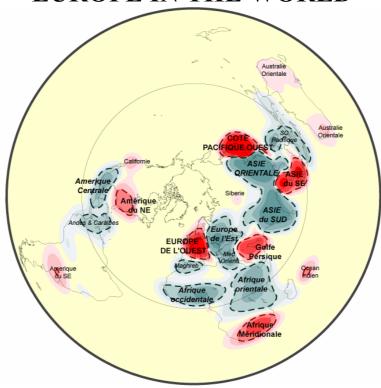


ESPON 2006 Programme

ESPON PROJECT 3.4.1

"EUROPE IN THE WORLD"



ANSWER TO THE TENDER

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Submitted by

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The answer to the tender ESPON 3.4.1. has been established through a common work of all teams involved in the project between 20th August and 14th September 2004. Each team has written the specific parts of the project related to their specific tasks in work packages and provided inputs and feedbacks to the common understanding of the project.

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Table of content

A)	MAIN OBJECTIVES	6
1) Terms of reference	6
2)	Common understanding	7
3)	Principles for efficient results.	11
4)	Global organisation of work	14
B)	WORK PACKAGES	17
W	/P 1 : Coordination & Networking	18
	WP 1.1 Administration & coordination (RIATE)	
	WP 1.2 Intranet (RIATE)	
	WP 1.3 Internal meetings of ESPON 3.4.1 (All teams)	
	WP 1.5 Networking with international organisations (Core teams)	
	WP 1.6 : Reporting activity (RIATE+All)	
W	/P 2 : Thematic Analysis	
	WP 2.1 Demographic structures and migratory flows (resp. ITPS)	
	WP 2.2 Economic structures and trade flows (resp., IGEAT)	
	WP 2.3 Air flows and network structures (resp. Géographie-cités)	
	WP 2.4 Environment (resp. HWU)	20
	WP 2.6 Mental Maps and other topics (resp. RIATE).	
W	/P 3 : Cross-thematic analysis of key-questions	30
	WP 3.1 World Regions and Global Integration Zones (resp., RIATE, HWU, IGEA	T)
	WP 3.2 Networking the world (resp. Geographie-cités, HWU, ITPS)	31
	WP 3.3 Delimitation of European influence area (resp. LADYSS, ITPS, RIATE)	
	WP 3.4 Internal differenciation of European territory (resp. IGEAT, Géographie-	
	cités, LADYSS)	34
W	/P 4 : Policy recommendations	
	WP 4.1 Aid flows and development (resp. ITPS)	
	WP 4.2 ESDP (resp. IGEAT)	
	WP 4.3 Polycentrism and Gateway cities (resp. Géographie-cités)	
	WP 4.5 Neighbourhood policy (resp. LADYSS)	
	WP 4.6 Territorial Cohesion (resp. RIATE)	
W	/P 5 : Database and Maps	42
	WP 5.1 Cartographical harmonisation (resp. Géographie-cités, RIATE)	
	WP 5.2 Statistical harmonisation (resp. RIATE)	45

WP 6: Dictionary of tools	
WP 6.1 Flows analysis (resp. RIATE, Géographie-cités, IGEAT, ITPS)	48
WP 6.2 Structural analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)	49
WP 6.3 Synthetic analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)	50
WP 6.4 Dictionary of tools (resp. RIATE, Géographie-cités, IGEAT, ITPS)	51
WP 7: Dictionary of Concepts	
WP 7.1 Definition of main concepts (resp. HWU, LADYSS, All)	
WP 7.2 Linkage between concepts (resp. HWU, LADYSS)	
WP 7.3 Dictionary of concepts (resp. HWU, LADYSS, All)	53
WP 8 : Case studies and expert contributions	54
WP 8.1 Labour shortage, outsourcing and replacement migration (resp. ITPS)	
WP 8.2 The impact of relocalisation on the position of European regions in value	e
chains (resp. IGEAT)	
WP 8.3 Focus on selected European Gateway cities (resp. Géographie-cités)	57
WP 8.4 Exploration of Gateways and GIZs in other continents (resp. HWU)	57
WP 8.5 Focus on selected ENP Countries (resp. LADYSS)	57
WP 8.6 Survey on the "Weltanschauung" of the ESPON community (resp. RI	
WP 8.7 The new Eastern and Southern external border of the EU (resp. CRS-HA	59 1 5)60
WP 8.8 Focus on geographic patterns and flows of knowledge in Europe (resp.	13)00
CASA)	60
WP 8.9 Focus on Romania as Eastern Border of EU (resp. TIGRIS)	
WP 8.10 Focus on Switzerland (resp. ETH)	61
W1 6.11 Internationalization of farian enterprises (resp. 500L5)	02
Annexe 1 : Bibliography	63
Annexe 2: Methodological framework for the analysis of flows and structures	70
1) Preliminary sample of methods for flows analysis	
2) Preliminary sample of methods for structure analysis	
3) Preliminary sample of methods for synthetic analysis	
of Fremmany sample of memous for symmetre analysis	01
List of figures	
Figure 1 : Clobal organisation of Work Pookeges	16
Figure 1 : Global organisation of Work Packages	
Figure 3: Example of divisions of the world by global organisations	
Figure 4: Most important international-european air routes in 2000	
Figure 5: Typology of world state according to the model center-periphery	
Figure 6: Top 100 of highest discontinuities of GNP/inh. between states (1999)	
Figure 7 : Map of touristic flows in Euromediterranean area	44 16
Figure 9: The two dimensions of results synthesis	
riguit 7. The two diffensions of fesults symmetric	JU

UMS RIATE - Answer to tender ESPON 3.4.1 « Europe in the World »

A) MAIN OBJECTIVES

1) Terms of reference

According to the final version of the terms of reference, the envisaged action 3.4.1 of the ESPON programme under Interreg III Art. 53 entitled: Europe in the World ask the tender to fulfil the following general objectives:

General objectives of TPG ESPON 3.4.1 according to ToR p.5

- a) To refer to the three fundamental objectives within the ESDP with regard to balanced and sustainable spatial development: the economic and social cohesion, the conservation of natural resources and cultural heritage and more balanced competitiveness of the European territory;
- b) To contribute to the identification and comparison of the existing spatial structure of Europe in a global context, in particular to the degree and diversity of polycentrism and to gain concrete and applicable information on EU wide effects of spatially relevant development trends.
- c) To contribute to the knowledge on the spatial structure of the European geographical neighbourhood as well as on the linkages and interdependencies between Europe and neighbouring areas based on analysis of selected flows.
- d) To delineate functional influence areas of Europe in the World and to detect the internal diversity of Europe according to world integration. Therefore and for what has been said under b) and c) the project should be sustained by empirical, statistical and/or data analysis.
- e) To develop appropriate indicators and typologies for measuring European influence in accordance to flows as well as for the comparison of Europe and its internal features and territorial structures with other parts of the world and providing an input to the ESPON database and map collection.
- f) To develop possible orientations for policy responses and strategic projects from a territorial perspective, taking Europe's embedding in a global context into account in particular its geographical neighbourhood and in doing so, considering institutional, instrumental and procedural aspects.
- g) To consider the provisions made and to provide input for the achievement of the other horizontal projects under priority 3 of the ESPON programme in particular for project 3.2, such as tools for diagnosis and observation to be able to contribute to the forthcoming long term scenarios.

