

C. Integrated cohesive scenario

1. Objectives and principles of the integrated cohesive scenario

The scenario is a prospective, policy-oriented scenario in which the main priorities of public policies at EU level, in a context of growing globalisation, are focussed on economic, social and territorial cohesion and not on global competitiveness. This does not mean that the improvement of competitiveness is excluded, but rather, that in case of incompatibility between cohesion and competitiveness (for instance if growing competitiveness is likely to increase territorial disparities), priority will be given to cohesion. It is however important to indicate that measures related to competitiveness in the context of structural policies are fully integrated in the scenario, even if they are likely to generate intra-regional disparities in less developed regions. It must be made clear that the scenario is a prospective policy scenario based on a strong cohesion policy and not a roll-back scenario minimizing regional disparities. Another major hypothesis is that the coming decades will be devoted to consolidating the enlarged EU in a balanced and sustainable way. Only Romania and Bulgaria will join the EU during the study period, while the neighbourhood policy will be focussed mainly on maintaining good relationships with immediate neighbour countries, independently of the fact if they are candidate or not to joining the EU. In order to avoid unnecessary repetitions, the outputs of the cohesive scenario are expressed in the form of differences with the baseline scenario.

2. Hypotheses of the integrated cohesive scenario

Demography	<ul style="list-style-type: none"> - restrictive external migration policies - more flexible retirement ages - encouraging fertility rates (=> encourage better balance of population structure) - more flexible arrangements for child care - no change on constraints to internal migration
Economy	<ul style="list-style-type: none"> - increasing activity rate, in particular in peripheral regions - maintaining the volume of EU budget - reinforcement and strong focus of structural funds on weakest regions - further harmonization of taxation and social security systems, as far as non detrimental to the competitiveness of less developed countries
Energy	<ul style="list-style-type: none"> - steady increase of energy prices - realisation of TEN-E - promotion of decentralised energy production (in particular renewables)
Transport	<ul style="list-style-type: none"> - continued growth of all traffic, in particular in peripheral regions, but curbed down by energy price - development of TEN-T with priority to peripheral regions at different scales - support to transport services in rural and less developed regions - application of the Kyoto Agreement
Rural development	<ul style="list-style-type: none"> - minor CAP reforms, but shift from pillar 1 to pillar 2. Priority to less developed rural regions in the field of direct payments to farmers (pillar 1) - priority to environmental and animal health criteria - slow industrialisation and moderate diversification of agricultural production, promotion of quality products - active policy for diversification of rural areas, including SMEs, tourism, residential functions etc.
Socio-cultural sector	<ul style="list-style-type: none"> - promotion of regional and European identities - integration of marginal groups (ex: gypsies, etc) in peripheral areas - proactive socio-cultural integration policies, in particular in cities - increased fiscal and/or social investment in quality of life issues (health, personal care, local environment, etc...)

Governance	<ul style="list-style-type: none"> - active multi-level territorial governance, in particular in areas supported by structural funds - strong role of public actors in territorial governance - stronger role for the European Commission
Climate change	<ul style="list-style-type: none"> - Moderate overall climate change until 2030 (+1°) - Increase of extreme local events - constant emission levels - strict mitigation measures (taxes, road pricing as far as non detrimental to peripheral regions) - wide range of adaptation measures (EU hazard funds, large investments)
Enlargement	<ul style="list-style-type: none"> - deepening preferred to widening - break on further enlargement (except Bulgaria & Romania, which enter later than foreseen) - only lip service to neighbourhood policy

3. Scenario process

Demographic changes and related territorial impacts

A major difference with the baseline scenario in the demographic field is the revival of fertility rates in many European countries. This trend, which was emerging in a number of countries in the early 2000s, has been amplified by the support of public policies in favour of families. This recovery, though by no means 'pan-European' (it is stronger in western than in Eastern Europe), as typical with demographic trends, shows signs of convergence. Immigration, the demographic variable with the most dynamic potential, becomes an increasingly contested issue in the policy arena. But the EU does eventually agree a common treaty on external migration, heavily influenced by those countries who have become very concerned about the volume of immigration from outside Europe. External migration thus becomes more restrictive. Migration policies within the EU are better coordinated and adapted to fulfil the goals of 'replacement' goals. They are strictly controlled by 'donor' country, area and region of destination and occupational group. Specific controls are also being introduced with socio-cultural integration in mind, for instance bars to migrants bringing relatives to Europe for arranged marriage. Illegal migration continues however to supplement population, but the figures involved are declining substantially following the introduction of EU ID cards. Although controversial, measures are developed to control internal inter-regional migration which has become an instrument of regional policy with, for example, generous re-location packages being offered to companies and individuals willing to move to remote regions.

Consequently, as a result partly of the new up-turn in birth-rates, but also strongly interventionist regional policies and strictly regulated and targeted migration strategies (another difference with the baseline scenario), there are, by 2030 indications of a more balanced population structure and of new life in many areas, even those which had previously been threatened by serious de-population. However Europe's structural demographic difficulties have not been totally alleviated by these new trends and actions. Population ageing continues to affect various parts of the continent. Compared with the baseline scenario, population ageing (median age of the population in 2030) is less strong in North-West Spain, southern Portugal, East-Germany, southern and north-eastern Italy, but somewhat stronger in central Sweden and eastern Finland. Regarding life expectancy at birth, there is no major difference with the baseline scenario. The demographic potential (Index of sustainable demographic development in 2030) is somewhat stronger in southern and north-western Spain, southern Italy, but it is weaker in central Sweden, eastern Finland, northern and south-eastern Poland, southern Hungary. Falling total population is also continuing to impact many eastern, and some southern areas of Europe.

A significant difference with the baseline scenario regarding the impacts of demographic evolution is the introduction of more flexibility in a number of public policies in order to facilitate all forms of cohesion. Flexibility in child-care arrangements and pension ages are becoming the norm.

Confronting institutional forms of ageism and removing compulsory retirement ages is part of this process, although it is less popular among certain occupational groups though, particularly those involving physically demanding work. Flexibility is also extended to other aspects of life too, such as education, making family commitments more manageable. Allowances paid to grandparents and other older/retired relatives, instead of or as well as mothers are also becoming a widespread means of integrating the so-called third and fourth generations in community life and maintaining healthy life expectancy rates.

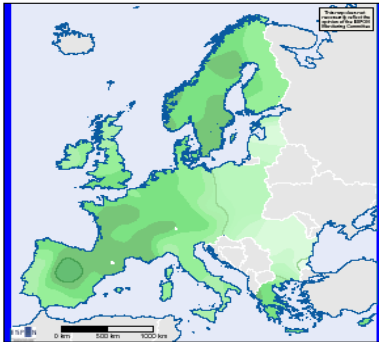
De-centralisation in welfare delivery means that some successful measures begin life as innovative one-off projects. Such initiatives have in effect re-created extended familial sources of support through surrogate residential arrangements. These programs, while inexpensive, help to consolidate community integration. More ambitious 'low-cost' projects which also allow mothers to re-integrate into the labour market earlier combine elderly and nursery care, in some instances with older adults, who are fit but otherwise isolated, being encouraged to 'mentor' pre-school children. Projects specialising in life-long learning, leisure and cultural are also becoming increasingly popular, opening up a wide variety of services and new forms of employment. Heavily subsidised through the tax system initially, many of these schemes are becoming self sustaining, profitable and 'exportable' as 'best practice' in welfare and community provision. Importantly in spatial terms the location of many of these new projects is at some distance from the major conurbations, deliberately engineered by financial incentives from the EU, regional and national administrations to reduce pressures on built-up areas and regenerate areas of declining population. 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. This too is policy led.

The need to restore cohesion in Europe by re-building social and cultural integration is faced head-on by the 2010s with serious efforts to seek solutions to the challenge of religious and, racial diversity which appeared to be the source conflict. The largely media-driven absorption with individual identity is tackled through shared cultural events and activities designed to cultivate shared regional and European identities. Citizenship and language classes become a residency requirement and restrictions on religious schools is complemented by interventions to circumvent the segregation of minority groups with, for instance quotas set for the children of ethnic and religious minorities and the facilitation of inter-cultural interaction from an early age through educational exchanges etc. While assimilation is not forced, such 'soft' measures encourage more peaceable co-existence and sew the seeds for long-term integration of disparate communities. Early indications show that the integration of 2nd and 3rd generation immigrants from Asia, Africa, the Middle East and Latin America into the host communities is improving, especially with young people. A slight rise in inter-racial marriage appears to be a positive side effect of this policy. While the detail of policy provision to seek socio-cultural integration is generally devolved down to lower levels of regional and local administrations, there are exceptions. The situation of particular minorities who have experienced discrimination is of concern and protective measures from the EU and Council of Europe are enacted. The emergent nationalism in some areas which feed these problems also continues to be a source of concern and the policy of a 'Europe of Regions' is being actively promoted to try to contain it, with special status/provision for minority groups who have no territorial base and are geographically disparate, such as Jewish and Romany groups.

A genuinely European Social Policy is also at last becoming something of a reality, with the harmonisation of tax systems and minimum levels of demographically relevant forms of income maintenance involving age and sex redistribution. This serves the dual purpose of both reducing 'benefit tourism' as a motivation for intra-European and inter-European migration- which until this time was only serving to intensify population growth in certain, already crowded areas, and overcoming some of the problems relating to the PSR (potential support ratio).

