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The STeM Approach for a sustainable territorial development of the Lisbon Strategy

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"*The European Councils held in Lisbon (2000) and in Göteborg (2001) gave the Union a new direction by establishing a long term strategy with sustainable development as the overarching objective. Sustainable development means, in this context, goals for economic, social and environmental policy, which are both mutually consistent and capable of delivering enhanced economic growth. (…) The strategy for sustainable development is a long term one and, although the deadline originally set for the Lisbon agenda was 2010, it is clear that sustainable development has a much longer time horizon and also that there is a global dimension to sustainable development, not just an EU one.*" (ESDP Report, From Here to Sustainability – Is the Lisbon/Göteborg agenda delivering?, 2004: p. 2).

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1. Introduction, litterature references, main scopes of the research

The cross-thematic ESPON 3.3 project (2004-2006), named *Territorial dimension of the Lisbon/Gothenburg Strategy*, was inspired to apply the update *Lisbon* (competitiveness)/*Gothenburg* (sustainability) *Strategy* goals at territorial dimension, for developing them by new Structural Funds 2007-2013.

It conduced an ex ante analysis of the impacts of these strategies in order to develop the EU national and regional competitiveness in a sustainable way; to introduce territorial cohesion to the Lisbon/Gothenburg Strategy into enlarged EU.

The **main project question** was ***how***:

- to link Lisbon and Gothenburg Strategies;
- to read them through national (macro), regional (meso) and sub-regional (micro) *territorial dimension*;
- to measure the territorial capability to apply the Lisbon/Gothenburg Strategy at national, regional, sub-regional levels by appropriate indicators;
- to present general and specific policy recommendations with regard to Lisbon/Gothenburg accomplishment sectors, looking at co-operative trans-national areas;
- to realise a simply-user operational procedure to handle the project results.

For this:

- a lot of arguments and/or paradigmatic hypotheses about the more important economic and territorial international scientific theories of the 90's and EU political reports, declarations and directives. They were critically revisited: i) to arrive at defining the implicit question of the Lisbon/Gothenburg Strategy: *How to be competitive in sustainability*; ii) to define and review the concepts of sustainability and competitiveness in the European territorial dimension by the needed criteria (indicators). The 3.3 project scope was mainly oriented from a critical discussion in front of some scientific and institutional inputs, as e.g. the Kok Final Report (2004); the European Parliament's Committee reports (from 2003 to 2005); the *Mr. Almunia* communication (2005) to the Commission with regard to *Sustainable Development Indicators*. They demonstrate why the initial Lisbon proposal based on the 14 synthetic indicators list (2003-2004) should not be suitable;
- several traditional and additional indicators were identified and measured to achieve the final indicators useful to monitor the "spatial" and "territorial" Lisbon/Gothenburg Strategy. The project recommends to take into account at political level this final list (thereafter A-case) to have got a common European regional measure of the territorial capability of applying Lisbon/Gothenburg Strategy;
- a 'process' (SteM Approach, which produces Territorial Impact Assessment – TIA as well) that can be used to assess the current and future national, regional, sub-regional capability to be competitive in sustainability.

The final project proposal studied *four* great "determinants" or **composite indicators**[2]. They were arisen from simple indicators (metadata) included into both

[2] Of course, they are from literature review and into this they were tested, too. At the end, this review has motivated the project *to revisit* the most important competitiveness contribution in the 90's: **the Porter's Diamond** and the **integration** with updated Lisbon/Gothenburg Agenda (2005) on the base of *Proposals* of the European Commission COM(2004) 495 (ERDF); COM(2004) 494 (Cohesion Fund).

revisited and renovated Lisbon Agenda, and the implementation of Gothenburg Strategy (Almunia Document, 2005 and the relative Eurostat update 2005-2006). They are:

- **Innovation & Research** (including ICT, R&D, Innovation, Human capital, Age)
- **Global/local interaction** (including CT, R&D, Innovation, SMEs, Human capital, Employment, Transport)
- **Quality** (including SMEs, Human capital, Employment, Climate, Public health, Natural resources, Poverty, Transport, Age)
- **Use of resources and funds** (including ICT, Innovation, Employment, Human capital, Age, Climate, Public health, Natural resources, Poverty);

They were used: i) to interpret the Lisbon/Gothenburg territorial dimension and strategy; ii) to measure Lisbon/Gothenburg Strategy ex ante (before year 2007) and ex post (simulation) by a new methodological approach (STeMA). Into this approach, the four composite indicators assumed the role of basic Lisbon/Gothenburg Strategy key-messages.

Because the project start-up could already count on some commonly shared results, as several lists of indicators (a long list of 42 indicators, a short one of 14 indicators, the Almunia one of 15 indicators, etc.), the well-known short-list of 14 "Spring Report" indicators was studied, too (B case). Anyway, a new indicators appropriate selection (*in the overall 69*, see Table 1) appeared useful in order to suggest some possible integrations and provide a common basic analysis of European regional results obtained from 2000 to 2004 for supporting and explaining political choices for the period from 2007 to 2013[3] (A case).

In this paper, only A case methodological approach is presented. It is related to a new and innovative methodology that studied competitiveness on the base of four composite indicators or determinants. It has offered a concrete and operational answer about *how* the EU countries (25+2+2 at NUTs 0), regions (NUTs 2), sub-regional areas (NUTs 3) can achieve the Lisbon/Gothenburg Strategy and territorial cohesion using their regional potentials; and *as* the regional areas are, which may best benefit from the granting of a co-operative use of the new Structural Funds.

The project met these requirements by territorialisation of spatial (statistical) data and building a proposal of cross-thematic co-operative regions, identifying their potentialities in the light of Lisbon/Gothenburg, through 'bottom-up' research of the regional and sub-regional qualitative and quantitative values. In order to develop a common co-operative territorial milieu through the use of new Structural Funds, the project proposed an integration of the indicators list with regard to the different territorial dimensions (regional typologies and trans-national areas involved in Interreg III B programmes and projects).

So, 3.3 project study was built on two types of results: **the spatial ones** at national and regional level (at NUTs 0 and 2); **the territorialized ones** at regional and sub-regional level (at NUTs 2 and 3). In this case, the project has *proposed-built an original base for this territorialisation* of the spatial data (statistical data) combining the ESPON Programme typologies (Fig. 11).

By using the STeM Approach and EU Territorial Impact Assessment - TIA input 2005 (see Analytical Appendix), 3.3 project has detected:

[3] To better sustain the new "ambitious" project thesis, 3.3 TPG decided to make at the same time two complementary analysis and mapping activities to perform a comparison

i) the national and regional territorial status. It corresponds also at ex ante potential demand for supplying national and regional appropriate operative plans;

ii) the wished effects applying Lisbon/Gothenburg sectorial policies by Structural Funds;

iii) the ex post simulation of national and regional changing.

This approach was useful "to assess the development potential and territorial imbalance in different trans-national/national territories and types of regions in relation to the objective of Lisbon/Gothenburg Strategy".

The 3.3 project named this development potential *capability to be competitive in sustainability*. For this scope, the specific GIS assessment was built, too.

1.1 The revision of scientific literature references

Competitiveness is a typical economic concept. From this point of view it is usually measured as the advantage of firms as compared to their competitors in both the domestic and international markets, focusing interest at the macroeconomic level (Porter, 1990; Markusen, 1992; World Economic Forum, 1995).

Within macroeconomic analysis, authors like Lipschitz and McDonald measured the competitiveness of a system in terms of real exchange rate. Helleiner (1989) and Krugman (1994) criticized the assertion of economy-wide competitiveness, pointing out that a country cannot be competitive in absolute terms but exclusively in average (Lafay, 1987).

Anyway, "*economic-wide competitiveness"* includes this concept as measurable by *cross-countries* performance analysis. Therefore it's important for European conutries competitiveness project to choose common variables able to measure performance in quantitative or qualitative terms[4].

Into economic current vision, the alternative is to use the concept of competitiveness finalized to understand the competitive relations between firms and industries, which competitiveness is influenced from a high level of education, high attitude to competitive market conditions and high level of optimization in the use of natural resources.

The competitive relations established at micro level essentially manifest themselves through actions tending to offer on the market high quality products and services at the lowest prices as possible. In this way, the concept of competitiveness is strictly linked to economic theory; the understanding of the sale abilities is the first objective in at least two fields of the theory: production and exchange (Nickell and Nicolitsas, 1999). From the micro-economic point of view, the study of industrial district has had great importance, and like this typology of territorial aggregation (Marshall, 1922).can help the competitiveness of firms (Prezioso, 1999).

In order to comprise the topic of the competitiveness, the contribution of the "empirical literature" turns out to be fundamental for verifying the positive/negative competitive effects. In fact, an other aspect of the microeconomic analysis of competitiveness is that relative to the dimensional impacts, so it is attempted to establish which relations exist between competitiveness and territorial dimension.

The work of Michael Porter (1982 and 1991) is fundamental because he sets attention on the importance of the territorial dimension in development. The true

[4] A possibility, generally used, is to analyse the growth of GDP, under the hypothesis of a causal relation between competitiveness and economic growth.

origin of the competitive advantage of an enterprise is the local dimension (or milieu) in which the enterprise is placed. The territory next to the enterprise will define many of the markets of input from which the enterprise must be re-supplied, the information that guide strategic choices, and the incentives and the pressures on the enterprises in order to innovate and accumulate "know how" or resources in the time. Competitive advantage can reside both in the territory and in the single enterprise (Porter, 1982).

In his approach Porter places the enterprise and the production, defining two concepts: the chain of the value and the competitive environment. With the competitive environmental notion, Porter recovers in the economic analysis, two fundamental elements: history and geography. Geographically, the competitive environment has the tendency to extend, integrating and differentiating themselves, so that the localization strategy is an integrating part of the competitive action of the enterprises. This assertion leads to a fundamental point of analysis for Porter: if the advantage is achieved and maintained through a localized process (Porter, 1982), the reasons of the success of some competitors must be searched for in the localized contexts (states, regions) where they operate.

In Porter's studies, this greater role for the territory as a competitive element has emerge from a great champion of industries in ten countries which lead in the commercialization. The ability of an enterprise to innovate and to grow depends on four characteristics of the territory (from which the famous "diamond"), geographically are not common:

- Strategic localization
- Local demand
- Integration with regional *cluster.*
- Human Resource

Passing from the competitiveness of the enterprises to national competitiveness Porter transforms the diamond (Fig. 1) where the fundamental elements are:

a. factor conditions (i.e. the nation's position in factors of production, such as skilled labour and infrastructure);

b. demand conditions (i.e. sophisticated customers in home market);

c. related and supporting industries;

d. firm strategy, structure and rivalry (i.e. conditions for organization of companies, and the nature of domestic rivalry).

The 3.3 research has added at this critical review an other preliminary overview about some of the most important relevant policy-related documents, including the *Presidency Conclusions* of the Lisbon (2000) and Gothenburg (2001) European Council Meetings, the annual *European Competitiveness Report*, the most recent report on *Economic and Social Cohesion* (2004) and the *European Sustainable Development Strategy*.

In such context of preminary hypotesis, the study confirmed competitiveness is a fundamental goal of European policy and is central to the aims of spatial development policies in Europe(*European Spatial Development Perspective* - ESDP), namely: economic and social cohesion, conservation and management of natural resources and the cultural heritage, more balanced competitiveness of the European territory.

Competitiveness could be defined and calculated in many ways, because a variety of different definitions existed in the policy/programming literature:

- «*high and rising standards of living of a nation with the lowest possible level of involuntary unemployment, on a sustainable basis*» (CEC, 2003a: p. 6);
- «*a sustained increase in real incomes and in the standards of living of regions or nations, with jobs available for all those who wish to find employment*» (CEC, 2002: p. 4);
- regional competitiveness must be calculated in terms of productivity (regional GDP per hours worked), work-leisure balance (total hours worked per employee), the rate of employment and demographic factors (the ratio of the population of working age).

By scientific and empirical references, and the sustainability basic concept, the 3.3 project suggested the integration of these several definitions in the polycentric vision of ESDP, by the following *key-messages* collectable at the regional scale:

- *a competitive market which uses internal and distinguished development factors, in respect of rules (governance) to grant environmental, social, cultural, economic sustainability;*
- *the availability of key resources useful to business vitality and innovative factors acting in a stable social system;*
- *the ownership of co-operative and subsidiary managerial capabilities, to inspire confidence towards the institutions;*
- *the capability to produce in a stable way the maximum possible added value (economic competitiveness) in the territory, enhancing the resources through local co-operation (social competitiveness) as well;*
- *environmental values distinctive of the territory itself, whose active protection is granted by a renewable use of natural resources and wealth (environmental competitiveness);*
- *a high level of co-operative internal capacities, measurable in the ranking assigned by globalization (political competitiveness).*

In such context of reference, the proposal of structural indicators able to compare objectively European Member States from a territorial competitiveness viewpoint, required a revision of the Porter's Diamond, too, to be updated according to the indications from new economics and social models for a new EU respecting the Lisbon 2000 and Gothenburg 2001 strategies.

So a further star was inserted in Porter's Diamond, crossing the classical elements of Porter study with four additional categories of elements or determinants:

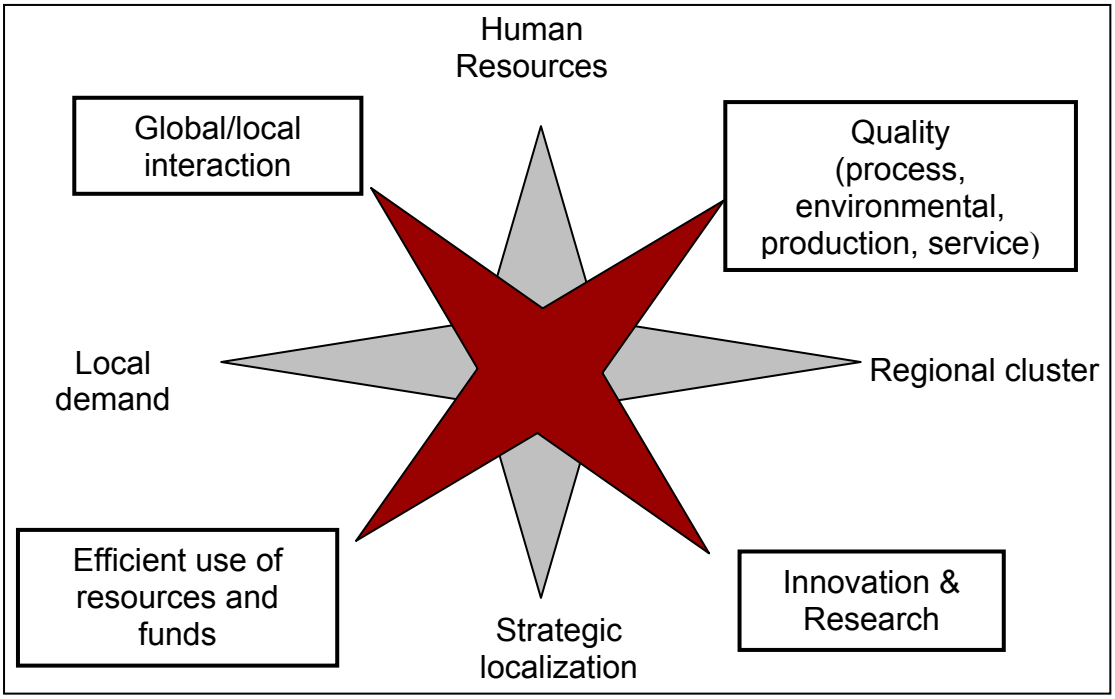
- Global/local interaction
- Quality (process, environmental, production, service ones)
- Innovation and Research
- Efficient use of resources and funds

The new scheme deriving from the concepts above is represented in the following (Fig. 1).