More detailed informations are provided by the Terms of Reference on primary research questions to be derived from those general objectives

Primary research questions to be analysed by TPG ESPON 3.4.1 according to ToR p.6

- Identification, gathering of existing and proposition of new indicators and data and maps to measure and to display
- functional influence areas of Europe in a global context, in particular according to accessibility as well as on the basis of selected economic and social flows;
- the definition of the human and economic resources (such as skilled labour migration potential, structure of the "regional" economic potential) of these areas connected to Europe as basis for the formation of (future) partnerships and cooperation based on the specific character of each area;

- the diversity of the European territory according to world integration; particular attention shall be paid to the definition of "gateway cities" and their functional specialisation (e.g. referring to transport facilities such as the position of sea harbours and airports) as well as to the definition of integration areas according to selected flows.
- -Identification of comparable world regions to the European space in order to make a comparison along selected indicators possible involving demography, economic performance, environment etc. as well as along major spatial structures;
- -A diagnose of the spatial tissue and structure of the geographic neighbourhood of Europe in relation to polycentrism and territorial balance as well as of the linkages and interdependencies between Europe and neighbouring areas based on analysis of selected flows.
- -Formulation of an effective statistical and cartographic framework for the needs of the research, in particular in relation to the questions of geographical projection and by adapting the level of aggregation to the specific needs of European policy;
- Classification of Europe's regions of influence in order to create a sufficient and comprehensive typology based on the results of analysis of flows and diversity of their human and economic resources (such as skilled labour migration potential, structure of the "regional" economic potential).
- The cooperation and networking of cities at global scale in support of polycentric development and better territorial balance;
- A further operationalisation and territorial diversification of the policy aims and options adopted in the ESDP, including an adaptation to the territorial diversities within Europe.

Last but not least, the ESPON CU and the MC have proposed some comments in order to improve the quality of the initial declaration of interest of UMS RIATE, which should be taken into account in the final answer to tender ESPON 3.4.1:

Comments of the ESPON CU on the initial declaration of interest of UMS RIATE

- Although the TPG looks robust in relation to the production of quantitative analyses, use of mapping techniques and production of econometric models, it could be strengthened regarding the capacity of production of qualitative analyses and elaboration of policy recommendations. An additional partner involved in the field of "political geography" for instance could be an advantage in that respect.
- The repartition of tasks between partners, as well as the particular role of the experts will have to be better explained.
- Further information should be provided on the technical capabilities of the LP and its associates, and on their administrative capabilities with respect to Interreg programmes.

Following those general/specific objectives, the ToR proposes a timetable of expected results which indicates precisely the deliverables to be presented in the interim reports and final reports. The precise analysis of this deliverable is not presented here but the internal organisation of the work plan of TPG ESPON 3.4.1 which will be discussed now should be able to complete the expectations in due time. Therefore, each expected deliverable is specifically introduced in the list of work packages presented in Part B of the answer.

2) Common understanding

The essence of this ESPON project might be defined as "grounding globalisation". The concept of globalisation is fundamental to a study of Europe in the World, but globalisation takes many forms and the concept can become very loose and descriptive. ESPON as a spatial planning observatory is primarily concerned with the spatial forms that globalisation takes and the spatial strategies that are being developed within and outside Europe to take advantage of the opportunities created by globalisation while also addressing its risks. In this project, perhaps more than in any of the others, ESPON has to address the trans-scalar dimension – the connections between global structures and flows and their replication, impacts and policy initiatives at macro, meso and micro levels. It is important to recognise the complex nature of these trans-scalar relationships, and the multi-directional nature of the flows and actions. Globalisation is a dynamic, differentiated, contested process infused with risk, not a one-way, top-down, controlled and predictable agency imprinting change on maps.

In seeking to "ground globalisation", to detect its trans-scalar spatial dynamics and spatial policy implications, we need to combine quantitative analysis with qualitative concepts and investigation. For example, Swyngedouw (1997 p.140) argued that "different scalar narratives indicate different causal moments and highlight different power geometries... Scale is consequently not politically or socially neutral, but embodies and expresses power relationships." Thus the way that scale and global spatial relationships are conceptualised and discussed is an important dimension of research into Europe in the World.

The elaboration of the transnational project group ESPON 3.4.1 is based on a consortium of teams who provides different but complementary points of view in geographical, theoretical and methodological terms.

The diversity of "geographical" point of view has been recognised as a major condition for the success of a project. Despite the limited allocation of funds, we have built a consortium of teams which originated from all parts of Europe: around the French teams (RIATE, LADYSS, Geographie-cités), we find specialist from Baltic (ITPS), Atlantic (HWU, CASA), west-central (IGEAT, ETH) east-central (CRS) and Mediterranean (SOGES) parts of European Union, candidate countries (Tigris) and associated countries of the ESPON Programme (ETH). Of course, each team has been assigned to a specific scientific task related to a particular thematic field or a particular case study, but it is very clear that all partners involved in the project will also fulfil a general mission of commenting the whole results of the research elaborated in the framework of the TPG. This diversity of "geographical" points of view will be especially important in the final stage of the research when we will try to elaborate policy recommendations and to provide assessments on the diversity of European territory according to globalisation.

The diversity of theoretical points of view on globalisation is partly related to geographical diversity of teams but rely also on the specific scientific knowledge of the partners and their differentiated access to literature on globalisation. If all partners share a common knowledge of the "mainstream literature" on globalisation (Global city, economic regionalisation, ...), each of them will provide specific added value on topics which are more developed in their country (e.g. Cultural approach versus Geopolitical approach) or in their specific field of expertise (e.g. Theory of demographic transition versus theory of economic transition). This diversity of point of view can also be recognised in the political background of the partners, especially on the question of economic convergency which can be analysed either in a neoclassical (Krugman) or neo-Marxist (Kondratieff) framework or for the question of relation to third world countries which can be analysed in pragmatic terms (definition of migrations

according to EU market needs) or in prospective terms (importance of migratory flows for developing countries). Last but not least, the points of view of partners team on the role of spatial planning for the realisation of EU objectives (Lisbon Strategy, Territorial Cohesion, ESDP, ...) present a certain degree of diversity which will insure a critical discussion of policy recommendations with alternative strategies to be proposed in the final report.

The diversity of methodological approaches has also been secured in order to fulfil the recommendations of the CU which noticed a too strong focus on quantitative methods in the first declaration of intent. In our final work plan (see. A.4) we have try to made very clear how we will try to combine both approaches in an integrated way.

- An in depth analysis of selected flows and structure is firstly necessary for the elaboration of objective representations of the position of Europe in the world and for the elaboration of a sustainable infrastructure of research in the framework of the ESPON program. Many theories which are proposed in the "mainstream" literature on globalisation are contradictory or based on very superficial analysis of existing databases. Furthermore, the mainstream literature focus generally more on general evaluation of globalisation than on specific problems of European Union. This problem of adaptation of global theories to the specific situation of Europe is a crucial challenge of the ESPON program and it can not be realised without specific control of the assumptions on objective databases. As an example, the famous study of UN on replacement migration (2001) provide a general framework but we should specifically adapt it to the specific concern of European Spatial Planning at regional scale (ESPON 1.1.4) and at pan European scale (ESPON 3.4.1.). It is also important to take into account the accumulation of methods and tools which has been yet developed in the ESPON program (measures of accessibility, maps of discontinuities, methods for flow analysis) and could be now applied at world scale in order to produce innovative results which can not be found in the works published by other international organisations (OECD, UN) which are less interested in the territorial dimension.
- Nevertheless, we can not cover all interesting topics with new applications on databases and the quantitative analysis of flows and structure need to be complemented by analysis of institutions, discourses and case studies. What are the scalar narratives that connect Europe and its regions to its "geographical neighbourhoods", colonial legacy, and global competitors? While many of those narratives are composed by policy-makers, the academic literature of political geography and urban politics has developed its own interpretative frameworks and language. In particular regulation theorists have constructed an international political economy account of more local spatial changes (e.g. Jessop, 1989; Tickell and Peck; 1992; Painter, 1997), while urban regime theorists have tended to focus on power relations at the level of an individual city (e.g. Bassett, 1996; Stoker and Mossberger, 1994). A full articulation of these and other theoretical approaches to conceptualising the spatial development of Europe in the World is beyond the scope and resources of the project. Instead, we propose to offer a summary overview of important positions, and to utilise some important insights from the theory in our empirical work. In particular we believe that there is value in looking at some of the key global institutions and how they conceptualise and act on their understandings of Europe in the World. This implies the study of institutions as mental models (Jenkins and Smith, 2001) - in other words the concepts, assumptions, priorities, and procedures - that shape action. Of course, the project is concerned with action and mental models that relate to spatial development. Therefore our aim is to identify and analyse key institutions in Europe and elsewhere in the world to elucidate and compare their mental maps of Europe in the World. The list would include multi-lateral agencies such as the WTO, regional blocks like NAFTA, mechanisms for co-operation across EU borders such as the Barents Commission, and networks of cities. This analysis will be supplemented by case studies to explore how these interscalar narratives of space impact on the development of global integration zones. But the mental maps and representations would be improved if they could deal with large multinational firms too, and not only public institution; for those public institution are quite diverse, not all of them are organised in sub-regional bureau, whereas MNF are mainly organised regionally which make their mapping quite comparable and relevant.