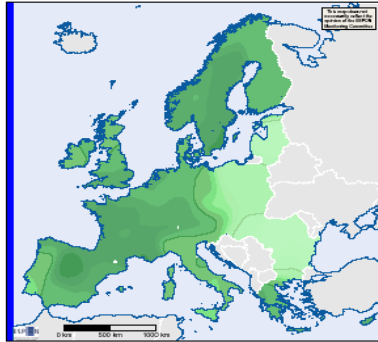
COHESION SCENARIO

2000

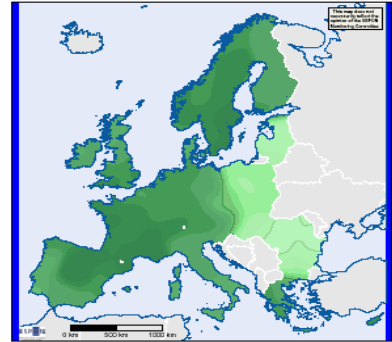


Projections based on data from UNPP 2004, ESPON database 2005 and ULB 1991

2015

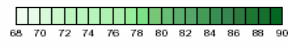


2030



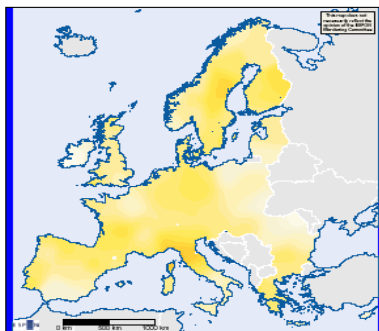
Gasland C, Guerrien M, Lambert N. (2006) - UMS RIATE - ESPON project 3.2

Life expectancy at birth (years)



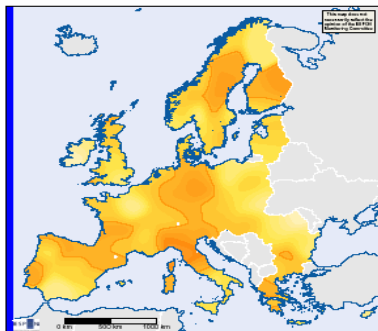
COHESION SCENARIO

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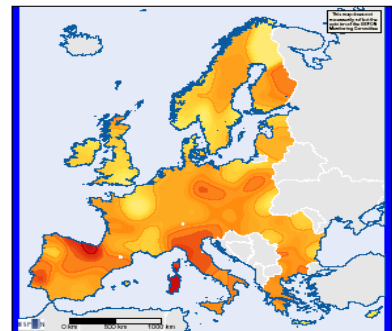


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2015

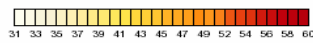


2030



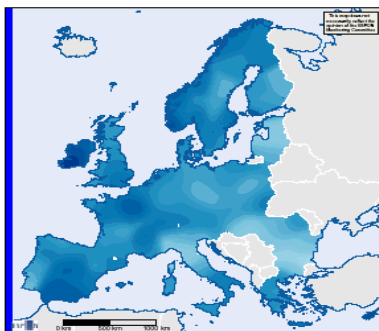
Gasland C, Guerrien M, Lambert N. (2006) - UMS RIATE - ESPON project 3.2

Median age (years)



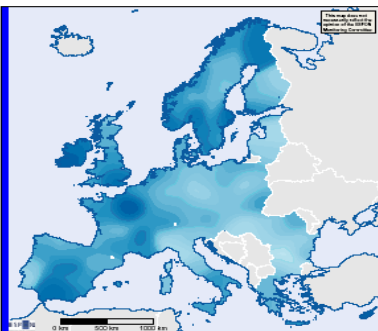
COHESION SCENARIO

2000

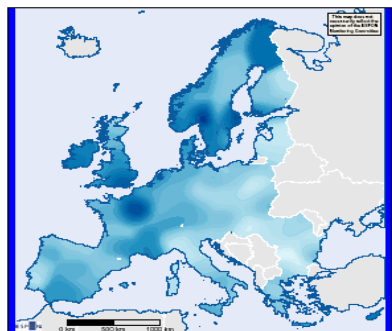


Projections based on data from UNPP 2004, ESPON database 2005 and ULB 1991

2015



2030



Gasland C, Guerrien M, Lambert N. (2006) - UMS RIATE - ESPON project 3.2

Index of Sustainable Demographic Development (years)



Economy and technology

The macro-economic context in which the renewed cohesion policy is launched is similar to that of the baseline scenario. Globalisation is still accelerating and external competition from large emerging economies (China, India, Brazil) encompasses more and more high-tech products and not only products requiring cheap labour force. It also reaches the agricultural (following the WTO decisions of the Doha round) and the service sectors. Energy prices (in particular oil and gas) are steadily increasing, reducing the profitability of energy-intensive productions in Europe as well as the competitiveness of the most transport-dependent regions (mainly the peripheral ones). The gap existing between Europe and other advanced economies (USA, Japan) in terms of growth rates or of technological development remains significant and the Lisbon Strategy, despite its renewed boosting in early 2005, is not efficient enough to reverse the trends. After the accession of 10 countries in May 2004, only Bulgaria, Romania, and Croatia become new members of the EU, but only by 2015. The decision has been taken not to continue the enlargement process. Turkey and the Western Balkan's states only have the Status of 'neighbouring countries'.

A major difference with the baseline scenario is to be found in public policies addressing balanced regional development and territorial cohesion. Maintaining and even strengthening the EU cohesion policy is the result of both the EU enlargements of 2004 and the subsequent ones regarding Romania, Bulgaria and Croatia and of a reaction to the territorial imbalances generated by accelerating globalisation in the early 2000s. Preserving the vitality of less favoured regions appears as a fundamental long-term objective, because the economic and social costs of devitalised regions are, in the long-range, extremely high. On the other hand, this collective attitude does not ignore the requirements of competitiveness. The new cohesion policies include numerous measures aiming at increasing the competitiveness of the less favoured regions and at avoiding that they become marginalised with regard to globalisation trends. As a renewed and strengthened cohesion policy is also more expensive, EU budgets have to be correspondingly increased and various resources diverted towards the cohesion policy. The CAP, the transport and the RDT policies are consequently being adapted to support in priority less favoured regions. Further liberalisation of public services is not envisaged, because it would be harmful for less developed areas where the profitability of such services does not really exist. It is considered that the closing down of such services would be damaging for the demographic and economic evolution of the regions concerned.

In the renewed cohesion policy, emphasis is put on efficiency-oriented support to the less developed regions. This support concentrates on preparing them to attract external investments and to enhance the opportunities for development of their own firms; on developing in priority transport links between these regions and the core nodes of their countries, and also on strengthening the networks of business and research cooperation with the stronger regions. This support also concentrates on assisting the localities and companies which had already demonstrated ability for restructuring, development and competitiveness. Unconditional assistance to territories, channelled only because they are adversely influenced by history and rules of competition-driven economic development, is of lesser importance and concerns mainly support to the improvement of the environment and of some basic facilities, such as water supply and treatment of sewage water, electricity supply, waste treatment etc. Cohesion policy at the European level is strongly related to the idea of maintaining the European 'social model'. Considerable spending for cohesion purposes is taking place. Furthermore, the deepening of European integration brings up a great number of new regulations at EU level, e. g. in terms of environment and consumer protection, which lead to growing costs both for public budgets and for businesses.

Technological evolution does not significantly differ in global terms from that in the baseline scenario. Main differences exist however in the regional patterns of innovation. In addition, various EU regulations are enacted to guide more efficiently technological developments and their impacts. Cohesive development implies for instance that consumer protection becomes also stronger at European level. As far as green biotechnology is concerned, gene-modified production indeed evolves but within different regulation frameworks, on European as well as on national level. At EU

level, strong regulations are being set into force which intend to avoid the contamination of certified GMO-free crops. Regarding red biotechnology, European or national policies intervene with regulations in research and development for gene-based technologies (such as of gene-tests, stem cell research, cloning etc.).

Regional patterns of economic evolution

Support to technological development is concentrated on less-favoured regions. In terms of ICT infrastructure development, progress is reached in the dispersion of broadband infrastructure into less densely populated regions. A supply-side improvement of broadband access in disadvantaged regions fosters the demand for internet services delivered by broadband, e.g. by the establishment of e-learning opportunities for citizens and employees in less densely populated areas and by offering e-government solutions. Also, policy actions and initiatives aiming at strengthening development poles in disadvantaged regions, contribute to improve and increase the mobility and skills of the regional workforce. As an essential effect of education and training activities, the IT-competencies of the workforce, of children and students as well as of older people are improving. Thus, the digital divide tends to become smaller and regional disparities decrease in European countries as a consequence of European policies. In the field of grey biotechnology, peripheral regions benefit significantly from the support of Structural Funds to environmental engineering (water treatment etc.). More generally, European and national policies follow a strategy to encourage researchers and SMEs in less favoured regions in order to let them participate in innovation processes.

However, not all disadvantaged regions are experiencing an economic upswing. The approach consisting in concentrating policy support in locations within disadvantaged regions where a certain minimum of innovative capabilities, social capital, and sectoral concentration is already existing, leads to a growing differentiation between the disadvantaged regions. The strongest among them experience an upswing whereas the rest continues to lag behind.

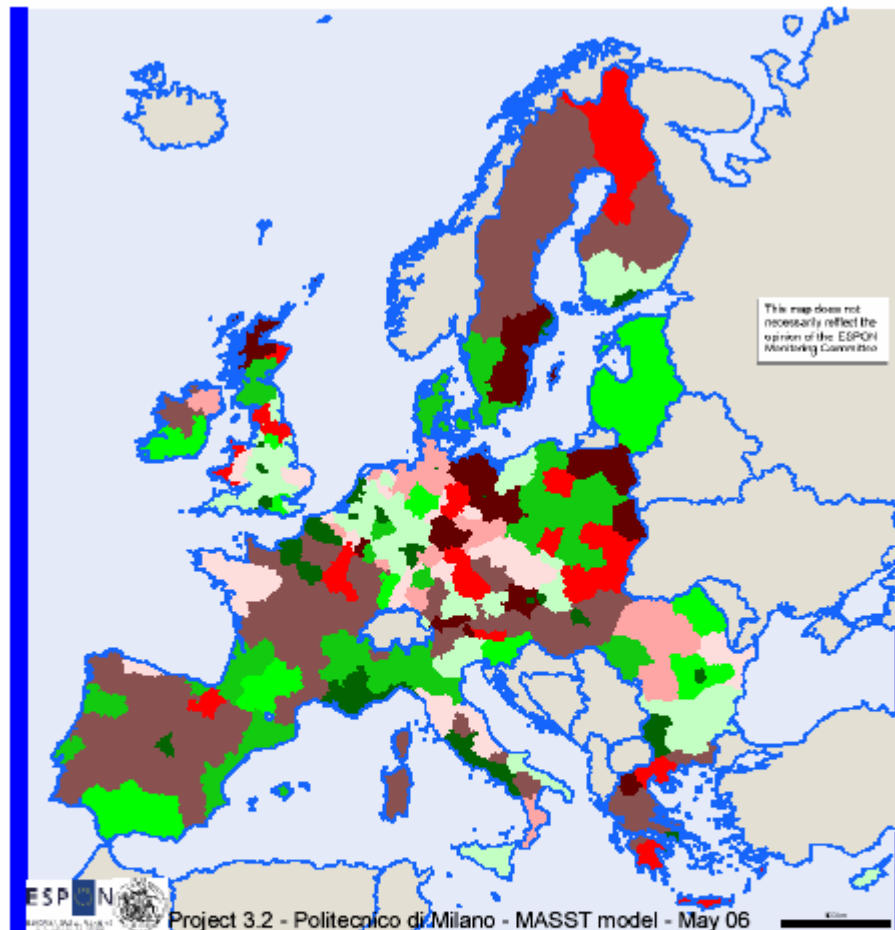
In global terms, the cohesive scenario is a less expansive scenario than the baseline scenario. A lower relative GDP growth rate is registered for the EU as a whole, but it is significantly lower for the EU15 countries than for the New 10 countries (as well as Bulgaria and Romania), although these countries show also a lower performance than in the baseline scenario. The difference is however more contained than in the EU15.

