based on reinforcing social welfare. Public investments that allow for economic recovery | Policy reforms towards post growth societies limiting both large corporations and central public administrations. | No, partially  |
| 2. Will migrations continue to be necessary in Europe to shirk labour market?              | Strong migrations bound to most performing economic corridors and MEGAs  | Moderate migrations mostly bound to large urban centres from inner regions and other EU countries       | Limited external migration. Residential mobility from large cities to medium and small towns                      | Migrations growing slowly mostly bound to largest metropolitan regions           |
| 3. Will European countries be able to sustain their welfare system?                        | Welfare system fully privatised  | Reinforced to allow its maintenance and sustained through increased taxation                            | Reformed to facilitate Third Sector (ONG's, social communities...) interventions.                                 | Welfare system reduced and further privatised                                    |
| 4. Will Europe (and its single countries) be able to find ways to finance its public debt? | Financial debt fully repaid by 2030. Surplus   | Financial debt reduced, but not fully repaid by 2030  | Financial debt repaid in 2050   | Financial debt remains high and public administrations are substantially reduced |
| 5. Will Europe be able to compete with emerging countries in high-value sectors?           | Increased overall competitiveness (manufacturing, biotech, medicine)   | Competitive limited to sectors like transport, design, nutrition, green energies                        | Limited competitiveness to sectors like tourism and welfare services  | European technological advantages reduced overtime                               |
| 6. Will Europe be decarbonised and decentralized energetically, reducing GHG emissions?    | Increased efficiency of fossil fuels, some RES, emergence of CCS. Targets partially met.   | High development of centralised RES and nuclear. Targets partially met.                                 | Decentralised RES. Lower energy consumption. Targets met.   | Fossil fuels remain important. Emissions reduced but targets are not met.        |



|   | <b>Scenario A</b>   | <b>Scenario B</b>   | <b>Scenario C</b>   | <b>Baseline</b>   |
|---|---|---|---|---|
| <b>7. Will Europe will be able to tap the untapped potential of its <u>regional diversity</u> richness?</b> | Continuous de-territorialisation of the economy   | Yes at National level, while regions in each country will play a secondary role | Local differences emphasised as a major European asset                    | Partially   |
| <b>8. Will spatial development and <u>settlement structures</u> be more polarised?</b>                      | Development focussed on global cities (MEGAs), and on corridors linking them  | Development mostly focussed on large and medium cities (FUAs)                   | Development focussed on medium and small cities with high quality of life | Increased polarisation  |
| <b>9. Will Europe be politically more <u>integrated</u>?</b>  | Europe of multiple speeds. Increased cross border integration motivated by economic interests. Increased relations with neighbouring space. | Continuation of existing trends   | Limited Federalism. No new EU Members                                     | No significant progress in EU political integration, limited cross-border relationships, Croatia enters EU. |
| <b>10. Will decision and management processes of EU key policies be more <u>decentralised</u>?</b>          | Corporate and business dominated top-down governance  | Increased role of Nations (mixed top-down and bottom-up approaches)             | Strengthened principle of subsidiarity, bottom-up governance enforced.    | Top-down governance with limited decentralisation   |

**Figure 6 ET2050 Scenarios facing Critical Bifurcations**

### 3.3 Policy Assumptions of Scenarios

Most relevant assumptions are presented in the next table:

| <b>Policies</b>             | <b>BASELINE</b>               | <b>A Scenario</b>                        | <b>B Scenario</b>                             | <b>C Scenario</b>                        |
|-----------------------------|-------------------------------|--|---|--|
| <b>Demographic policies</b> | Continuation of actual trends | Lowered support to natality and families | Continuation of actual trends, as in Baseline | Public support to natality and families. |

| <b>Policies</b>           | <b>BASELINE</b>   | <b>A Scenario</b>  | <b>B Scenario</b>  | <b>C Scenario</b>   |
|---------------------------|---|--|--|---|
| <b>Migration policies</b> | Continuation of actual trends   | Openness to migrants from outside Europe   | Relative openness  | More strict immigration policies  |
| <b>Monetary policies</b>  | In Western European countries, stability of interest rates, ULC, exchange rates, inflation;<br>Progressive convergence of Eastern EU towards Western European Countries values<br>Decrease of interest on bonds: end of speculation periods   |  |  |   |
| <b>Fiscal policies</b>    | Increase of tax rates in the Western and Eastern Countries. Debt/GDP remains constant   | Slow tendency towards stability pact: 60% of Debt/GDP.<br>Decrease of public expenditure growth rate especially in vicious countries.  | Debt/GDP remains constant  | Slow divergence from stability pact. Slight increase of public expenditure growth rate  |
| <b>Transport Policies</b> | 0,8% of European GDP invested in transport infrastructure by 2030 <sup>1</sup> , mostly in long distance infrastructure (€1.970Bn 2013-2030).<br>Slightly reduced modal allocation of investments to rail, and slightly increased to airports and ports.<br>Single European Transport area fully developed for intra-Europe transport | 0,6% of European GDP invested in transport infrastructure by 2030, mostly in long-distance infrastructure (€1.610Bn 2013-2030)<br>Modal allocation increasing in air and maritime, and decreasing in rail<br>European transport area opened to global competition.<br>ITS deployment in road mode reduces costs by 5%.<br>Reduced subsidies to rail. | 1,0% of European GDP invested in transport infrastructure by 2030, mostly in medium distance infrastructure (€2.290Bn 2013-2030)<br>Modal allocation increasingly rail based<br>Single European Transport area fully developed for intra-Europe transport<br>Pricing and taxation as in baseline | 0,7% of European GDP invested in transport infrastructure by 2030, mostly in short distance infrastructure (€1.790Bn 2013-2030).<br>Modal allocation focussed on collective modes and urban public transport<br>Slow liberalisation and integration of the European transport market<br>Road and air taxation causes 5% cost increases<br>Rail and public transport subsidies |