Clearly, the field of investigation is very wide, whatever the quantitative or qualitative point of view which will be adopted. Therefore it is necessary to have clear targets strongly related to the expectations of the ESPON Program. Our analysis of the terms of reference and our knowledge of the existing results of the ESPON program lead to the conclusion that **the most important challenge of the TPG 3.4.1** is the introduction of the 4th dimension (World) in the actual framework of 3-level approach which has been the main output of previous research. More precisely, the introduction of this 4th dimension means that me have to propose a joint analysis of the influence of Europe on the rest of the World ("Europe in the world") and the reciprocal influence of the World on internal differentiation of European territory ("The World in Europe"). In a sense, the correct title of the project should be "Europe in the World, the World in Europe". Following this central objectives, we have identified four key-questions which try to examine this interaction between Europe and the world at different geographical scales.

- The division of the world in regions (key-question 1) tries firstly to propose various divisions of the world according to criteria of homogeneity (structural division of the world) and criteria of flows and accessibility (functional division of the world). In a first step, we do not introduce any particular assumptions on the existing divisions of the world in political regions (NAFTA, UE, ASEAN, ...) and use only statistical criteria. In a second step, we proceed to a comparison between structural and functional division of the world and political divisions in order to examine how they fit together.
- The delimitation of European influence area in terms of neighbourhood (key-question 2) is a medium-scale approach logically connected with the previous analysis of world division but introduce a strong assumption on the continuity of the European influence area which is supposed to be a set of contiguous or at least neighbouring states. It can therefore be considered as a specialised analysis of the results of key-question 1 in a territorial perspective.
- The definition of networks and cities connecting Europe to the rest of the world (key-question 3) is a trans-scale approach which does not introduce an assumption of contiguity (continuous territoriality) but an assumption of connexity (discontinuous territoriality). It is based on the fact that many human activities are not present in all points of a territory but are concentrated in very specific areas strongly connected to each other. The Global City is an archipelago of metropolis which are not necessary strongly connected to the states or regions where they are located.
- The analysis of internal differentiation of European territory according to globalisation (key-question 4) is the lower scale approach which is also the main expected results in a European spatial planning perspective. But it can not be analysed without inputs of previous key-question. Key question 1 will answer to question of the unity of European territory (is it divided by world division or not? is it part of a wider world region?). Key question 2 will answer to the question of the limits of the European territory and the specific situation of margin, borders and periphery. Key question 3 will provide inputs on the location of gateway-cities, gateway-regions or gateway states which are more or less integrated and connected to the rest of the world.

According to the answer to ose four key-questions, the central policy problems to be solve by ESPON 3.4.1 could be the understanding of what prevails in the today's spatial organisation of Europe's insertion in the world: is it a 'Triade model' with long range flows with Northern America and Eastern Asia? Is it the 'archipelago' pattern, with varied flows at varied scales linking major metropolitan areas wherever they are located (see the works of Michael Storper for instance)? Or is it the 'Regional' view, according to which preferential flows develop with neighbouring countries as US do with Canada and Central America, and Japan with and SE Asia and now China ('which would suppose a strong definition of "World regions", "GIZs" or "cultural areas" in our dictionary)? Or, more probably, a mix of the three – but how exactly?

Our thinking is that the third pattern (the Regional) is under-estimated and under-studied in the case of Europe. We have heard very much about globalisation, Triade and archipelago; the approach that is developing nowadays is the Regional one; what would be the pattern in the case of Europe? Can we speak of the rise of an Euromediterranean Region? One of the goals of our common research might be to confirm or invalidate the relevance of an "European Region". If it had to be confirmed, what would be its geography: fit with European Neighbouring Policy delimitation? Or would it be larger, due to accessibility networks?

- If confirmed, what are the consequences on the European territory, especially the international gateway cities that might have a long range insertion but also a regional role?
- If confirmed, what would be the impact on the bordering territories and thus the consequences for the Interreg policy?
- If confirmed, would the links with Eastern neighbours (Russia, Belarus, Ukrainia...) be the same as those with the Southern (Mediterranean countries)?
- If confirmed, what impact on the sub-regional process (e.g. Black Sea cooperation zone, Baltic Sea space, and so on)?
- If confirmed, what is and could be the contribution of European neighbours to the economic development of Europe? (the question is frequently asked in the opposite sense, but is interesting in that sense too).

3) Principles for efficient results.

Taking into account the limited amount of money granted for this project ($250\ 000\ \in =$ half of a classical ESPON TPG), the limited time available for its realisation (18 months), and the crucial problem of connexion with TPG ESPON 3.2 and 3.3 which need inputs from TPG 3.4.1. for scenario building and elaboration of Lisbon Strategy, we have decided to build a very efficient research consortium where all teams and individuals embedded will have a precise task to accomplish. In our answer, we do not try to cover extensively and equally all subjects indicated in the terms of reference because doing that would produce superficial results on all topics. All subjects expected will be covered, but sometimes with a review of literature, sometime with an in-depth statistical analysis of databases, sometime with exploratory surveys or innovative case study. What is important, in our opinion, is to answer both to a short term demand on specific topics (e.g. identification of gateway cities connecting

Europe to the rest of the world) and to establish the foundation for a long term observatory of European Spatial Planning (or an ESPON II) where the question of Europe in the World will necessary be a major topic.

According to the final version of the Terms of Reference for action 3.4.1 and to the recommendations received from the CU after our expression of interest we have decided to introduce some changes in our initial work plan, in order to fit better to the expectations of the ESPON program. Those changes can be summarised as follow:

- (1) Limitation of exhaustive quantitative analysis of flows and structures to selected topics: According to time and budget, it is not possible to realise an in depth analysis of two many quantitative information and it seems more efficient to focus on the most representative and interesting flows, according to their availability and their interest for general objectives of ESPON and ESDP. In the case of structures as in the case of flows, we propose to limit our quantitative investigations to the topics especially mentioned in the terms of reference, i.e. (1) demographic structures and migratory flows, (2) economic structures and trade flows, (3) accessibility networks and air flows, (4) environmental structures. Each of these topics will be specifically covered by one of the core-teams (ITPS, IGEAT, Géographie-cités, HWU) in order to gain added value by the joint analysis of flows and structures.
- (2) Specific complements of database for European Neighbourhood Areas: This limitation of the collection of exhaustive database at world scale is not relevant in the case of Southern and Eastern Periphery for which it is necessary to introduced complementary data collections on various topics. For example, the analysis of accessibility is limited to air flows at world scale but more information on maritime flows, oil and gas network, road and rail accessibility, ... should be taken into account in the analysis of European neighbourhood. The same in true in the case of tourism which could not be reasonably covered at world case but should be necessary taken into account in the pan-european area. A team of the core group (*LADYSS*) which has recently published an Atlas of Europe and neighbouring countries¹ will be responsible of this specific complement of database.
- (3) The integration of quantitative results by statistical and spatial analysis tools will be limited to exhaustive database at world scale but the methodology used for the cross thematic analysis will be stored in a dictionary of tools which will allow the future development of results in more recent databases or more complete informations. Therefore, we can combine efficiency in the short term and scientific sustainability for the future of ESPON. This elaboration of a dictionary of tools will be realised by the lead partner (*UMS RIATE*) which has yet proved his capability on similar subject in the framework of TPG ESPON 3.1 (methodology of Multiscalar Territorial Analysis). It will be of course based on methodological inputs from all other core partner teams.
- (4) The introduction of case-studies and expert contribution will be developed in order to "strengthen the capacity of production of qualitative analyses and elaboration of policy recommendations". Indeed, quantitative methods provide a general picture of world situation of Europe in the World according to flows and structures, but they introduce the risk to develop too general conclusions which limit their political usefulness. Case studies and expert contributions will provide focus either on specific geographical areas of interest (e.g. ALENA, India, external borders of EU) or on specific topic of interest not sufficiently covered by quantitative database (e.g.

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¹ **Beckouche P., Richard Y. 2004,** , *Atlas d'une nouvelle Europe : l'Europe élargie et ses voisins – Russie, Proche Orient, Maghreb*, Préface de P. Lamy, Autrement, Paris, 64 p.

- investment of private companies in foreign countries, cultural influence, geopolitics). If possible, case studies should cover a geographical and thematic topic, as the analysis of foreign investment of Italian companies in eastern and southern periphery of Europe proposed by SOGES.
- **(5)** The elaboration of a dictionary of main concepts related to globalisation and "regionalisation" of the World appears also crucial for the elaboration of a common understanding of fourth dimension (Europe/World) of the previous 3-level approach developed in ESPON (Europe/National/Local). On this particular topic, we will follow the methodology developed by *Géographie-cités* for the elaboration of a dictionary of polycentrism in the framework of the TPG ESPON 1.1.1. and use the resource of the intranet applications which will be elaborated by *UMS RIATE*. In a first step we will elaborate preliminary definitions of concepts by bibliographical research, which will be criticised and improved by the forum of teams involved in TPG ESPON 3.4.1. In a second step, links between concepts will be elaborated (hypertext), taking benefit from internet facilities. Finally, some illustrations from concepts derived from empirical work realised in ESPON 3.4.1 will be introduced (links toward maps or case studies).
- (6) Collective synthesis of results will be organised around 4 key-questions for which all partners teams will provide inputs derived from their specific field of expertise. Times and resources are not sufficient to organise too many discussions on all potential subject of interest. Therefore, it is necessary to focus the collective work on very precise questions which will be discussed in depth during the internal meeting of the TPG ESPON 3.4.1 and which will be subject of 4 specifics forum on the intranet of the project. The choice of these four key-questions has been made very carefully, according to the priority of the terms of reference and the political expectations of the ESPON Program. They are discussed in detailed in WP 3.
- (7) The elaboration of policy recommendation is considered as the main output of the TPG 3.4.1 and will be the main target of all analysis developed in the whole area of the TPG ESPON 3.4.1. We have identified six major topics of policy recommendations which could benefit from the results of the work realised in TPG ESPON 3.4.1. Four topics are directly related to the questions of spatial planning previously developed in ESPON (ESDP, Lisbon Strategy, Polycentrism and Gateway Cities, Territorial Cohesion) and the aim of the project will be mainly to complement existing ESPON research by the explicit introduction of the 4th dimension Europe/World. The topic of neighbourhood policy is more original and important as it has not been previously taken into account by the research developed in ESPON and can be considered as the most innovative part of the work. The last topic (Contribution of Europe to millennium objectives) is more exploratory and has been introduced despite the fact that it was not mentioned in the terms of reference. It is related to the general policy of Europe toward developing countries which are not necessary located in the neighbourhood of Europe but are historically, demographically and economically linked to Europe (e.g. Western, Central and Eastern Africa).
- (8) Networking within Espon is a topic of crucial importance for the development of project ESPON 3.4.1. Inside ESPON, obvious connexions should be established with several TPG's: ESPON 3.2 (Scenario) for the joint elaboration of the long term experimental database on World states/European regions and also for the definition of possible future scenarios; ESPON 3.3. (Lisbonne) for the exchange of inputs-outputs on the future competitiveness of Europe; ESPON 1.1.4 (Demography) for the articulation of research on migrations at world/European scales; ESPON 1.1.1 (Polycentrism) and ESPON 1.2.1 (Accessibility) for the complementary analysis of

- gateway cities and polycentric areas connecting Europe with the rest of the world; ESPON 1.1.3 (Enlargement) for the analysis of neighbourhood areas of Europe and effects of the establishment of new borders of EU25 or EU27; ESPON 3.1 for the development of ESPON database and ESPON tools at world scale. Each member of the core-team will be explicitly responsible of such connexions, taking benefit from actual or previous participations to these TPG's. Linkages with other ESPON TPG's are considered as less important but will not be neglected. Specific request will also be addressed to ESPON ECP or ESPON MC, particularly for the elaboration of a survey on mental maps (the different possible division of the world in regions).
- (9) Networking outside ESPON is a necessary condition of success of the project which should firstly take benefit from existing work and avoid duplication of databases or researchs yet developed by other services of the Commission (DG Trade, DG Relex, DG Enlargement, Eurostat, ...) or by other international organisation (WTO, PNUD, OECD, ...). Reversely, the TPG ESPON 3.4.1 will develop a communication strategy in order to insure the diffusion of results, under the control of the ESPON CU and the ESPON MC (political validation) and in partnership with ESPON ECP (scientific validation).

4) Global organisation of work

According to the objectives and constraints defined above, we propose to organise the work of the TPG ESPON 3.4.1 in 8 workpackages with a very precise division of work between teams involved in the answer.

- The backbone of the project (WP1, WP2, WP3, WP4) start from the elaboration of an efficient infrastructure of coordination and networking which will insure an optimal division of work between partners at the very beginning of the project (WP1). Each core-partner will be responsible of a particular thematic analysis for which he will elaborate a database on flows and structure, realised a state of the art on existing research, provide maps and comments expected for the first and second interim report (WP2). This analytical part of the work will provide the inputs for the analysis of the four key questions which will be subject to common elaboration during the internal meeting or by intranet discussions. The progressive answer to these keyquestions is the center of the collective research of the TPG and will be the core of the second and final report (WP3). The policy recommendations will be deduced from the answer to the key-questions and will be strongly linked to the results elaborated in the previous workpackages. They will be delivered as preliminary assumptions in the first and second interim report in order to gain feedbacks but there final version will be of course the main challenge of the Final Report (WP4.)
- The quantitative approach (WP5 and WP6) will focus on the elaboration of an harmonised database and an harmonised presentation of maps, including the elaboration of an "ESPON design" for the future maps of the world elaborated in the framework of ESPON (WP 5). It will also elaborate and store methodologies for the separated or joint analysis of flows and structure, in order to secure the future development of the topic "Europe in the World" in the future ESPON program. The main output will be a dictionary of tools

- which can be employed by ESPON community in the future (WP 6). The quantitative approach will of course receive inputs from WP2 and provide synthetic results for WP3 and WP4.
- The qualitative approach (WP7 and WP8) will firstly establish a common language and clarify the main concepts to be used by project partners, in order to avoid ambiguity and contradiction in the results (WP7). It will also insure complement to quantitative approach through case-studies on geographical area or specific thematic of particular interest (WP8). As in previous case, the qualitative approach will be strongly connected to the backbone of the project and fully integrated in the analysis of key questions (WP3) and the elaboration of policy recommendations (WP4).