The lower performance registered at the aggregate level in the cohesive scenario with respect to the baseline scenario is not equally distributed at regional level. Some regions are in fact able to show greater GDP growth rate in the 2002-2015 period with respect to the baseline scenario (Map ...). In particular, the following territorial trends emerge, compared with the baseline scenario:

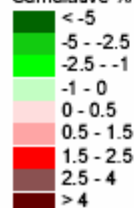
- in general, the cohesive scenario provides *a more diffused development*, especially in more rural regions, in peripheral regions, and in regions with a medium-low income level;
- the *barycentre of growth moves towards South-Eastern Europe*, a tendency witnessed by a greater performance in Eastern Germany, Austria, Hungary, Greece, part of Central and Southern Italy;
- in general, *the periphery of Europe grows more than in the baseline scenario*; Greece, Sardinia and Corsica, most regions of Spain, Northern Ireland, the Northern part of the Irish Republic and all Scandinavian countries;
- interestingly enough, and contrary to some existing assumptions, *fragmentation of relative growth rates in Eastern European countries is limited*. First of all, despite the favouring assumptions, no category of regions perform much better than in the baseline scenario, with the exception of some Hungarian regions and the eastern regions of Poland. A relatively higher performance is registered in rural areas, while agglomerated and mega regions perform relatively less but still better than the western ones;
- *a more fragmented territorial picture characterises EU15 countries*, where the variance between lower and higher relative performance is more pronounced;
- *capital city regions in general lose their relative better position* obtained in the baseline scenario, in both Eastern and Western countries. This is true for Athens, Rome, Madrid,

Paris, Brussels, Luxembourg, London, Copenhagen, Stockholm, Helsinki, Berlin, Vienna, Prague, Budapest, Bucharest and Sofia. The *relatively bad performance of capital cities is also registered for the 'engines of Europe', like Milan, Barcelona, Frankfurt, Malmö, Munich, Stuttgart, Düsseldorf, Cologne;*

- in Western countries, some *relatively better performing regions can be found also in peripheral areas and/or rural regions*, like Bretagne, Pays-de-la-Loire, Champagne-Ardenne and Languedoc-Roussillon in France, Toscana, Marche, Abruzzo, Calabria, Veneto and Friuli in Italy, East-Anglia, South-West, in UK, Northern Ireland, Schleswig-Holstein in Germany.

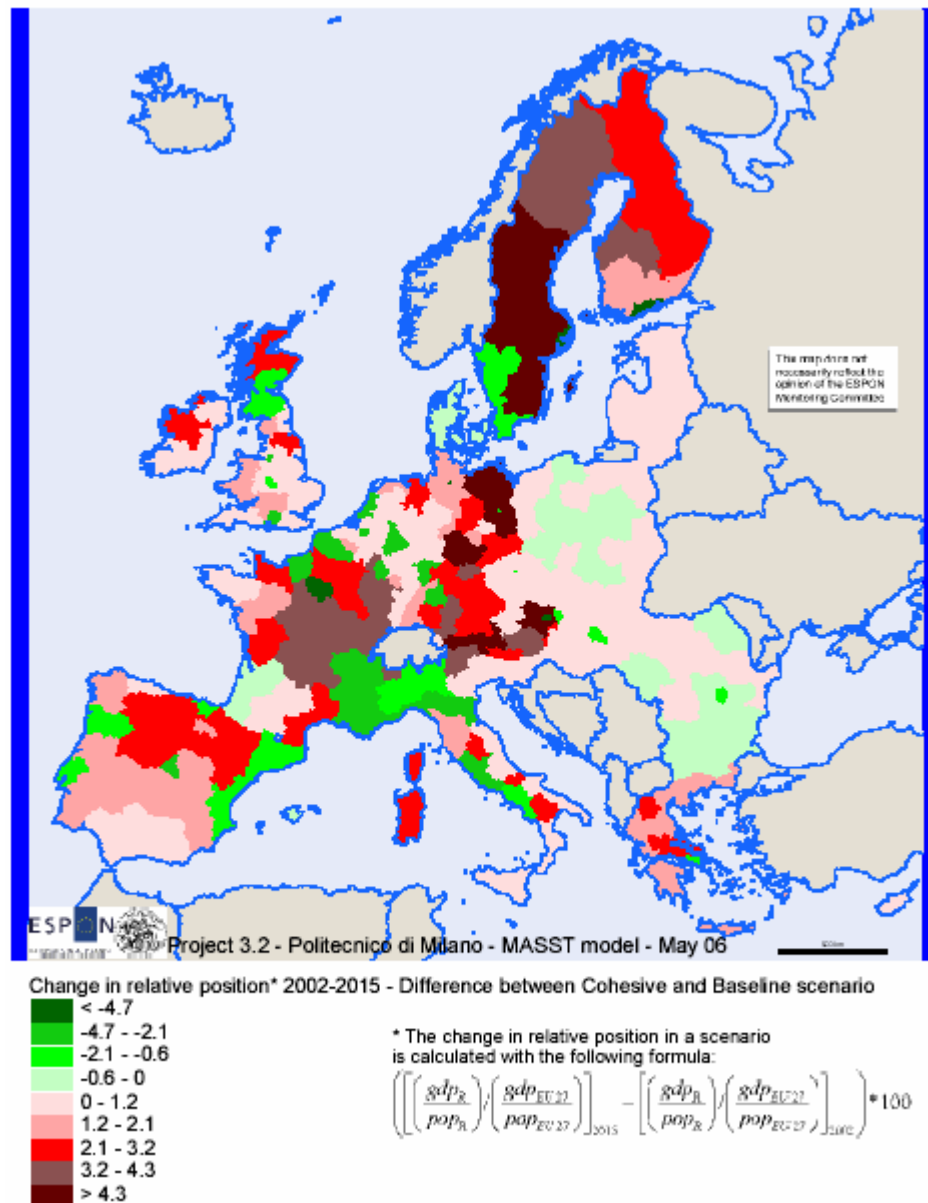


Cumulative % real GDP growth 2002-2015 - Difference between Cohesive and Baseline Scenario



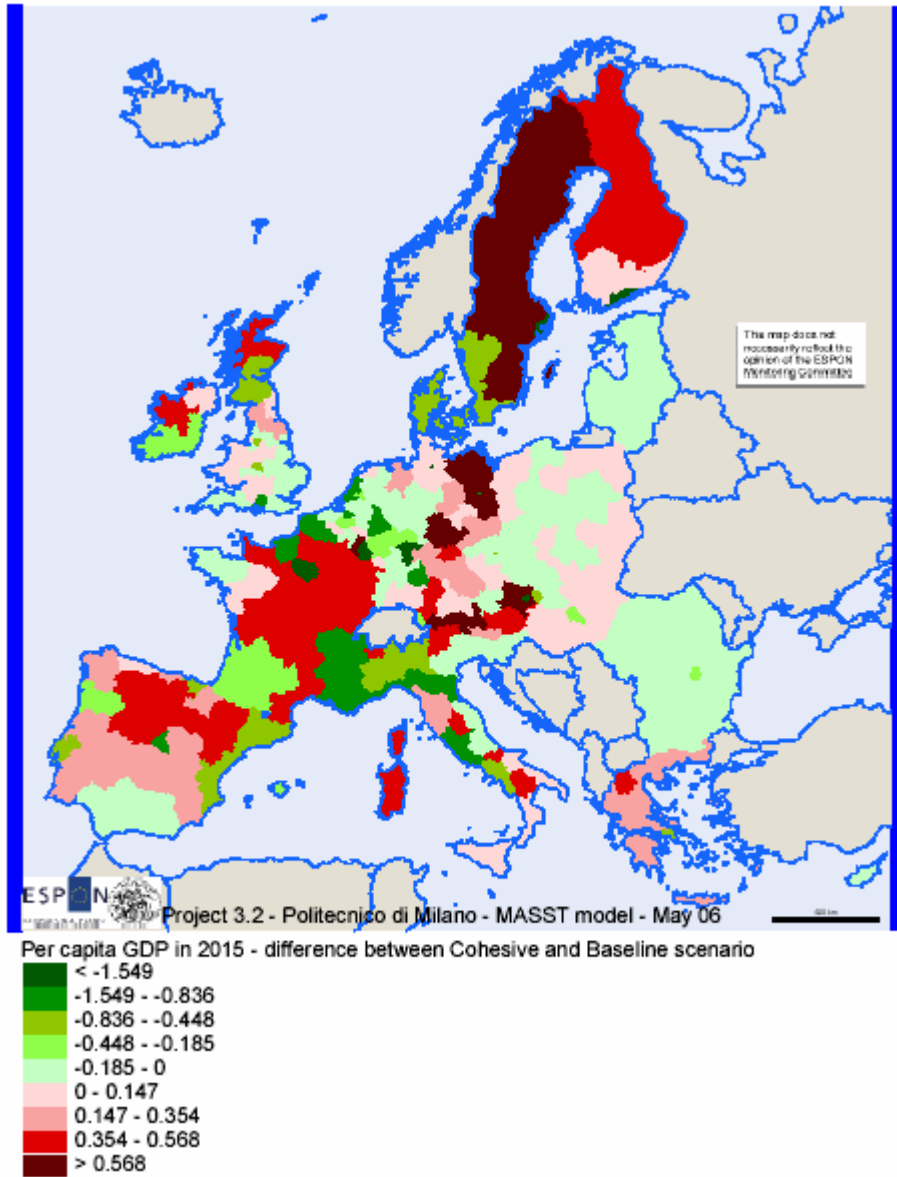
If the change in the relative position is taken into consideration, the previous tendencies are confirmed, namely (map ...):

- in Eastern European countries the relative winning regions are the peripheral and more low-income regions. The agglomerated and capital city regions are losers with respect to the baseline scenario;
- in Western European countries, the winning regions are in general rural and peripheral areas, as well as the western border areas with the Eastern countries;
- some additional areas emerge as winners, especially in the Pentagon areas and in Central and Southern countries, due to the relatively lower increase in population growth.