<sup>1</sup> General assumption for all scenarios on European transport investment: 0,9% in 1995; 1,2% in 2007; 0,6% in 2015

| <b>Policies</b>               | <b>BASELINE</b>  | <b>A Scenario</b>  | <b>B Scenario</b>  | <b>C Scenario</b>  |
|-------------------------------|--|--|--|--|
| <b>Energy policies</b>        | Fossil fuels remain important. Emissions reduced but targets are not met.  | Increased efficiency of fossil fuels, some RES, emergence of CCS. Targets partially met.   | High development of centralised RES and nuclear. Targets partially met.  | Decentralised RES. Lower energy consumption. Targets met.  |
| <b>Environmental policies</b> | Continuation of existing environmental management trends<br>Euro-standards <sup>2</sup> regulation drops vehicle emissions to 100gr/km by 2030, (140gr/km in 2009) | Environmental protection focussed on keeping standards of environmental quality for air and water. Technologic optimism.<br>Euro-standards drop vehicle emissions a 10% respect to baseline  | Protection and management of rural areas as open spaces for leisure and environmental safety. Strong mitigation. Strict public regulations.<br>Euro-standards drop vehicle emissions by 5% respect to baseline               | Limits in both use intensity and quality standards and land occupation. Mixed Focus on adaptation.<br>Euro-standards drop vehicle emissions by 20% respect to baseline                                     |
| <b>Cohesion policies</b>      | Budget kept constant. Allocation among regions in 2007-2013 as 2000-2007<br>Limited and gradual reforms favouring efficiency with no major political change.       | Half of the present budget. Allocation among regions in 2007-2013 as 2000-2007<br>Territorial cross-border cooperation reinforced as well as with Neighbouring countries and the rest of the World.<br>Productive investments in neighbouring countries. | Budget kept constant. Allocation among regions in 2007-2013 as 2000-2007<br>Thematic objectives redefined favouring urban-oriented policies and innovative urban actions.<br>Strict-land use instruments in vulnerable areas | Budget doubled. Regions type C get 2/3 of the budget, Type B 1/3<br>Integrated territorial investments and community-led local development reinforced. Place-based focus promoting endogenous development. |
| <b>Agricultural policy</b>    | Limited reform of the CAP  | Budget reduced and focussed on subsidies to increase the sector productivity   | Limited reform of the CAP. Higher emphasis on landscape management   | Full integration of agricultural and environmental policies in their territorial dimension through cohesion policy, particularly pillar II.  |

**Figure 7 Synthesis of Scenario Assumptions on Exogenous Conditions and Policies**

<sup>2</sup> Regulation on transport vehicles environmental performance

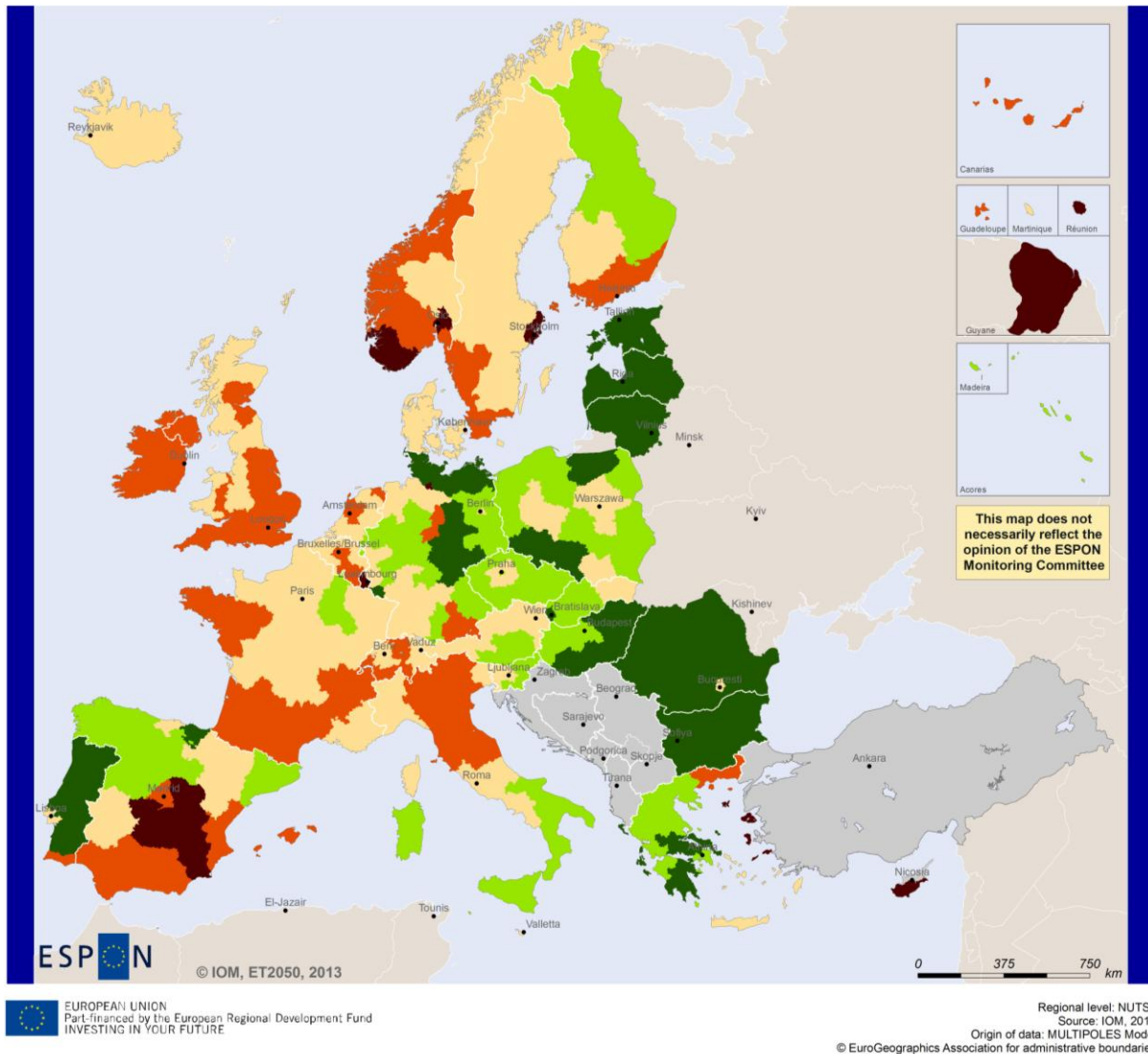
## 4. Findings of the Scenarios

### 4.1 Europe towards 2030: Unfolding trends and baseline scenario

Uncertainty is high when looking ahead. The number of uncertainties (or “wild cards”) is overwhelming when looking ahead, from political conflicts in neighbouring countries to new global financial breakdowns, new emerging energy and communication technologies, or environmental issues. The increasing interdependency of global economies also increases their vulnerability. In order to be politically relevant, assumptions for the baseline need to be as realistic and as likely as possible.