The resulting organisation of work in ESPON 3.4.1. is presented in Figure 1 where the role of each partner is precisely identified.

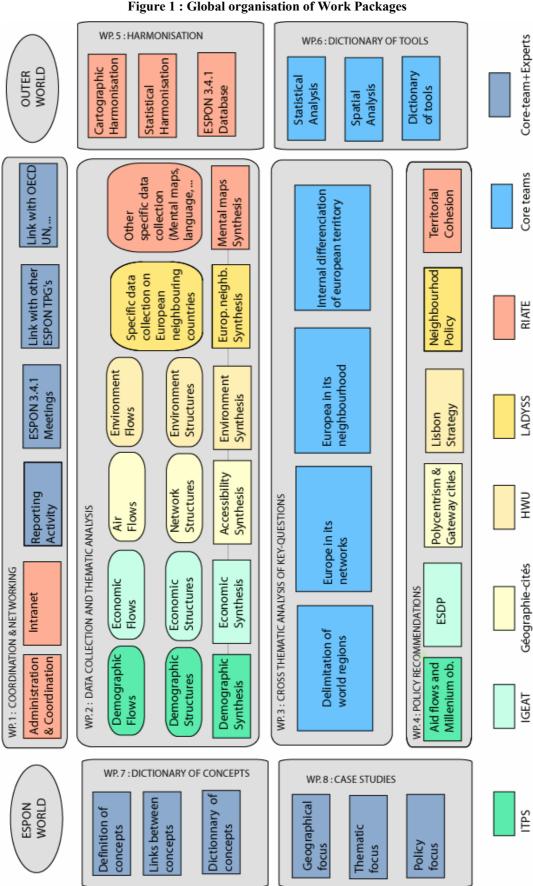


Figure 1: Global organisation of Work Packages

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B) WORK PACKAGES

This part B propose a precise description of each work package defined in Part A. For each work package, we indicate:

- A synthetic description in one page, with (i) main objectives (ii) description of internal organisation (sub-work packages), (iii) list of deliverables and timetable (iv) allocation of funds to teams.
- A precise description of the work to be realised in each sub work package, written by the team responsible of the task.

The general scientific bibliography used for the elaboration of those workpackages is summarised in *Annex 1*.

More details on the statistical and spatial analysis tools is given in *Annex 2* which propose an illustration of the methodology on a limited sample of states.

WP 1: Coordination & Networking

<u>**Objective**</u>: The objective of this workpackage is to fulfil all tasks related to the scientific and administrative organisation of the project, including networking activities.

Teams involved: RIATE

Organisation:

WP 1.1 Administration & coordination (RIATE)

WP 1.2 Intranet (RIATE)

WP. 1.3 Internal meetings of ESPON 3.4.1 (All teams)

WP 1.4 Networking with related ESPON TPG's (Core-teams)

WP 1.5 Networking with international organisations (Core teams)

WP 1.6 : Reporting activity (RIATE+All)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.1.a	Contract ESPON 3.4.1. & subcontracts	RIATE	01/05
	with partners		
D.1.b	Revised version of workplan according to	RIATE	01/05
	addendum		
D.1.c	Intranet of project ESPON 3.4.1	RIATE	01/05
D.1.d	Delivery of the First Interim Report	RIATE, All	03/05
D.1.e	Delivery of the Second Interim Report	RIATE, All	12/05
D.1.f	Delivery of the Final Report	RIATE, All	05/06

Precise description of work realised in WP 1

WP 1.1 Administration & coordination (RIATE)

This work package should cover all the administrative and financial work. The elaboration and conception of the financial reports, the gathering of financial data, invoices or administrative documents will be done by UMS RIATE. A full-time engineer, Isabelle Salmon (administrative responsible from UMS RIATE) will be mainly in charge of these tasks.

Concerning the scientific coordination the leader of the project (Claude Grasland) will be assisted by a scientific coordinator in the framework of a post-doctoral contract². The scientific coordinator will insure the continuous task of networking with all the partners, request for deliverables, preparation of interim reports, control of timetable, preparation of meetings, development of documentation, animation of forum on key-questions on the website...

Due to the responsibility of UMS RIATE as French Espon contact point, the networking with other TPG will be necessarily very active (see also WP. 1.4) and feedbacks will be obtained from other ECPs.

WP 1.2 Intranet (RIATE)

The UMS Riate ensures since 2002 an active participation in the frame of the Espon program which leads to some conclusions on the usefulness and limits of the virtual networking. Following the experience gained under the TPG 3.1 and the TPG 3.2, the UMS Riate, through its web-documentation engineer, can provide to the members of the consortium 3.4.1 a coherent and efficient set of Internet, Extranet and Web tools.

We propose some originals applications, like controlled Extranet "Duevera Groupware" with several thematic working groups, Mailing-Lists, Webmail, Ftp access, Web sites with graphic resources which will ensure a good diffusion, and a good sharing of informations, files, ideas...

This infrastructure is very crucial for the WP7, (the concepts) and the WP3 (cross thematic analysis of key-questions) to allow discussions and to strengthen the relations between each member of the European consortium.

The work of intranet will be insure by an engineer of UMS RIATE (Bernard Corminboeuf) specialised in the question of cooperative work by internet and scientific documentation.

WP. 1.3 Internal meetings of ESPON 3.4.1 (All teams)

Taking into account the very limited budget available for the project, we will use intensively internet communication and introduce a minimum number of meetings which will focus on

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² The scientific coordinator will be Clarisse Didelon which achieved a Ph'D on the effects of globalisation on silk trade in India

the preparation of interim reports, the discussion of key-question and the elaboration of policy proposals. We start from the assumption of 4 meetings for core-partners and 2 meetings for expert team:

- **December 2004**: Kick-off meeting Preparation of FIR (core teams + experts)
- April 2005 : Preparation of SIR (core teams)
- **December 2005**: Synthesis of results on key-questions and integration of case studies results (core-teams + expert)
- April 2006 : Preparation of FR elaboration of policy recommendations. (core teams)

The meetings will take place in Paris, except if another location appears more relevant (e.g. use of ESPON general meetings in order to reduce fees). In every case, the team that will host the meeting will take the responsibility of lunch fees (as it has less travel fees).

WP 1.4 Networking with related ESPON TPG's (Core-teams)

Each member of the core teams is responsible of the networking with specific TPG's for which he has yet established connexions in the past (e.g. partner) or for which he is specialist, according to the thematic division of work. Eventually, expert teams can be asked to establish connexions with other TPG's not mentioned here.

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WP 1.4.1 Networking with ESPON 3.3 (resp., HWU)
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WP 1.4.2 Networking with ESPON 3.2 (resp. IGEAT)

WP 1.4.3 Networking with ESPON 1.1.1 and 1.2.1 (resp. Géographie-cités)

WP 1.4.4 Networking with ESPON 1.1.3 (resp. LADYSS)

WP 1.4.5 Networking with ESPON 1.1.4 and 1.1.2 (resp. ITPS)

WP.1.4.6 Networking with ESPON 3.1 (resp. RIATE)

WP 1.5 Networking with international organisations (Core teams)

Each member of the core teams is responsible of the networking with specific organisation related to the thematic division of work. Eventually, expert teams can be asked to establish connexions with other organisations not mentioned here.