In added, territorial cohesion was mentioned as a significative character of the new competitiveness in the current EU Treaty[5] and documents, such as the *White paper on European Governance*, the communication on integrated coastal zone management, the white paper on transport and the Report of the Van Miert Group on the revision of the ten guidelines, the European Commission's Third Cohesion Report (2004), including a territorial dimension.

This was needed as a consequence of the re-launch of the Lisbon Strategy, because the review of the EU sustainable development strategy, ongoing discussions about the future of the Structural Funds (and the European Constitution), planning and programming concerning the Lisbon and Gothenburg Strategy are currently in a state of flux. It was therefore extremely difficult to assess the congruence of the Lisbon and Gothenburg Strategies or their relation with territorial cohesion.

Figure 1: Modified Porter's Diamond Model (CEIS, 2004-2006)



On the basis of this critical revision, the project proposes to introduce a new language into EU declarations. The proposal was the logo *competitiveness in sustainability* which is to be considered the target of the 2007-2013 European structural policies, both as measure of the regional capability to apply Lisbon/Gothenburg strategy and as a fundamental goal of the European national and regional policies to obtain a cohesive, polycentric and co-operative territorial development.

In order to help this integrated process, the project suggested accepting that competitiveness (Lisbon) could have lots of definitions, and different territorial dimensions. That was precisely opposite to what happens with sustainability (Gothenburg), whose definition is clear to everybody and doesn't have to be justified and discussed in the same way.

In order to assess the territorial dimension of competitiveness in sustainability, and referring as well to the studies on competitiveness of nations (i.e. Porter, Krugman,

[5] Article 16 of the EC Treaty concerns the role of services of general economic interest in promoting 'social and territorial cohesion'.

Kok), the project had to provided an critical and constructive approach of macro-economic evaluation widened to the regional scale.

It suggested assessing territorial competitiveness (Lisbon) linked to sustainability (Gothenburg) also from the externalities and internalities point of views (*economies of external and internal co-operation scale*), thus suggesting the European policy makers push single regions in order to make them do the same to define independent policy declarations in regionally operational documents/programs.

The dimension of these declarations should be evaluated through the parameters selected in the project, which have to be adopted as reference points to start in the 2007-2013 period the enhancement of the different territorial contexts in the perspective of **stable cohesion**[6] (an approach inside the countries or regions), **convergent cohesion** (a comparable approach between the countries and regions), **cohesion towards a continue improvement** of European populations' general life style, to evaluate the positive progress of regional **performance** in terms of occupation, income and productivity. These parameters are represented by the 4 *synthetic and composite indicators* the project built in order to let old strategies (strategic localization, local demand, integration with regional cluster, human resources) and new ones interact, determining the development of the Lisbon/Gothenburg strategy aims: **i) innovation and research, ii) global/local interaction, iii) quality, iv) resources and funds**.

1.2 Main results and relative interpretation

The target of a simultaneous operational application of the territorial dimension of Lisbon/Gothenburg Strategy has been reassessed and integrated with new and more current scientific results produced within the TPG. They may be considered an integrated aspect of the following *other 3.3 key-messages*:

- for Europe to become (then continue to be) competitive and dynamic by building on knowledge and innovation, it needs to know its *territorial potentials* (or *capabilities*) and its *competitive advantages* required for economic development; at the same time, it needs to know the imbalances and disadvantages that issues from existing important European phenomena, such as urban agglomeration, environmental pollution, climate change and social and health risks;
- for the Lisbon/Gothenburg Strategy to be applied, some key functional common services are basic. Today, they are concentrated in urban systems (urban agglomerations, large and metropolitan areas or cities which contrast with polycentrism). In these areas the full use of these services is linked at different European urban levels of physical and virtual regional accessibility (above all into the enlargement countries), as well as the capability of catching foreign direct investment (FDI) to use for improving human and physical capital performance;

[6] In this case the word means the capabilities of strength, co-operation, peaceful and productive coexistence among all the components of productive systems; but also the institutions' eligibility and efficiency in putting into practice *governance* rules, leading the business community to pursue, in individual behaviours, such goals as:
1) the positive and productive introduction into the social and economic environment,
2) the development of "proactive" behaviours towards the inclusion collective choices (up to the "burdening" of individual and social responsibilities),
3) contributing with the (formal or not) institutions to the community government, sharing their "good practices".

- for an enlarged Europe to build its development (not only growth) on knowledge, it is a priority for employment policies to invest in human capital with high educational and innovative levels (with an intensive and appropriate use of ICT and R&D) and "dedicated" services, also in less competitive and dynamic regions. This should allow the improvement of territorial and economic performances, overcoming informative asymmetry.

Concerning the evaluation of the *territorial dimension* of competitiveness in sustainability, and also referring to the studies on the competitiveness of nations (i.e. Porter, Krugman, Kok), *the approach of macro-economic evaluation widened to the regional scale has to be criticised* during the project analysis. At the regional European scale this approach, indeed, cannot count on the same adjustment mechanisms, or on the completely independent fiscal systems that can be found at national level. For instance, such factors as 'knowledge and innovations' express all their criticality at the regional level only, where it is possible to evaluate their differences and changes in time and space.

From this point of view, the project agrees with the *III report on social and economic cohesion* (European Commission, 2004), which asks for a selection of factors able to establish territorial development and not only growth (see the European Parliament's Committee Study on Regional Development, 2005, which evaluates the coherence between structural reforms - financial and social reforms – and the anticipated variations for the Structural Funds and the Lisbon/Gothenburg objectives).

In this project framework, the mentioned proposal of *four determinants* or *composite indicators* - which includes at the base, and for territorial dimension evaluation, a larger number of indicators (from the initial 77, they were reduced to **69**) than the initial 42, including the synthetic list of the 14 Spring Report – answers to EU "subsidiary and cohesive" needs requested from European regions.

Answering at a systemic scientific approach, A proposal traced out different trends towards the Lisbon/Gothenburg enforcement. Particularly:

- the basic indicators allow us to give to the European policy makers **4 synthetic choice criteria (*composite indicators*** about: ***Innovation and Research; Global/Local Interaction; Quality; Resources and Funds*****) at national, regional, sub-regional spatial and territorialised scale for the enforcement of Lisbon/Gothenburg**, enabling to realise the TIA process, too, for the Lisbon/Gothenburg policy choices, as well as a continuous data updating for monitoring the result in the time and space;
- **the selected indicators is presented according to their capability of simultaneously representing the Lisbon/Gothenburg goals**, considering the availability of official statistical sources and their consistency with the geographical reference scale and their date. This appropriate selection of indicators (see Table 1) appeared useful in order to provide a basic analysis of European regional results obtained from 2000 to 2004 for supporting and explaining political choices for the period from 2007 to 2013. The 3.3 List included the 15 synthetic indicator List from Almunia (2005), too.

Table 1: List of basic indicators used in the 3.3 project (A-case), compared with the list of 42, the short list of 14 indicators and the ESPON projects list (underline the new indicators advised by the 3.3 project)

Determinant	3.3 Indicator	42 Spring indicator (2003)	14 Short list indicator	ESPON references

Innovation & Research[7]	Internet users	II.3.1		project 1.2.2
	Firms with internet access	II.3.2		project 1.2.2
	Available e-government services			
	Universities students			project 1.1.2 (w. gaps)
	Innovative dependency index			ESPON DB
	Population with tertiary education			ESPON DB (w. gaps)
	Population in life-long learning	I.5		
	Research Centres			project 2.2.1
	Old and new technologies	III.3.3		project 1.2.2
Global-Local interaction	General environmental concerns	V.7.2; g/f		
	Specific environmental concerns	V.7.2		
	Manufacturing enterprise			
	Products trademarks			
	Energy self-sufficiency index	V.2	Energy intensity of the economy	project 2.1.4
	FDI intensity	III.6.6		
	Trade integration of goods	III.6.4		
	Trade integration of services	III.6.5		
	Degree of Vulnerability in Europe		Volume of freight transport relative to GDP	project 1.3.1
	Typology Multimodal Accessibility Potential	V.3		project 2.1.1
	Fiscal pressure			
	Labour - cost index (2000:100) - NSA	e		
	Long-term interest rate	d	Financial market integration (convergence in bank lending rates)	
	Research Centres			project 2.2.1 project 3.3
	Credit institutions			
	Insurance companies			
	Companies		Employment rate	
	Stock market capitalisation - end of period - Milliards of euro - NSA	III.6.1		
	Population change			ESPON DB
	Tourists inbound			
	Tourists outbound			
	Students inbound			
	Students outbound			
	Researchers inbound			
	Researchers outbound			
	Active people	I.1.1		ESPON DB
Quality[8]	GDPpps per capita	a.1	GDP per capita (PPS)	ESPON DB
	Consumption per capita			
	Level of employment	I.1	Employment rate	ESPON DB
	Consumer price index	III.1.1		
	Hospital beds			
	Hotel beds			
	Cultural opportunities			

[7] Into the calculation of the composite index "Innovation & Research" the indicator *Employment rate of older workers* was substituted by the *Innovative dependency index*. The older workers are however indirectly considered in the indicator *Population in life-long learning*.

[8] The indicator *Labour productivity per person employed* into the composite index "Quality". The indicator *Dispersion of regional employment rates* is not used because cover data is missing.

	Typology Multimodal Accessibility Potential			project 2.1.1
	Old and new technologies	III.3.3		project 1.2.2 project 3.3
	Municipal waste generation	V.5		
	Hazardous waste generation			
	Municipal waste recycling			
	Degree of vulnerability in Europe			project 1.3.1
	Total greenhouse emissions	V.1	Total greenhouse gases emissions	
	Total gross abstraction of freshwater			
	CO^2 emissions	V.7.1; V.7.2		
	Confidence in EU Commission			
	Confidence in EU Council of Ministers			
	Confidence in EU Parliament			
	National public participation			
	European public participation			
	Early school leavers	IV.5.1		
	Inequity of regional income distribution	IV.1		
	Persons aged 0-17 who are living in households where no one works	IV.7	Long-term unemployment rate	
	At-risk-of-poverty rate before social transfers	IV.2.2	At-risk-of-poverty rate	
	Female employment	I.2.1		
	Fertility rate			
	Healthy life years			
Resources and funds	R&D expenditure	II.2.1	R&D expenditure IT expenditure	project 2.1.2
	(firms) National aids	III.5		
	Human capital expenditure (pps per capita)	II.1	Spending on human resources (public expenditure on education)	
	Employment expenditure (pps per capita)			
	Climate and natural resources expenditure pps per capita			
	Efficiency and accessibility			project 2.2.1
	Public Health expenditure pps per capita	III.5		
	Poverty and age expenditure pps per capita	III.5		
	EU funds spending			project 2.2.2
	Economic resources	III.1.1		

The adhesion of the new member States had a relatively low influence on the values of the used indicators, for the adopted statistical method in A case; the great variety that characterises the ten new members in the areas of reference is nevertheless meaningful, variety producing a not foregone global effect.

In new approach, each dataset has then been arranged and linked to the geographical subdivisions; the quantitative variables or metadata are transformed in qualitative ones through weight assignment.

In parallel, a Database/GIS tool for the automatic combination starting from the basic indicators according to the methodology has been developed. It could be used

as tool for easy readout and choice for policy makers. The design and capabilities of the tool is described in a dedicated section[9].

The toolbox uses as a reference data 3.3 project regional statistical indicators, aggregates them according to the network-like conceptual structures to be defined by the user, and provides as a result relatives values of each region from the simple indicators up to the highest more abstract concept.

3.3. GIS project can be used from both **EXPERT-USERS** (researchers, consultants, civil servants....), and **POLICY-USERS** (Fig. 13).

In order to provide a territorial typology useful for data territorialisation, the question was developed into the A-case (ed by CEG, Portugal). The typology of territories was selected as a function of the typologies of regions developed within the ESPON Programme, specifically those from Project 1.1.1. – "The role, specific situation and potentials of urban areas as nodes in a polycentric development" (2002-2004) and Project 1.1.2. – "Urban-rural relations in Europe" (2002-2004).

The classification of territories was developed in 3 steps and 7 classes (see, Fig.11). The aggregation was made in order to highlight the real difference between the "regional/local areas" and the "no special function areas".

In this choice, more depopulated areas are separated from the rural areas where we can find medium-sized cities with regional/local economic bases, remembering that the main arguments of the analysis were:

- to identify the more competitive and dynamic territories based on knowledge and innovation and relate it with urban and regional characteristics;
- to know if urban centres and metropolitan agglomerations play a crucial role in providing the framework conditions for a knowledge-based economic development;
- to understand the polycentric model at different scales, which includes the dynamics of urban growth centres and linking peripheral and disadvantaged areas with urban centres

This type of approach allows one to construct an indicator which includes not only the information on the current situation according to its own specificities, but also to the real dynamics of the actions that enable a given goal to be reached: in this case we turn from the simple territorial competitiveness to the **capability to generate territorial competitiveness in sustainability**.

2. STeMA and the 4 composite indices of the Lisbon/Gothenburg Strategy

In order to study the Lisbon/Gothenburg Strategy, the 3.3 project has developed a dedicated part of the model named STeMA for calculating the territorial capability to be competitive in sustainability.

In order to apply the 'revisited' Lisbon/Gothenburg Strategy at European regional level, this procedure can help European policy makers to take appropriate decisions with regard to the new Structural Funds regional distribution.