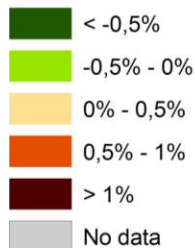
Europe most likely future looks **relative balanced**: stable and more cosmopolitan population and moderate economic growth, transport and energy demands are slowing down because of increasing market efficiency and technologic progress, limited land-take at aggregated scale and more conscious resource consumption. Nonetheless, many internal unbalances are also expected: increasing internal migrations, and perhaps also external (necessary because of the ageing population), growing social and regional economic disparities, energy dependency and rising costs, and divergent trade patterns.

**Ageing** is and will be the most universal demographic trend across Europe, but the scale of the phenomenon differs between countries and regions. Ageing will be fuelled by continuous increase in life expectancy, to 81 years for men and 86 years for women in 2030 and to 85 years for men and 90 years for women in 2050, combined with long lasting below replacement fertility. International extra-Union **migration** tends to mitigate this process, whereas international intra-Union migration and internal migration tend to reduce ageing in large urban agglomerations and affluent, highly developed regions and increase it in peripheral, poorly developed regions. In Eastern regions, ageing combined with migration and limited savings will place a significant burden on national budgets; in the medium term, this will be compounded by a cohort of minimum-waged or ‘informal economy’ residents reaching pension age. In terms of total population, a moderate growth is expected from 510 to 530 million people in 2030.



### Annual population change (Units: %)

Results obtained by MULTIPOLES forecast model

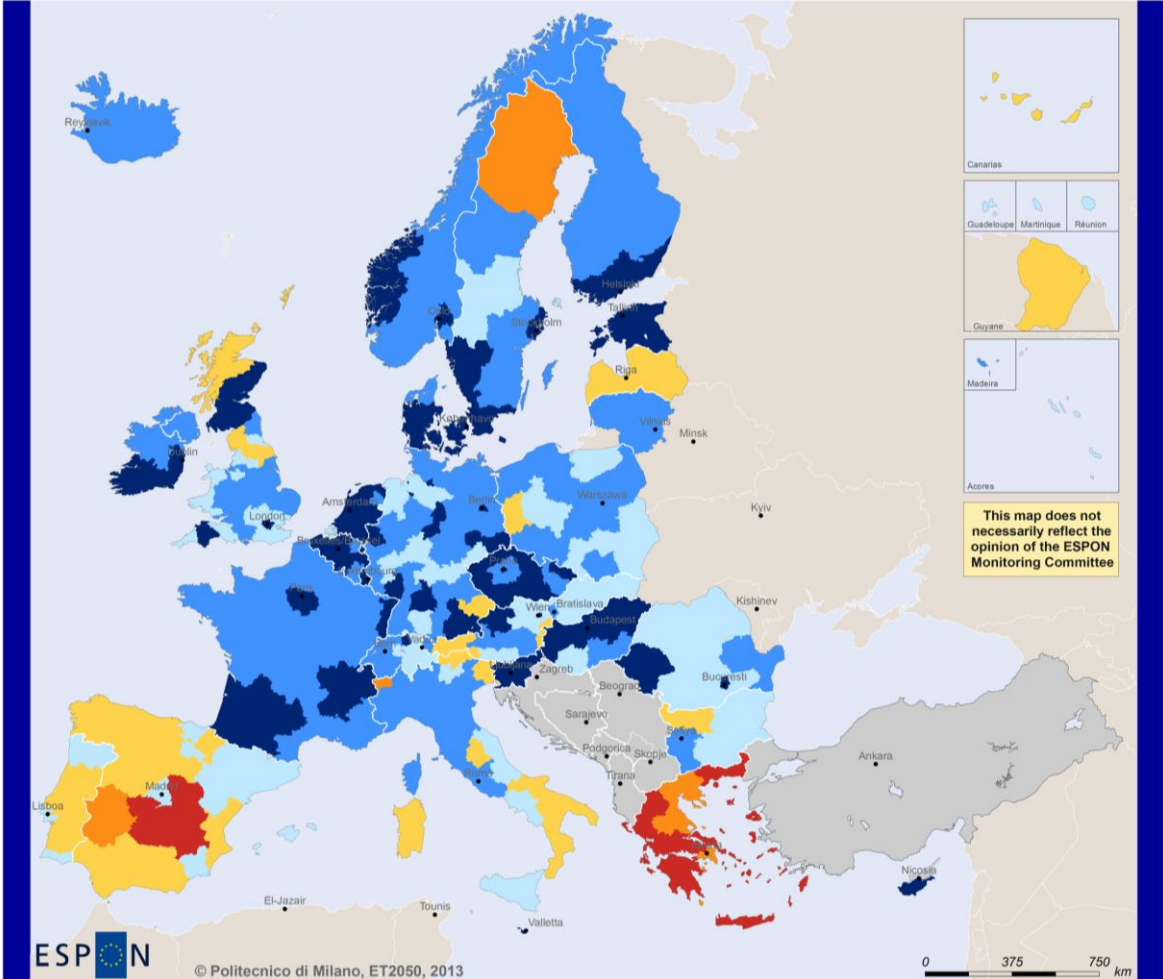


**European population growth will tend towards stabilisation.**  
**Total population (ESPON Space) will grow from 514 million in 2010 to 530 million in 2030.**  
 MULTIPOLES is a cohort-component population dynamics model. It is used for the simulations of complex hierarchical multiregional, multi-country population systems; for analysing impact of various scenarios concerning migration, fertility, and mortality.

**Figure 8 Annual population change according to MULTIPOLES model for the Baseline scenario**

**Moderate economic growth** in average is expected. The annual growth for Europe may be around 1,90% in average between 2010-2030 if actual policies and technologies do not suffer significant changes, and the rest of the world follows a baseline trend. Even if an average growth is foreseen for Europe, it is expected to be uneven territorially, with 44 regions growing less than 1% or even having negative growth over the whole period (mostly less developed Southern regions). Eastern European regions may grow around the European average, but growth is

mostly focused on capital cities. The least developed regions won't probably catch-up with the rest of Europe before 2030. In a business-as-usual or baseline scenario, the more developed a country or region is now, the more chances it will have to keep growing in the coming years: the catching up processes that happened in the previous decades will not necessarily happen in the future at the same speed, at least during the next decade.



