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Tender to the European Spatial Planning Observatory Network (ESPON):

Action 1.1.3

"Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure"

Lead Partner:
The Royal Institute of Technology (KTH)
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BID FOR TENDER NO 2002.ESPON 1.1.3
"Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure"

Lead partner: The Royal Institute of Technology (KTH)
Division of Urban Studies

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OPTIONS FOR SPATIALLY BALANCED DEVELOPMENTS IN THE ENLARGEMENT OF THE EU (ODEN) project bid for ESPON 1.1.3 "Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure"

Introduction

Enlargement of the European Union by the accession of transforming economies and societies will have particular effects on the fibre of the European territory, especially at the internal and external border regions. These effects will require more emphasis on balanced and sustainable spatial development, with special attention to the issues of transitional political and administrative systems, possible geographic polarisation, capricious development of technical infrastructure, environmental stress and a shrinking public sector. Within the framework of the ESPON 2006 Programme, measure 1.1.3, The Royal Institute of Technology (KTH) in Stockholm submits this bid entitled "Options for spatially balanced developments in the enlargement of the EU (ODEN)".

1. Presentation of the transnational team:

The transnational group put together for the bid for tender for ESPON action 1.1.3 "Enlargement of the European Union and the wider European perspective as regards its polycentric spatial structure" consists of one Lead Partner, nine Partners and two Associate Cooperation Partners (from Candidate countries). The Partners will, together with the Lead Partner, will contribute to the Work Packages under the leadership of the of KTH for Work Packages 1,3,4 and 5 and under Nordregio for Work Package 2. The Associate Cooperation Partners will be called upon for input and advice of the work in progress as well as the Interim and Final Reports.

Lead Partner:	**The Royal Institute of Technology (KTH)**, **Division of Urban Studies**, SWEDEN
Partners:	**Nordregio**, SWEDEN
	Institute of Community Studies/CASA, University College London, UK
	Austrian Institute for Regional Studies and Spatial Planning (ÖIR), AUSTRIA
	Spiekermann & Wegener, Urban and Regional Research **(S&W)**, GERMANY
	Karelian Institute, University of Joensuu, FINLAND
	Department of Urban Planning and Regional Planning, National Technical University of Athens (NTUA), GREECE

TNO Inro, Netherlands Organisation of Applied Scientific Research, NETHERLANDS

Center for Urban and Regional Development Studies, Ltd (CEDRU), PORTUGAL

Swedish Institute for Growth Policy Studies (ITPS), Stockholm, SWEDEN

Associate Partners: **The Prague Institute for Global Urban Development,** The Czech Republic

Stanislaw Leszczycki Institute of Geography and Spatial Organization, Polish Academy of Sciences, POLAND

"OPTIONS FOR SPATIALLY BALANCED DEVELOPMENTS IN THE ENLARGEMENT OF THE EU (ODEN)".

Project design for tender bid 1.1.3

1. Introduction

Enlargement of the European Union by the accession of transforming economies and societies will have particular effects on the fibre of the European territory, especially at the internal and external border regions. These effects will require more emphasis on balanced and sustainable spatial development, with special attention to the issues of transitional political and administrative systems, possible geographic polarisation, capricious development of technical infrastructure, environmental stress and a shrinking public sector. Within the framework of the ESPON 2006 Programme, measure 1.1.3, The Royal Institute of Technology (KTH) in Stockholm proposes this bid entitled "**O**ptions for spatially balanced **d**evelopments in the **en**largement of the EU (ODEN)".

The project will be carried out during the period January 2003 to December 2005. Five work packages cover the full scope of the Call for tender for ESPON Programme measure 1.1.3, namely:

Work Package 1: Conceptual Framework
Work Package 2. Data inventory, indicators
Work Package 3 Diagnosis: Spatial tissue, polycentrism and discontinuity in candidate countries and border regions
Work Package 4 Spatial impact of enlargement on the EU and accession countries
Work Package 5. Policy orientations

2. WP 1: Conceptual Framework

Aims and objectives

The aim of WP 1 is to gain an overview and operationalization of the concepts and methodologies used in this transnational project. This will form the common framework of the project and be used to guide all subsequent Work Packages. This will be accomplished as an interactive cooperation with other EPSON projects. Below we sketch out a few of the concepts we intend to explore further:

WP 1 aims at an overview on concepts and methodology to be applied;

Concept of polycentric spatial development

With the European Spatial Development Perspective (ESDP) a core concept for spatial development has been put on the table. The ESDP constitutes a commitment for European policies on three fundamental goals:

- Economic and social cohesion
- Conservation of natural resources and cultural heritage and
- More balanced competitiveness of the European territory[1].

A change of paradigm is launched, in particular, by the goal mentioned last. Whereas the traditional strategy is focused at the weakness of regional structures and disadvantages of development, the new point of view targets the possible development potentials of regions and the making use of it.

At the same time the ESDP through its goals is addressing not only the regional policy as the evident area of policy, but explicitly also other policy areas with territorial impacts (competition, TEN, CAP, environment).

The balanced and sustainable spatial development described by the goals mentioned above should be pursued by the European institutions, the national, regional and local authorities by following the three policy guidelines:
- development of a balanced and polycentric urban system and a new urban-rural relationship.
- securing parity of access to infrastructure and knowledge, and
- sustainable development, prudent management and protection of nature and cultural heritage.

Without a doubt the first guideline mentioned above may be considered the key concept for spatial development. It is closely related with the taking up of the new goal of social and *territorial* cohesion“ (Art. 16 EGV) into the ´Treaty establishing the European Economic Community´ (Amsterdam 1999) that the entire spatial development activities of the Union are given a new commitment. In the ´Second report on economic and social cohesion´ the European Commission makes clear that this will be taken as a reason for the restructuring of regional policy for the period beyond 2006.

Regarding the character of the concept as well as for distinguishing it from earlier concepts for spatial development it should be emphasized that in this dynamic concept cities are not only supply centers, but are also driving forces of development. Cities should be analysed not only as settlement structures, but also as functional networks. With the activation of endogenous regional potentials, models should be applied at multiple levels.