When looking at the per capita GDP level achieved in 2015 in the cohesive scenario some interesting trends emerge with respect to the baseline, (map ...):

- *the relative effect of the cohesive scenario on the catching-up process of Eastern countries is a limited one; only a few regions register in fact a greater per capita GDP level than in the baseline scenario, and this is especially true for the weakest and lowest level income regions. At the same time, the strong areas in Eastern countries have a lower per capita GDP level. This double trend reduces intra-national disparities but increases international disparities, as shown in Fig. 3;*
- *in Western countries, a higher per capita GDP level is achieved in the periphery of Europe, in most remote areas with respect to the Pentagon. The latter, on the contrary, is in general losing its per capita income level with respect to the baseline;*
- *the areas registering the highest increase in per capita GDP with respect to the baseline are regions belonging to Central Europe (Eastern Germany, south-eastern Bavaria, Austria and Trentino and Süd Tirol in Italy) as well as most Swedish regions.*



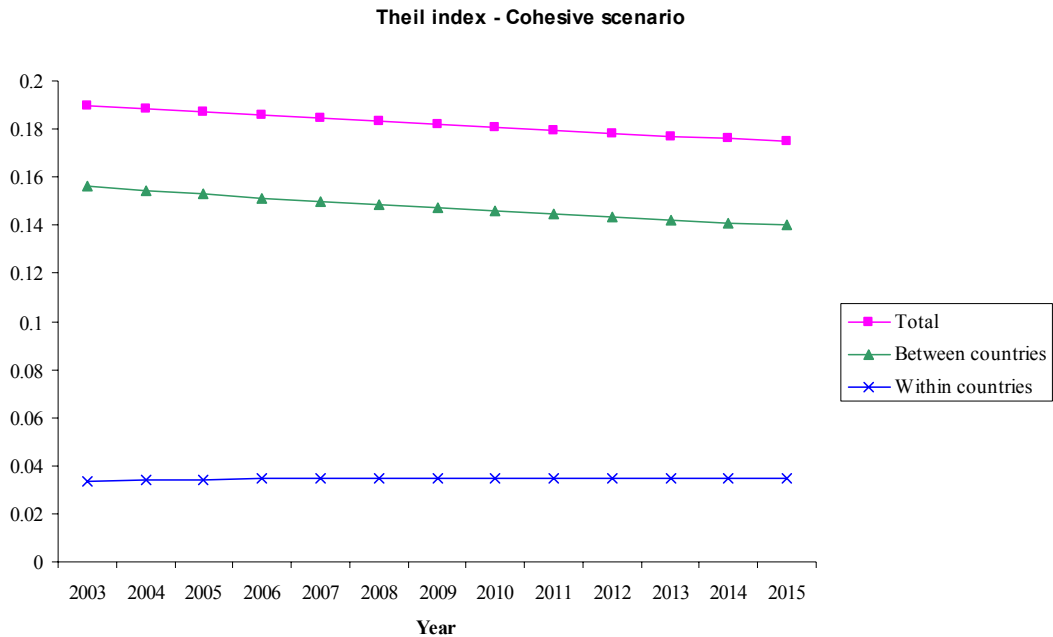


Fig. 3 – Regional Disparities in the Cohesive Scenario

Territorial integration and cooperation progress differently than in the baseline scenario. Compared with the handling of the policy schemes practised at the beginning of the 21st century, a significant change in supporting cross-border cooperation is taking place. Regions which showed an already relatively high quality and intensity of both inter-firm and municipal cross-border cooperation at the beginning of the 21st century (e. g. the Saar-Lor-Lux-Region, the Upper Rhine Region), receive much less support from EU border-specific support schemes. The support is more focused on the weakest border regions, thus on those of the periphery. However, the results are ambiguous. Although Interreg schemes have been applicable on both sides of the border after 2004 (enlargement), the number of projects bearing really cross-border character remains limited. This is primarily the case with many regions along the border between EU 15 and EU-10. The reasons for deficits regarding genuine cross-border projects do not only refer to the weak potential for cooperation (e. g. lack of businesses and low population density). The impact of different institutional arrangements on the two sides of the border (stronger decentralisation on the side of the EU-15 and – despite administrative reforms – still strong influence of central government on the side of the EU-10) is also responsible for this evolution. However, some progress is reached in regions where a minimum of characteristics is present. In a number of cases, the potentialities of the border situation can be exploited with the support of Interreg. This is the case, for instance, within the country-triangle CZ-PL-D, where the Euroregion Neisse acts as an engine for developing cross-border cooperation based on a relatively diversified landscape of small and medium-sized businesses. Serious problems arise however along external EU borders, since regions bordering neighbouring countries which were denied to become EU members, face barriers which hamper potential welfare development.

Compared with the baseline scenario, metropolitan areas are less favoured, both in eastern and Western Europe. This does not mean, however, that they do not progress in absolute terms. In the cohesion countries metropolitan areas and other large agglomerations are significantly supported, both in terms of infrastructure and of technological endowment. A major difference with the baseline scenario is, however, that small and medium-sized towns in less developed regions are more strongly supported, especially as far as services of general interest are concerned.

Rural areas benefit from stronger support through the cohesion policies (Structural funds, Rural development Policy), and from stable support of the CAP. The CAP budget is broadly maintained while resources are shifted from Pillar 1 to Pillar 2. The budget for Pillar 1 is reduced from € 37.5 billion in 2005 to € 28 billion in 2030 (75%). Pillar 1 payments are shifted from market support to direct payments to farmers. The Pillar 2 budget, however, is substantially increased from € 7.5 billion in 2005 to € 23 billion in 2030 (300%). The *macro-economic impacts* are relatively modest. The enormous transfers from consumers and taxpayers to agriculture – more than €120 billion in 1999 – are reduced to approximately € 90 billion. The reduction of import tariffs and export subsidies to 75% enable the developing countries to generate approximately € 5 billion more extra welfare per year.

The SF's are concentrated on improving the socio-economic viability of marginalised rural areas in all member countries. Improving landscape and nature is also an important priority. In addition to the growing awareness of the environment and the priority given to territorial cohesion after the enlargement of the EU, other exogenous factors become important for the evolution of agricultural production. *Consumers* become more and more aware of their possibilities to steer production in the direction of organic farming and regional and other quality products by their spending behaviour. Following a separation desired by consumers, the coexistence of two farming types develop: cautionary measures in order to avoid the contamination of GMO-free crops are being taken and specific policies to ensure a certification and labelling due to coexistence are established. A further spatial separation of production comes up and requires new logistic systems for agriculture and food industry. *Technological innovations* lead not only to higher agricultural production but also to reduced pollution and reduced water-use for irrigation. Rising *energy prices* stimulate the building of sustainable agro-production parks and lead to a growing demand for energy crops.

A basic difference with the baseline scenario is that intensification and scaling-up of agricultural production are moderated by the continued, be it lowered, protection against the world market, by the regulation of the internal market and stronger regulation in the field of environment etc. *Large-scale agriculture* increases most in rural areas with low land-prices in Poland and the Baltic States; in Northwest and Southern Europe large-scale arable and dairy farming decreases. Many *intensive cattle farms and horticulture* settle on agro-production parks, mainly in the Pentagon. Clustering reduces production costs and provides possibilities for recycling manure, waste etc. Regulations for animal welfare limit intensification. *Experience farming* brakes through in metropolitan areas and in rural areas with small-scale landscapes in Eastern and Southern Europe. The increased and intensified RDP programmes facilitate farmers' professionalism. The growing demand for cultural landscapes provides opportunities for agrarian *nature and landscape management*, particularly in small-scale landscapes. RDP programmes let *subsistence farming* in the peripheral regions of the CEECs almost completely disappear.

The process of economic diversification of rural areas is much stronger than in the case of the baseline scenario. In the fertile areas of France, Germany, and Poland, agricultural production further modernizes. In these areas, food production competes strongly with the production of energy crops. In Eastern and Southern Europe rural areas, stimulated by RDP and the SF's, become economically more diversified. Both types of rural areas become more socio-economically viable. In Western as well as in Eastern Europe there are a decreasing number of rural areas experiencing marginalisation and abandonment. 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. Despite all efforts the socio-economic viability of these areas lags behind. Urban-rural relationships and partnerships intensify more in rural areas, around medium-sized and small towns than in more urbanised regions around metropolitan areas, as in the case of the baseline scenario.

Transport

The transport context in Europe in a cohesive perspective

The general economic conditions in a cohesive perspective, with even more modest economic growth than in a baseline perspective, limit the growth of transport volume at European scale. Progressing European integration and accelerating globalisation are however factors which push transport flows to grow. The move towards a more intangible and service-oriented economy is slower than in the baseline scenario. The changing nature of transport flows is correspondingly also slower. As in the baseline scenario, the significant and sustained price increase of energy, especially of oil, is a major constraint for the transport sector. It has impacts on mobility and counteracts the cohesion objective, the economy of more peripheral and less developed regions being more transport-dependent than that of the pentagon regions. Technological innovations play also an important part in the cohesive scenario, in order to reduce energy consumption and to diversify energy supply sources.

Transport policies in the cohesive scenario are more oriented towards cohesion and sustainable development than in the baseline scenario and market demand is less an unavoidable criterion. Significant financial resources from the Regional and Cohesion Funds are allocated to the development of transport infrastructure in the cohesion countries and in the less developed regions. A main priority is the development of efficient transport infrastructure on major corridors in the new member countries as well as between the new member countries and the EU15. A difference with the baseline scenario is that, in addition to major corridors, support is also given to a number of strategic regional transport axes 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 cohesive scenario pays also greater attention to a better balance of transport modes and promotes significantly efficient railway and waterway systems. In the countries of central and Eastern Europe, obsolete railway systems are being modernised, in order to limit the growth of road and motorway traffic, a policy which takes also into account the constraints of oil price and oil supply.

In the central regions of the pentagon, the more modest growth of traffic flows related to weaker economic development requires less expansion of major networks to eliminate bottlenecks. Although less resources from EU budgets (TENs) are available for central regions, national governments allocate their own resources with the aim to reach a more balanced modal shift. Public-private partnerships are also promoted, but less frequently than in the baseline scenario. A major objective is to provide sufficient transport capacity to the connections between the new member countries and the pentagon and to avoid that transit flows become an insuperable constraint.

Simulations from the KTEN model

In preparation

Energy

The basic factors leading to new energy paradigm are the same as in the case of the baseline scenario (increasing prices of oil and gas, progressive depletion). A difference with the baseline scenario is however that structural policies pay a greater deal of attention to energy issues and allocate a higher amount of resources in eligible regions to support measures of energy savings and of diversification of energy supply sources. The TEN-E are being further developed, but mainly to the benefit of less developed countries and regions (central and Eastern Europe, European peripheries). The Rural Development Policy allocates also substantial resources to the production of energy in rural areas. Energy systems are being more modernised in less developed regions benefiting from structural support than in richer regions with metropolitan areas. In this respect, the catching up process of the new member countries in the energy supply and energy transport sectors is significant. Obsolete energy systems are rapidly being replaced by more modern ones, including renewable energy sources. Decentralised systems of energy production/distribution are developing, encompassing rural areas together with their small and medium-sized towns. The

external energy dependency of such regions is being reduced and energy production is at the same time a new source of income for farmers and rural areas in general, a factor which stabilises rural economies in a period of further liberalisation of agriculture with related stronger external competition.

As technological research is not sufficiently being supported by EU policies, new breaks through in energy technologies are however not taking place. The hydrogen technology and its applications progress only slowly, as the mass production of hydrogen remains very expensive. Coal gasification has not reached maturity. In order to match the energy needs of urban regions, a significant revival of nuclear energy production can be observed, generating tensions in the European society between those in favour and those against the proliferation of nuclear energy production.