ESPON  
 © Politecnico di Milano, ET2050, 2013  
 EUROPEAN UNION  
 Part-financed by the European Regional Development Fund  
 INVESTING IN YOUR FUTURE

Regional level: NUTS2  
 Source: Politecnico di Milano, 2013  
 Origin of data: MASST3 Model  
 © EuroGeographics Association for administrative boundaries

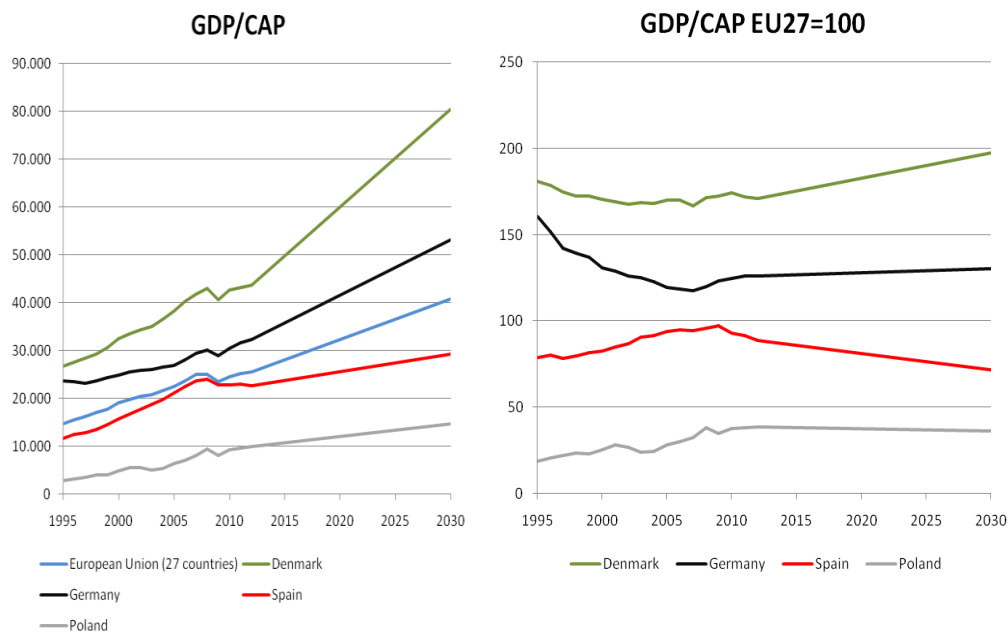
**GDP Growth annual average rate (Units: %)**

Results obtained by MASST3 forecast model

- < 0%
- 0% - 0,5%
- 0,5% - 1%
- 1% - 1,5%
- 1,5% - 2%
- > 2%
- No data

**Economic growth at very different speeds, leading to an increase in inter-regional economic disparities. Number of regions below to 1% of GDP growth: 45 (16%). ESPON Space annual average GDP growth rate: 1.89%**  
 MASST3 is an econometric, macroeconomic, sectoral, social and territorial model. It has been upgraded to explicitly take into account the impact of the current economic crisis.

**Figure 9 GDP Growth 2010-2030 according to MASST3 model for the Baseline Scenario**



**Figure 10 GDP per capita in absolute terms and relative to EU27 for a few selected countries**

Note that disparities within countries also grow (e.g. capital regions in Poland are likely to have higher GDP/capita than the average Spanish region in 2030, catching up some East German regions).

The **unemployment level** in many European regions will keep driving salaries down in real terms at least for the next decade and will also induce labour migrations towards more developed and ageing regions, with much higher salaries and better social welfare systems. More jobs are expected to be created elsewhere in Europe, overall, if the actual trend towards lower salaries will continue for the next decade. **Employment** will grow even in regions with low economic growth, where such growth will result from workforce increases rather than by higher productivity, as it happened in many Southern regions from 2000 to 2008 when a large number of jobs were created and occupied by low-skilled immigration. During the crisis, the hidden economy has grown up to 25% in many Southern regions, as well as informal labour and family support, and will last for a longer time than in Eastern European regions, where the hidden economy will tend to gradually diminish since it is mostly related to self-sufficient agriculture in rural areas.

**Jobs** are likely to be created in both the manufacturing and service sectors across Europe. A reindustrialisation process is expected in traditional industrial areas in the centre of Europe, recentralising high-quality and technologically advanced production, as well as in Southern regions where salaries will remain relatively low, making already existing industrial investments profitable enough to remain there for a longer time, and delaying delocalisation plans. Eastern regions, that received a large inflow of foreign investments during the latest decade, from both Central European and Southern European regions, may see this inflow slowing down, that can be compensated by a net increase in the service sector, clustered in main cities. Nevertheless, growth in non-metropolitan regions will maintain a significant industrial element.

An average moderate economic growth is expected in the **Central and Eastern European Countries** (CEEC). If a low growth of 2,2% is the case for CEECs towards 2030, the existing economic gap would hardly be modified and Central and Eastern Europe will remain on the European periphery. CEECs followed the pattern of a dependent market economy type of capitalism which is characterized by high dependency on imported foreign capital. The role of foreign savings in promoting economic growth in the EU12 countries was undoubted in the short

run and in a growth environment but this is rather not true in the long run and in crisis times therefore the strong correlation between higher FDI increase and higher growth cannot be proved. Foreign investors not only contributed to the modernisation of the economy, but also increased its structural and spatial segmentation created by the “dual economy”. Sustainable catching up process is jeopardised by the dualistic feature of the transition economies, unveiling the weakness of domestic sectors. Low-income-based competitiveness represents a development trap that counteracts the accumulation of financial and social capital, hinders upgrading to high value-added production, and encourages migration to higher-wage regions. Despite European catching-up processes, the large economic and territorial inequalities cannot be eliminated in dependent economies due to constant capital scarcities. At regional level, we may see disparities growing more than before. In the new member states capital regions are the winners, while rural and eastern border regions may likely be the losers. A continuation of the present situation towards 2030 years is a likely outcome, if there are no significant political or technologic changes. Clashes between growth- and sustainability-oriented policies are to be expected, and development may involve different sectoral mixes than in developed regions.