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WP 1.5.1 Networking with UN Environment Programme and UN Habitat (resp., HWU)
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WP 1.5.2 Networking with UN CNUCED & DG TRADE (resp. IGEAT)

WP 1.5.3 Networking with OECD (resp. Géographie-cités)

WP 1.5.4 Networking with DG RELEX and DG ENLARGEMENT (resp. LADYSS)

WP 1.5.5 Networking with UN Population Division (resp. ITPS)

WP.1.5.6 Networking with EUROSTAT (resp. RIATE)

WP 1.6 : Reporting activity (RIATE+All)

Preparation of report is realised by the core teams under the responsibility of the leading partner. The timetable of internal meetings (WP 1.3) is precisely organised to fulfil this reporting activity in the best conditions.

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WP 1.6.1 Preparation of First Interim Report (resp., RIATE, all)
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WP 1.6.2 Preparation of Second Interim Report (resp., RIATE, all)

WP 1.6.3 Preparation of Final Report (resp., RIATE, all)

UMS RIATE - Answer to tender ESPON 3.4.1 « Europe in the World »

WP 2: Thematic Analysis

Objective: Following the framework for data collection and aggregation established in WP.5 this work package will be responsible from the collections of data related to flows and structure. According to the general objective (d) of the ToR, the aim of this workpackage is "To develop appropriate indicators and typologies for measuring European influence inaccordance to flows as well as for the comparison of Europe and its internal features and territorial structures with other parts of the world and providing an input to the ESPON database and map collection» (p.5). More precisely, it twill be based on the rationale and structure described in the ToR (p.8) which propose a list of themes to be covered.

Teams involved: RIATE, Géographie-cités, IGEAT, HWU, ITPS, LADYSS

Internal organisation:

- WP 2.1 Demographic structures and migratory flows (resp. ITPS)
- WP 2.2 Economic structures and trade flows (resp., IGEAT)
- WP 2.3 Networking the world through inter-urban air flows (resp. Géographie-cités)
- WP 2.4 Environment (resp. HWU)
- WP 2.5 European neighbourhoods (resp. LADYSS)
- WP 2.6 Mental Maps and other topics (resp. RIATE).

Deliverables & Timetable:

Code	Description	Responsible	Date
D.2.a	Comprehensive list of existing data to be collected with proposed timetable	RIATE,All	01/05
D.2.b	Evaluation of data situation. Main request for statistical and geographical data to be collected mainly by OECD or Eurostat	RIATE, All	03/05 (FIR)
D.2.c	Preliminary description of identified linkages between Europe and other parts of the world.	IGEAT, ITPS, Géographie-cités, RIATE	03/05 (FIR)
D.2.d	First structural comparison of Europe to comparable world regions on the basis of available indicator in each thematic field.	All	03/05 (FIR)
D.2.e	Establishment of a new database, so far based on indicator available.	RIATE, All	12/05 (SIR)
D.2.f	Further developed results on the basis of available indicators in each thematic field.	RIATE	05/06 (FR)
D.2.g	Final collection of harmonised maps and statistical tables in each thematic field	RIATE	05/06 (FR)
D.2.h	Final version of the database	RIATE, All	05/06 (FR)
D.2.i	Listing of further data requirements and ideas of indicators for further development of the database	RIATE, All	05/06 (FR)

Precise description of work realised in WP. 2

WP 2.1 Demographic structures and migratory flows (resp. ITPS)

The purpose of this work package is to put the European population development – both with regard to change and structure - in a global perspective. This will be done both from a European point of view – e.g. how Europe influences other parts of the world - and from a "global" point of view – how Europe is influenced by the development in other parts of the world. Both these aspects are of high priority in the analysis of migratory flows concerning e.g. size, categories, directions, impacts and effects, both with regard to population structure, economic, social and territorial cohesion.

The work package takes its point of departure in the population development in differing parts of the world (regions in a wider sense) with regard to both growth rates and structures. Population change is divided in natural population change (births and deaths) and migratory movements (immigration and emigration) and a typology with regard to differing combination of these six variables (see ESPON 1.1.4, SIR, TIR). Based on this typology, some conclusions about sustainability concerning population structure and change will be drawn. This also means that the ageing process in Europe in particular, and in some other parts of the world, is a central ingredient in the analysis as it has impact on the reproduction potential and future population development. This also has effects on the migratory flows that are a very central ingredient in the analysis of population structure and population development as well as economic preconditions and performances. Differing migration theories will be helpful in the analyses of motives as well as effects of migratory flows from both the country ("region") of origin and the destination country ("region").

Net migration is not the only phenomenon of interest in discussing migratory flows. Migratory flows of different categories are even more interesting because these differing categories have various impacts on the preconditions of economic development and social cohesion. "Brain drain" and "brain gain" are well-known concepts with regard to migratory flows concerning various categories of in- and out-migrants. According to this discussion, the effects on the countries ("regions") of origin and destination are quite different and the question of divergence or convergence will be of utmost interest in the WP.

According to neo-classical economic theory, migratory movements are an equalising factor that results in equilibrium between demand and supply. This is more valid on the national level than on the international level, where motives other than pure economic are more pronounced. Because of this, it is of utmost importance to find data concerning migratory flows of groups with different characteristics. This is also high prioritised with regard to the convergence/divergence discussion, as this topic can be analysed based on symmetrical/asymmetrical migratory flows and the disaggregated on different categories. These analyses takes their point of departure in economic/social migratory flows as the more involuntary flows are more difficult to integrate in theoretical models based on rationality. Involuntary or compulsory migration is a consequence of e.g. wars, natural and climatic catastrophes, political events, political and religious persecution and discrimination.

Even involuntary migratory flows must, however, be estimated and analysed both with regard to origin/destination and impacts/effects. It is well known that refugees, asylum seekers, clandestine migrants and so on are not equally distributed over the world or in Europe. The economic, social and demographic effects vary then because of the structure of the migrants. Population data on international level are often difficult to find. There are often discrepancies in definitions, in dates, and in many cases, they are not published and existing. Despite these problems, the general population trends and structures seem to be possible to describe and analyse. Sources as demographic journals and publications, ESPON-projects, national

statistical offices, Eurostat, OECD and UN Population Division are some of the sources that will be used in order to find the relevant figures.

WP 2.2 Economic structures and trade flows (resp., IGEAT)

Analysis of external trade and investment flows

We will present a chronological and sectoral analysis of investment, service and commodity flows between the ESPON space as a whole and the other large continental or regional blocs like NAFTA, ASEAN, MERCOSUR,(e.g. *Figure 2*). If necessary – and particularly in the case of evolution across several decades, we will distinguish between the old and new Member States.

The analysis of commercial flows will allow, amongst others, to show the technological strengths and weaknesses of the EU on the basis of a fine-grained categorisation of economic sectors. In this context we will propose a comparison with the other great economic blocs, i.e. Japan and USA/Canada. We will also, again in close collaboration with WP 3.3). Special attention will be brought to the evolutions of the European influence in its ancient colonies, as well as in the emerging markets. WP 8.2 will focus on these issues more in detail.

Continuing with the comparisons of the EU with other large blocs, we will examine the economic growth dynamics of Europe's global zone of influence (in connection with WP 3.3 and 2.5), both in terms of growth and in terms of sectoral specialisations, by elaborating a mean growth rate doubly weighted by the respective importance of each partner and the intensity of its relations with the EU. In this context special attention will also be paid to Europe's immediate neighbourhood (in collaboration with WP 2.5).

Both in respect to foreign investment and to commercial flows, internal EU disparities will be studied at national and regional scale. The former will be studied at regional scale according to the inflows and according to the localisation of headquarters of large global enterprises. External trade flows being quite difficult to grasp with available data, we will elaborate an openness index on the basis of multivariate analysis including indicators such as air flows (in collaboration with WP 2.3), city rankings, and, possibly, a theoretical level of external trade based on regional economic structure and national external trade structure.