In the cohesive scenario, the negative impact of higher energy prices is felt more strongly than in the baseline scenario, because it can less be compensated by other factors of growth. The move towards a more intangible economy is less rapid. More investments are made in intermediate technology sectors, especially in less developed regions. In this respect, the European economy remains very sensitive to the globalisation process and is not in a position to gain substantial benefits from accelerating globalisation. Europe is however more and more competitive in sectors related to renewable energy technologies. A number of regions, not necessarily in the pentagon, take advantage of this evolution and develop significant amounts of exports towards other European regions and also towards non-European countries.

The impacts of higher energy prices on peripheral regions are less significant than in the case of the baseline scenario, because of a different transport policy favouring peripheral regions, not only through new motorway projects, but also through the strengthening of railway systems and through increased support to maritime routes. Despite modernised infrastructure, transport costs between peripheral and central regions are however not decreasing. The competitiveness of air connections is particularly affected, because the cost of air transport depends more upon energy costs than on infrastructure.

As in the case of the baseline scenario, settlements become more energy efficient and urban policies favour a better integration of urban functions generating less mobility. As no significant technological breakthrough takes place, likely to diversify the energy supply of urban and metropolitan regions, solutions are however being looked for in energy savings and in the revival of traditional energy sources such as coal, which are more detrimental for the environment than in the baseline scenario. In the context of the cohesive scenario, the new energy paradigm favours more rural areas than urban regions. The strong promotion of renewable energy sources creates wealth in rural areas and counteracts the decline of a number of traditional weakly competitive agricultural activities. Solar and wind energy as well as the production of energy crops enable the creation of decentralised energy supply systems which also benefit to small and medium-sized towns, making them less dependent upon external energy supply. In the context of a liberalised energy policy, new regional energy production and supply companies emerge, competing against each other to the benefit of energy consumers. In the countryside, numerous farms are becoming energy self-sufficient. EU structural and rural development policies play a major part in making the new energy paradigm favourable for less developed rural regions, especially in the new member countries and in other peripheral regions.

The progressive change of energy paradigm brings with it both positive and negative aspects in relation to the quality of the environment. In urban regions and metropolitan areas, despite energy savings and the introduction of environmentally-friendly technologies (hybrid cars) which contribute to improving the quality of the environment (air quality, noise level), the revival of traditional energy sources (coal, nuclear energy) endanger more the environmental quality and security than in the baseline scenario. In rural regions, the higher level of energy self-sufficiency does not automatically mean that the environmental quality is overall being improved. Wider use of solar energy and of biomass and biofuels certainly contributes to the improvement of the environmental quality. In the case of wind energy, both positive and negative impacts to the environment are being generated. Despite the adoption of new regulations, damages to natural and cultural landscapes cannot be excluded. Mass production of energy crops may also endanger

the environment. In the cohesive scenario, the impacts of climate change on rural areas, especially in Southern Europe, are by far less negative than in the baseline scenario, because of the implementation of prevention measures, largely supported by structural and rural development policies. The protection of forests and the development of energy crops cultivation contribute to the production of biomass while maintaining agricultural and forestry activities and preserving traditional landscapes.

Environment

In the cohesion scenario, the environment is viewed as one of the main pillars of European solidarity. Therefore, not only must all Europeans have a basic right to jobs, education and decent housing — regardless of the region in which they may live — they also must have the right to clean air and water, protection from floods, and a rich and vibrant natural landscape. Environmental targets are put at a higher level than in the baseline scenario and a significant amount of resources from Structural Funds and rural Development Policy is allocated to environmental improvement and protection in less favoured regions.

As far as water resources are concerned, the level of water stress is lower than in the baseline scenario thanks to a combination of strict implementation of the Water Directive and the targeted use of funds to build and maintain a sustainable water management system. Examples of measures implemented are investments in water-saving irrigation techniques in Southern Europe as well as in desalination plants, changes in agricultural production with the cultivation of less water-demanding crops etc. This does not exclude that water consumption is also increasing in certain sectors, such as the water consumption of households in the new member countries. The policy decisions taken in the cohesion scenario also have tangible results on the changing quality of water in Europe. In rural areas, policies concentrate on halting nitrate diffusion; this requires more effective use to be made of fertilizers, and block the expansion of agriculture in areas with high nitrate levels. Farmers are urged to find new ways of fertilizing and to recycle the surplus of manure from their cattle farms. As a result of these efforts, pollution levels of European rivers decrease substantially, particularly in traditionally polluted areas like industrial zones and urban fields, but less so in areas of intensive agriculture. As a result, eutrophication remains a problem in most of central and Western Europe, although not as much as in the baseline scenario.

With regard to the risk of flooding, the policies implemented in this scenario generally mitigate the effects of excessive water rather than the root causes (climate change). Measures are implemented from a public outcry following a number of damaging river floods. It is increasingly acknowledged that these are not isolated incidents, but symptomatic of a structural change in climate. Significant resources from Structural Funds are allocated to prevention measures. As a result, riverbeds are reshaped, emergency water retention areas designated, and restrictions imposed on building in areas that would cause unacceptable levels of runoff. In 2030, although river discharge has increased in Northern and Central Europe, the actual damage of flooding is little more than in 2005, and much less than the baseline scenario. Most river landscapes have been transformed into wide semi-natural river plains.

Stronger attention paid to environmentally-friendly transport modes and related investments, especially in railways, tend to reduce the environmental footprint of the transport sector and to contribute to the improvement of air quality. Kyoto implementation is also taken very seriously by the EU, which translates itself into more rigorous source-based controls for industry and transport and the promotion (subsidization) of environmentally friendly practices.

More attention is paid to the protection and enhancement of the natural and cultural heritage than in the baseline scenario. In less favoured regions, significant resources from Structural Funds are allocated to the enhancement and protection of natural areas and to the implementation of Natura 2000. Important efforts are made in Southern Europe to prevent forest fires through better forest management. Stronger rural development in European peripheral regions favours the maintain of cultural and natural landscapes as a resource for rural tourism.

Territorial image of Europe by 2030

Compared with the baseline scenario, the demographic situation of Europe by 2030 is less declining thanks to a revival of fertility rates in various countries, however stronger in western than in Eastern Europe. The median age of the European population by 2030 is therefore lower and the demographic potential higher than in the baseline scenario, as for instance in southern and north-western Spain and in southern Italy. In a number of areas, however, such as central Sweden, eastern Finland, northern and south-eastern Poland, southern Hungary, the demographic potential is lower than in the baseline scenario and population decline affects many eastern and some southern areas of Europe.

The impacts of the revival of birth rates on the labour markets are not yet significant by 2030. In order to compensate for the massive retirement of the 'baby-boomers' and for stronger immigration control, retirement age was postponed, so that numerous people older than 65 are still at work by 2030. Population of immigrant origin living in Europe (second and third generation) is however better integrated in the labour market than in the baseline scenario.

In the context of progressing globalisation and because of lower economic growth and competitiveness than in the baseline scenario, more European businesses were taken over by foreign, non-European companies through mergers and acquisitions, so that by 2030 the European economy has become more dependent upon external decision-makers than in the case of the baseline scenario.

The dichotomy in long-term growth processes observed in the baseline scenario between metropolitan and non-metropolitan areas is less strong in the cohesive scenario, especially in the cohesion countries where rural areas are strongly supported.

Urban Europe

The competitiveness of European metropolitan areas has progressed less significantly than in the baseline scenario, both in western and in Eastern Europe. The gap between European metropolitan areas and global cities of North-America and Asia has increased. The expansion of the pentagon along major corridors is less strong than in the baseline scenario. The development of networks of cities supporting wider integration areas is more modest than in the baseline scenario. Polycentricity at European scale has not progressed, as no alternative global integration area has emerged.

As opposed to the baseline scenario, peripheral and/or rural regions have been more successful in generating development. At intermediate scale, the level of polycentricity in the national urban systems of the countries of central and Eastern Europe has less significantly declined and in some cases the revival of medium-sized cities has made possible to efficiently counteract the attraction of capital and other large cities, especially as far as rural-urban migration and location of SMEs are concerned. In western rural and peripheral areas, towns have benefited more than in the baseline scenario from migration flows generated by large cities (retirees, self-employed) and from tourist and other activities.

A substantial difference with the baseline scenario is the evolution of urban systems at local scale under the effect of the social cohesion and integration policies. The efforts developed in the field of economic, social, educational and cultural integration of ethnic minorities and of other less privileged groups have contributed to limiting the social and physical segregation in cities and the resulting feeling of insecurity. The better offs are less inclined to move out of cities and to contribute to strengthening suburbanisation. Gated communities are not emerging and the originally less favoured population groups are better integrated into the labour market.

The impact of increasing energy price on the evolution of settlements is similar to that in the baseline scenario. Generally, it favours more the evolution towards compact cities and it is much less counteracted by suburbanisation trends resulting from insecurity and from high real estate prices in cities, as the growth of metropolitan areas is less significant than in the baseline scenario.

Rural Europe

The evolution of rural areas in the cohesive scenario is much more positive than in the baseline scenario. Strengthened structural funds and rural development policies have contributed to accelerate the process of economic diversification in numerous rural areas. Compared with the baseline scenario, the dichotomy between strongly growing rural areas located around metropolitan areas and large cities and the more remote and declining rural areas is much more modest, since metropolitan areas are less strongly growing and remote rural regions are more strongly supported. This does not exclude the existence of a variety of situations and of dynamics. Despite significant support by public policies, a number of remote rural regions are facing decline and depopulation.

As in the baseline scenario, changes have taken place, by 2030, in agricultural systems. The strong dichotomy between areas with intensive agriculture and areas with low productivity agriculture, shown by the baseline scenario, is attenuated in the cohesive scenario by stronger control of environmental impacts of agriculture and by stronger rural development policies in peripheral and remote rural areas. The increasing impacts of market forces in agriculture and the development of the production of energy crops have however favoured highly productive agriculture in fertile areas, especially in north-west Europe, Poland, northern Italy etc.

The negative impacts of climate change on rural regions in Southern Europe are much less strong than in the baseline scenario because support is allocated to adaptation measures of agricultural production (water-saving irrigation techniques, changes in types of productions etc.), to forestation, to the maintain of cultural landscapes. Less agricultural areas are abandoned because of drought than in the baseline scenario. As a counterpart, pressure on agricultural and rural regions in the central and northern European regions increase less dramatically.

Generally, the natural and cultural heritage of European rural regions is better protected and enhanced than in the baseline scenario.

Territorial images by 2030 in the European macro-regions (comparison with the baseline scenario)

Atlantic Area

A long-term spatial impact of increased socio-economic redistribution for the Atlantic Area has been the maintenance of some of its weakest regions, ultimately contributing to a process of decentralisation. Active measures to support diversification, particularly in rural areas has assisted their survival and supported the numerous SMEs, as has continued support to peripheral service infrastructures. Multi-service centres already in existence in some of the French Atlantic Area regions in 2005 are one form of social infrastructure invested in to maintain the rural communities that had by the turn of the century been at risk of disintegration. Other small scale heritage projects and subsidisation of diversification projects also work towards the retention of populations in areas such as the Highlands of Scotland.