[9] The theory behind has been developed by M. Prezioso, into University of Rome "Tor Vergata", also responsible for testing and using it within the ESPON 3.3 project, and the software implementation by the project sub-contractor MCRIT (Barcelona).

The project produced a large number of "maps" and horizontal and vertical comments (see ESPON website) with regard to a precisous methodological approach: STeMA. Each map, beside representing the indicator, the category, the sector, the typology and finally the determinant, expresses compared judgements that unite or separate even adjacent European regions.

To avoid the excessive distributive uniformity of the data deriving from a classification with *equal* interval (quite popular in the European geographic studies), we preferred to use the so called *quantile method*.

In this paper, only an example of *final maps* for each determinant are presented (NUTS 2 territorial final values). *All the maps are included into Part Two or Part Three of Final Report*.

Since 3.3 project has used the systemic quali-quantitative STeM Approach, the legend of each map is characterised by:

- quantitative values grouped into 4 classes according to quartiles of distribution; qualitative places were assigned at each class (A; B;C;D, where A>B; B>C; C>D).

The spatial (statistical) and territorialised data pictured as a great majority of the European Countries show a medium-low profile in terms of *Innovation & Research* (one of the main themes of Lisbon) at national scale and a higher level at regional (Fig. 2) and sub-regional ones. With respect to national policies, medium-high values can be found only in the "Pentagon" area and in Slovenia, while only some regional enclaves in the Scandinavian Peninsula, in Great Britain, Netherlands, Italy achieved the goal fixed by Lisbon. Facing territorialisation, differences result even more strongly and sharply, clearly highlighting the gap dividing Finland, Norway, Sweden (with a low population density) from France, Spain and Greece and the rest of Europe. From this point of view, it is necessary to develop targeted structural actions, concrete and operative, with the direct concourse of regional finance.

To sum up, the *Global/Local interaction* highlights just a few regional cases as positive (capital regions) balanced references to an EU regional benchmarking. The positive references in respect of Global/Local interaction are even more evident looking at the territorialisation of the spatial values of the determinant synthesis (Fig. 3), where the territorial concentrations with a true gift for sustaining virtuous outside relations are few, among which are Lombardia, Emilia Romagna and Lazio in Italy, much more often corresponding with capital-regions: Ile de France in France, Inner London in Great Britain, Centro in Portugal, Madrid in Spain and the Helsinki Region in Finland. A high propensity towards interaction is measured as well in the Pentagon, in the frontier areas and in Central Italy, thus demonstrating: how European citizens are basically more interested in keeping and strengthening local relations, also through specific investment actions (considered as "marginal" in respect to the Lisbon/Gothenburg objectives) independently from the trans-national relational potential of the resources; how this depends, for enterprises too, upon an attitude to privileging endogenous cohesion (even through a strict relationship with the local government), more than upon an evaluation of the perspectives offered by the European market of trans-national investments.

In the perspective of a sustainable European policy, national and regional *Quality* must be considered an overriding and combined measure of phenomena, ranging from climatic change to deterioration and poverty (health, safety, quality of life), to the not self-sustainable economic and social systems in the great urban areas (irrational use of resources, waste of energy, waste management, noise pollution and air pollution due to traffic congestion). So that the EU gives a uniformed and balanced answer to the big issues involving the relations between infrastructure, environment, citizens' health and safety (exposure to electromagnetic fields, to noise pollution, to new integrated technologies of mobile telephony and to electric energy availability). The new general policies will have to be the result of sectorial actions and policies directly connected to the territorial dimension of the

development (Fig. 4). The project registered, for instance, that in the future some cases of pollution could also take place in the regional economies with the highest per capita expense, where the use of appropriate technologies is still low. In this direction the concept of "territorial quality" has been interpreted in the project both as an economic process, and mostly as a *social cohesion process* leading to the definition of targeted actions and policies in order to build an efficient and effective regional economic system (solidarity, creativity and high life quality) to play an important role in territorial planning and social policies. But all that is insufficient to grant a successful increase of territorial quality to support development. It is therefore necessary that the Union would institutionalise the concept of quality and permanently include it in the decisional processes (institutionalised governance) so as to establish a connection between economic and social progress for a global development to be coherent and sustainable. This is typified by the behaviour of the European enterprise, to whom the concept of territorial quality has become synonymous with success in competitiveness, as testified by the achievement of appropriate certifications (ISO or EMAS), followed by the enlarged concept of social responsibility (i.e. Environmental Management more than Corporate Social Responsibility) considered as a useful and necessary instrument of cohesion and competitiveness.

The effects of an action in quality on European regions could inspire many variations, as broadening and strengthening the internal market. What has been suggested before is the starting point in linking the Lisbon/Gothenburg Strategy to the financial availability scheduled for the 2007-2013 Structural Funds. This requires a more focused attention to the models of economic and financial resource management, which are considered, sometimes wrongly, among the causes of hindrance for the social and economic development of the European regions, especially for those historically underdeveloped (as Italy's Mezzogiorno). The evaluation of economic resources scarcity is nevertheless the subject that also catalysed attention from realities considered historically strong (as the Pentagon), attracting the policy makers attention towards an optimal and effective allocation of resources. For instance, the III Report on social and economic cohesion linked the issue of the post-enlargement Union's population growth to a considerable increase in goods and services consumption.

It had also to be excluded an adequate participation from the enlargement countries) and an their impediment to maintaining the EU15 current level of non-renewable resources and to develop technologies available for exploitation, on a large scale and cost effective, of clean and renewable sources.

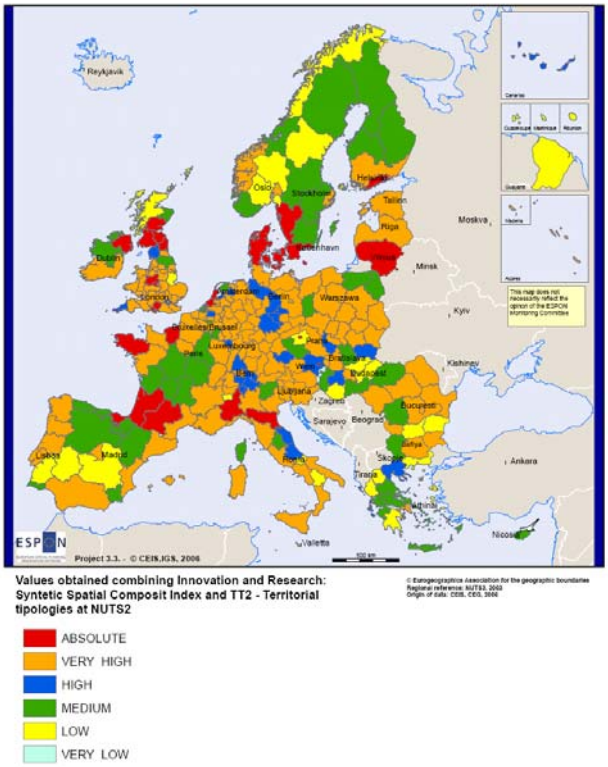
Notwithstanding the many calls to think about the possibility of a change in the politico-economic European paradigm – from growth to sustainable development – most of the Union countries faced the issue of r*esources and funds* in a traditional way, writing their balance sheets just in light of an efficient and effective use of those (Fig. 5). That is why in the last year the Union has been pushing towards a greater control (evaluation processes) on the use of financial and economic means.

However, the search for a territorial competitiveness based on the Lisbon/Gothenburg parameters and on their strict connection with *structural funds programming* highlights how, as in the past, concentrating resources on the underdeveloped countries doesn't mean they will achieve a reduction of their performance gap.

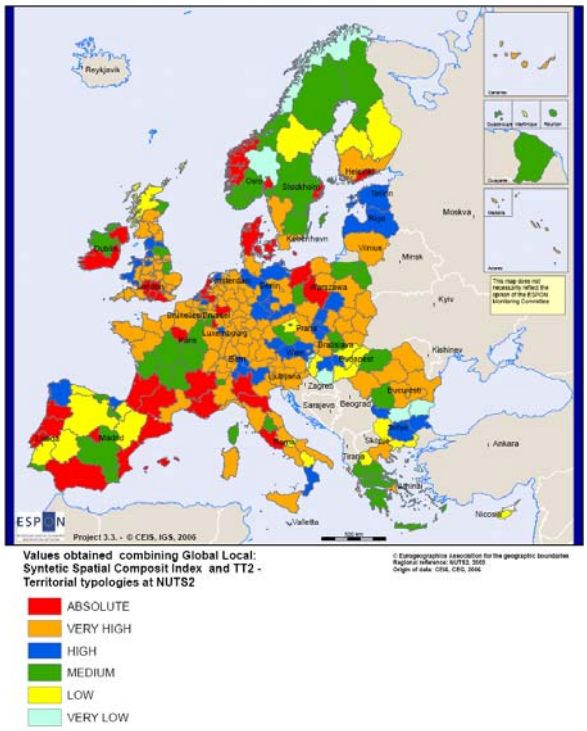
Figure 2: Territorial I&R: final values at NUTS2 (CEIS, 2006)

Figure 3: Territorial G/L: final values at NUTS2 (CEIS, 2006)

MAP IR 18 - Innovation and Research:Territorial Dimension at NUTS 2



MAP GL 43 - TERRITORIAL Global Local Interaction



The capability of being competitive in sustainability of a given territory is then proposed by the project, as a substitutive measure of the traditional model of the growth towards development. This capacity is always increasingly based on endogenous factors, where aspects such as connection infrastructures, network services, reception structures, social organization and labour qualification, provide contexts favourable to the satisfaction of citizens' demands and constitute elements which are at the base of the competitive benefits of a territorial system. The analyses performed in the research show how the local systems, both the weakest and strongest, are in need of appropriate support policies.

Thus the project suggests that the previously listed necessary actions won't be funded on one instrument only, but will be co-ordinated and integrated into combinations of different incentives (support to enterprises, to human capital education, to occupancy, etc.), in strict relation with the regional policies dealing with interventions of and infrastructural form.

The European Union, aware of how important it is to measure the effective use of resources, will have to evaluate territorial competitiveness also in terms of effectiveness, promoting the consumption of resources within the bounds of renewable-ness and long-term availability, especially in terms of energy.

Since the goal of the ESPON project 3.3 in underlining the dynamics which, in the global competition, bring to the definition of territorial systems 'competitive in sustainability', the determinant Resources & Funds performed the task of determining those regions which, earlier than others, are today or could really soon be on the sustainable development path.

The study of Resources and Funds allows a measure of the efficiency level of funds in employment in pursuing the integral objectives of the Lisbon and Gothenburg strategies. Since the economic and financial resources pursuing the integral objectives of Lisbon and Gothenburg can be included in synergic actions (unspecific but integrated interventions), the measurement anyway has been

made of the efficiency rate of economic and financial resources utilisation, with such indicators as public deficit, the debt/GDP report, inflation, usually considered as measures of the "good governance" of a country.

These quantities (generally measures of economic/financial stability) disclose an only partial view of the phenomenon. Willingness to achieve a measure of the "good use" of the economic and financial resources devoted to the Lisbon/Gothenburg objectives, the discussion in Europe will have to be directed towards a qualitative/quantitative evaluation of the phenomenon. In this direction we preferred, as it happens at EU level for many years, an examination of the statistics on the use of structural monetary funds in terms of efficiency, developing a study/analysis path for achieving a measuring of the contribution of resources to territorial development.

Figure 4: Territorial Quality: final values at NUTS2 (CEIS, 2006)

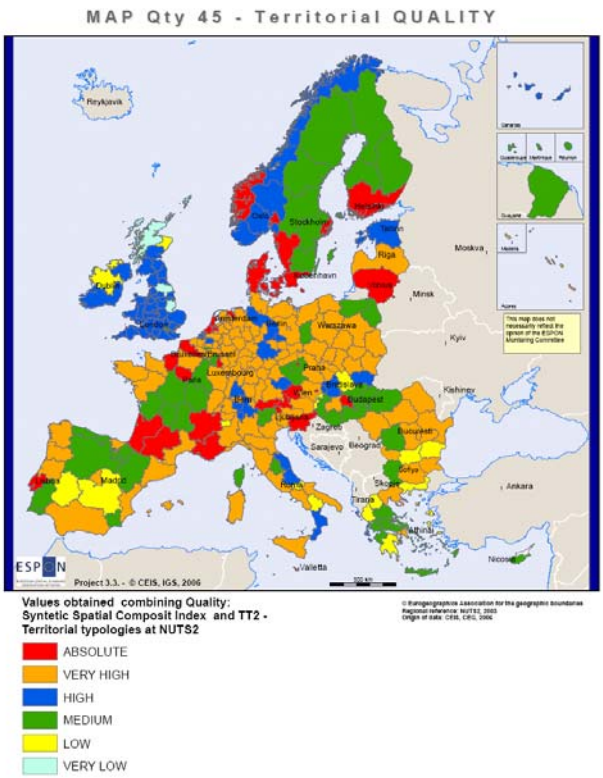
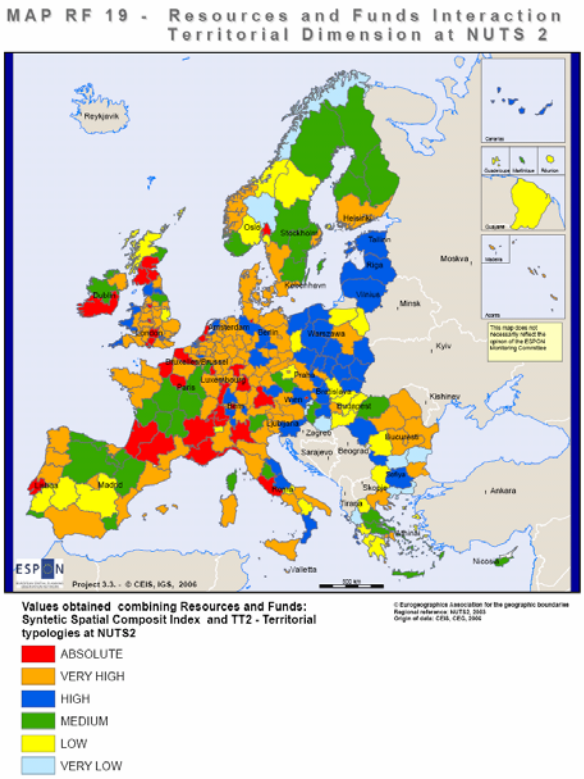


Figure 5: Territorial R & F: final values at NUTs 2 (CEIS, 2006)



2.1 Main methodological innovations

In order to obtain both the Lisbon/Gothenburg territorial objectives and a sustainable vision of competitiveness, we need to perform an act of planning. That is to say building a 'machine' or 'process' (which produces TIA as well) that can be used to assess, in a territorial dimension, the current and future regional capability to be competitive in sustainability.