Analysis of economic structures

Sectoral economic structures and their evolutions will again be analysed in a first phase for the ESPON space as a whole and the other large economic blocs. We will also study the part of European decision making (headquarters) in the total of large global corporations.

The sectoral structures will be studied at regional scale through, amongst others, a typology analysis, including the analysis of the structural and growth dynamics of each type. Other characteristics of the types will also be analysed, such as R&D intensity, levels of qualification of the labour force and other labour market indicators.

Data sources (other than the ESPON database) that will be of use for these analyses:

UN COMTRADE database, OECD, UNCTAD, Eurostat, Fortune 500 and national sources

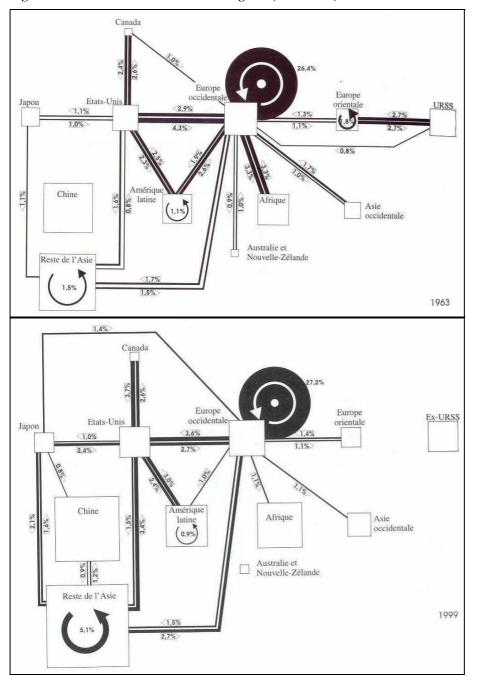


Figure 2: Trade flows between world regions (1963-1999)

Source : Vandermotten C., Marissal P., 2003, *La production des espaces économiques,* vol. 2, Presses de l'ULB, Bruxelles, 295 p.

WP 2.3 Air flows and network structures (resp. Géographie-cités)

The main objective of this work package is to gather data on the world air flows at the interurban level and for (at least) the ten last years in order to answer questions such as the networking dynamics between the cities at the world level, European level and between European cities and cities from the neighbourhood countries.

While air flows are among the worldwide data that are the easiest to obtain, the different sources are not compatible the ones with the others and it is not evident to harmonize them. In addition, one should, from the begin, be also aware that a database that collect data on flows between the airports/cities gives different figures from a database that collect data on the traffic of each airport/city. This difference comes, in particular, from the through traffic.

Working on air flows for more than ten years, and having tested different sources from different international institutes and organization, we have chosen, for the flows figures, two major databases: from OACI and from ITA. Several reasons can explain this choice. In particular: the database from OACI are quite the only one to provide a database that are comparable for a long period of time (for example the last two decades). While the database from ITA is for a few international linkages more accurate and could constitute a complementary source of information.

The other main difficulty of this work package relates to the freight figures. While main analysis and conclusions will be drawn from the number of air passengers that travel all over the world, one cannot avoid taking into account the tons of freight that are carried between the cities. Indeed, for the last ten years, the air cargo recorded considerable increases taking into account the fall in the costs in air transports.

Figures for each airport/city will be collected from "Aéroports Magazine" and have already been tested by our own previous researches and in particular in ESPON 1.1.1 for the European level.

WP 2.4 Environment (resp. HWU)

We anticipate that there will be limited data available on flows, and therefore the main element of this WP will be concerned with structures. For example, water supply and quality is a key issue, and there are UN agencies such as UNDP, UNESCO and UNICEF that hold some data, as do annual reports of the World Bank, and specialist agencies such as the International Water and Sanitation Centre. Data is generally country-based, and international reports tend to give little attention to city-level data. Globally the UN figures are that some 3000 million people lack adequate access to sanitation and that about half that number lack safe water (UN Centre for Human Settlements, 2001, p.115). Other parts of the database will look at bio-diversity, land cover (forestry is important), and energy.

The key flow to be looked at in this WP concerns climate change and its likely impacts. There is no widespread acceptance that greenhouse gases and global warming are changing the earth's climate with potentially very serious environmental, economic and social impacts. For example, there are estimates that global warming could create 150 M environmental refugees by 2050.

The work in this WP will follow the pattern set out in the discussion of synthetic analysis for the project as a whole; However, geographical accessibility is unlikely to be a sufficient explanation for the intensity of many environmental relations. For example the impacts of climate change reflect a complex mix of global politics, location and topography, while even access to safe supplies of water is rooted in socio-economic issues such as poverty.

WP 2.5 European neighbourhoods (resp. LADYSS)

Data collection

The Ladyss package will basically benefit from data collected by the other teams (demographics, economics, networks, environment, WP 2.1. to 2.4.), in a close partnership with them. Nevertheless, its work will drive at collecting specific data, considering the interdependency between Europe and its neighbours (so called "Euro Mediterranean region": EU + Switzerland and Norway, Balkans, ENP countries, Tacis countries except Mongolia and Central Asian countries), in social (migrations and regional labour market), economics (foreign investment and regional capital market), environment (air and water interdependencies) and geopolitics (security and stabilization of the close neighbourhoods).

As for the social and demographic concern, Ladyss will add data (for the countries of the region) on degrees and/or skill levels of labour forces, with a distinction between men and women, in order to provide the gender analysis with an information that is particularly important in this part of the world. It will add data on specific migrants such as refugees and asylum applicants and on students if available. Data on unemployment and underemployment (due to little dimension of women labour forces in southern countries) will be collected for both sexes.

As for the economic concern, specific regional data will be added in the following fields:

- O/D matrix of FDI in the region (if not provided by WP 2.2.)
- data on workers remittances (which seem to become a major regional link between northern and Latin America)
- national investment risk ratio
- trade in energy goods in the region (including here Middle-East and Caspian oil producers, in a wide view of the region)
- flows of public international subsidies between EU and neighbours (if not provided by WP 2.2...)
- if not provided by WP 2.2. and if available, a detail of trade flows concerning agricultural goods (the European food market is of utmost importance for the southern neighbours)
- if not provided by WP 2.4., a set of regional data on energy consumption and air pollution.

Furthermore, specific data will be collected concerning a few relevant items; they will not be completed at a comprehensive global scale, neither will they be comprehensive thematically. For instance tourism flows will be focused for a set of o/d data for some relevant countries of the region; the "Base Lumière" database on international flows of movies (numbers of entrances) will be set up for a regional analysis.

The target of data collection is the presentation of the Euromediterranean region spatial structure and regional links.

Structures:

- Demographics and economics: national levels of development and typology of development (in partnership with IGEAT-WP 2.2.), skilled labour migrations potential
- Environment: the main risks in the region (the WP will benefit from results of WP 2.4.); a focus will be made on the water concern (availability and consumption of freshwater).

Flows:

- Economics (in partnership with IGEAT in charge of WP 2.2.): market shares of European countries in the neighbouring states (vs Northern America and Japan namely); dissymmetry of trade flows Europe / neighbours vs neighbours/Europe;
- Geopolitics: main trade flows of oil in the region
- Geography: identification of sub-regional (economic) integration process, e.g. Baltic countries, Black Sea countries, Eastern Mediterranean countries, Russia and its western and southern margins. This item will use the result of the Accessibility workpackage (3.3.).

WP 2.6 Mental Maps and other topics (resp. RIATE).