Insufficient productivity is expected in the **Southern regions**. The analysis of the GDP per capita performance reveals that Southern regions will hardly be able to recover from the crisis in the coming years, with Greece, Cyprus, South Italy, most of Spain and Portugal facing severe problems of economic instability and trouble in public finances. The growth in many of these regions was triggered by relatively high in-flows of capital and labour (in cases on speculative markets), instead of an improvement in productivity. The challenge for the coming decades is being able to value the important social capital investments realised, often because of European funds, to generate productive economic activities. The importance of the informal markets is high, up to 25% of GDP in many regions, explaining why large unemployment levels can be afforded. In the coming years salaries will tend to be reduced, and employment may recover as a consequence. Industrial delocalisation, often towards Central and Eastern Regions may not continue, in this case. How many of these regions may support the welfare improvements during the latest two decades remains as a paramount challenge until 2030.

The importance of the “**Silver Economy**” will increase. Ageing will result on transformation of the provision of social services, such as health and long term care, for which demand may grow substantially. Silver economy will have to be absorbed into mainstream economic activities, both on regional and national levels. Provision of social security, in particular retirement benefits will be a substantial problem for national governments, as many of the national social security systems either already are or may become insolvent from the actual perspective. These challenges will have to be met under the conditions of a decreasing labour force related to the exit from the labour market of the retiring post-war baby boom cohorts, combined with relatively small entry of young cohorts. The shrinking labour force and population ageing will have to be counterbalanced by an increase in labour productivity and delayed exit of older workers (increased statutory retirement age and increased labour force participation).

More **labour migration** within Europe, between and within countries, although it will still be low in comparison to the USA, which has a much younger population. Migration in Europe is expected to grow because of economic reasons: if less developed countries do not catch-up with more developed European countries, they will not be able to offer better jobs and higher salaries to most of their population. At the same time, population ageing in more developed countries will create need for young foreign labour. Most developed cities will compete for more skilled and creative persons. The large volume of the labour migration from East to West and from South to North can be a serious threat to societies and economies of sending countries. Since migration is highly selective (migrants are usually young and equipped with better human capital), it will also have a substantial impact on age structures and pool of skills. Skilled and qualified people will be attracted to large global cities all over Europe in search of better job opportunities but favouring



particular skill groups which are in high demand. This mechanism will have a powerful detrimental effect on sending regions, increasing regional disparities.

**External migrations** will continue to increase. Since no major changes in demographic policies across Europe are expected, the number of immigrants will be growing to respond to the labour shortage related to the ageing of Europe. Migration from third countries, especially from the neighbouring countries will grow towards European Union regions with relatively large agriculture, construction or tourism sectors, as well as to large cities. It is assumed that until 2030 extra-European immigration may increase by 2 per cent every 5 years, and that afterwards it will remain constant. In the most crisis-hit countries the increase will be delayed by some years.

**Migration in Southern regions**, due to residential tourism, is already high (some 800.000 people in the Spanish Mediterranean coastal regions, with a significant variation over the year), and will likely grow. It is becoming a positive social and economic development driver of health and other advanced personal services. Demographic trends are extremely heterogeneous and unstable across Southern regions. While in some regions migration was extraordinary since 2000s, and is currently reduced or even reversed, other regions suffered depopulation. Towards 2030 these trends may be even exacerbated; on the one hand coastal areas will be extremely attractive for residential tourism and large cities may be able to attract skilled people, while rural inner areas may face depopulation.

New forms of **sustainable tourism** in areas such as education and training, health and leisure, cultural and business will emerge. Tourism will grow as much as middle classes also grows at world level. Many European cities and regions will become destinations for tourism and many cities and regions will have to manage massive flows to avoid stereotyping their cultural and ecological assets, by creating exclusive or segregated zones. In their way out of the crisis, it is likely that land-use restrictions preventing the urbanisation of sensitive areas, mostly coastal areas, be relaxed, and therefore tourism also represents a serious threat for the preservation of natural and cultural landscapes.

**Transport** demand will be more diversified and will increase below economic growth. Transport demand may be decoupled from economic growth, at least for urban and short-distance mobility in more developed cities and regions, but it is not likely neither for freight and passengers nor for long-distance, particularly for intercontinental transport. More diversified trip purposes and specialised transport modes are expected, while transport costs for passengers and freight may remain stable in relative terms if social and environmental externalities are included in the price of transport somehow compensating savings from technological innovation. Market inefficiencies inside Europe will gradually likely diminish because of the completion of the Single Market on transport and other network industries, and there will be a gradual opening of global markets to more competition. While in most Eastern European regions still there are important infrastructure deficits constraining economic growth, in many Southern regions infrastructure endowment is already high, in part because of Cohesion and Structural Funds, to the point that infrastructure is one of the main assets for future development. Excessive investment on infrastructure results on market distortions and have important opportunity costs associated, but infrastructure scarcity heavily constrains development. Most sustainable regional economic development patterns are based on the valorisation of endogenous assets in the European and global markets.

**Energy intensity** will gradually decrease because of the more service oriented European economies and the increased energy efficiency and savings. Carbon intensity (GHG emissions elasticity in relation to energy consumption) is expected to decrease due to improved technology, especially wind and solar sources. More in general, renewable sources are expected to grow and nuclear facilities gradually dismantled, diversifying energy sources and reducing the energy dependence of European Union's countries, even if the energy costs in Europe may remain higher than other developed world regions, particularly USA. More interconnected and

decentralised production will bring higher efficiency. New energy technologies (e.g. nuclear fusion) seem unlikely in the next decades but they will provoke a revolutionary change, if they happen.

**Urbanization and land-take** may increase. The urban surface may still grow rapidly (898 km<sup>2</sup> per year of new artificial land between 2010 and 2030, on average), often in the form of uncontrolled urban sprawl. Main drivers for urbanisation are people migrating from rural areas to cities and people using more residential space per capita (e.g. larger houses, less people per family). Although industrial and commercial land use tends to become denser, the overall process is towards increasing urban surface. The problem is not just the increase in sealed soil, but even more where does development take place (e.g. on fertile soils, with the risk of losing these and the nature and the ecosystem services related to it) and how does development take place. Tourism is the greatest consumer/user of the Mediterranean coast. The crisis is inducing the relaxation of planning regulations. Overall, the attractiveness of the region because of cultural heritage and weather remains as a precious asset to be protected and valorised.