This process has been standardised to a specific methodological approach, *Sustainable Territorial Environmental Management Approach - STeMA*[10], and transformed into logical passages (steps), so that it can be applied at the national

[10] STeMA was conceived by Maria Prezioso in 1983 and for the first time formalised at regional scale in 1995. At this moment it was patented and it is *All copyright reserved*.

(macro), regional (meso) and sub-regional (micro) scales of the Lisbon/Gothenburg scopes, as the ToR asked.

In order to make this procedure smoother and *user-friendly*, it was useful to list clearly some *axioms* that explain because STeMA is the better approach to analyse the "competitiveness in sustainability" perspective proposed and shared in the 3.3 TPG. Below, they are briefly recalled:

- STeMA is (and Lisbon/Gothenburg territorial strategy needs) a multidisciplinary and interdisciplinary methodology, therefore it requires support from a number of disciplines and a knowledge that is larger than that of traditional studies about competitiveness and sustainability;
- STeMA (and also Lisbon/Gothenburg territorial strategy) 'works' according to a systemic-qualitative and quantitative logic, and in a perspective of 'total quality management';
- STeMA (and also Lisbon/Gothenburg territorial strategy) integrates competences, knowledge and languages by using the tools of complex knowledge;
- STeMA (and also Lisbon/Gothenburg territorial strategy) pursues strict adherence to both the objective of sustainability and territorial 'bottom-up' development;
- STeMA (and also Lisbon/Gothenburg territorial strategy) allows for continuous adaptation and the up-dating of data.

Since, at the moment, to be competitive in sustainability is a voluntary and pro-active choice, implications and responsibilities are evident from the political-administrative point of view (Lisbon and Gothenburg Strategy). So STeMA can assist policy makers to choose appropriate regional policies (through the Structural Funds), assessing these choices *ex ante*.

In order to plan an assessment of the capability to be competitive in sustainability, in the 3.3 project STeMA:

- fixed and shared a common lexicon (common language, see Glossary);
- defined the modalities of the acquisition of certified data at national, regional and sub-regional levels;
- established a new list of Lisbon/Gothenburg Strategy indicators and the territorialisation procedure of statistical data;
- set the general architecture to apply the systemic method, fixing the contents and procedures to express the ex ante judgement;
- defined the contents of the territorial policies applied to Structural Fund planning;
- designed the TIA starting from a SEA experience and inserted it in the architecture of the information and management system, to express the ex post judgement through a dedicated GIS project.

The comparison of the regional backgrounds -to enable the design of the new Structural Funds' Plan- was also necessary to build a conceptual scenario. It had to be conceived according to both European directives and through the definition of the indicators and determinants. The selection of indicators and determinants was based on criteria and parameters assigned in order to calculate their functionality towards the objectives of this project.

Each determinant outlines the logical procedure of the information and judgements.

Indicators and determinants express judgements by sending 'messages' that reverberate on their initial territorial dimension.

This permitted a read-out of the indicators and determinants to be obtained, in terms of the minimum mapping unit expressed by the geographical scale of the phenomenon (NUTS2 and NUTS3).

In the STeMA approach, the ex ante assessments are defined by a set of indicators that concur with the definition of the determinant, as described in the "logical procedure" (see Fig. 8).

The regional level (NUTS2) is the territorial domain of interaction (or inter-relation) between indicators and defines the "playground" for every Lisbon/Gothenburg indicator or determinant.

Among the territorial typologies produced by the ESPON thematic projects, the choice that appeared to be the most suitable for our territorialisation approach is presented in the following.

Through the connection of the determinants to the territorial typologies – that comes, in turn, from a specific weighing process - it has been possible to specify the Territorial Capability to be Competitive in Sustainability, as explained in the Scientific Summary.

The particular final capability result of a region is not considered in absolute terms by STeMA, but rather as relative to the SF with regard to Lisbon/Gothenburg objectives.

The choice of the indicators for each determinant is driven by environmental/territorial, technical, social and economic criteria. The first ones reflect physical/natural aspects; the latter parameters, instead, depend on the type of plan to be carried out (in this case the Lisbon/Gothenburg Strategy). In general, they are conditioned by the objectives and the design standards that the plan requires.

The *Structural Funds plan's actions* are identified, quantified and correlated with the 2005 EC Proposal and the managerial assessment that makes them feasible.

3. Short conclusions

In conclusion, the several recommendations emerging from this project broadly speaking involve: an implicit new vision of the European Spatial Development Perspective (ESDP); the guiding principles of social cohesion, economic competitiveness and environmental sustainability; which fit neatly with those expressed the Lisbon and Gothenburg agendas. However, the principles are easier to express in theory than in practice, because they must be 'governance orientated' and 'bottom-up', while the EU perspective is still 'top-down' in perspective.

Some results of the projects have been considered essential for establishing a new perspective to be adopted towards the achievement of a full accomplished Lisbon/Gothenburg Strategy:

- the initial regional resources play an important role; nevertheless seemingly unflavoured countries don't have to be excluded from the beginning of the development process scheduled by the Lisbon/Gothenburg Strategy;
- the concept of "capability" can be linked to that of "use function" and then contribute to evaluating the most appropriated actions to undertake through the Structural Funds, monitoring over time the relative employment performance;

- the potentially useful territorial aspects emerge as much as the economic ones, explaining how to activate the expectations of Lisbon/Gothenburg for each type of region;
- the potentials for development and territorial imbalances are a clear indication to start common trans-national projects of co-operation, for typology or sector of development, according to the Lisbon/Gothenburg objectives;
- the differences in development potentials reflect the diversity in European territories, thus requiring a differentiation in the interventions, especially in the use of structural funds;
- diversity can be explained only through a complex analysis of the indicators that reveal its territorial dimension. Measuring the Lisbon/Gothenburg Strategy means measuring diversity in its territorial implementation.

For implementing the territorial dimension to the Lisbon/Gothenburg Strategy, the 3.3 project suggests improving and pursuing the way of "Better Regulation", too. This way was already anticipated in 2005 by the European Commission, who started several formal and informal initiatives. Among them was an **Impact Assessment** proposal **as a new method** to introduce a common support *within the framework of the Better Regulation package and the European Sustainable Development Strategy*.

Particularly, the *Territorial Impact Assessment* (TIA) could be an immediate and appropriate regulative instrument for introducing the territorial dimension and its cohesive potential into the Lisbon/Gothenburg Strategy. In fact, faced with the challenge of enlargement and increasing regional disparities, the European Commission proposed a restructuring of cohesion policy in order to adapt it to current needs.

To have knowledge of real current needs is made possible by TIA (also seen in this context as a SEA evolution), because it helps both to identify the problems faced by cohesion policy, in the light of the financial perspectives too; and assess the coherence of the proposed reforms with regard to current and future challenges; and with the Lisbon and Gothenburg objectives. (European Parliament, 2005, *Adaptation of Cohesion Policy to the Enlarged Europe and the Lisbon and Gothenburg Objectives- Provisional Study*, Brussels).

On the other hand, the TIA, seen as a regulated aspect of the Open Coordination Method, could encourage new regions towards a greater commitment to increase competitiveness, and towards representing a greater consistency of their different competitive measures at European, national and regional levels. In fact the Lisbon priorities ought not to be identified entirely with those of the single countries or regions (European Parliament, 2005, p. iii), and this may not mean a leakage of competitive capability and cohesive vision.

TIA could have another function from the European point of view: it allows the realisation of a mid-term review (after four years) in order to re-balance the Community's priorities and the regional strategies in the light of progress made or problems incurred by the use of the new Structural Funds. At the moment, it could seem hazardous to compare old and new Member States to predict their social and economic developments by access to the new Structural Funds: "*Increase conditionality on the results of structural interventions instead of on macro-economic developments, which do not necessarily bear any relation to programmes*" (European Parliament, 2005, p. iv).

Since a challenge introduced by Lisbon/Gothenburg is also to observe whether Europe is capable of offering the world "an alternative to the American model" (as Jacques Delors always declared), further European researches should follow or adopt a more geo-political point of view, i.e. studying the global strategic geo-

economic role that some European trans-national areas could assume, transforming themselves in free trade zones.

To pursue this perspective requires having a real common democratic vision based on the concept of *subsidiarity* and a *polycentric* idea of European Union.

Subsidiarity needs *polycentrism* to express its territorial political role. Particularly, polycentrism is useful to clarify what horizontal or vertical political organisation really means.

The 3.3 project results and TIA procedure could also be the functional basis for verifying the European Parliament draft proposal of Structural Funds distribution (2005) to submit the main changes to the cohesion policy and the new programming system proposed by the Commission for 2007-2013 (by national and regional annual reports).

For this the project apporach suggested a need to leave conventional trajectories for competitiveness, if a concurrent goal of achieving sustainable development is to be met. Here a summary of the recommendations for the determinants of *innovation and research*, *global/local interaction*, *quality,* and *resources and funds* are applied to the main elements of the Lisbon and Gothenburg Agendas with a natural concentration on recommendations at the EU level, but an identification of which actions are better devolved down to lower levels of governance.

a) The Lisbon Agenda

Innovation and Research: The application of the Lisbon plans to this determinant at the EU level suggests that the European Investment Bank should take a leading role in promoting the networks required for innovation and research across the European Union. The issue of up-take is a priority which needs to be co-ordinated from that level, but devolved to agencies below in terms of its micro management. The proposed European innovation scoreboard would be introduced to most effect at the national/trans-national level, while it is at a regional level that 'innovation poles' should be established. In terms of support, a 'European Institute of Technology' could be set up at the EU level, but this and other European Technology Initiatives may be promoted by, and partnered with, industry and possibly higher education establishments.

Global/Local Interaction: With respect to this determinant, the co-ordination of the EU is required to ensure labour market requirements are met, with agreement on increasing the mobility of the workforce and migration. This would be assisted by the establishment of an European Higher Education Area. The much contested reform of the European social model promoted by the Lisbon Agenda, basing support on work and alleviating tax pressures on labour, would be difficult to enforce at the EU level given past failed efforts to develop a genuine European social policy. Consequently the national scoreboard approach to improving labour participation rates and maximising productivity are probably the most attainable means of challenging perceived inefficiencies in the model. Meanwhile regional variations in work, tax and income maintenance configurations may offer alternative solutions to mitigating market inequities whilst retaining economic efficiency.

Quality: Addressing the issue of life chances is a key part of this determinant. However, here Lisbon objectives are less specific, allowing future innovation in policy development at all levels. Suggestions include innovation in eco-technologies harnessed to enhancing quality of life and renewing neighbourhoods and introducing labour policies which address the conflicts arising from maintaining a healthy work/home life balance.

Resources and Funds: In this determinant there is again an emphasis on labour market and income maintenance policies. Given the nation state command of these areas the Commissions' targets for the increasing work force participation

rates – by at least 9% - with particular emphasis on women and older workers are appropriately devolved to the scoreboard approach as embodied in the National Plans recently submitted. More flexibility in labour market conditions with the extensions of freedom of movement may however help create the conditions for this. Measures may be enacted at both the national and the EU level to foster an encouraging environment for private research investment, R&D partnerships and high technology start-ups. These could be made more attractive by adjusting tax policies and providing the appropriate support in the form of venture capital with EIB backing. Finally at the macro level too, a reform of Structural Funds to focus on local employment delivery and economic growth, have been a controversial, but fundamental pillar of the Lisbon Agenda.

b) The Gothenburg Agenda

The policy recommendations derived from Gothenburg and applied to the determinants of project 3.3 fall even less easily into appropriate levels of governance. As typical with issues of sustainability there are a lot of more broad ambitions than specific recommendations and agreed responsibilities. Nonetheless the determinant *Innovation & Research* must by its very nature offer the most potential and the consensus here is that 'a substantial investment is required in order to fulfil the Sustainable Development Strategy', though who should undertake the investment is unclear.

More concrete proposals are found in the area of *Global/Local Interaction* where it is advocated that EU co-ordination in four key policy areas must be worked towards; climate change, natural resources, transport and public health. To complement this pre-existent policy agreement on climate change must be implemented and the contribution of renewable energy sources must be increased proportionately. Prices, it is suggested, should be linked to their environmental impact, especially in the field of transport. While these propositions would require interventions at the market and national level, EU action is essential to reform the Common Agriculture Policy which should demand more environmentally sustainable forms of production.

For the determinant *Quality*, specific EU wide measures are suggested; on public health (including a European surveillance and early warning system on health issues) and the initiation of action on the problems relating to rising levels of traffic should take the form of EU policy on a sustainable transport system which includes greater investment in public transport and other actions to encourage a major modal shift.

Perhaps most pertinent to the Gothenburg goals, is the *Resources and Funds* determinant. However, in relation to this determinant, Gothenburg only specifically suggests EU level action in the sector of fishing where it is proposed that the Common Fisheries Policy must address the issue of over-fishing more pro-actively. The implementation of the EU Integrated Product Policy is urged though, in co-operation with business. Other than that, recommendations that new measures are implemented to maintain bio-diversity and preserve eco-systems and reduce the levels of waste produced in the EU are articulated.

Finally, as stressed in the Gothenburg Strategy, the ultimate way of reconciling environmental sustainability and global competitiveness is to develop some way of separating economic growth from resource use. But apart from that global challenge, the issue of regionally specific recommendations for action will now be addressed.

The concentration on the regional level of the project is also intended to offset the predominantly national orientation of much work in this area, characterised by the current preoccupation with the National Action Plans. Here though a summary of the key recommendations, organised by determinant, which combine the objectives

of both Lisbon and Gothenburg are provided. These constitute the recommendations that are most relevant to 'territorial competitiveness in sustainability'.

Innovation and Research: At the meso level and in the majority of countries, national policies should be geared to increasing the general populations' access to the Information Society. This needs to be supported by telecommunication and education systems, organised at either national or regional level, which reach the most regions. In the latter case education ought to engage the middle-aged population in life-long projects which will enable a re-engagement in the productive system. Education policy at tertiary level requires 'actualisation' to international needs. Specific measures, such as targeted sectorial investments, are recommended for countries with a low innovation and research profile as a priority in the new Structural Funds in Eastern countries, perhaps contingent on commitments in their financial plans. Also in Eastern and Mediterranean countries, an emphasis on firms' information access to enable a start-up to an intensification of internationalisation is suggested. At the regional level, linking innovation and research to the local job market and introducing a major local dissemination of Structural Fund projects into the local/regional system is recommended. Collaboration between public and private enterprises and between firms, regional institutions and the education/research systems could be encouraged. Recommendations for specific regions are in the body of the report. The majority of recommendations for this determinant are Lisbon oriented, but in their orientation - particularly with their focus on ICT, are compatible with the goals of the Gothenburg Agenda.