The relation to several levels is a distinct feature (and achievement) already expressed explicitly in the ESDP. Analytically, the concept means that at the European level, several metropolitan regions are considered global integration zones instead of only one. At the transnational level, analyses are focused on the enforcement of a polycentric system of metropolitan regions, city clusters and city networks. At the national level there are systems of cities that include the corresponding rural areas and towns. The concept is also open for application at lower levels, e.g. for the development within city regions (intra-regional)

Nordregio, one of our main partners, has *defined polycentrism* as a concept that refers

[1] ESDP (18)

to differentiated mechanisms and strategies of development according to territorial scale in relation to the definition taken into account above.

Although the concept is not new, it has never been adequately defined. As such it remains confused and ambiguous. To define this concept is one of the major challenges of the ESPON programme. From a methodological and empirical point of view, it allows for a better identification of territorial indicators and tools, both of which are essential elements in the evaluation of current and future trends with regard to the organization of the European space. From an operational point of view, it is the best way to ensure the better determination of spatial planning strategies and development policies targeted at spatial cohesion.

Transition processes

We consider transformation to be synonymous with transition. It should, however, be kept in mind that these two concepts can be substantively different with respect to continuities and discontinuities in the development process. Transformation is in general more connected with abrupt and fundamental processes than transition. Transformation is characterised less by stages in the development process as is transition. The candidate countries from the former Soviet bloc have been often called 'transition countries' since the beginning of the 1990s. The correct term should perhaps instead be 'transformation countries' during the fist part of the decade and then 'transition countries' as a consequence of the smoother development from the middle of 1990s. Here, however, we use the two terms synonymously.

Political transformation

Political transformation includes a number of parallel processes: Marketisation implies abolishing the directive system of central planning, liberalisation of prices and wages, establishing institutions of capital, money and commodity markets, abolishing the system of extensive subsidies, introducing the regulation of competition, anti-monopolistic measures and of consumers' protection.
Privatisation of state assets, compensation of people expropriated in the past, legal regulation of different types of corporations and enterprises, and guaranteeing the rights to property are also parts of the transformation process. Transformation implies opening trade barriers via abolishing discriminative trade barriers, liberalisation of foreign trade, steps towards convertibility of the currency, as well as establishing the legal and economic preconditions of foreign direct and portfolio investment.
Transformation also implies the addition of new functions of central and local government, new regional levels and government structures, and new institutions with:

- Changes in the relationship between ministries and enterprises, streamlining of government,
- changes in procedures of public administration,
- a new system of taxation and budget expenditure control,
- establishing and enforcing new regulations against corruption and fraud, and
- new administrative and financial system of regional and local governments.

Convergence

The neo-classical model of growth postulates the convergence of regional income. This basic kind of convergence to a common income level is referred to as absolute convergence. However only a homogenous group of economies with a similar technological level and a similar institutional environment, such as the OECD countries or the federal states of the US, will fulfil the condition of similar fundamentals to assure a convergence mechanism towards the same steady state income, i.e. absolute convergence.[2]

Dimensions of convergence according to the CEC (2001) second report on economic and social cohesion within the EU are as follows:
- productivity, competitiveness and economic performance
- demography and migration
- investment
- infrastructure endowment
- human resource development
- innovation and RDT[3]

Spatial barriers will be in focus since the stepwise integration of the EU ranging from the Euro-zone to the EU candidate countries, Tacis countries, and the Euromed co-operation will lead to different degrees of integration in terms of the free movement of financial assets, goods and services and the labour force. This in turn will lead to impacts not just along the borders but also inland. The spatial dimension of the creation and abolishment those barriers are interesting for the investigation of the spatial dimension of increasing integration and possible convergence.

Accessibility

In the context of spatial development, the quality of transport infrastructure in terms of capacity, connectivity, and travel speeds determines the quality of locations relative to other locations, i.e. the competitive advantage of locations as such. This is usually measured as accessibility. Investments in transport infrastructure as well as removals of social, economic and political barriers in the enlargement process will lead to changing locational qualities of this type.

There are numerous definitions and concepts of accessibility. Very simple accessibility indicators take only transport infrastructure in an area itself into account as an endowment factor. More complex accessibility indicators take account of the connectivity of transport networks by distinguishing between the network itself and the activities or opportunities that can be reached by it. These indicators always include in their formulation a spatial impedance term that describes the ease of reaching other such destinations of interest. Impedance can be measured in terms of travel time, cost or inconvenience, and may also include social, economic and political barriers.

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[2] Gabriele Tondl (2001), Convergence After Divergence? Regional Growth in Europe, Springer; Vienna, New York, p. 41.

[3] CEC (2001), Second report on Economic and Social Cohesion + CEC (2002), First progress report on economic and social cohesion

In this study, a range of complex accessibility indicators will be used. This will be done by following the definitions of ESPON actions 1.2.1 and 2.1.1 in which accessibility as such and its impact on regional development play prominent roles. A close co-operation with both projects is ensured, because S&W, one of the main partners in this project, is a main partner in both of the other projects mentioned above.

Integration

Stability and security of the European continent can only be achieved through its economic, social, political and spatial integration. So the concept of integration has several meanings. One of them is spatial integration (see for instance Eskelinen and Snickars (1997) and Cornett and Snickars (2002)[4]. Spatial integration means reducing the distance between geographical sites and regions in terms of time costs and psychological distance. It means the establishment of dense transport and telecommunication networks, and the enabling of speedy, frequent and bureaucracy-free movement of people, goods and information. It means to make borders as penetrable and "spiritualised" as possible. It also implies creating transnational co-operation networks between cities, regions and the other actors of spatial development.

Partnerships at all levels and in all spheres are necessary to foster integration: between national administration, between regional and local governments, between economic, political, environmental and cultural institutions, among enterprises, cities and regions. The speed of integration differs from country to country due to different political, economic and geographic factors. By stressing the importance of spatial integration, we do not want to divert attention from economic and political integration in the framework of the European Union being of primary importance for the southeastern European countries. But even in this respect, one should distinguish between integration and accession. Countries that have not applied for accession into the European Union can also take part in several elements of the European integration process. Several European integration initiatives and organisations are not reserved to EU member countries and member candidates. Finally, integration can be seen as the process that leads to cohesion.