Large decline of pastures and perennial crops. Over the past decades there has been a large decline in **agricultural areas**, especially in pastures and perennial crops. This process is expected to continue for a few more years, with the strongest declines being expected on marginal lands. Conversion from agriculture to all other land uses is expected throughout Europe, with large changes from low productive lands to natural vegetation. This brings challenges regarding rural depopulation and stewardship of the land, but can also be seen as an opportunity to restructure and strengthen the rural areas. Europe is at a crossroad to decide the future of agricultural areas. Should food security be a crucial aim or should more space be devoted to energy crops, or does the decline in agriculture area offer possibilities to connect high value natural areas into a green infrastructure throughout Europe.

## 4.2 Europe towards 2030: Likely impacts of the alternative scenarios

The impacts of the scenarios A “market based growth favouring large metropolis”, B “public policies promoting secondary city networks” and C “public policies with more social and regional redistribution at European level” are assessed for the development of Eastern and Southern regions.

According to the forecast models applied, based on the assumptions for framework conditions and policies established, scenario B is the most expansionary in terms of **GDP** (+2,30% yearly), followed by scenario A (+2,20% yearly), and C (+1,80%). The higher expansion of growth in scenario B can be explained by more efficient exploitation in this scenario of territorial capital elements, of local specificities, present in both large and second rank cities that allow local economies to achieve higher competitiveness. Development based on second rank cities implies the existence of an integrated and equilibrated urban system, made of efficient second rank cities working with first rank cities in providing quality services and allowing the latter to avoid strong diseconomies of scale that can be detrimental to growth. The weak presence of equilibrated and efficient urban systems in the Eastern countries may explain why these countries register very similar growth rates between scenarios A and B, being both the result of growth supported only by first rank cities.

A more detailed analysis for Cohesion countries in the East and South of the European Union reveals the structural unbalances of the fast economic development during the latest twenty years, and the difficulties these regions may have to catch-up the development level of central and northern European regions.

**Flows** within Scenario A will orient even more towards national capitals and resource concentration in mega-centres can be expected to encourage not only the backwash of local

resources from the periphery (capital and human resources alike) but further de-industrialisation and accelerated tertiarisation; the clear winners are the capital-city regions resulting in a dramatic increase in regional disparities. CEEC countries would benefit vastly from the implementation of Scenario B. However, in Eastern regions the relative weakness of secondary cities may be a hindrance factor. In order to achieve this more territorially balanced vision through polycentric development the critical mass of secondary cities have to be promoted partially through the complex multi-fund integrated territorial investments. CEEC having more numerous peripheral regions takes particular advantage of the Scenario C in which New Member States grow faster than western countries; the promotion of rural and peripheral regions in the new member states in Eastern Europe is stronger. A vision of integrated rural and urban areas might be the most favourable approach to mitigate regional inequalities and bring EU12 industrial milieus closer to Western Europe, since it would offer institutional incentives for the spreading-out of production and the reindustrialisation of the peripheries.

**Employment-wise**, cohesion policies positively affect both rural and peripheral areas in the CEEC, which are expected to benefit the most from scenario A. This does not imply industry can retake its former employment share, but knowledge-intensive production can be more evenly spread, bringing along further socio-economic advantages for smaller cities, towns and rural areas. The relevance of industrial development and its territorial differences maintain a key role in catching-up processes in the EU13. Under the baseline, industry can be expected to have a slowly diminishing share in employment and economic output, although its significance will stay above the Western European level. Development will continue to be FDI-dominated, although the gradual emergence of mid-tier companies in the EU13 is to be expected. With the dominant role of MEGAs in scenario A resource concentration would be expected to encourage further de-industrialisation. Scenario B and particularly C emphasise a higher significance of industry within the space economy, and more balanced growth patterns. Large cities can serve as integrators of industrial production and business services, while also maintaining spreading networks towards smaller centres. Scenario C offers the strongest vision of “spatial justice”, although at certain trade-offs. More dispersed patterns of innovative manufacturing can emerge, dominated by flexible small and medium-sized firms. In the Central and Eastern European Countries, the urban network shows a weakness on the tier of cities with 400-600 thousand inhabitants. It is unrealistic to propose to develop regional seats to Western European levels, but they must be able to fulfil their roles as regional centres. Urbanisation is compounded by the demographic decrease facing the macro-region, which has both natural and migratory reasons, and results in workforce shrinkage and the decline of economically active population. This puts brakes on the macro-region’s growth potential, and represents long-term capital loss, with specific areas “hollowing out”. The different scenarios do not imply radical differences from the baseline. Scenario A would lead to the highest degree of internal differentiation, while the others show similarities in offering a territorially balanced vision through polycentric development.

According to the baseline scenario (2010-2030) the **gaps between regions** within Southern countries will grow, creating explosive social and political conflicts at national and European level. These countries are expected to show the same demographic diversity as today with a high net migration and a mild overall increase in old age dependency in comparison to the northern Europe. In terms of **GDP per capita**, the economic crisis is likely to have continuing impacts in most regions of the Southern European countries, however, with a positive total employment growth rate and diverse results in manufacturing and service employment. Overall passenger and freight **accessibility** is expected to increase but will stay below EU average with a few exceptions around important cities.

Southern European population is lower in **Scenario A** than in the Baseline, despite increased immigration, because of lower fertility. The comparatively high immigration in this scenario results to a strong reduction of the speed of ageing in the promoted regions of southern Europe. GDP

growth is higher than in the baseline scenario in all southern countries of Europe with minor exceptions while the gains of employment growth (also in service and manufacturing) in almost all regions are positive due to increased external demand. Road will remain the main mode for passenger transport but Scenario A causes rail share to decrease by one half. The Scenario also shows a 32% average speed increase compared to 2010.