Global/Local Interaction: Recommendations specified under this determinant are more focused on Gothenburg and a combination of Lisbon and Gothenburg objectives. At the national and trans-national meso level, but co-ordinated at the macro level, common procedures must be found to fix territorially sustainable limits regarding growth and investments. Similarly a common language regarding sustainability needs to be developed, which, together with a stress on transparency, may transform actions in the direction of 'virtuous behaviour', possibly along the lines of the benchmarking approach instigated for fulfilling the Lisbon goals. At the regional level, the sustainable level of population development should be found in metropolitan areas and ESDP guided choices about settlement capacities and life quality made, re-launching the role of 'urban' and peri-urban areas. Hidden, but local potentialities should be the focus of new EU Structural Fund instruments which may be less competitive in the short term, but more sustainable and cohesive in the long term. Strengthening links involved in tourism, youth mobility and exchange may be part of this process. Education and research forms of 'delocalisation' and measures for population mobility in borderline regions are stressed. Another measure which would usefully merge the Lisbon and Gothenburg goals would be to reinforce the regional stability pact by using the Cohesion regional funds to strengthen local social interaction using local trading and manufacturing activities for 'bottom-up- structural change in European economic activities. The adoption and application of common environmental concerns should be integrated with more specific technological and enterprises and measures. This would benefit from the support of a text outlining plans which can be worked on collaboratively between regions, trans-nationally and internationally. Finally, for working towards Lisbon as well as Gothenburg ends, there ought to be a homogenisation of regional fiscal pressures, by looking for example at attracting trans-national investments in the medium term, and co-ordinating regional capabilities, whilst respecting the policy plans of local population enterprises. The role and performance of peripheral areas are likely to need particular attention in this regard.

Quality: At the national and trans-national level a move away from traditional economic variables, such as GDP pps per capita, for measuring country

positions is proposed. A range of new common European welfare indicators to create a significant and innovative measure of welfare efficiency are recommended. This may include a 'social wellness aptitude' and a way of assessing the results of Structural Fund interventions as well as a new dedicated Structural Fund for promoting equal opportunities. Priority projects for particular proposed trans-national co-operation areas are outlined in the report, but suffice here to note that specific forms of productive de-localisation need to be looked at, especially in the new Eastern regions. The completion of the network enabling physical accessibility and multimodal organisation encompassing peripheral areas and attention to horizontal TCL development are recommended, the latter using new and advanced technologies. With regard to governance issues, at both national and regional level, the incorporation of the 2001 *Governance White Paper*. Subsidiarity should, in addition, be used to develop a bottom-up vision with national policies in harmony with regional and local ones helping to improve citizenship democratic confidence, which can also be accelerated by the development of communication systems outlining European issues and encouraging feedback.

Finally, with a view to uniting the Lisbon and Gothenburg objectives for this determinant the incorporation of 'Total Quality' environmental norms in territorial plans and as an integral part of the competitiveness model.

Resources and Funds: One key recommendation here, applied from the macro to the regional level, is to prioritise the provision of higher order services to second and lower tier cities, ultimately to broaden the competitive position of the EU as a whole. In addition, building up the service sector in IT, telecommunications and other relevant Lisbon oriented areas to sustain more specific human capital policies is suggested, with labour markets consciously becoming more inclusive of older workers. From a Gothenburg perspective, international exchange in relevant aspects of innovation and research and cross-border activities in pollution, risk prevention and the tackling of environmental problems is recommended especially at the trans-national level, aiming eventually at an equalisation in expenditure and coverage. Also in the fulfilment of both agendas, the constitutional differences particularly at regional level, which permit the current differentiation and which play an important role in the application of the strategies needs to be confronted. Autonomous regional governments which represent a positive benchmark could be identified. Furthermore the different priorities expressed in different regional plans need to be open for examination and accessible for change if insufficient to meet clear needs, for instance public health in Mediterranean regions and the polarisation of older female workers in Eastern areas. In general, the levels of public expenditure for both employment and natural resources which currently varies so markedly from relatively high values of most old capital EU regions to medium to low elsewhere, needs to be re-balanced with the assistance of the new Structural Funds. Regional governmental priorities with respect to expenditure on, for example, poverty and ageing could be a condition of certain new project funds and contribute to cohesion and the overcoming the north/south, east/west and centre/periphery divides.

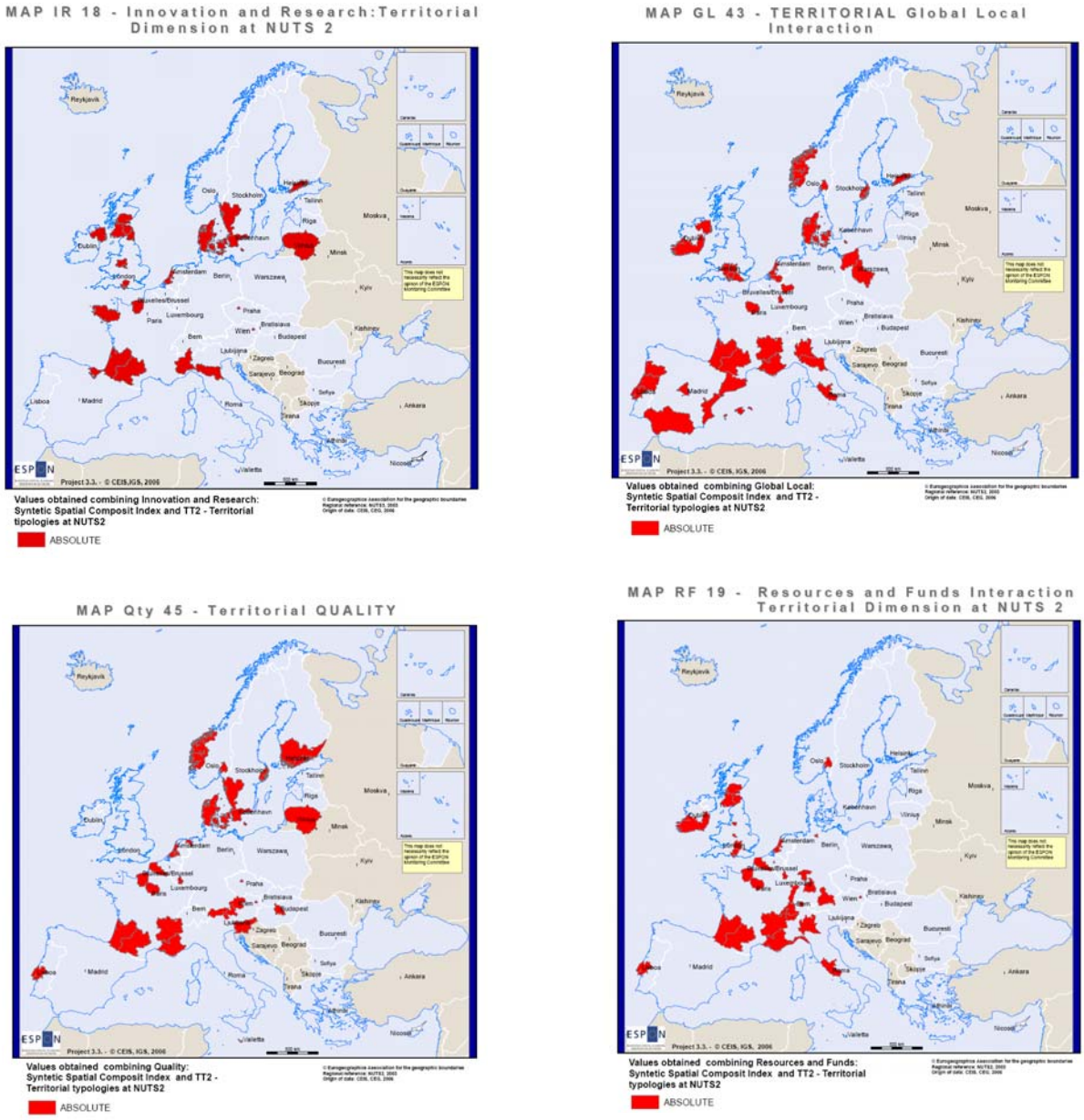


Figure 6: Potential regional leads in co-operative trans-national I&R, G/L, Quality, R&F projects

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Analytical Appendix

The recognition of the effects potentially generated by the Lisbon/Gothenburg plan's actions is a core issue. The value of the impact is measured by the effects of the designed plan's actions.

STeMA assesses:

- the difference (correlation matrices) between initial and final states of regional capability;
- the improvement in performance and competitiveness produced by the actions scheduled in the Structural Funds plan.

The choice of the policy alternative is drawn to policy makers' attention through logical and deductive criteria, using systems that describe the considerations made on the various problems that determined the choice at regional level.

This *phase* of STeMA procedure ends in the formulation of the scenarios of reference, to define the whole field of relation within which the various hypotheses relating to the development of the territory and the possible alternative political choices can be taken into consideration.

For the formulation of the scenarios it was necessary to refer to a given historical moment (time t_0), when it was possible to detect the state of all the indicators considered.

At this final stage, the functionalities and the sub-objectives that constitute the procedure were identified; each of these functionalities was measured depending on its localisation (territorialisation), since it is susceptible to acquiring different aspects and values.

In this type of procedure, the hierarchical, vertical classification of the problems, and the increasing number of functionalities analysed at the low levels of the structure (Indicators) determine a graph with a characteristic *upside-down tree* configuration.

The basic indicators were defined, as well as the corresponding possible connections of mutual relation.

Then, the results of the study of the indicators (first step) were correlated with the best achievement level of the Lisbon/Gothenburg objectives (i.e. the implementation or no of the initial resources level).

Regarding the subject of the *generation of policy alternatives*, the operational procedure, embodied through a GIS, enables the policy makers to choose the desired objectives of the Lisbon/Gothenburg Strategy. Therefore it is able to optimise and highlight the various alternatives that can be proposed depending on the problems related to European regional structure.

To be able to confront the problem in practice, STeMA allows the comparison of one or more alternatives within every determinant, intended as one of the elements that contribute to the generation of possible scenarios and, therefore, also as an intermediate check. Some indicators and objectives of the former aspect can be used in the latter, creating the relationship needed to make each one of the Lisbon/Gothenburg determinants as a design variable of the other. It will be possible to compare two or more determinants by correlating them both at the stage of the synthesis, and at the most adequate intermediate levels.

The application of this procedure implied the realisation of an *appropriate GIS* in order to collect, process and communicate the information, starting from the acquisition of data (with regard to the *structure* of the GIS).

Another issue was to make the monitoring *durable*, because a plan can have effects in the short, medium and long term. The Structural Funds plan has a 2007-2013 duration, thus the need to create a continuous up-dating architecture of the GIS in order to overcome this problem.

Therefore, the objective that can be pursued by the ESPON database is the constitution of a *general informative system* that, covering the whole EU regional territory, builds the scenario onto which the objective selection of the indicators is based, contemplating and classifying also those indicators that are not directly involved in the SF or in the Lisbon/Gothenburg hypotheses.

STeMA implies continuous confrontation and updating to increase the levels of awareness and participation to the development choices.

To achieve this, STeMA:

- defines the "playground" for every indicator/determinant of the Lisbon/Gothenburg Strategy and contributes to determining some *judgements*[11], to calculate their state;
- applies a SEA/TIA procedure to calculate the risk of compromising the system/determinant with respect to the Structural Funds plan and Lisbon/Gothenburg policies;
- selects the trans-national/regional zones for a co-operative use of the new Structural Funds.

In order to attain that, it is fundamental to understand the answer that is brought about by the indicator (aiming at the best possible significance) or, in other words, to define exactly the phenomenon that has to be explained by the indicator. We built up four synthetic indicators that answer the Lisbon question; *if and how a given territory is able to generate/develop competitiveness*, not in absolute terms but relatively to what Amartya Sen calls **"capabilities".** In our case, they become **territorial capabilities**. This type of approach has two fundamental points of strength:

- the initial resources play a role in that a lesser handicap is imposed on those countries that have less of them;
- the concept of capability can be connected to that of "use function/functionality" that allows an estimation of the realizations achieved and also to carry out a monitoring over time.

The theoretical choices and methodological approaches discussed below are strongly dependent on the previous points and the results try to combine a rather simple procedure with the complexity of the topic. This required the TPG to make an acceptable compromise between more advanced and sophisticated procedures (also in the statistical and mathematical instruments involved) and a methodological approach concerning a sufficient scientific agreement, innovative in some parts, but, once more, at the same time easy to run.

[11] Status Quo is the state of the determinants (the critical elements to be competitive) and is defined by state indicators. Vulnerability is the description of the effects of the determinants and is defined by process indicators.

In the following section the purpose is to explain the steps involved in the construction of the STeMA towards the definition of the *Territorial Capability of Competitiveness in Sustainability Composite Index* (thereafter TC of CiS CI) (Carbonaro, 2006).

The aim was to construct a measure established on the basis of an ordinal scale. These conditions identify what we previously named competitiveness in sustainability.

To achieve this goal there is the need for a synthetic measure (technically a composite index) that moreover would be:

- tailor-made for the specific question regarding the distribution of new Structural Funds;
- inserted in the general framework of a wider interconnection and integrations between territories;
- devoted to preserve the richness of territorial heterogeneity, but at the same time with a strong purpose of a common convergence towards higher L/G levels;
- and, last but not least, easy to handle for decisional purposes and, therefore, generated from a very pragmatic operative approach.

The TC of CiS CI is determined by the occurrence that several elements ("driving forces") can contribute to the territorial capability of competitiveness in sustainability, but, at the same time, they can be grouped into four fundamental aggregate sets (in our language determinants), which are in turn generated by the combination of other less aggregate sets, in accordance with a hierarchical structure: determinants from typologies, typologies from sectors, sectors from categories, to end with the elementary information, or indicators, that generate categories.

The determinant takes a value through 'messages' from its indicators that reverberate on the state of the system and on the domain (national or regional) of their relations.

The interactions between indicators, in synergy or in reciprocal prevalence, define a 'domain of interaction' that allows every competitiveness component or determinant to be defined, and to then assess the potential impact that could come from the realization of the new SF plan, or part of it.