Economic and social cohesion

There are unacceptable gaps between regions, territorial categories (e.g. urban /rural) or social groups from the point of view of their level of economic development and social integration. Economic and social cohesion relates primarily to disparities in regional income and quality of life, as well as to differences between social groups' access to employment. It is the main objective of the European policy to address these disparities (see Article 130 A of the Treaty).[5]

[4] Heikki Eskelinen and Folke Snickars, (eds), 1995, Competitive European Peripheries, Berlin: Springer. A. Cornett and Folke Snickars, 2002, Trade and foreign direct investments as measures of spatial integration in the Baltic Sear region, Geograpghica Polonica, Vol. 75, No. 1 (Spring 2002).

[5] Economic and social cohesion: (Source: CEC [1999], Evaluating socio-economic programmes, Glossary of 300 concepts and technical terms, MEANS collection, Volume 6, Luxembourg.)

Also the ”Second report on Economic and Social Cohesion ” CEC (2001) treats these objectives and deals with the developments concerning economic and social coesion and convergence. The ”First progress report on economic and social cohesion” CEC, Commission communication (2002), points out that the cohesion policy should continue to target the least developed regions and opens the debate for the future regional policy.

By the new goal in the Amsterdam treaty (Art. 16) **territorial cohesion,** the entire range of spatial development activities of the Union is given a new commitment. In the second report on economic and social cohesion the European Commission makes it clear that this will be taken as a reason for the restructuring of regional policy for the period after 2006. Unfortunately, the term does not seem to be properly defined so far. However, it may be assumed that the concept of polycentric development is the proper spatial model for pursuing the goal of territorial cohesion.

While economic and social cohesion is usually measured by criteria/indicators for certain territories like GDP per capita, employment, income, male/female employment, population change, and educational level for assessing territorial cohesion, there might be other criteria/indicators relevant such as specific relations/exchanges between territorial units, e.g. migration, commercial links, cultural relationships, institutional relations, and accessibility.

The methodologies that will be developed from this conceptual framework include polycentric network analysis, typologies for integration zones at various levels (see for instance, Andersson and Andersson 2001)[6], and convergence and integration models, scenario technique, simulation and modeling, including accessibility modeling, methods for applying negotiation theory to scenario analysis and policy assessment and territorial impact analysis.

Output and deliverables from our WP1 to ESPON

	Substance	Date
To 1st Interim Report	First detailed list of terms and description of methodologies	April 2003
To 2nd Interim Report	Expanded list of terms and methodologies, including more specific terms such as gateway cities, hierarchies of accessibility and multi-modal infrastructure networks	September 2003
To Final ESPON Report	Finalised list and definitions of terms and methodologies	December 2005

[6] Åke E. Andersson and David E. Andersson, (eds) 2000, “Gateways to the Global Economy, Northampton, MA; Cheltenham: Edward Elgar.

3. WP 2. Data inventory, indicators (WP leader: Nordregio)

Aims and objectives

WP 2 aims at establishing a consensus on indicators and data needed, after a precise analysis of the availability and comparability of data at Community level, to develop new database, including territorial indicators and the facilities needed for map-making.

For the analysis, the results of the study programme and the results of other ESPON projects in course, in particular under priority 3.1, will be taken into account (see chart Linkages to other ESPON projects below). The task is also to define the appropriate geographical level and technology required for data collection, taking into account the availability of relevant data.

The concrete measurement of the concepts addressed in WP1 above requires the definition of appropriate indicators and the collection the relevant data. The focus will lay on the quantitative analysis of concepts. Therefore the selection of indicators and data, which at the same time are accessible and meaningfully builds the reference for further work.

Apart from data on the basic structure of population, land use and economic activity indicators are emerging such as on:

- division of labour/functions
- co-ordination of amenities
- joint investment in infrastructures and institutional structures of shared function/common interest
- promotion of joint ventures
- joint marketing at the respective higher functional level(s).

The project will cover existing qualitative and quantitative indicators, propose new ones and collect the data within the 15 Member States as well as for the 12 candidate countries, and Norway and Switzerland.

The collection of data for the basic indicators will usually take place on the NUTS III level[7] and will be aggregated and disaggregated within the project to obtain data for the following territorial scales: global economic integration zones, urban development poles and urban functional areas.

The comparability of data is an important aspect that will be considered, given the potentially wide range of data sources that will be used. Where comparability is judged insufficient, adjustments will have to be made. Adjustments or estimates will be clearly indicated and documented, allowing analysts to follow the logic applied in the adjustments.

[7] Where harmonised (Eurostat) data sources do not provide the data for the indicators at the appropriate geographical level, we will examine national and possibly regional data sources to try to complete the data sets. The collection of these data will be done in co-ordination with data collection provided by the contractors of ESPON projects under priority 4 Data Navigator.

Within this WP we will interact with the other EPSON projects, particularly 1.1.1, 1.1.2, 3.1 and Data Navigator.

Output and deliverables from our WP2 to ESPON

	Substance	Date
To 1st Interim Report	Consensus and comprehensive list of indicators, data and map-making facilities needed	April 2003
To 2nd Interim Report	A revised and extended request for further indicators to be collected.	September 2003
To 3rd Interim Report	Processing of new database, indicators, map-making and system to monitor territorial development trends in candidate countries and new neighbouring countries Provisional final results of number of available territorial indicators. European maps showing spatial structure of urban nodes, polycentrism, economic base, transport and knowledge accessibility as well as problems and dynamics in European territories	September 2004
To Final ESPON Report	Presentation of territorial indicators, data and maps. Identification of other concepts, typologies linked to database and mapping needed Presentation of results on database and mapping facilities developed	December 2005

4. WP 3 Diagnosis: Spatial tissue, polycentrism and discontinuity in candidate countries and border regions

Aims and Objectives

This work package will examine spatial structure and transformation in the enlargement process. Therefore a deeper look at spatial tissue, polycentrism and discontinuity in the candidate countries and border regions is necessary. Besides the careful description and mapping of the general spatial tissue, our analysis will focus on spatial discontinuities and barriers, interaction and co-operation and the polycentrism concept as one main strategy and key concept for territorial cohesion. The analysis of spatial discontinuities and barriers at the European scale

(social/cultural barriers, cross-border commuting, economic indicators, wealth/unemployment) and co-operations in border areas have to be based on the results of the SPESP working group for spatial integration. The main focus of this diagnosis is to consider the application of these results to the enlargement area and neighbouring countries. We will also consider the emergence of global integration zones.