A focus on quality of life issues and EU expenditure invested according to qualitative indicators has also helped the promotion of geographically and cultural marginal areas. Specific measures are supported by a broad strategy to build solidarity between coastal areas and their hinterlands. The development of 'hubs'; medium sized towns acting as service centres to integrate fragile and depopulating surrounding areas, a policy already in place in Ireland at the beginning of the century designed to counter its monocentricism, is promoted elsewhere along the Atlantic Rim. The enhanced role of the EU in working with regional bodies to identify and exploit complementarities between medium sized towns and retain the viability of interior regions, such as those in Galicia and Limousin, has been key to maintaining the momentum of the efforts.

EU measures, backed by member state governments also support socio-economic expansion by providing incentives to enterprises to invest in peripheral locations, addressing the issue of labour supply partially through the targeting of migration and re-location packages where appropriate. With new agglomerations benefiting from a dispersal of economic activities, new, previously marginal areas are strengthened and the effects are cumulative with a greater emphasis on residential quality of life away from what were becoming increasing congested core metropolises.

Transport and telecommunication policies also have supported the development of peripheral poles, moving beyond connections between them and their old national centres, to build up those along the Atlantic coast and their hinterlands. Such investments, while costly, have not completely 'held back the tide', but have worked with the pre-existent trend of increasing geographical mobility in the post-industrial society where remote working and retirement to rural regions have continued to grow in popularity. Given the landscape and situation of the Atlantic Area, these policies and trends have been of particular significance in retaining its viability.

The decentralisation of energy production and subsidisation of new renewable forms have been of benefit to remote and coastal regions, which have also been protected by EU investments in environmental hazard prevention. The diffusion consequent to de-centralisation is complemented by the development of the post-industrial economy, but there is nonetheless some political controversy and resistance to the logic of and extent of the EU effort to disperse monies and maintain the most marginal of areas. There is also a degree of tension between the goals of cohesion and the environment, with for instance, the respect for the fishing resources regulation policy causing much deliberation in view of the potential negative impact on employment of imposing stricter quotas and the negative impacts on the environment of expanding aquaculture. A compromise involves much closer co-ordination than had previously been the case between the CFP, conservation policy and the EU's Cohesion Policy to assist in diversification measures, which has been moderately successful.

Shared environmental risks and maritime safety have been tackled though strong support by the EU for forms of trans-national co-operation and regional and local governance. These are also empowered through match-funding to give financial and organisational backing to innovative initiatives to exploiting the unique potential of the Atlantic Area, such as research and development into currents, tidal power and other coastal renewable sources of energy, harnessing SMEs and higher educational establishments with larger business enterprises and funding bodies. Supported by tax incentives and subsidies, renewables have, by the 2020s begun to compete with conventional energy sources, which bodes well for the longer-term future bio-diversity, landscape and economic self-sufficiency of the Atlantic Area.

At a macro scale the outcomes of the cohesion approach include the emergence, at least in embryonic form of a new polycentric system and the development of two strong development corridors showing good potential to counter the current centrist system. One of these an 'Iberian Atlantic Zone' comprising a coastal system of Galicia and North Portugal, the port of Lisbon, Seville, up to the cross-border Basque region, the second a 'North Atlantic Zone' consisting of an urban system connecting the Manchester-Liverpool conurbation with Ireland, upwards to Scotland, down to Bristol and the Midlands and providing connections onwards to Scandinavia and America. The development of the latter by 2030, serves as a strong complement to the pull of Greater London. In the French part, the large cities of Bordeaux, Nantes and Rennes have further progressed, but have not achieved to build together an Atlantic axis escaping the attraction of Paris.

In summary, a greater attention to the objectives of social cohesion works well for the peripheral areas of Atlantic Area relative to other models. Moreover the relative improvements in territorial balance, in helping to produce greater social cohesion, in turn enable the continued implementation of more ambitious measures, producing in other words multiplier effects favourable to the region.

North-West Europe

The orientations of policies under the cohesive scenario are more favourable to peripheral regions than to metropolitan areas. North-West Europe has therefore been performing less successfully than in the baseline scenario and much less than in the competitive scenario. Compared with the baseline scenario, the regions which have benefited most are the rural regions (essentially those of the French part) and the most peripheral ones (northern Ireland, Wales and northern Scotland). In addition, Cumbria and parts of the Walloon region have gained ground. This does not imply, however, that these areas have overtaken the NWE metropolitan regions in affluence, since their starting position was much lower. In addition, the globalisation process and other market forces have supported the development of metropolitan areas. Despite the catching up process of less developed regions, there are by 2030 still significant differences in the regional GDP per capita between metropolitan areas of the NWE core and more rural regions.

Demand for new transport infrastructure has been less strong than in the baseline scenario. Most new TENs have been realized outside the NWE area. Some additional investments in transportation in rural areas have nevertheless been carried out in order to improve accessibility, while the development of urban networks in the core area of NWE, supported by the building of new highways and high-speed train connections, has been less pronounced than in the baseline scenario.

Regarding urban growth, the Pentagon has hardly expanded along the major corridors. The global cities London and Paris and MEGAs like Amsterdam and Brussels have attracted less people than in the baseline scenario. Suburbanisation has still been progressing, but much less than in the baseline scenario. Population ageing in the cities has progressed slightly more than in the baseline scenario, since the volume of immigrants from outside Europe and from less developed parts of the EU has been more modest. The revival of fertility rates has also contributed to moderate the process of population ageing in urban areas. Even the cities of old industrial areas like the Ruhr area, northern England and Wallonia have experienced a demographic and economic revival and are more populated than they would have been in the baseline scenario.

Illegal immigration has continued but the figures have declined substantially after the introduction of the EU ID cards. The population of immigrant origin living in NWE has become better integrated in society and in the labour-market than in the baseline scenario thanks to efficient integration policies. Citizenship and the knowledge of the country's language have become residency requirements and inter-cultural interaction has been facilitated from an early age. Violent manifestations and riots have declined. This happened particularly in Paris and Antwerp. Xenophobia and political radicalism decreased. In the global cities London and Paris and in other large metropolitan areas, efforts in the field of the integration of ethnic minorities have contributed to a more limited spatial/social segregation. No-go areas and gated communities are not usual.

Rural areas have remained very diverse in their characteristics. Those highly dependent upon agricultural activities and the most remote ones have been more strongly supported than in the baseline scenario. Basic infrastructures and services have been maintained and improved. The development of the production of energy crops has been beneficial to a large number of agricultural holdings which had to face external competition in the field of conventional agricultural productions. The demographic evolution in such regions has been by far less negative than in the baseline scenario thanks to a revival of fertility rates. Rural areas around cities have been facing population pressure for housing and recreation. This did not only occur around the largest metropolitan areas, but also around medium sized cities in the English Midlands, Belgium, the Netherlands and the Ruhr area. Pressures have been however more limited than in the baseline scenario. Moreover, the differences between metropolitan and other areas have become smaller since EU, national and regional authorities have implemented policies aiming at reducing the pressure on densely populated areas and at regenerating areas of declining population.

The overall energy consumption has not significantly increased in NWE. While more attention has been paid to renewable energy sources (solar and wind energy, tidal energy, biomass), the emergence of large-scale alternative energy systems for the supply of large cities has not been

significant. This has resulted in the increase of external energy dependency and in the increased use of traditional energy supply systems (especially nuclear and conventional power plants). The breakthrough of the hydrogen technology and of coal gasification and liquefaction technologies has not really happened because of insufficient R&D efforts and investments. Rural areas have benefited more from renewable energy sources than large cities, both in terms of income and of energy supply. Rising energy prices have favoured the evolution towards compact cities but this tendency has been less counteracted than in the baseline scenario by suburbanisation trends resulting from urban population growth and insecurity in cities.

Stronger priorities in the field of environmental protection and sustainable development have led to an improvement of environmental conditions, compared with the baseline scenario. Natural areas have been better protected and ecological corridors more efficiently implemented. In rural areas, increased EU funds have enabled a landscape management promoting regional identities. Problems with air quality have slightly been reduced in most urban areas. Compared to the baseline scenario, metropolitan areas are showing declining pollution levels, due to weaker population growth, and consequently smaller growth of transport volumes. Moreover, EU regulations are implemented more strictly, with penalization for those cities which do not cope with EU pollution level standards. International treaties, like the successor of the Kyoto agreement, have been a catalyst for cities to embrace sustainable ways of transport and housing. Some factors have however been slowing down this evolution, especially the late emergence of less polluting transport and power generation technologies (hydrogen technology). The systematic implementation of prevention measures has significantly limited the negative impacts of natural hazards, especially of floods.

North Sea Region

The policy measures implemented in the cohesive scenario have been less favourable for the NSR than the baseline scenario. The most important economic drivers of the region, the port cities, largely showed signs of relative weakness. This has partly been compensated by growth in more rural areas, but considering the relative importance of trade for the region, the overall picture remains rather inauspicious. Particularly Rotterdam, Antwerp, Bremen and Hamburg have been negatively affected in the cohesive scenario. A result is that there has been less potential for improving the transport links between port cities, and consequently less attention paid to the development of multimodality in the region, despite the objective of promoting sustainable development in the region. Other economic activities such as fisheries and agriculture have gained ground compared to the baseline scenario. Compared with the baseline scenario, rural regions of East Anglia, Pennines and Yorkshire, northern Netherlands and north-west Germany are clearly performing better, while the metropolitan regions and the port cities are less favoured by the policy orientations of the cohesive scenario.

In the NSR population ageing has been slower and population decline in certain areas less intense than in the baseline scenario because of a revival of fertility rates. Since authorities at EU, national and regional level have been implementing policies aiming at reducing pressure on built-up areas and at regenerating areas of declining population the difference between metropolitan and other areas has become smaller. As a result MEGA's like Copenhagen, Hamburg and Amsterdam have attracted less people. The development of urban networks, supported by the building of new highways and high-speed train connections, has been less strong. At the same time old industrial areas like Leeds and Sheffield and medium-sized cities such as Bergen, Esbjerg, Groningen and Newcastle have experienced a revival and have become more populated. Attractive rural areas, particularly those along the coasts from the Strait of Dover to the Danish west coast have benefited even more from the location of retirees, self-employed people and tourism than in the baseline scenario. The same is true for peripheral rural areas such as the Scottish Highlands, the south-west of Norway and the Wadden islands.