This framework is largely adopted in the literature concerning the development of aggregate indices that summarise the information contained in different elementary indicators. What differs from the usual methodology for producing aggregate indices are the aggregation process and the introduction of an innovative territorialisation procedure (outlined in more detail below), to stress the similarity/diversity of the European regions in respect to their capability for competitiveness in sustainability (including the factors creating it).

The strength of this methodology can be seen in its capacity to combine very different elementary information (quantitative, qualitative - the latter also transformed into quantitative) and in referring to phenomena (economic, social, environmental etc.) that could hardly be treated with an identical model.

A weak point can be located in the aggregation process and the ranking choice that allows "pair to pair comparisons" to be made between indicators. Anyway, limitations and criticism would have accompanied the choices as to an aggregation function and a weighing scheme in the alternative to a more conventional methodology.

To give a comparison of the various indicators into determinants, STeMA provides *the construction of several qualitative interaction matrices* that, on the basis of reliable scientific theories or of reasonable demonstrations, given the value of a single indicator

(I_1 or I_2), and returns the qualitative value of the corresponding synthetic/composite indicator (I_x).

An example of qualitative interaction matrix is presented into Final Report.:

Each indicator is combined with another to answer specific questions presented by the European documents (ICT, R&D, Innovation, Human capital, Age, Poverty, Climate, etc.).

The approach to combining heterogeneous indicators has been a mix of matrix ranking and weighted performance analysis.

On the base of the scientific cross between the selected indicators, the project calculated for each determinant:

- the *status quo* and *vulnerability judgements*, e.g. the state and the risk of a wrong access to the Structural Funds plan;
- the territorial base, using some typologies extrapolated from ESPON results (U/R typologies + MEGA + FUA);
- the *capability to be competitive in sustainability* at sub-regional, regional and national levels;
- the assessment of this territorial capability to correctly decide and choose the policy sectors which appropriately may use the European Fund;
- a different involvement of the 14 "Spring Report" indicators

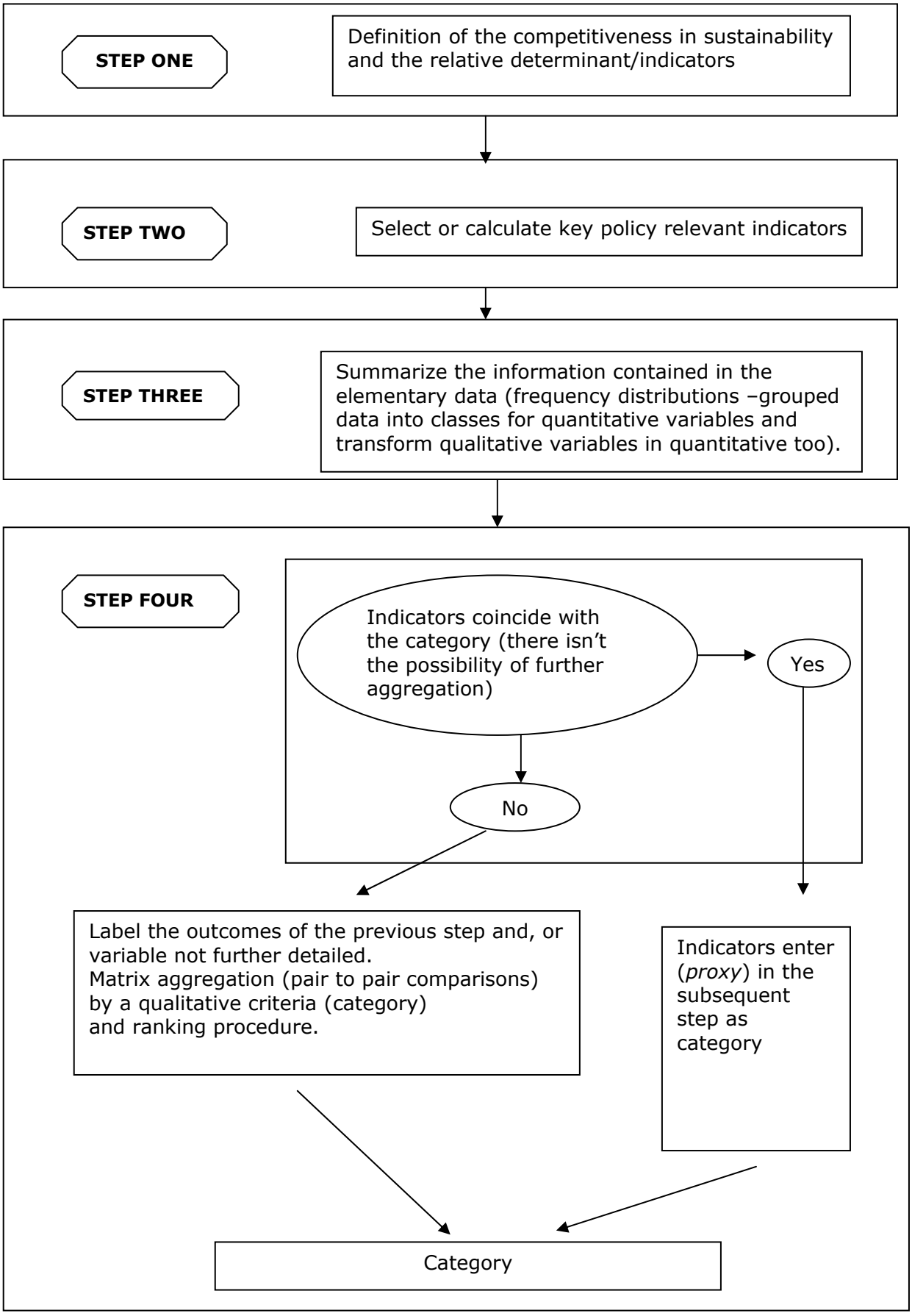
At the moment, the number and the "recipe" of indicators' combination is completed with the NUTS2 mapping.

The mapping covers the countries of the EU 25 plus Norway, Switzerland, Bulgaria and Romania; although we must remember how it is often challenging to find comparable information and data for all these countries. Nevertheless, the project has always covered all 29 countries and, only where there is a clearly justifiable exception, proposes a different coverage.

Several steps are needed to obtain the requested measure, beginning with the proposal of our "core" indicators, to persist with grouping the data, and, to complete with the definition of aggregation criteria (in conjunction with a special kind of weighted scheme) concerning the link between the different subdivisions in order to define the next level (category, sector, typology, determinant). Finally, the definition of the territorialisation procedure, and of the rule capable of comparing the performances (*ex ante* and *ex post*) complete this methodology.

The steps, nine overall, are linked to each other, so that the previous enters as input in the subsequent. They are illustrated in Figure 7. It shows the relation between the components (that is indicator $\rightarrow$categories $\rightarrow$sectors $\rightarrow$typologies $\rightarrow$determinant - from the lower to the higher level -) and outlines when the aggregation process, territorialisation procedure and policy choices occur (see also the software application, named the toolbox, described later).

Figure 7: STeMA process and work steps



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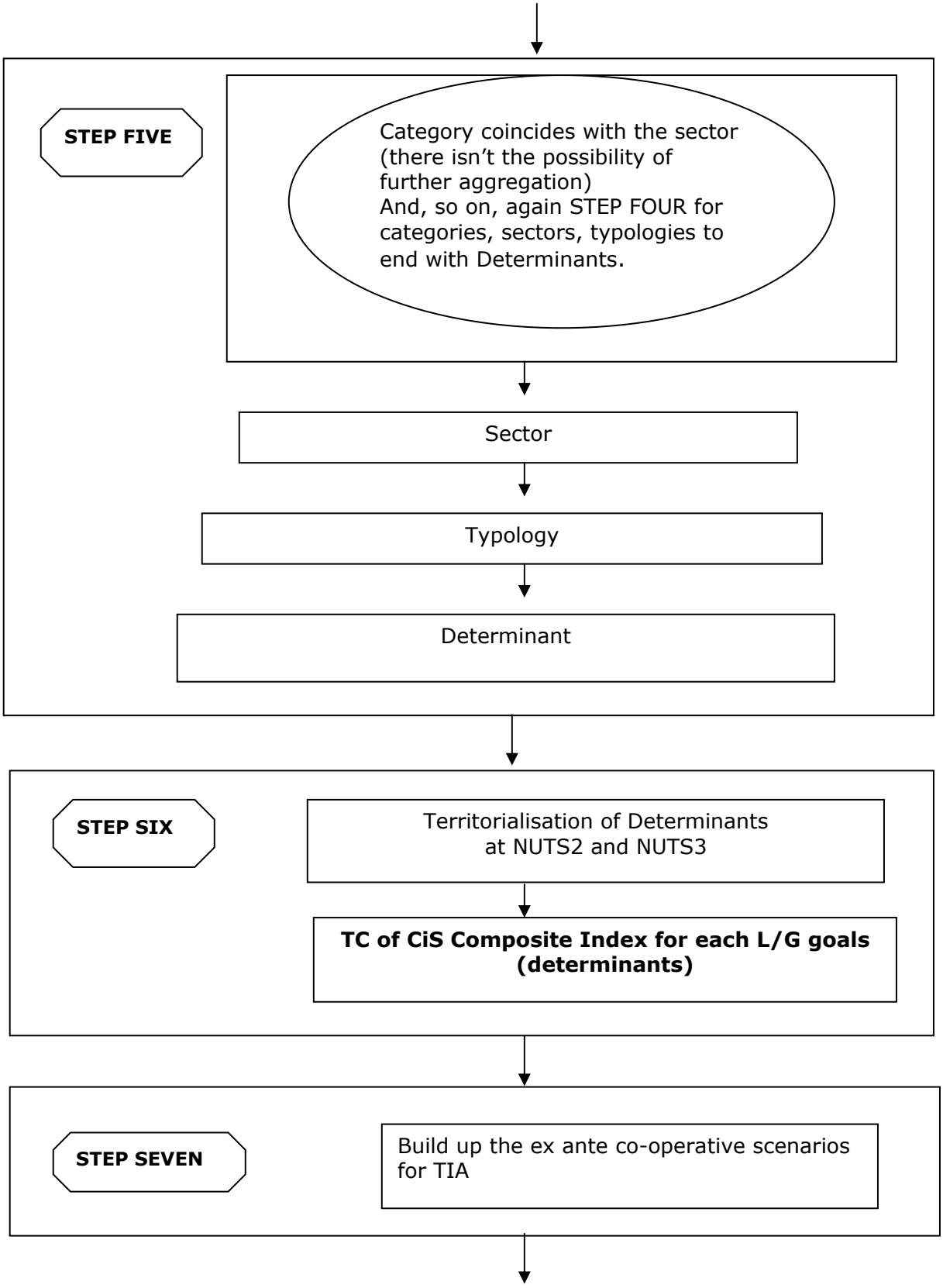
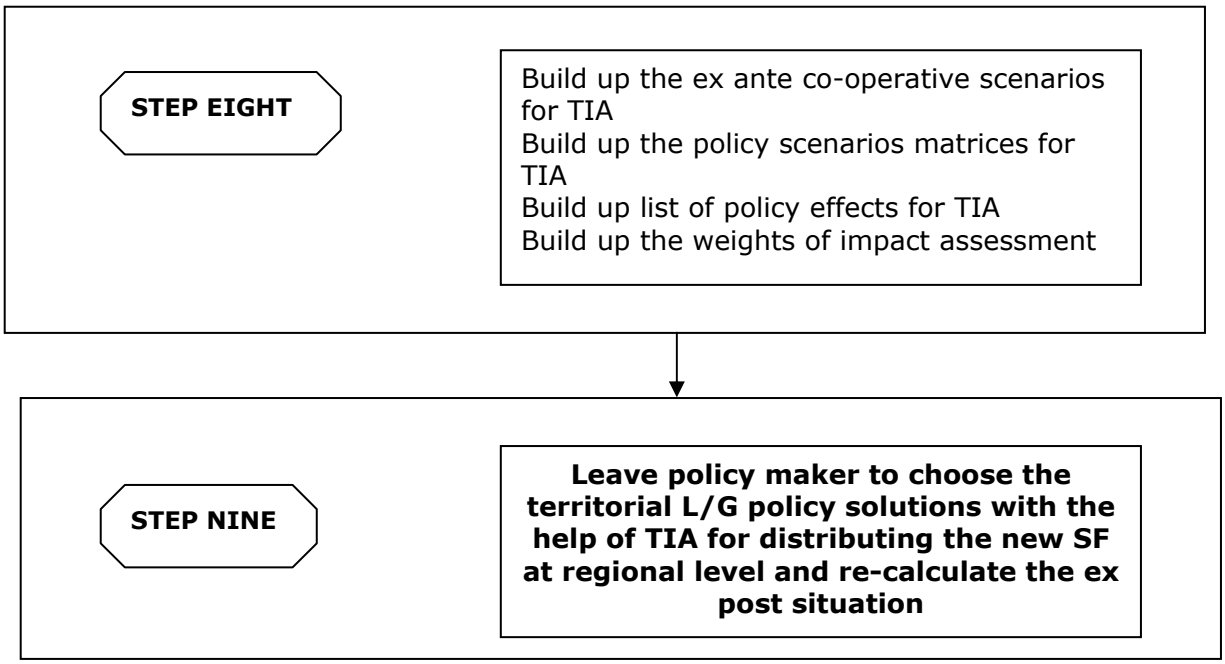




In this approach, that faces the challenge of adding the "territorial dimension" to peculiarly economical-political objectives (competitiveness and sustainability), the main operational problem was that a large part of the indicators describe socio-economical phenomena that are not completely "territorialized" because of the statistical relevance of the data themselves, both in terms of the modality of the survey and of the geographical level of detail.

In this particular case, the great majority of data needed to build from the indicators up to the determinants, are currently available mainly at national (NUTS0) and regional (NUTS2) level.

From our point of view, the most appropriate territorial levels on which the analysis of the competitive process should be addressed are NUTS2 and NUTS3. In fact, the readout of the programmatic demand –to which the SF policy should provide a consistent offer- is best performed at these levels of subsidiarity.

This problem was solved by taking advantage of the work made by those ESPON projects which provided territorial typologies of various kinds, namely, a major part of the thematic projects. Most of them, or at least the ones that are more closely related to our framework, have in fact geographically referred to the NUTS 2 and NUTS3 administrative levels.

The territorial typology helps by providing a way to "project" onto a more detailed reference data that are generally assigned to a much wider boundary. On the other hand, this allowed the retaining of a source of information that is geographically more detailed, even when combined with less detailed ones.