The basic method will be derived from current advances in network theory. The method of research will also encompass analyses of relevant programme evaluations and studies with European focuses using statistical evaluation analyses in order to quantify relationships and map the results. The following three dimensions are crucial for handling this subject: *The process of spatial interaction, the characteristics and territorial variation in the spatial tissue, and evaluation of spatial co-operation and integration.*

In summary, the three sub-projects within this WP contribute to a diagnosis of the spatial tissue and structure in candidate countries in relation to polycentrism and territorial balance and the policy orientations for cities, accessibility and natural and cultural heritage adopted in the ESDP. In particular the socio-economic functionality of different cities, regions and larger territories (including a compilation of relevant national studies with European focus) will be analysed. The emergence of integration zones at the transnational and global levels will be further analysed.

Methodology

Each of the three sub-projects will be approached by quantitative methods utilizing data and indicators collected in WP 2 and in other ESPON programme measures:

Patterns of spatial interaction

The first step in this study is to *describe, analyse and map current patterns* of flows of goods and people in and across border regions in the Eastern parts of the EU. This will be done with existing data. As far as possible (concerning level of available flow data) spatial interactions will be analysed, with possible subjects being direct foreign investments, trade flows, goods transport flows, migration flows, and institutional barriers to trade

The next step is to pursue *accessibility modelling*. The idea is to provide a typology of NUTS-3 regions based on their accessibility to candidate countries before and after enlargement and TEN-T/TINA network development. This would show which regions already have a good location with respect to candidate countries and which regions would benefit in future from the combination of political/economic integration and infrastructure development.

Analysis of the development of the spatial tissue

The first step in this study is to describe and analyse the current network of cities in the candidate countries. This will be done by applying methods developed within *network theory*. We will analyse homogeneity, discontinuities and multiscalar position: wealth differential between neighbouring regions, dynamics of regions

(based on GNP), spatial structures in the light of the concept of polycentric development (application of results of ESPON 1.1.1); barrier effects by natural, economic, cultural and administrative circumstances. In particular the, spatial response within candidate countries to convergence criteria will be analysed.

In the second step we will utilise both global and *local spatial autocorrelation indices* in investigating the networks of spatial patterns of regional development in candidate countries, and in cross border regions of EU/candidate countries.

The global spatial autocorrelation indices measure the overall extent of spatial dependency and clustering, but they do not produce enough information concerning the characteristics of individual locations. In the local autocorrelation analysis, however, each location in the data set is considered separately, and an autocorrelation measure is derived from data concerning its local neighbourhood. This allows the results of the cross scale analysis to be visualised as a map rather than presented as a single statistic or table.

The results may indicate, for example, tendencies towards mosaic-like urban/rural divergence, regionally clustered economic dynamics, or spatially stable cohesion and convergence in candidate countries, and in current cross-border areas of the EU.

The study continues the work of the SPESP study spatial integration and gives new insights to spatial structure of regional dynamics in Europe. The results are presented as maps, comparing neighbouring regions. The results can be used in:

- analyzing the spatial of regional development in cross-border regions
- locating the high and low spatial clusters of economic dynamics,
- visualizing the phenomenon of economic convergence/divergence within the local neighborhood concerned, and
- evaluating the role of different types of cities and regions as growth poles in regional development in candidate countries.

Data sources and project implementation

The dataset to be used in this analysis is intended to cover the period 1990-2000. The final list of indicators - as well as the spatial scale to be used and the regions/countries included - is decided on the basis of the results from the data inventory module, WP2. The spatial statistics software used in the analysis is ArcGIS 8.1.[8]

Spatial cooperation and integration leading to convergence/divergence

Finally, WP 3 includes a comparative analysis of integration processes between transnational and cross-border regions. The analysis includes cross border regions becoming inside an enlarged EU, as well as ongoing and potential cooperation between EU regions and future neighbouring regions, in order to follow the process of European integration at meso and micro levels. The question is which approaches are to be followed towards a better transnational and cross-border integration, taking into

consideration as well sea borders between two countries. We will identify the general discontinuities and barriers at European scale using fundamental indicators such as differences in wealth or unemployment, barriers to residential migration or cross-border commuting.

This will be accomplished using specific methods depending on the processes that will be described and analysed. When the focus is on dispersion in income and wealth between regions or nations 'σ-convergence' is perhaps the most useful method and is often based on cross-section data between two different time periods. β-convergence is often used when time-series are used and indicates how fast or slow different regions are changing. In analyses of regions or nations at quite different levels β-convergence is perhaps the most useful method and indicator. Here, both methods will be used to get a hint of the transition and convergence/divergence process with regard to regions within the EU, and with regard to the EU and the candidate countries (for a more exhaustive discussion with relevance for the EU, see e.g. Button and Pentecost, 1999)[9].

By using indicators of convergence and divergence it is possible to assess continuities and discontinuities in transition processes. According to neo-classical economic theory convergence is an indication of integration and better resource allocation. According to centre-periphery models divergence between regions may be an indicator of increased integration – the 'backwash effect' is larger than the 'spread effect' (see e.g. Myrdal, 1957)[10].

By analysing cross-border mobility of different types it is possible to find indicators of both integration and barriers. Increased mobility – e.g. labour force or residential migration – are in regular a sign of increased integration especially if it is not a one-way process. Increased symmetric migration patterns in combination with convergence in income and wealth provide indications on a well-functioning integration process without abrupt discontinuities. Increased one-way migration in combination with divergence in incomes is instead a sign of an integrative process that are likely to result in spatial polarisation.

Decreased one-way migration in combination with convergence in incomes may be an indication of increased cross-border barriers but it can also be an effect of the integrative process. Asymmetric migration patterns are often a consequence of differences in incomes and job opportunities. Convergence in income and wealth hampers the push and pull factors and in turn, one-way migration.

By using these typologies it is possible to analyse the integrative process and hampering barriers with regard to transnational and cross-border regions in a simple and illustrative way.