Southern European population is slightly higher in **Scenario B** than in the Baseline due to higher immigration. It is the most expansionary scenario in terms of GDP due to the higher and more efficient exploitation of territorial capital elements and local specificities in both large and second rank cities. Employment growth rates seem to be comparable between the southern European countries and the rest of ESPON area and among the southern countries while service employment is more expansionary than manufacturing. Road will remain the main mode for passenger transport but Scenario B provides for moderate rail modal share increases.

**Scenario C** will lead to a more balanced distribution of population between various categories of regions with a reduction of ageing in the peripheral and rural areas mostly due to a reduced emigration of working age population. This scenario presents on average a relatively slower rate of GDP growth with respect to the Baseline scenario driven mostly by slower growth in these countries where rural and peripheral areas tend to benefit more. Employment growth in this scenario takes place mostly in the most promoted regions while there is a clear distinction of regions in terms of manufacturing and services employment growth. Road will remain the main mode for passenger transport but rail has the highest growth potential in this scenario, up to 12% in 2030 compared to 6% in 2010.

Finally, in all scenarios, long distance mobility is expected to grow below average from 2010 to 2030 and because of an increase in energy-saving techniques, the whole of southern European countries presents a noticeable decrease in CO<sub>2</sub> emissions (especially in Scenario C).

A **Territorial Impact Assessment (TIA)** covering the whole of Europe was run for all scenarios at the 2030 horizon. The TIA points out the relative higher desirability of the scenarios B and C in the 2030 horizon. Computing an overall summative indicator of impacts on the European space, scenario B shows high benefits on the economic and identitarian dimensions while scenario C the highest benefits on the social and environmental ones. Scenario A lags behind due to its excessive environmental and social costs. The B scenario shows up as the one capable of better exploiting the potentials of a dispersed - but mainly urban - territorial capital, embedded in economic capabilities and also in highly differentiated regional specificities. It turns out to be the scenario in which at the same time the highest cohesion and the highest competitiveness are achieved, emphasising that the preconditions for development widely lie in a hugely differentiated and scattered endowment of "territorial capital", made up of natural and artificial specificities, varied settlement structures, cognitive and relational assets at different degrees of complexity and development. Referring the TIA results to a spatial typology of regions (MEGA-agglomerated-urban-rural) an interesting image emerges: European future will be based, on - and at the same time will bring the highest benefits to - medium-size cities regions and secondly to MEGA regions; almost all scenarios confirm this forecast. No doubt, our future will be an urban one, but not just a giant city one. But rural regions will not be lagging behind: in wide economic terms they will benefit from relevant spill-over effects and tourism development and show the best performance in quality of life and environmental sustainability. The challenge they will face will refer mainly to the shock of modernity and cultural transformation.

In conclusion, catching up regional imbalances remains a challenge in 2030. A detailed analysis for Cohesion countries in the East and South of the European Union reveals the structural unbalances of the fast economic development during the latest twenty years, and the difficulties these regions may have to catch-up the development level of central and northern European

regions. Regional divergence is reduced in the three scenarios in relation to the baseline trend for 2030, but just marginally.

### 4.3 Europe towards 2050: Long-term territorial scenarios

The three scenarios developed for 2030 (A, B and C) were prolonged for 2050 by keeping the same core socioeconomic and environmental dimensions and being more explicit territorially. To deal with the increasing uncertainty of a longer time horizon, these three alternative territorial scenarios were evaluated against different extreme framework socioeconomic and environmental conditions. The purpose of the exercise is not to predict likely futures but to assess the alternative territorial strategies in terms of economic growth, regional disparities, land-use and the environmental impact derived from transport activities, in energy and emissions.

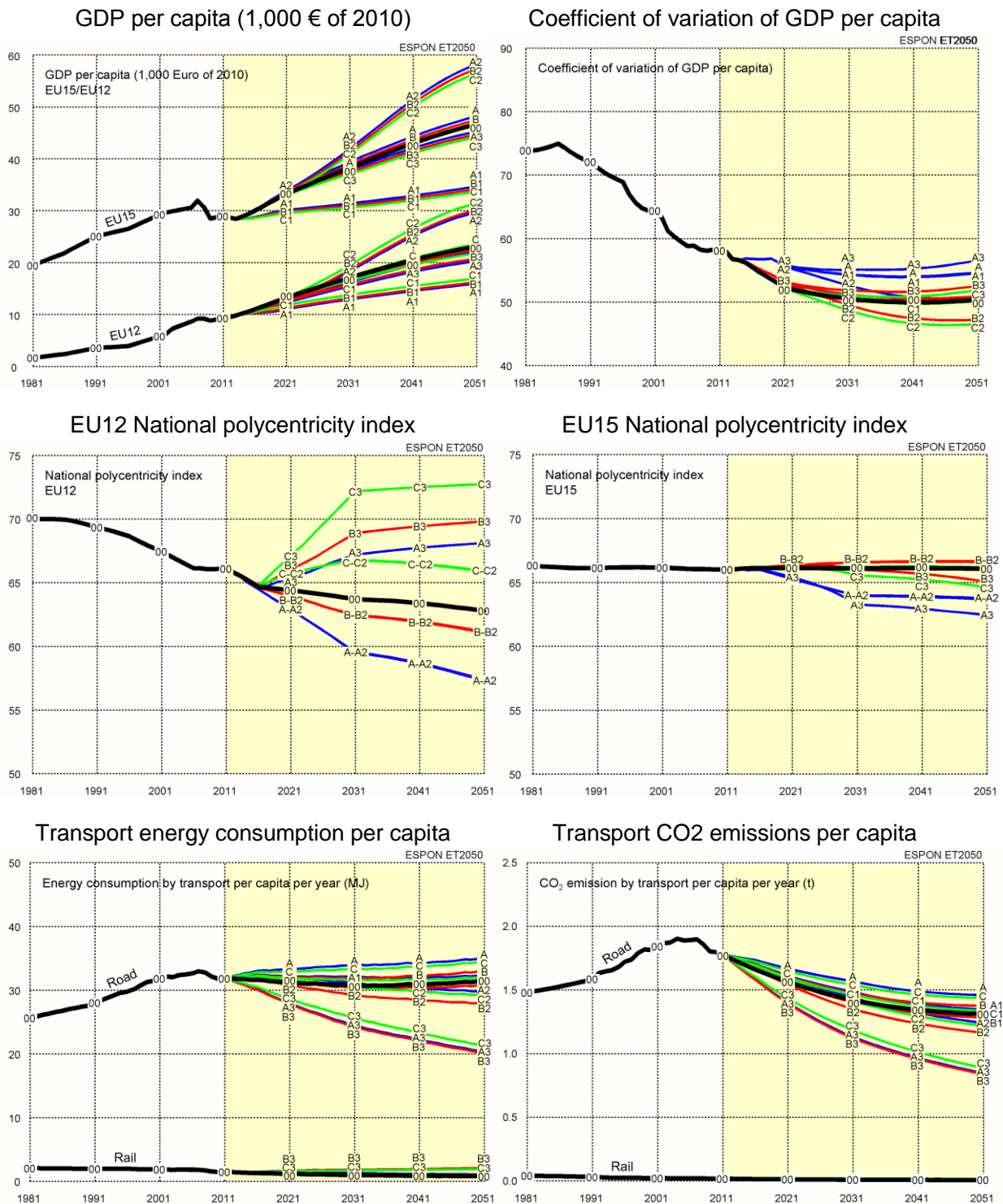
A detailed analysis of these scenarios reveals that the long-term average growth of Europe is not reduced by redistributive policies: **Economic growth in the long-run** is not significantly affected by the promotion of any of the three strategies presented (A, B and C). A similar average growth can be obtained in the long-run with alternative policies favouring either metropolis and larger cities in developed regions, or medium and small cities in peripheral regions. Economic development mostly depends on technological changes leading to increases in productivity, and public policies such as fiscal and monetary policy. Therefore, towards 2050 scenarios A, B and C would result in a similar average economic growth for Europe as a whole, under the same framework conditions, meaning that, under these conditions, agglomeration economies will have in Europe a relatively minor role as growth drivers.