The theoretical bases on which our approach is founded guarantee the significance of this sort of projection, that was also used in previous ESPON-related studies[12] and that is included in the studies under ESPON Project 2.4.2 "Zoom in" too.

Moreover, this point of view is also consistent with the application of the vertical

[12] See, *e.g.*, SPESP 1999, Final Report of the working group on Cultural Heritage.

subsidiarity principle within European States/regions.

Through the connection of the determinants to the territorial typologies – that comes, in turn, from a specific weighing process - it was possible to specify the Territorial Capability to be Competitive in Sustainability.

To consider the value of the indicators and determinant, after two different mapping exercises (Equal and Quartile), the quartiles one was preferred.

The final step of the 3.3 methodological process is the recognition of the effects potentially generated by policy actions. This question was solved linking the *capability to generate competitiveness in sustainability* with the policy recommendations coming from other ESPON projects and new EU programmatic documents.

This process can be considered as an evolution of economic/territorial/environmental impact assessment (SEA DIR CE/42/2001); it becomes a first example of Territorial Impact Assessment (TIA). The value of impact is in fact produced by the effects of the policies on the indicators, using *correlation matrices* to assess the degree of risk of overtaking the carrying capacity threshold and the improvement in performance and competitiveness.

After the end of this phase, it is possible to start the one consisting of building the scenarios of Structural Funds allocations, according to the indications provided by the Capability Framework.

STeMA faced some issues that became operational steps, to contextualize (territorialisation) the measurement in order to compare the different territorial dimensions of the Lisbon/Gothenburg Strategy. STeMA solved this problem after having obtained the determinants values, linking those to regional typologies and building qualitative relations matrices to get a weighed value (see in following).

Impact assessment (IA) is a process aimed at structuring and supporting the development of policies. It identifies and assesses the problem at stake and the objectives pursued. It identifies the main options for achieving the objective and analyses their likely impacts in the economic, environmental and social fields. It outlines advantages and disadvantages of each option and examines possible synergies and trade-offs.

Impact assessment is an aid to political decision, not a substitute for it*. It informs decision-makers of the likely impacts of proposals, but it leaves it up to them to take the decisions.*

TIA is already an assessment procedure built into STeMA. Through the 3.3 GIS project (see below) and some special/dedicated coaxial matrices (Fig. 8), one for each determinant of the Lisbon/Gothenburg Strategy), STeMA provides for:

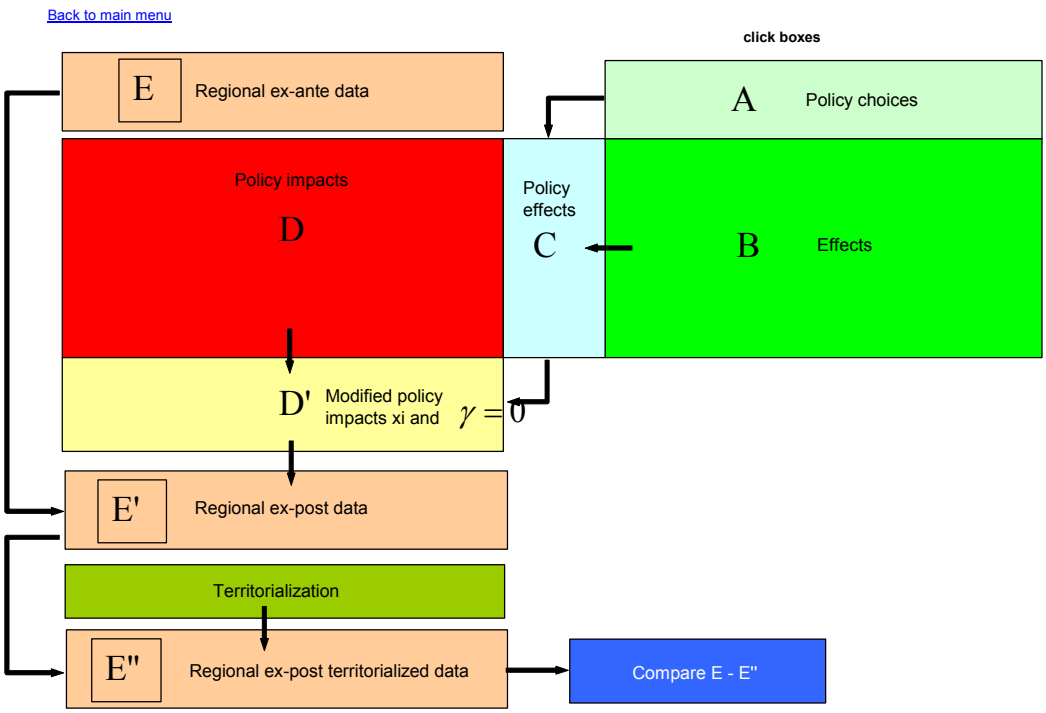
- connecting the different calculations of the territorial dimension of the Lisbon/Gothenburg Strategy, weighing indicators and their combinations;
- completing the calculation of the territorialised synthetic index (territorial initial value of capability - TIVc) for each determinant (see Scheme in Figure 8, zone '**E**').

Then:

- from the ESPON and EU projects analysis, a list of general and sectoral policy recommendations is built and introduced in four matrices (see Scheme in Figure 8, zone '**A**'), one for each determinant (see Fig.8);

- each policy list is weighed (gravity value) introducing these values in relationship with the single determinant (i.e., I&R, G/L Interaction, etc.) into a dedicated matrix (see Scheme in Figure 8, zone '**B**');
- for each determinant a list is built of positive effects that the Lisbon/Gothenburg Strategy should produce. This list, different for each determinant, is introduced into single appropriate matrices (see Scheme in Figure 8, zone '**C**');
- each single effect is weighed in relation to the determinant/indicators (quality value) to fix the desired policy (see Scheme in Figure 8, zone '**D**') and calculate the relative impact (or territorial final value of capability – TFVc).

Figure 8: TIA matrix scheme of correlation (The design of the toolbox and the theory behind has been developed by the University of Rome "Tor Vergata", also responsible for testing and using it within the ESPON 3.3 project, and the software implementation by MCRIT - Barcelona)



A = list of *policies/actions.* $a = 1,...,h,....l$. This list covers all the actions that a policy maker could follow in relation to Lisbon/Gothenburg strategies. This list is the same for each of the four determinants (matrices)

B = contribution of the single action to obtain the correlated effect (the actions contribute with different weights; it could be that some actions don't contribute to produce a certain effect)

C = list of *policy effects.* This list covers the effects correlated to different determinants. This list is different for each determinant (matrix)

D = impact of the effects on the indicators
E = list of *indicators*. This list contains the indicators used to calculate the determinant ex ante (E) and ex post (E') value and new territorialisation (E'')
Then:

- the policy makers can choose the Lisbon/Gothenburg sectoral or general policy (one or more) that they feel as appropriate to apply this Strategy;
- STeMA, by GIS, calculates the effects and the impacts with regard to this choice and can suggest and sustain the final decisions about the use of Structural Funds;
- some territorialized scenarios (maps) of these future hypothetical choices will help policy makers to better examine the results.

In the following section the TIA procedure followed by STeMA is explained in detail.

Symbology
We denote with different colours and geometric figures to indicate three weights that are preliminarily assigned to policies (B) and impacts (D) into matrix.

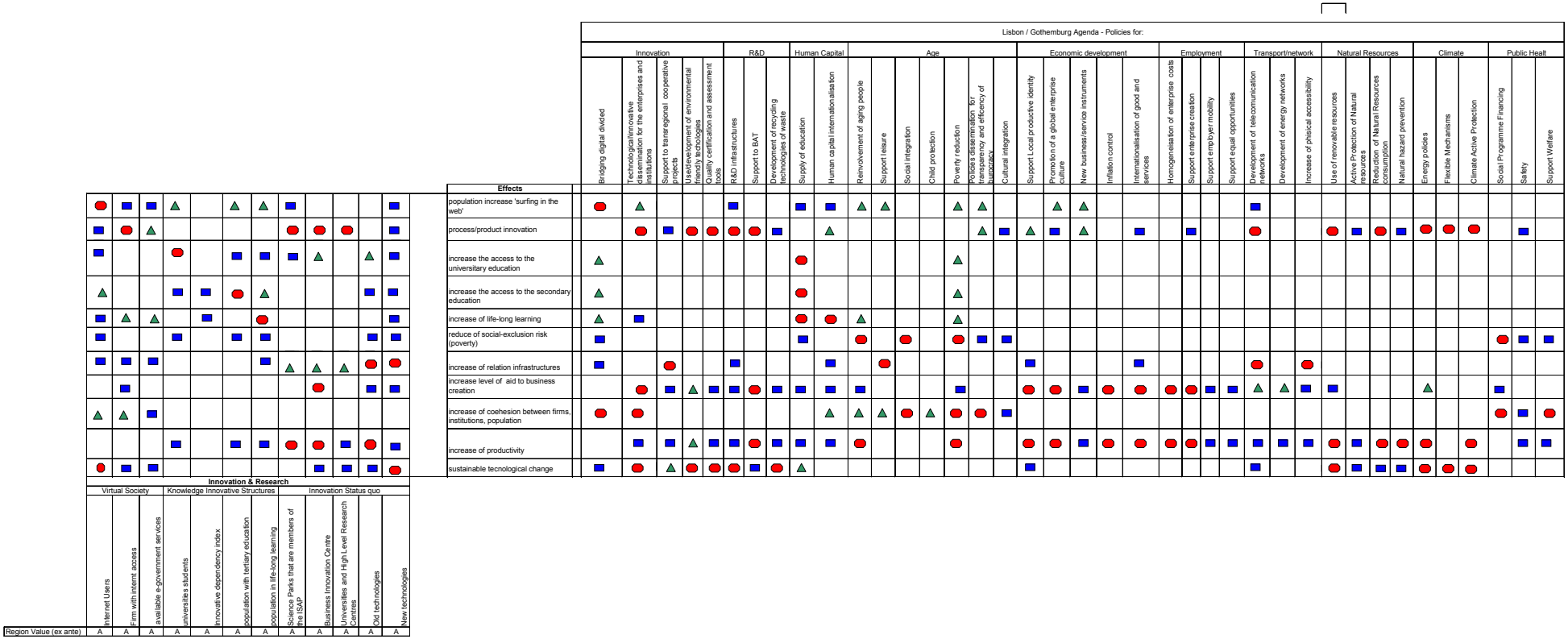

Low value = 1


Medium value = 2


High value =3

The values in the matrices are to be considered as a starting point.

Figure 9 – Example of TIA Matrix for I&R Determinant



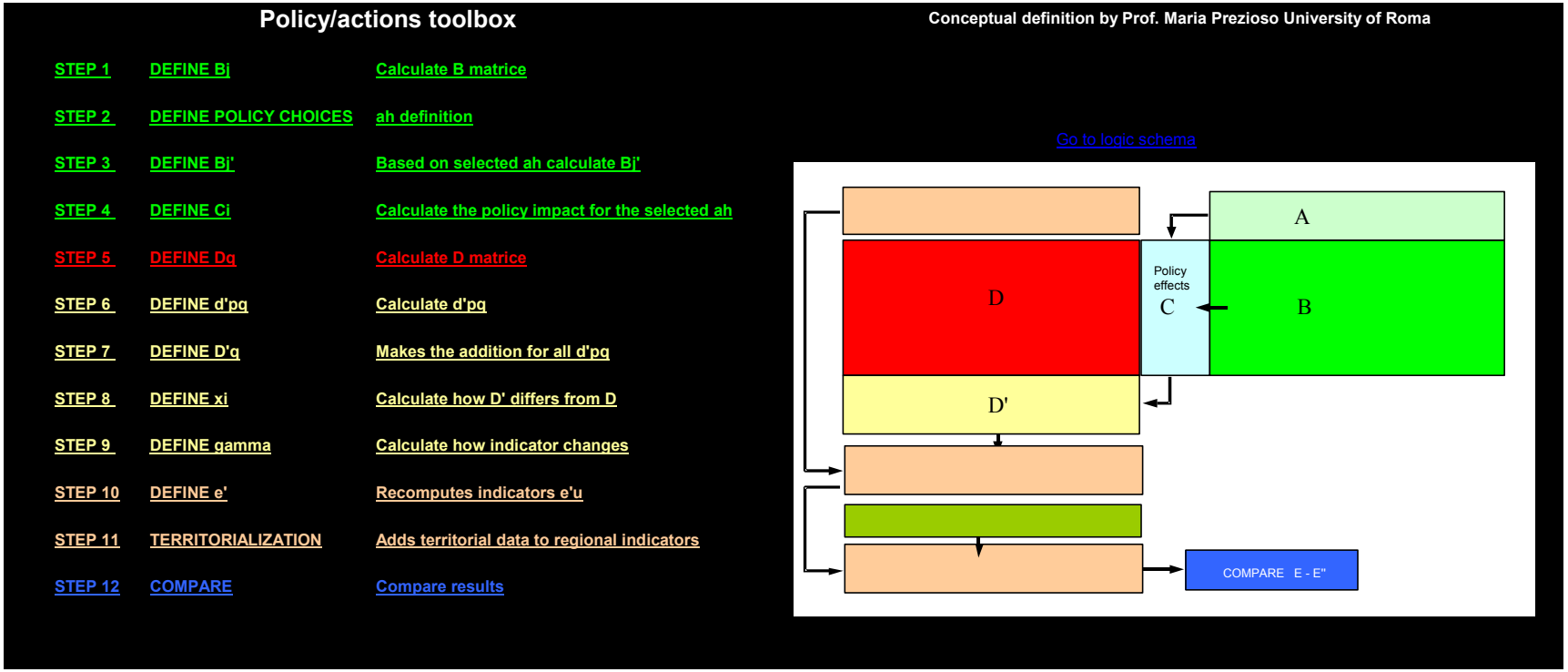


Figure 10: 3.3 final TIA toolbox

To see the whole regional list of ex ante, ex post, spatial, territorial data and values and the list of policies, please, open the following EXCEL FILEs
TIA I&R.xls
TIA G&L.xls
TIA Quality.xls
TIA R&F.xls
In order to play the TIA game changing the policy value from 1 to 0, you can ask Maria Prezioso the relative files.

In order to assess the spatial impacts of different sectorial policies, relevant for the implementation of the Lisbon/Gothenburg Strategies, it was necessary to define a territorial typology for STeMA (see Fig. 7, STEP SIX, territorialisation). Building on this approach has permitted the verification of the application of the territorial development policy framework, as formulated in the ESDP (especially with regard to the concepts of *polycentricism*, *urban-rural relations* and *accessibility*) and their contribution to *spatial cohesion* in Europe.