WP 3 includes a comparative analysis of integration processes between transnational and cross-border regions. The analysis includes cross border regions becoming insiders in an enlarged EU as well as ongoing and potential cooperation between EU

[9] K. Button and E. Pentecost, 1999, Regional Economic Performance within the European Union, Edward Elgar Publishing. Cheltenham, UK and Northampton, MA.

[10] G. Myrdal, 1957, Economic Theory and Underdeveloped Regions, Macmillan: London.

regions and future neighbouring regions. This is a method to follow the process of European integration at meso and micro levels. Also examined are national co-financing schemes of Interreg IIA / IIIA / IIC / III B / Phare Initiatives; evaluation of the programmes on EU level, twinning activities and participation of cities in networks.

Output and deliverables from our WP3 to ESPON

	Substance	Date
To 1st Interim Report	First results and diagnosis of spatial interaction tissue and cooperation in candidate countries.	April 2003
To 2nd Interim Report	Analysis of situation at the Eastern periphery: urban nodes, polycentrism, barriers and discontinuities in the enlarged parts of the EU. Analysis of cooperation and networking between cities.	September 2003
To 3rd Interim Report	Provisional diagnosis of spatial tissue and structure in candidate countries, convergence/divergence.	September 2004
To Final ESPON Report	Further knowledge of spatial tissue and structure in candidate countries – socioeconomic functionality of cities, regions and territories, further identification of spatial discontinuities and barriers.	December 2005

5. WP 4. Spatial impact of enlargement on the EU and accession countries

Aims and objectives

WP4 aims at an analysis of the regional and spatial effects of enlargement on GDP, sectoral structure, trade, investment, unemployment and population density and migration flows on the regions in the candidate countries and in EU regions, in particular, least favoured regions and border regions. We will identify particular effects of the stepwise integration of the candidate countries on territorial development.

This encompasses an analysis of the situation of cities and regions (in particular, rural regions located at the Eastern periphery of an enlarged EU and old industrial regions)

in the candidate countries (as the ESDP states) as result of an integrated approach considering policies for the development of gateway cities, multi-modal infrastructure for the European corridors, equal access to telecommunication facilities and intercontinental accessibility, and natural and cultural assets, which could strengthen the role of regions and their cities, in particular at the external borders of the EU (linkages with measures 1.1.1 and 1.1.2. will be considered).

The aim is to assess the impact of enlargement for the spatial integration the present 15 EU Member States as well as the overall structure of the enlarged EU. We will pay special attention to the situation of the old industrial regions and rural regions. These tend to have relatively poor infrastructure, little investment and unfavourable economic structure characterised by a predominance of agriculture and low educational attainment of the labour force. Structural reforms in agriculture are likely to lead to large-scale job losses in future years.

Close co-ordination will be enacted with action 1.1.1. The main added value of this study with respect to action 1.1.1 should rely on a precise identification and description of existing and potential urban poles likely to play a major role as catalysts for development in the candidate countries (development poles) as well as on a focus on the whole European territory (including neighboring countries).

The development and organisation of energy and transport networks are particularly significant in this context[11]. Special attention will have to be paid to the composition of the total infrastructure available within a given urban-rural region and to the identification of major quantitative and qualitative bottlenecks. The conceptualisation of the specific barriers of transformation and the current integration process for a polycentric development should be address with a view on the future relation with the future neighbours of the EU.

As an example referring to the concepts of global integration zones under action 1.1.1 this would mean addressing the question of the positioning of the current EU economic core area (the global integration zone) in a more eastward spatial economic development in Europe and the development of a more polycentric EU with more integration zones.

From this broad question, several other questions will be approached. In related to an EU wide specialisation of functions, what will be the predominant spatial-economic dynamics in the EU in the long term and what are the strong and weak points of the various developing (global) integration zones? What should be their focus in view of a sustainable, balanced and efficient spatial allocation of resources? What are the options for and effects of strengthening the physical and geographic interrelationships between the various integration zones (in particular Trans-European Networks)?

Both sets of questions will be analysed within two scenario studies at the EU level from the perspective of the current EU economic core area.

Methodology

Enlargement scenario study 1.Spatial economic dynamics in the EU in the long term

General objectives

The effective design, evaluation and implementation of any territorial policy or policy with territorial effects rely on their correct targeting. This involves both definition of goals and the sensible identification of target urban areas and territories. A good and spatially exhaustive knowledge of regional variations in rural and urban types, patterns of spatial differentiation and requirements of the different urban regions is therefore needed before any evaluation and implementation of territorial policies. Moreover, the specific processes of diffusion of changes in territories have to be anticipated when significant redistribution of trends in relative shares of local development is wanted. Settlement systems react in their own way to social, economic, technological and cultural changes. They often tend to keep the same general structure (defined as relative inequalities in size and specialisations of their different parts) because each part of the system is quickly adopting most of ongoing changes. This well-known spatial diffusion process is very often biased by the urban hierarchy and gives a recurrent advantage to the largest metropolitan areas, if no counteracting measures are taken.
The ESDP has clearly set its main policy aims in the realization of:

- a polycentric spatial development and a new urban-rural relationship,
- parity of access to infrastructure and knowledge,
- wise management of the natural and cultural heritage

All these objectives represent different challenges for candidate countries and for EU countries

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While it is the goal of WP1 to identify and operationalise the concept of polycentric spatial structure and development, at the moment the concept is still in a preliminary phase, where many conceptual interpretations co-exist. It often takes on different configurations depending on the scale (regional, national, European) at which it is studied and on the functional relationships established within and among urban centres, urban areas and territories. This means that one reading of the polycentric model, based solely on the need to enhance the value of urban poles and networks could have the effect of breaking the linkages between these poles and their surrounding territories, which would lead to undesirable situations of territorial exclusion. Such a territorial development scenario would be one marked by small patches of integration and enormous spaces of excluded territory.
This is particularly true for candidate countries characterised by relatively narrow economic bases dominated by a single economic sector, often at risk of decline such as heavy industries and agriculture and by spatial and social structures where urban areas, life-styles and employment patterns are clearly differentiated and segregated from rural ones.
Examples of spatial issues in the candidate countries, which could be significantly affected by the implementation of the ESDP and other EU policies are[12]:

- growing disparities between poles of transition and other areas;

[12] Vsion Planet, 1st Seminar of the Project Panel, Ljubljana, 20-21.4.1998.