Urban development is more balanced throughout the region. Within large cities, the social/spatial segregation has progressed less than in the baseline scenario, because of lower pressure from external migrations and stronger efforts in the field of the integration of ethnic minorities. The population of immigrant origin living in the NSR has been better integrated in society and in the

labour-market than in the baseline scenario. In seaport cities like Hamburg, Rotterdam, and Antwerp violent manifestations and riots have only seldom taken place. Xenophobia and political radicalism has decreased. The impact of increasing energy prices on the evolution of settlements has been similar to that in the baseline scenario. It has favoured more the evolution towards compact cities and it was much less counteracted by suburbanisation trends resulting from insecurity. The dispersal of settlements has been in addition more limited by efforts to promote public transport systems and to better control land use evolution at regional scale.

The promotion of renewable energy sources has somewhat compensated for the decline and depletion of the North Sea oil and gas resources. The NSR has some of the highest wind speeds in Europe and large wind parks have been developed. New technologies exploiting tidal energy have also been implemented in the NSR. Rural areas have benefited from the growing demand for biofuels. This has contributed to maintain agricultural income in areas where conventional agricultural productions were hit by foreign competition. Nevertheless the external energy dependency of the NSR has been increasing.

In the field of the environment, evolutions have been somewhat contradictory. Kyoto has been taken seriously and measures have been focused on the diversification of energy sources and on energy savings, particularly in Scotland and Norway. At the same time, emissions from car transport have still been growing, due to investments in highways in peripheral areas in Scotland, Norway and Sweden, but also in rural areas distant from major urban centres, like Groningen, Esbjerg, and Aalborg. They were not sufficiently counteracted by the introduction of less polluting car engines, since the hydrogen technology has not yet made a breakthrough. High investments are made in wind parks on the North Sea and in coastal regions. Maritime wind parks interfere with the development of maritime freight routes. The improved attractiveness of rural areas in the North Sea coastal regions has revived the interest for recreational uses. This has not been exempt of land-use conflicts with respect to onshore wind parks. Stronger environmental legislation and a CAP focusing on rural development, diversity, and environment has been a major issue in agricultural policies. Agricultural intensification has taken place in competitive areas in the south, but within rather strict environmental limits. However, lower nitrate use in agriculture could not curb down the eutrophication of the North Sea in the short term. Rural development has been very much promoted in all areas where economic stagnation and population decline was taking place, particularly in Scotland. Efforts to connect peripheral regions with improved infrastructure have nevertheless led to the fragmentation of unspoiled nature, particularly in Scotland and Norway. The dichotomy between growing rural areas in urbanised regions such as Norfolk, South Jutland and the Green Hart of Holland and more peripheral rural areas like the Scottish Highlands, the Northern part of Ireland and the Western part of Norway has however been more modest than in the baseline scenario.

Northern Europe²⁵

The cohesion approach adopted by the EU after 2005 has a number of impacts in this region, though they are of course highly differentiated geographically. In the far north, the impacts are minimal as a rather stronger version of this particular 'policy mix' has existed in the Nordic countries for much of the post-war period, albeit with limited success and notwithstanding the fact that prior to 2005 the basic philosophy underpinning this approach was coming under increasing pressure within these countries themselves. Similarly, on the northern shore of the Baltic, in the more heavily populated areas of the Nordic countries (The Nordic capital regions) the impact of the cohesion approach would be, at best, slightly negative.

Demographically, inward migration to the northernmost parts of the region has remained low, while though fertility rates improve, it has remained difficult to maintain a 'gender balance' in the most peripheral regions as young women generally had to migrate southwards to the major urban centres to fully benefit from the opportunities of modern life. In the Nordic capital regions, rising fertility levels fuelled the spread of suburbanisation as space/cost ratios make city living for most

²⁵ Baltic Sea Region and northern periphery.

average families prohibitively expensive. Meanwhile, in parts of the area to the south of the Baltic the adoption of a cohesive scenario has signalled a significant turnaround in the population decline trend that began at the beginning of the 1990s. This was caused by rising health care standards and general economic improvement alone, though the decline in out-migration and the eventual impact of the EUs 'catch-up' economic strategy magnified these basic effects. Problems remain however by 2030 in respect of the urban-rural balance as little could be done, at the policy level, to counteract the continuing historic move away from the land in countries like Poland.

Economically, the impact of the cohesion approach has been again highly differentiated. In the north – a rather atypical 'peripheral' region - where, paradoxically, most people live in small urban environments rather than in traditional rural settings, the changes to the SF and CAP regimes and the focus on CEE 'catch up' brought little cheer. Similarly, in the southern capital regions of the Nordic countries – already groaning under the fiscal weight of cohesive 'equalisation' policies at the national level, but unlikely ever to be relieved of their dominant national economic positions – the EUs cohesion policy approach offered little that was new while at the same time putting a brake on significant further economic development and restructuring. On the southern Baltic shore however, the strengthening of the EUs territorial cohesion policy regime had a significant positive impact in Poland and the Baltic States as continuing higher than EU-average growth rates plus the impact of the drive towards 'catch up' combined with the positive demographic trends already alluded to see economic improvements over the baseline scenario taking place. In addition, the already polycentric nature of the Polish and Lithuanian urban networks benefited from the attempt to promote economic development in areas beyond the capital regions.

As energy price rises remained constant with the baseline scenario, a mix of nuclear power and alternative energy strategies again predominated in the Nordic countries, while Poland and the Baltic States remained tied to the Russian gas distribution network, though even here, alternative approaches – such as the use of biomass – are utilised. The demand for additions, (above the baseline) to the transport infrastructure in the Nordic countries has been minimal in the context of the cohesion scenario, though in the southern Baltic the continuing process of long-term urbanisation necessitated further transport infrastructure construction – fuelled by EU fiscal transfers – which further increased the rate of flight from rural to urban areas.

In sum, the cohesion scenario had little impact on the Northern Periphery, a slightly negative impact on the Nordic capital regions and a significant positive one (when combined with long-term patterns of rural-urban movements etc) on the southern shore of the Baltic. Given the rather significant spatial differentiation existing across the region in 2005, statistically speaking, by 2030 a measure of cohesion has been achieved, though this relates as much to the sub-par performance of the northern shore of the Baltic as it does to the good level of performance shown in the south.

Alpine space

Due to family-friendly policies in the EU member countries and in Switzerland, the population ageing has been curbed down in most regions of the Alpine Space. Improved child and health care facilities as well as better care infrastructure for the elderly have resulted in higher fertility rates and lower median ages in the urban agglomerations of the lowlands and rural centres in the Alps. Women have been able to better engage in work life, and flexible retirement schemes have led to a high activity rate. Although high investments were made in order to prevent remote rural areas from being abandoned, the process of ageing and population loss could only be slowed down but not be stopped in alpine villages and small towns. Instead of migrating from rural villages to the agglomerations, young qualified job seekers have settled in the rural centres. This has been accompanied by very restrictive migration policies that have permitted a minimum of qualified workers from non-EU countries to immigrate. Most of them were needed in the economic centres of the Alpine lowlands; only a small share has come to rural areas. Compared to the baseline scenario, the need for integrating foreigners has been lower in the larger cities but slightly higher in the rural centres. All in all, these measures have proven to be successful, and no major conflicts between residents and newcomers have occurred. Illegal immigration still exists but to a very small extent.

Following stronger decentralisation efforts, business development has been directed from the economic centres toward smaller cities even in the Alps, provided that there is good accessibility. TEN-T has been realised, giving priority to peripheral regions including those along transit axes. But also many remote towns have benefited from competitive but rural development-oriented public investment in infrastructure and public transport. In the Alps, the construction of feeder roads and better public transport offers into the valleys has led to better cohesion and improved market access even in very remote areas. In addition, new jobs in industry, the supply sector, and service sector have been created in the more attractive Alpine centres. However, the urban agglomerations in the lowlands have kept their role as economic engines. Compared to the baseline scenario, GDP growth has been strong in regions like Tyrol, South Tyrol, Eastern Austria and Vienna, the Aosta valley and in Southern Germany. These regions have also been able to considerably improve their relative position in Europe. The per capita GDP has increased in comparison with in the baseline scenario, most of all in the East Alpine region, but has also decreased in the southern and western part of the Alpine Space. This is also where GDP growth has been lower in general. The weakest development could be observed in the Sea Alps, Slovenia, and all over Northern Italy, from Liguria over the Po Valley to Venice. Thus, Milan and Lyon have become less competitive than Munich and Vienna.

Globalisation including structural change of agricultural production has continued, but compared to the baseline scenario, CAP has given priority to pillar 2 funds. In the less developed regions, direct payments to farmers have been strengthened (pillar 1), mainly for meat and dairy production. However, smaller farms have been abandoned for the most part or united into regional cooperatives. In the Alpine regions, farmers have changed to labelled quality products and environmentally sound production methods, and more stringent animal health criteria have been applied. The area has also observed a moderate diversification toward subsidised landscape conservation, eco-tourism and biomass production. In the lowlands and Alpine foothills, the industrialisation of farms has also been slow. However, a concentration of agricultural production to increase efficiency has taken place. In addition, decentralised production of renewables like biofuels has been promoted due to rising prices for oil and gas. SMEs in the field of energy technology have settled in rural areas, mainly in Central Switzerland (where businesses are taxed less than the EU average) and Austria. Compared to the competitive scenario, alternative sources for mass energy production have not yet made a breakthrough; oil dependency has remained high, alleviated in the Alpine Space by the more intensive and efficient use of hydroelectric power.

The territorially more balanced development in economic terms, however, has led to increased mobility, particularly in peripheral regions. Thus, overall energy consumption has increased as well. High energy prices have shifted individuals and freight to public transport means. Nevertheless, high mobility and longer transportation paths have resulted in worsened air quality and noise, dispersed all over the Alpine Space. On the other hand, these impacts are less dramatic overall and congestion has been kept to a minimum in the urban agglomerations.

Policies promoting rural areas have led to stronger settlement activities, or 'rural sprawl' even in remote areas, thus – together with an improved road network – cutting through unique habitats. This process has led to monotony in the landscape and enormous environmental destruction fuelled by climate change: increased variability in precipitation (heavy rainfall / drought), storms, floods, and consequent erosion and landslides threatening human settlements in valleys. In parallel, measures aiming at improving environmental conditions have been strengthened, mainly through the establishment of regional natural parks that attract people from the cities as well as the nearby rural centres. Tourism has remained a main source of income in the Alpine Space despite mounting snow lines and shorter winter seasons.