**Relative regional development gaps** are significantly reduced by redistributive policies. Policies transferring resources into second tier cities and peripheral regions as defined in B and C scenarios are effective to reduce economic gaps without diminishing the overall economic growth of Europe, even if they are not above the current levels (0,4% of European GDP). A basic modelling assumption is that resources being transferred are allocated to services and infrastructures that effectively contribute to increase the productivity of the regions.

**Absolute regional gaps** will likely remain. Gaps are only reduced in relative terms; in absolute terms, the current gap will hardly be reduced unless much stronger redistributive policies (than the present 0,4% of European GDP) are applied.

**Polycentric territorial structures** induce more balanced growth. If polycentricity is measured by combining population, location and economic growth distribution among the cities in a given region or country, then more polycentric structures provide for a better distributed growth in the long run. Where the most developed cities and regions within Europe cooperate as parts of a polycentric structure they add value and act as centres that contribute to the development of their wider regions. This means that polycentric territorial development policy should foster the territorial competitiveness of the EU territory. It can be seen that in particular in the new Member States the effects on the present dominance of capital cities are substantial.

To deal with the increasing uncertainty for a longer time horizon, the three alternative territorial scenarios (A, B and C) were disaggregated into three scenario-variants covering different extreme socio-economic (1 - economic decline), technologic (2 - technologic progress) and environmental (3 - energy scarcity) conditions for 2050. At the same time, all regional transfers of public funds were kept at 0,4% of the total GDP in Europe in order to assess the impact of their territorial redistribution among different types of regions.



Source: SASI

Figure 11 Evolution 1981 to 2051 (GDP per capita and variation) according to SASI model

The main threats of larger metropolitan regions within **scenario A** are related to higher environmental impacts associated to urban sprawl (which can be avoided only by strict land-use regulation), neighbourhoods facing social conflicts (always requiring public intervention and public participation) as well as a higher risk of depopulation of the countryside. On the other hand, higher urban densities will limit land uptake and provide for the necessary economies of scale

favouring the development and implementation of advanced technologies to manage urban services sustainably.

The promotion of secondary cities in **scenario B** will make land-use change more manageable, as well as social inclusion. Cities are expected to fulfil an important interaction with their hinterland and thus provide a balanced landscape in which both urban and rural areas can thrive and build partnership.

The main benefit of promoting small and medium-size cities in rural areas, in both more and less developed regions (**scenario C**), is the ability to maintain and protect valuable ecosystems and enhance a vibrant area around cities and towns. Good stewardship of the land and cohesion can be promoted through stimulating less favoured areas. The main threat linked to scenario C would be an increasing fragmentation of the landscape due to less dense and more diffused land development throughout Europe

The results of the assessments carried out confirms that, assuming productivity increases in the coming decades (because of both new technologies as well as better labour skills and organisation), together with more resource efficiency (avoiding transport and energy increases), **redistributive policies at regional level** (at the level of 0,4% EU GDP) will result in a significant reduction of the disparity gaps while the overall growth is not affected.

Results also demonstrate, however, that this evolution is not delivering a reduction of disparities at absolute level. For this reduction to happen, intense redistributive policies are needed beyond the 0,4% European GDP assumed, according to the regional economic forecast model applied.

**In conclusion**, the evolution of Europe from A2 (2020) to B2 (2030) and C2 (towards 2050) is identified as a convenient territorial scenario among all studied. Under this scenario, which assumes technologic progress, a significant reduction of regional disparities is achieved at relative terms, with the highest overall growth, with more limited environmental impacts in terms of land-take, transport and energy demand.

## 5. Next Steps

The territorial scenarios developed, assessed and discussed within the ET2050 project each have their own advantages and disadvantages, which confirms that there is not always an optimal solution. It actually led to identifying an evolution of Europe starting at Scenario A2 in 2020 via B2 in 2030 towards C2 in 2050. This also formed the basis for the Territorial Vision for Europe in 2050 that has also been developed within the timeline of the ET2050 project.

Territorial cohesion as a topic seems to be losing momentum and needs to be given a fresh start. In so doing, questions about the Europe we want to build need to be raised. The territorial scenarios can serve as input for discussing possible territorial developments, the impacts of territorially relevant policies and the political choices to be made to better operationalise territorial cohesion.

[www.espon.eu](http://www.espon.eu)

The ESPON 2020 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.

The Managing Authority responsible for the ESPON 2020 Programme is the Ministry of Sustainable Development and Infrastructure of Luxembourg. The ESPON 2020 Programme is implemented by the ESPON EGTC.