- lacking infrastructure or bad condition (road, rail, telecommunication etc.) on the supranational, national and regional level;
- spatially concentrated structural change (heavy industries, agriculture);
- West-East slope of development;
- urban sprawl due to development push in certain areas;
- growing competition between regions/areas;
- social segregation in cities and rural areas.

Proposed Methodology

The European Commission, through its Regional Policy Directorate-General, has carried out exhaustive studies on the spatial impacts of Community policies[13] and on the spatial effects of the enlargement of the Union[14]. These studies have set the knowledge framework upon which the development of scenarios should be based. The proposed approach however will try to overcome two of the major weaknesses of these studies: the use of data at the national scale and the reference to sectoral policies as the base for the identification of the spatial effects of enlargement.

The proposed methodology recognise the need for an integrated approach for the assessment of the impacts of the interdependencies between territorial units, sectoral policy, power of all governmental levels and economic forces on the evolution of the social and economic spatial structure of European territories.

At the same time it underlines the need to accompany the analysis based on administrative units (such as the NUTS) with the definition of new geographic units of investigation, which can better represent the spatial and economic concepts, particularly significant for the purposes of the ESDP, of global integration zones, metropolitan regions, gateway cities. While administrative areas remain essential as target units of both data production and policy implementation, spatial, economic and migration relationships take place among real geographic entities, which often overcome boundaries.

The definition of *ad hoc* units of analysis is critical where:

- EU-wide data for a given administrative level is not available, such as urban level data at NUTS5, to support new policy concerns such as urban policy, although the data might exist locally;
- new policies span geographically across different administrative units and require new data collection efforts;
- the unit of analysis requires new data and methods for its characterization, such as the increasing use of landscape as a geographical entity.

For this purpose the envisaged methodology will exploit, among others, the concept of "Functional Urban Regions" derived from the work of Hall and Hay[15], Cheshire and Hay[16] and Pumain[17].

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[13] EC, DG Regional Policy, 2001, Spatial impacts of Community policies and costs of non-co-ordination, http://europa.eu.int/comm/regional_policy/sources/docgener/studies/study_en.htm.

[14] EC, 2000, DG Regional Policy, Spatial perspectives for the enlargement of the European Union, Luxembourg.

[15] Hall, P. and Hay, D.G. (1980) Growth centres in the European urban system, London, Heinemann Educational Books.

[16] Cheshire, P.C. and Hay, D.G. (1989) Urban problems in Western Europe: an economic analysis, London, Unwin Hyman

[17] Pumain, D. (1999) Summary report on 2.2 Typology of cities and urban-rural relationships, Study Programme on European Spatial Planning

The methodology will support the need to preserve multidimensional representations of each scenario based on policy-relevant sets of indicators.
The centrepiece of this project is the development of a GIS-based integrated modelling and decision support system, which enables the development and simulation of trend scenario based on "what-if" hypothesis' testing, and the explorations of the consequences on the emerging economic and spatial structures, of changing critical indicators such as transportation, zoning patterns and various related locational decisions involving growth pole strategy. Figure 1 outlines the stages of the scenarios' development and links with other Work Packages.

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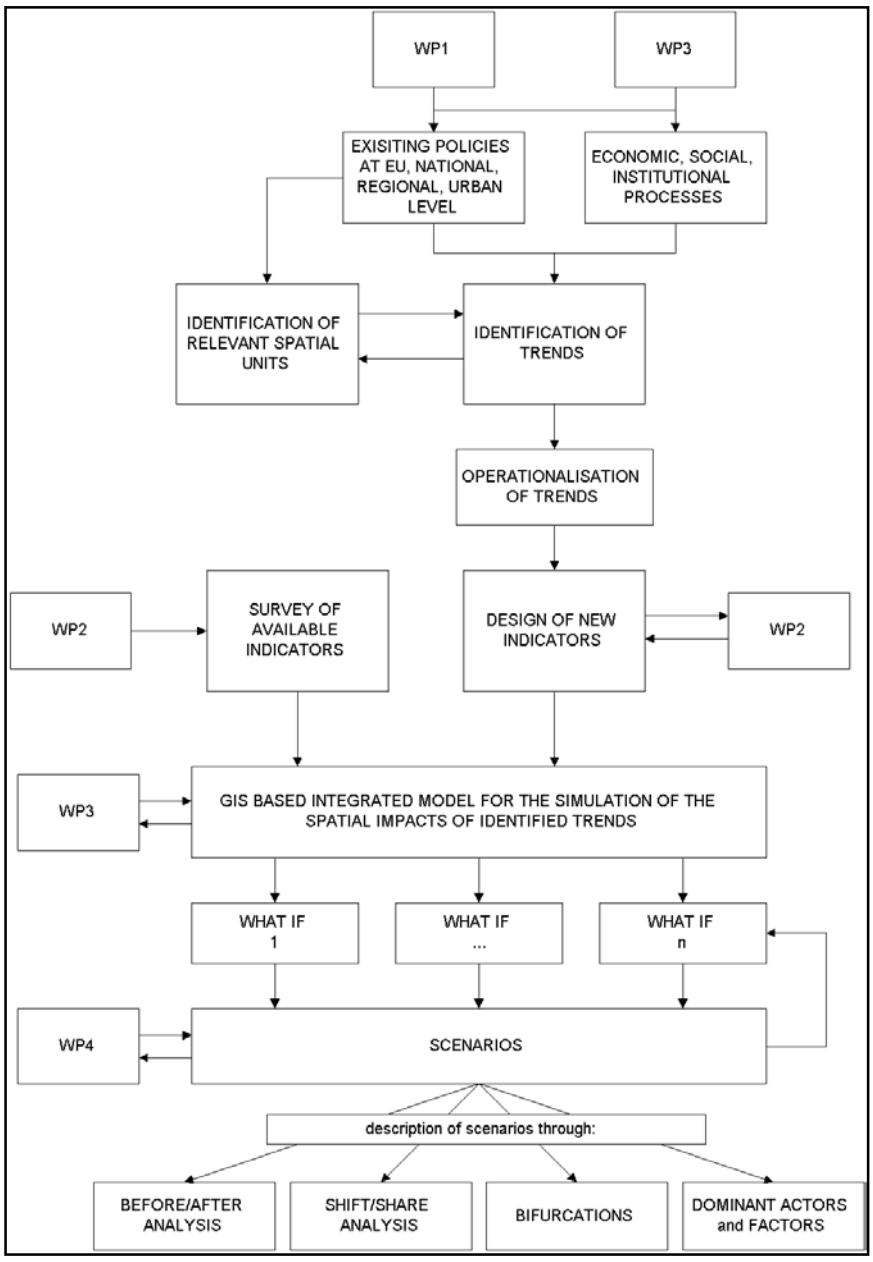

Fig.1Outline of the scenario methodology

"What if" hypotheses include:

- different extent of EU enlargement;
- different levels and target areas of implementation of EU policies;
- different levels of integration among sectoral policies;
- different levels of barriers' removal.