Central and Eastern Europe²⁶

One of the main objectives of economic and social policy in this scenario has been to create jobs and housing for people, as far as possible there where they live. Stable working and living conditions have favoured higher birth rates even at a more modest level of income. It follows that

²⁶ Former CADSES area.

in this type of strategy the role of natural population increase has been more important and the role of migration less decisive than in the case of other development paths. From 2000, but especially from 2010 onwards, total fertility rates have begun to increase in the Eastern parts of the region. One of the reasons has been better health care, the other improved facilities for child care. However, even improving fertility and birth rates could not ensure a constant level of population and even less a constant level of active population. Nevertheless, it enabled that emigration flows could gradually decrease. An important precondition for this development was higher activity rates of elderly people and of women with grown-up children. These policies enabled to raise total fertility rates in the Eastern parts of the region up to a level of approx.1,4²⁷. Not only international, but also migrations within countries have slowed down. The improvement of infrastructure and accessibility has ensured better living conditions in small towns and rural areas, even in less developed regions in the East and in the peripheries. Natural decrease could not, however, be stopped in Bulgaria, Romania and Hungary, but a certain stabilisation of the population in Eastern Germany, Eastern Austria, the Czech Republic, Poland, Slovakia and Slovenia could be reached, at least up to 2020. Lower emigration to the West has resulted in a more balanced population development between East and West. In 2005, the share of the 10 Eastern European member countries (including Bulgaria and Romania) in the ESPON29 population was 23 percent. By 2030, according to the baseline scenario it would have decreased to 21, in the competitive scenario even to 18 percent. In the cohesion scenario, their share has remained at the 23 percent. Seemingly, these are not dramatic differences, but it should be taken into account that 1 percent of ESPON29 population corresponds to 5 million people.

The precondition of these developments under the cohesive scenario has been a consequent and strengthened EU socio-economic and territorial cohesion policy, with specific support to the catching-up of less developed regions and to regions in structural difficulties. Furthermore, it has to be taken into account that this scenario results in a lower overall rate of economic growth and, consequently, in a somewhat lower level of per capita GDP at European scale than in the baseline and - especially- than in the competitive scenario. A basic difference with the competitive scenario is that small and medium-sized enterprises play a more important role. The role of multinational enterprises has been of course very important also in this scenario, but a large number of suppliers have emerged, consisting mainly of local small and medium enterprises. Low wages have played a less decisive role as location advantage, while improving infrastructure, environment, skilled labour and potential supply networks have been more important. The increasing role of local based small and medium-sized enterprises meant also that entrepreneurial income generation has been more evenly distributed and small and medium-sized cities had better development opportunities.

In this scenario, the main objective of the European Union has been deepening integration at the expense of further enlargements. More functions and tasks have been delegated to the supranational institutions, but without fundamental reforms of these institutions and of decision-making procedures (as it happened so far). Consequently, this deepening has been in contrast with the increasing heterogeneity of the Union and the conception and implementation of EU policies has not always been optimal.

The metropolitan areas of central and Eastern Europe had a lower development rate than in the other scenarios, being less supported in terms of infrastructure and R&D activities. They have been however subject to a certain amount of internal migrations from the rural areas and their population is increasing. Their polarisation power remained at a reasonable level, so that they did not hinder too seriously the development of medium-sized towns.

The modernised CAP has still absorbed a large, though decreasing, part of the EU budget. By 2013, EU subsidies to farmers from new member states have levelled with those paid to the EU15 farmers. In fact, levelling has been completed even earlier, since the governments of the new member states paid additional support to their farmers as long as they did not reach the EU15 level. Despite of this 'legal' equalization, income support has been higher in the 'founder' member states, and western farms continued to be more competitive than farms in the South and East of the EU and in the neighbouring countries. The EU has supported mainly those sectors of agriculture

²⁷ A total fertility rate of 2,0-2,1 ensures the reproduction of the population at an unchanged level.

(grain, milk, cattle and sheep) which are the typical products of Northwest Europe, while several important products of the Southern and Eastern member states (wine, fruit, oil, pigs, poultry) enjoyed less or no support. Furthermore, the new private farmers of the new member states (with the exception of Poland) started their activity only in the 1990s (earlier they were forced into the collective farm system). Therefore they had a competitive disadvantage with respect to the accumulation of the necessary capital and to the provision of their farms with modern equipments and machinery. It means that smaller and less competitive farms in Southern and Eastern Europe managed to survive, but differentiation in agriculture has not been less than in other scenarios. The continuation of the CAP meant that agricultural 'surplus' employment could be partly kept in rural areas, where the large part of the farmers' income was coming from EU support. Migration to the cities and especially to the Pentagon and other core areas has been lower than in other scenarios. But the bulk of agricultural products on the market has been produced by a rather small fraction of farms. Scenarios of agricultural and rural development and its spatial structure differ much less with respect to the structure of production than with respect to employment and social aspects.

The energy efficiency of the economies of central and Eastern Europe has progressed because of the support given to the modernisation of energy supply systems. The promotion of renewable energy sources has benefited most to the rural areas, especially in the production of biomass. Foreign investors have also engaged in this sector, taking advantage of the availability of large and cheap agricultural areas. The resulting intensification of agriculture has been causing in various areas environmental problems, especially in the field of ground water contamination.

Southern Europe²⁸

Compared with the baseline scenario, restrictive policies have limited the importance of external immigration, especially from the Southern Mediterranean countries, as demographic development driver in Southern Europe. However, the improvement of the environment and attractiveness of the region related to its favourable climate conditions, has intensified internal migrations from Western Europe (retired people etc). Population ageing has been less strong in North-West Spain, southern Portugal, as well as in southern and north-eastern Italy than in the baseline scenario. By 2030 the demographic potential is stronger in the French regions and in Andalusia and Murcia, while the central and southern Portuguese regions, Corsica and Sardinia as well as Piemonte, Emilia Romagna, Toscana and Lazio in Italy have the weakest potential. Falling total population is also continuing to impact some areas of Southern Europe.

As it generally happens in the cohesive scenario compared with the baseline one, the regions that have benefited most by 2015 are the least developed ones (i.e. the ones that do not include any major metropolitan areas). A greater performance in Greece and part of Central and Southern Italy has contributed to the drift of the barycentre of growth towards South-Eastern Europe. A great number of peripheral regions of Southern Europe have grown more than in the baseline scenario: Greece, Sardinia and Corsica, most regions of Spain. Some relatively better performing areas can be found also in peripheral and/or rural regions, like Languedoc-Roussillon in France, Toscana, Marche, Abruzzo, Calabria, Veneto and Friuli in Italy. These tendencies are confirmed by the change in the relative position of regions; in Southern Europe some additional areas have emerged as winners due to the relatively lower increase in population growth. In 2015 a higher per capita GDP level than in the baseline scenario has been achieved in the periphery of Southern Europe, in most remote areas. Southern EU regions bordering neighbouring countries loose development opportunities since EU membership was denied to Western Balkans and Turkey and the EU relationships with the Southern Mediterranean countries were not sufficiently intensified.

Compared with the baseline scenario, Southern Europe metropolitan areas are less favoured. This is true for capital cities as Athens, Rome, Madrid but also for those considered as 'engines of Europe' like Milan and Barcelona. Inversely, small and medium-sized towns in the numerous less developed regions of this area are more strongly supported, especially as far as services of general interest are concerned. The numerous Southern Europe rural areas, particularly the peripheral ones, have profited from an enhanced support by RDP and the SF's focusing on sustainable

²⁸ Including the European Mediterranean regions as well as Southwest Europe.

development. Experience farming has broken through in rural areas with small-scale landscapes. The growing demand for cultural landscapes has provided opportunities for agrarian nature and landscape management, particularly in small-scale landscapes. Rural areas have become economically more diversified as well as more socio-economically viable. Therefore, the dichotomy between metropolitan and non-metropolitan areas is less strong in the cohesive scenario.

The basic factors leading to new energy paradigm are the same as in the case of the baseline scenario. However, a large part of Southern Europe containing peripheral and / or rural areas as well as small and medium-sized cities and towns is in better position than in the baseline scenario because of the enhanced support from RDP and SFs through appropriate measures. The TEN-E have been developed by priority in less developed and peripheral regions while the RDP has allocated also substantial resources to the production of energy in rural areas. More investments have been made in intermediate technology sectors, especially in less developed regions. Solar energy (presenting a higher potential in Southern Europe) and wind energy as well as the production of energy crops have enabled the creation of decentralised energy supply systems which also benefit to small and medium-sized towns, making them less dependent upon external energy supply. At the same time, they contributed to the improvement of the environmental quality.

The transport priorities of the cohesive scenario have contributed to a more balanced and sustainable spatial development in Southern Europe. In the context of rural development plans concerning a large part of this area support has been given to strategic regional axes so as to connect as many medium-sized and small towns as possible to the trunk networks. Greater attention has also been paid to environmentally-friendly transport modes such as efficient railways and maritime routes interesting Southern Europe. The latter reduced the impacts of higher energy prices. Despite these improvements, transport costs between Southern Europe and EU central regions have not decreased.

Southern Europe benefited in priority from the allocation of significant SFs and RDP resources to environmental improvement and protection in less favoured regions. Lowering of water stress (in comparison to the baseline scenario) achieved through investments in water-saving irrigation techniques, desalination plants, cultivation of less water-demanding crops etc has benefited more to Southern Europe in which drought is very important. Therefore, less agricultural areas have been abandoned because of drought. The region has also benefited from the more intensive efforts made to prevent forest fires through better forest management as well as from the stronger rural development which has favoured the maintain of cultural and natural landscapes as a resource for rural tourism. The negative impacts of climate change on Southern European rural areas have been much less important than in the baseline scenario, because enhanced support has been allocated to adaptation measures of agricultural production, to forestation, to the development of energy crops cultivation which contributes to the production of biomass. Environmental improvement reinforced tourism development which is of crucial importance for Southern Europe. Gated communities in tourism resorts have not been emerging since less favoured population groups are better integrated into the labour market.

Conclusions: territorial issues arising in 2030 from the cohesive scenario

Europe-wide level:

Regional disparities are still important by 2030, although less significant than in the baseline scenario. Global European growth and competitiveness are however lower. The divide, in terms of wealth, between metropolitan areas and more rural regions is less strong than in the baseline scenario, while disparities between East and West remain important despite strong cohesion policies. New global integration zones have not emerged. Differences in accessibility between the wider pentagon and peripheral areas have been somewhat reduced thanks to transport investments in favour of peripheral regions, but the impact of high energy price on transport costs is detrimental for remote regions. Despite strong support by EU cohesion policies, the leverage

effect on private investments in a number of less-favoured peripheral regions has remained low (however less than in the baseline scenario).

Intermediate level

Territorial integration at transnational and cross-border level driven by networks of cities, is much weaker than in the baseline scenario. Fewer economic and technological synergies have developed. A number of rural regions are facing a spiral of decline (population ageing, depopulation, negative impacts of drought etc.), but they are less numerous than in the baseline scenario.

Local/regional level

The global competitiveness of metropolitan areas is lower than in the baseline scenario. The internal differentiation of cities and the related segregation trends are however also lower. The socio-cultural integration of minorities and of disfavoured groups has progressed in large cities, but is limited by insufficient job opportunities resulting from lower economic growth.