In order to respond to the above mentioned objectives, both assessing the territorial dimension of the Lisbon/Gothenburg Strategies and identifying the extent to which the policy framework as defined in the ESDP has been integrated, we followed a series of relevant criteria, as given below:

i) to secure the 'representability' and geographic diversity of the EU;

ii) to take into consideration a variety of spaces, keeping in mind:

   a. the population structure and its incidence in areas with urban and rural characteristics (via typologies referring to the Functional Urban Areas and to urban-rural relationships);

   b. the relationships between urban and rural areas via the typology referring to urban-rural relationships);

   c. the cities' growth dynamics (via the typology referring to the Functional Urban Areas/MEGAs);

   d. accessibility/connectivity, introducing a dimension of territorial integration that deals with spatial integration capacity (via the typology referring to the Functional Urban Areas/MEGAs);

As the 3.3 Tender pointed out, the sample of proposed regions was selected as a function of the typologies of regions developed within the ESPON Programme, specifically those from Project 1.1.1. – "The role, specific situation and potentials of urban areas as nodes in a polycentric development" (2002-2004) and Project 1.1.2. – "Urban-rural relations in Europe" (2002-2004).

iii) to secure a multi-level approach. A multi-level approach allows for an assessment of whether or not a polycentric spatial organisation exists, and in what way this organisation contributes towards the increase of economic competitiveness in such spaces. In that case it was important to create the conditions for an analysis of the level of trans-national or trans-border **integration/co-operation**, thus illustrating the importance of the EU INTERREG III Initiative (in domains such as infrastructure, support for economic activity, rural development, etc.) in the increase of spatial cohesion.

This facet is particularly evident in the larger FUA, where the phenomenon of metropolisation is directly linked to territorial and spatial competitiveness, with a variety of implications for cohesion and sustainability. In this sense, it appears pertinent that the EU regions should fit into an approach engendered by multidimensional spatial principles that must take these three fundamental objectives/principles into account.

Figure 11: Territorial base at NUTS2

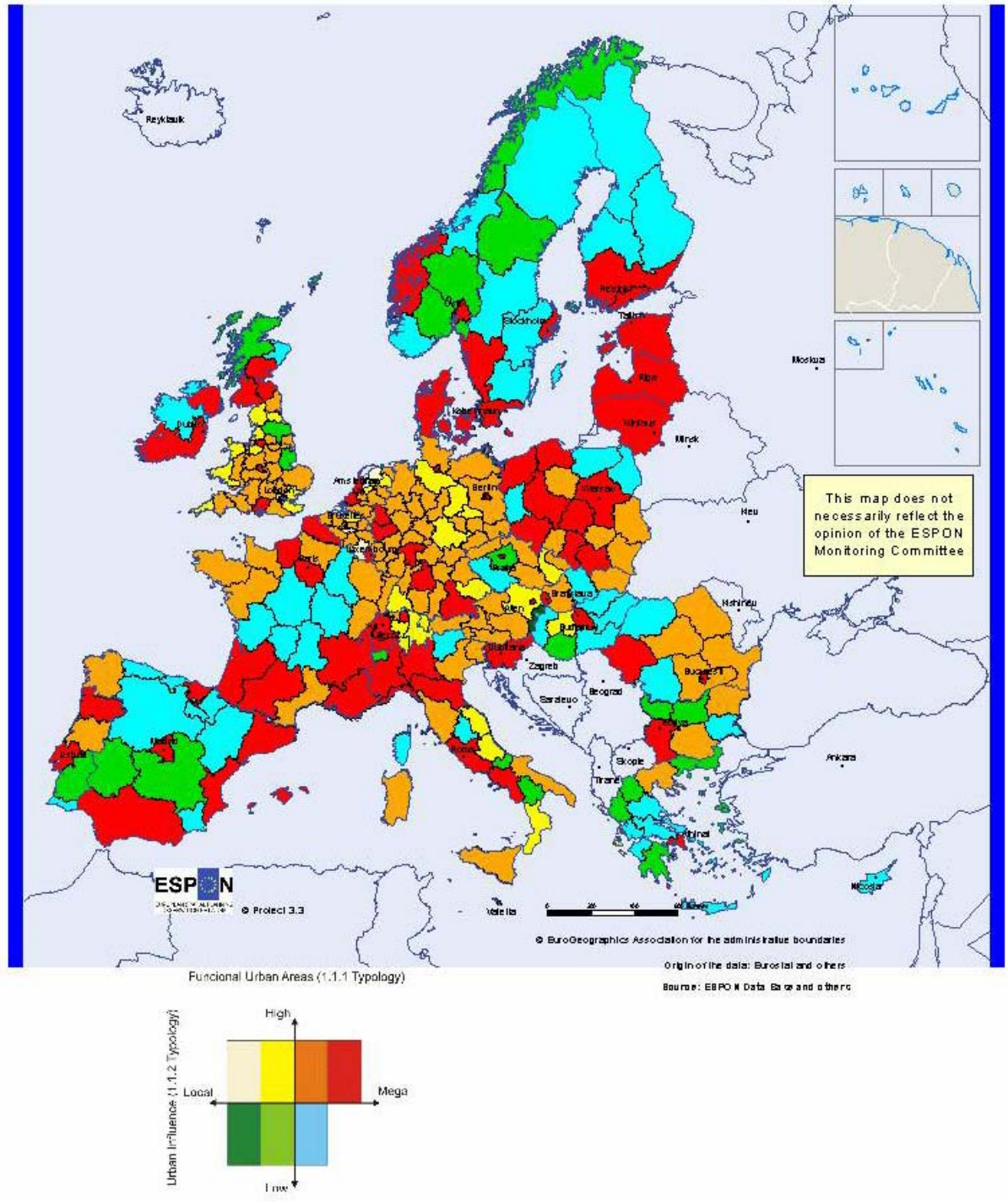


Table 2: Interaction matrix between indicator and Territorial typologies

Determinant	Value	1 High urban influence with MEGA functions (A1)	2 High urban influence with Trans-national or National functions (B1)	3 High urban influence with Regional/Local functions (C1)	4 High urban influence with No special function (D1)	5 Low urban influence with Trans-national or National functions (E1)	6 Low urban influence with Regional/Local functions (F1)	7 Low urban influence with No special function (G1)
Innovation & Research	A	A	A	B	B	C	C	D
	B	A	B	B	C	D	D	E
	C	B	B	C	D	D	E	F
	D	C	C	C	D	E	F	F
Global/ Local	A	A	A	B	B	C	C	D
	B	A	B	B	C	D	D	E
	C	B	B	C	D	D	E	F
	D	C	C	C	D	E	F	F
Quality	A	A	A	B	B	C	C	D
	B	A	B	B	C	D	D	E
	C	B	B	C	D	D	E	F
	D	C	C	C	D	E	F	F
Resources & Funds	A	A	A	B	B	C	C	D
	B	A	B	B	C	D	D	E
	C	B	B	C	D	D	E	F
	D	C	C	C	D	E	F	F

cross values	
A	absolute
B	very high
C	high
D	medium low
E	low
F	very low

N2_03	REGION_03	Territo	Q_GEC	Q_SEC	Q_ME	Q_P Tm	Q_E SSI	Q_FD lin	Q_ Tig	Q_ Tis	Tint	Int	ESSI & Int	Q_R DA	Q_V uln	RDA & Vuln	Q_L Tlr	Q_ FP	Q_ LC	FP& LC	CS	SL	ESSI & Int & SL	Q_ ME	Q_P Tm	PSI	EI
AT11	Burgenland	7	B	D	C	B	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	C	B	C	C
AT12	Niederösterreich	3	B	D	C	C	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	C	C	C	C
AT13	Wien	1	B	D	C	A	C	B	A	A	A	B	C	B	D	B	B	D	A	D	B	B	C	C	A	C	C
AT21	Kärnten	2	B	D	B	B	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	B	B	B	C
AT22	Steiermark	2	B	D	C	C	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	C	C	C	C
AT31	Oberösterreich	2	B	D	B	C	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	B	C	B	C
AT32	Salzburg	2	B	D	B	B	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	B	B	B	C
AT33	Tirol	2	B	D	B	B	C	B	A	A	A	B	C	C	B	C	B	D	A	D	B	C	C	B	B	B	C
AT34	Vorarlberg	3	B	D	B	C	C	B	A	A	A	B	C	C	C	C	B	D	A	D	B	C	C	B	C	B	C
BE1	Région de Bruxelles-Cap	1	A	C	C	A	C	A	A	A	A	A	C	A	D	B	B	D	A	D	B	B	C	C	A	C	C
BE21	Prov. Antwerpen	3	A	C	C	C	C	A	A	A	A	A	C	B	D	B	B	D	A	D	B	B	C	C	C	C	C
BE22	Prov. Limburg (B)	2	A	C	C	C	C	A	A	A	A	A	C	B	C	B	B	D	A	D	B	B	C	C	C	C	C
BE23	Prov. Oost-Vlaanderen	2	A	C	B	C	C	A	A	A	A	A	C	B	C	B	B	D	A	D	B	B	C	B	C	B	C
BE24	Prov. Vlaams-Brabant	2	A	C	C	A	C	A	A	A	A	A	C	A	D	B	B	D	A	D	B	B	C	C	A	C	C
BE25	Prov. West-Vlaanderen	2	A	C	B	C	C	A	A	A	A	A	C	C	C	C	B	D	A	D	B	C	C	B	C	B	C
BE31	Prov. Brabant Wallon	4	A	C	C	A	C	A	A	A	A	A	C	A	C	A	B	D	A	D	B	A	C	C	A	C	C
BE32	Prov. Hainaut	2	A	C	C	B	C	A	A	A	A	A	C	B	C	B	B	D	A	D	B	B	C	C	B	C	C
BE33	Prov. Liège	2	A	C	B	B	C	A	A	A	A	A	C	B	C	B	B	D	A	D	B	B	C	B	B	B	C
BE34	Prov. Luxembourg (B)	4	A	C	C	B	C	A	A	A	A	A	C	C	B	C	B	D	A	D	B	C	C	C	B	C	C
BE35	Prov. Namur	2	A	C	C	A	C	A	A	A	A	A	C	B	B	B	B	D	A	D	B	B	C	C	A	C	C
BG01	Severozapaden	6	B	D	A	D	B	B	A	A	A	B	B	D	D	D	D	B	D	B	C	D	B	A	D	B	B
BG02	Severen tsentralen	6	B	D	A	D	B	B	A	A	A	B	B	D	D	D	D	B	D	B	C	D	B	A	D	B	B
BG03	Severoiztochen	2	B	D	A	D	B	B	A	A	A	B	B	D	D	D	D	B	D	B	C	D	B	A	D	B	B
BG04	Yugozapaden	1	B	D	B	D	B	B	A	A	A	B	B	C	D	C	D	B	D	B	C	C	B	B	D	B	B
BG05	Yuzhen tsentralen	2	B	D	A	D	B	B	A	A	A	B	B	D	D	D	D	B	D	B	C	D	B	A	D	B	B
BG06	Yugoiztochen	5	B	D	A	D	B	B	A	A	A	B	B	C	D	C	D	B	D	B	C	C	B	A	D	B	B
CH01	Région lémanique	1	B	C	B	A	C	A	B	A	B	A	C	C	C	C	C	D	B	C	C	C	C	B	A	B	C

Figure 12: Example of ex ante values with regard to 3.3 indicators to assess sectorial regional gaps

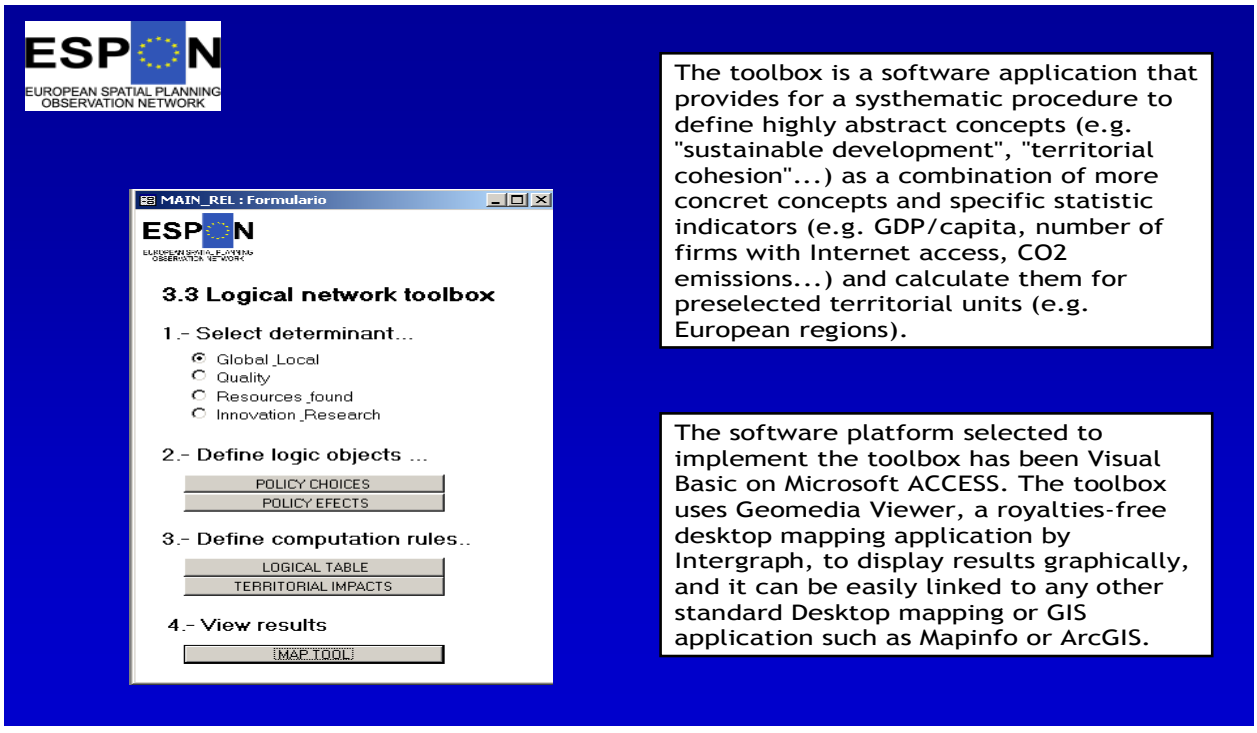


Figure 13: 3.3 logical network or tree by STeMA