Identification of trends

This stage of the project aims primarily to identify major global trends occurring at the European level and trends, which are important in Europe but not necessarily apparent at the global level. Trends can be separated into those where the general direction over the scenario period can be assumed not to vary significantly (strong trends) and into those which could take a number of possible directions (weak trends). Trends are not to be meant as exhaustive, but represent a starting point from which to explore enlargement scenarios.

Strong trends are developments which:

- are likely to continue in the same direction during the next scenario period;
- have profound impact on society;
- are evident at the global, European and national level (EU and candidate countries);
- are prominent flows for Europe but not globally observed;

Weak trends are developments which:

- are expected to play an emerging role over the scenario but the direction is unclear at present;
- potentially have profound impact on society;
- are global trends affecting European and candidate countries at the regional and urban level.

TRENDS IMPACTING ON:		
ECONOMIC PATTERNS	SOCIAL STRUCTURE	ECOLOGICAL CAPITAL
Liberalisation • Deregulation and privatisation in the EU energy sector; • Fall in global and European tariff rates • Growth in global and European FDI Globalisation • Increase in world trade; • Expansion of communication networks • Culture and international travel Technology • Increased spending on R&D • Decline in production costs	Social development • Demographic transitions; • Human Development Indices; • Expenditure in education; • Evidence of life-styles changes • Employment patterns; • Population patterns	Environment • CO2 emissions; • Consumption Pressure Index; • Urban air pollution; Natural Resources • Growth in energy consumption; • Decline in forest covers; • Water and land consumption

Table.1: Preliminary list of trends that will be investigated.

Trends will be operationalised quantitatively through indicators and through a qualitative description in which driving force of this study.

Enlargement scenario study 2. Impact assessment of TEN-T and TINA developments

One of the main obstacles for the integration of the candidate countries into the European Union is the poor quality of transport infrastructure in those countries as well as the links between those countries and EU15. At the same time, this problem is already approached by the European Union's transport policy. However, the territorial impacts of the proposed transport network developments are not clear at all. The outcome might be a higher level of cohesion, but also increased spatial disparities might be the case. Therefore, a second scenario study will assess the impacts of large-scale European infrastructure investments in form of TEN-T and TINA networks on the European regions.

The methodology proposed here to measure the territorial effects of transport policies is to use a quasi-production function model with accessibility. This type of model is based on an extension of the production-function approach in which the classical production factors are complemented by one or more variables representing the locational advantage, or accessibility of a region. The SASI model developed in the 4th RTD Framework EUNET/SASI project, updated and extended in the 5th RTD Framework IASON project and to be used in ESPON action 2.1.1 is such a kind of model and will be used for this scenario study.

The SASI model is a recursive simulation model of socio-economic development of regions in Europe subject to exogenous assumptions about the economic and demographic development of the European Union and the candidate countries as a whole and transport infrastructure investments and transport system improvements, in particular of the trans-European transport networks. For each region the model forecasts the development of accessibility, GDP per capita and unemployment. In addition cohesion indicators expressing the impact of transport infrastructure investments and transport system improvements on the convergence (or divergence) of socio-economic development in the regions of the European Union are calculated.

The main concept of the SASI model is to explain locational structures and locational change in Europe in combined time-series/cross-section regressions, with accessibility indicators being a subset of a range of explanatory variables. Accessibility is measured by spatially disaggregate accessibility indicators which take into account that accessibility within a region is not homogenous but rapidly decreases with increasing distance from the nodes of the networks. The focus of the regression approach is on long-term spatial distributional effects of transport policies. Factors of production including labour, capital and knowledge are considered as mobile in the long run, and the model incorporates determinants of the redistribution of factor stocks and population. The model is therefore suitable to check whether long-run tendencies in spatial development coincide with development objectives discussed above. Its application is restricted, however, in other respects: The model generates distributive, not generative effects of transport cost reductions, and it does not

produce regional welfare assessments fitting into the framework of cost-benefit analysis.

The SASI model differs from other approaches to model the impacts of transport on regional development by modelling not only production (the demand side of regional labour markets) but also population (the supply side of regional labour markets), which makes it possible to model regional unemployment. A second distinct feature is its dynamic network database based on a 'strategic' subset of highly detailed pan-European road, rail and air networks including major historical network changes as far back as 1981 and forecasting expected network changes according to the most recent EU documents on the future evolution of the trans-European transport networks.

The SASI model has seven submodels.

- European developments.
- Regional accessibility.
- Regional GDP.
- Regional employment.
- Regional population.
- Regional labour force.
- Socio-economic indicators.

The *spatial* dimension of the model is established by the subdivision of the European Union and the 12 candidate countries in eastern Europe and Liechtenstein, Norway and Switzerland into 1,291 regions (NUTS-3 regions) and by connecting these regions by road, rail, waterway and air networks.

The *temporal* dimension of the model is established by dividing time into periods of one year duration. By modelling relatively short time periods both short- and long-term lagged impacts can be taken into account. In each simulation year the seven submodels of the SASI model are processed in a recursive way, i.e. sequentially one after another. This implies that within one simulation period no equilibrium between model variables is established. In other words, all endogenous effects in the model are lagged by one or more years. The SASI model commences in the year 1981 in order to cover twenty years of the past for validation reasons and makes then forecasts up to the year 2021.

The outcome of SASI model runs are forecasts of regional accessibility, GDP/capita and unemployment pattern in Europe and their translation into cohesion indicators (e.g. coefficient of variation, Lorenz curves and GINI-coefficients).

The SASI model will be used in the second enlargement scenario study to model a limited set of different scenarios with respect to the speed and extent of the enlargement process and with respect to different assumptions on the extent and scheduling of transport infrastructure implementation. The outcome of the model runs will be assessed and compared with respect to territorial patterns of the output indicators and with respect to spatial disparities and cohesion.

Territorial impact analysis

The territorial impact analysis will be taken from the resultant scenarios. As a final step in this WP, we will assess the effects of enlargement on regional development and translation of trade, foreign direct investment and migration flows on macro-economic variables. The aim is to, as far as possible, evaluate the effects seen from territorial and regional dimensions and consider variables such as demographic indicators, including population density, evolution of the population, new urban poles at different scales; regional economic strength, as seen in GDP per inhabitant in Purchasing Power Parity (PPP), evolution of GDP per inhabitant, creation of enterprises, GDP per person employed, inflation, and changes in the economic sectors; and labour market indicators such as different rates of unemployment (long term, young, women), evolution of unemployment rate, poverty rate, and wage levels. Finally, effects will also be evaluated with regard to environmental problems such as CO2 emissions, noise pollution, and congestion.

Output and deliverables from our WP4 to ESPON

	Substance	Date
To 1st Interim Report	First qualitative hypotheses of regional and spatial effects of enlargement on GDP, sectoral structure, trade, investment, unemployment and population density and migration flows on the regions in the candidate countries and in EU regions.	April 2003
To 3rd Interim Report	First analysis of regional and spatial effects of enlargement with regard to indicators listed above for first interim report. Identification of discontinuities and barriers using these indicators. Analysis of cities and regions in the candidate countries.	September 2004
To Final ESPON Report	Final assessment of impact of enlargement of spatial integration for EU 15 and enlarged EU, comparative analysis of integration processes between transnational and cross-border regions.	December 2005

6. WP 5. Policy orientations

Aims and objectives

WP5 aims at policy recommendations for the integration of candidate countries. The main questions to be addressed are: Where are the opportunities and threats for achieving spatially balanced developments on the background of enlargement? Where are the access points for a better spatial integration of candidate countries and future neighbours? How will a stepwise enlargement influence the spatial structure and what policy recommendations should be the result?

Our *recommendations for an improved policy* for a balanced and sustainable spatial development that should be pursued by European institutions, the national, regional and local authorities will follow three policy guidelines. The first guideline is the development of a balanced and polycentric urban system and a new urban-rural relationship. The second policy guideline is oriented towards securing parity of access to infrastructure and knowledge, and the third focuses on sustainable development, prudent management and protection of nature and cultural heritage.

The first guideline mentioned above may be considered the key concept for spatial development. It is in close relationship with the implementation of the goal of social and *territorial* cohesion (Art. 16 EGV) into the treaty establishing the European Economic Community (Amsterdam 1999) and implies that the range of spatial development activities of the Union are given a new commitment. In the second report on economic and social cohesion the European Commission makes clear that this will be taken as a reason for the restructuring of regional policy for the period beyond 2006.

Thus, recommendations will build upon our findings from Work Package 4 concerning the territorial impact of enlargement processes and will point to the necessary reforms of structural and sectoral policy, and provide an outline of an integrated polycentric urban model. The policy recommendations will also reflect the need for a territorial diversification of policy aims.

In addition to traditional methodologies for policy impact analysis we will also take an innovative approach by *addressing the discontinuities and barriers that stakeholders experience (*EU-15, Candidate countries and new neighboring countries) in the enlargement process with regard to polycentric spatial structure. This approach will focus on the process of negotiation and stakeholder participation and be based on the typologies and enlargement scenarios developed in the course of performing the tasks for 1.1.3. We will thus develop an Enlargement Simulation for Polycentric Spatial Structure that will be administered to students of Spatial Planning at The Royal Institute of Technology and at academic institutes in each of our partner countries. KTH, with input for all partners will develop the simulation so as to capture the crucial aspects of the spatial impact of enlargement and transformation in number indicators including trade, migration, GDP, labour markets, and environment, and to see how this effects polycentric development. The results of iterated simulations will then be correlated and analysed with the aim of complementing policy impact analyses from the actor-related perspective of European and neighbouring stakeholders. The results will also be used to construct new scenarios

Output and deliverables from our WP5 to ESPON

	Substance	Date
To 1st Interim Report	First indication of policy recommendations.	April 2003
To 2nd Interim Report	Proposals for increasing co-operation and networking between cities in trans-border networks and on transnational scale contributing to a polycentric spatial development of the whole European territory and a new urban-rural relationship. Additional and expanded policy recommendations.	September 2003
To 3rd Interim Report	Provisional policy conclusions and results.	
To Final ESPON Report	Final Policy recommendations Elaborated policy recommendations for the integration of candidate countries in a polycentric and balanced spatial tissue and structure.	

7. Time line and phases of the ESPON 1.1.3 project

The first phase of the project, taking place in 2002-2003, will analyse enlargement effects on EU territorial developments with emphasis on spatial tissue and structure in candidate countries with regard to polycentrism and balance and natural and cultural heritage. This phase will explore the spatial discontinuities and barriers as well as the potential for development of future external and internal EU borders. The goal will be to pinpoint the territorial effects of transformation processes to spatially integrate the candidate countries in a polycentric Europe. We will give some ideas as to policy recommendations and take into account the linkages with other ESPON projects, especially territorial indicators and mapping. We will also determine the data that should be collected in the candidate countries to be used in the second phase.

The second phase of the project, taking place in 2004-2006, will expand on the first phase and extend into studying the enlarged EU for potential transnational and interregional cooperation. During this phase the focus will be on more in-depth study of the spatial tissue of candidate countries n terms of socio-economic functionality of cities regions and territories. We will continue to identify, gather and propose new territorial indicators, data and map-making methods to show the current situation, trends and impacts of development with special cooperation with ESPON projects 1.1.1, 1.1.2 and 3.1. We will expand our efforts to identify spatial discontinuities and barriers, social and cultural hindrances to residential migration or transboundary

Detailed timeline