As leading partner of the project and responsible of database harmonisation, the UMS RIATE will take the responsibility of the collection of data on topics not covered by other partners or topics of general interest like distance between states, presence of a common border, existence of common language, historical relations, etc. Nevertheless, we will avoid a "blind" collection of heterogeneous indicators and focus only on topics which are clearly important for the realisation of the objectives of the TPG ESPON 3.4.1. When possible, we will use existing sources (e.g. Matrix of distances between states established by the CEPII, official definition of borders established by UN or US geological survey, etc.). In each case, a strong procedure of quality control will be introduced, following the principles for sustainable database collection elaborated in ESPON 3.1 and reproduced in the annex of the FIR of ESPON 3.2.

A specific database will be elaborated on the "mental maps" of the world through a collection of the maps of the world produced by international organisations (UN, OECD, WTO, World Bank, ...), main states of the World (China, Russia, United States, ...), main private global companies (IBM, Microsoft, Renault, Exxon, ...) and most important non governmental organisations (WWF, Amnesty International, ...). This collection of world maps will base mainly on official documentation produced in report or website of the organisations (*Figure 3*). The maps collected will be stored on the intranet of ESPON 3.4.1 (Cf. WP.1) and specific informations will be systematically analysed concerning:

- The choice of cartographic projection
- The choice of world divisions in regions

This study on mental maps of the world will be strongly connected with the case studies on "The Weltanschauung of the ESPON community" (WP 8.6)" and will provide crucial inputs for the elaboration of a common template for world cartographic representation in the ESPON programme (WP 5.1). The aim is to propose a revised version of the preliminary template of world representations elaborated in the framework of ESPON 3.1 (Annex B of SIR, *Preliminary study on Europe in the World*)

(a) Microsoft (http://www.microsoft.com/worldwide/) Microsoft Microsoft Worldwide **Web Sites**To visit the Web site of any Microsoft Worldwide Office, choose from the dro Europe Middle East and Africa **■** Go North & Central America Contact Information
Choose the location for which you want contact information: South Pacific • Go (b)World Toursim Organisation (http://www.world-tourism.org/members/eng/menu states.html) World Tourism Organization (WTO) Member States Americas East Asia & the Pacific Europe Middle East South Asia WTO has six Regional Commissions within which the member States are grouped, not necessarily according to their geographical location. For instance, Egypt is included in the Regional Commission for the Middle East. List of Member States (pdf) (October 2003) For more details on each of the Member States, please dick on the Regional Representations links above. (c)United Nations News center (http://www.un.org/News/) UN NEWS CENTRE و عولي † * \$ Français Pyccoxii Español 3 September 2004 Search UN N **UN News** Past 2 weeks 💌 service Annan condemns attacks on UN and partners in western Afghanistan Annual Contember — Secretary-General Kofi Annan has condemned today's attacks against United Nations offices, non-governmental organizations (NGOs) and the Independent Human Rights Commission in strife-torn western Afghanistan's Herat province FULL STORY>>

Figure 3: Example of divisions of the world by global organisations

This first sample of divisions of the world reveals a major role of continents in the representation of the world used by main international organisation. But some specific areas are identified like Middle East and many divisions of Asia are proposed

WP 3: Cross-thematic analysis of key-questions

Objective: This work package has the central task to integrate thematic analysis of flows and structure according to the common understanding of work described in part A.2. It will integrate the results elaborated in quantitative approaches (WP2, WP5, WP6) and qualitative approach (WP 7, WP8) It will therefore provide a synthesis of results which will directly provide inputs for the elaboration of policy recommendations in WP.4.

Teams involved: RIATE, Géographie-cités, IGEAT, ITPS, LADYSS, HWU

Internal organisation:

- WP 3.1 World Regions and Global Integration Zones (resp., RIATE, HWU, IGEAT)
- WP 3.2 Networking the world (resp. Geographie-cités, HWU, ITPS)
- WP 3.3 Delimitation of European influence area (resp. LADYSS, ITPS, RIATE)
- **WP 3.5 Internal differentiation of European territory** (resp. IGEAT, Géographie-cités, LADYSS)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.3.a	Preliminary results on the definition of European influence area	All	12/05 (SIR)
D.3.b	Preliminary results on the synthetic division of the world by flows and network.	All	12/05 (SIR)
D.3.c	Preliminary results on structural comparison of Europe to comparable world regions.	All	12/05 (SIR)
D.3.d	Comprehensive presentation of the analysis on flows including the delimitation of functional influence areas of Europe in a global context and on aspects related to the internal situation within these spheres of influence.	All	05/06 (FR)
D.3.e	Comprehensive presentation on the diversity of the European territory according to world integration	All	05/06 (FR)
D.3.f	Comprehensive presentation on the structural comparison of Europe with other parts of the world	All	05/06 (FR)
D.3.g	Comprehensive presentation on the spatial structures of European neighbourhood areas as well as on linkages and interdependencies between Europe and neighbouring areas.	All	05/06 (FR)

Precise description of work realised in WP. 3

WP 3.1 World Regions and Global Integration Zones (resp., RIATE, HWU, IGEAT)

The work will involve an exploration of literature about GIZs, including exploration of the scale and spatial features of GIZs. Attention will be paid to historical and cultural factors, agglomeration economies and the application of concepts of place competition (c.f. Porter, 1990, 1996; Krugman 1996a and b), and also the role of infrastructure (c.f. Graham and Marvin, 2001). The key questions, especially concerning policy and institutions, will be followed up by interviews and data collection in one or more GIZs. The scale of the work will depend on the resources, and decisions will have to be made about trading off depth against breadth of coverage. However, the aim would be to at least review the world as a whole and the key metropolitan regions in terms of their functional bases and development trajectories.

The intention is that the overview developed in WP 6.4 will provide the basis for a case study of 3 GIZs — one in North America, one in China and the one that is emerging around the Straits of Molacca involving Singapore, Malaysia and Indonesia. The case studies will focus on the key themes emerging in the rest of the project, rather than being stand-alone pieces of analysis. In particular they will seek to integrate data analysis with institutional and policy analysis, so as to better understand the preconditions for growing a GIZ.

Finally, through analysis of ESPON reports, liaison with projects 3.2 and 3.3 and ECPs ideas will be developed about the potential and the spatial possibilities for further GIZ development within Europe.

WP 3.2 Europe in its networks (resp. Geographie-cités, HWU, ITPS)

This part of the project studies the dynamic of the world system and the trends of the European position in the world spatial organization through the international air flows collected in WP 2.3 that have been observed during the last two decades. Thanks to their relative fast capacity to adjust with supply and demand, the air network are very relevant indicators of globalization and is one of the best synthetic indicator of contemporary societal trends. As such, air flows highlight the way in which current integration processes shape the relations of society to space and reorganise the territorial structures at different scales.

The work proposed in this work package will examine in particular the linkages that connect the different parts of the world and the different places within Europe (EU 25). This study will also focus on the relationships that emerge or consolidate between the European space at different scales (states/regions/cities) and their different neighbours observed at similar territorial levels.

We would like to underline that while placing this study in a relational approach of the territories, the objective is to deepen the analysis of the interdependences between the different places of the world. Indeed the description of world flows leads many researchers to define, between countries or between several regional blocs, the main roads of the

international exchange. We would like to go beyond this "narrow" vision of the world networking, mainly by taking into account the reality of flows between the cities (Figure 4).

London
Amsterdam
Frankfurt

Madrid
Paris

Flow > 353 000 passengers
(return trips)

Figure 4: Most important international-european air routes in 2000

Source : ICAO*
© N. Cattan, G. Lesecq, CNRS-Géographie-cités, 2003

Source: N. Cattan, 2004, Final report of ESPON 1.1.1

Consequently, while taking the flows that occur in the world system at the inter-urban scale, this work package differs from the majority of the analysis that are proposed in other work packages of this project. We do not claim that the example of intercity air flows gives a representative picture of how world networks function. It is proposed to provide a necessary counterweight to the dominant visions and perceptions of the world network dynamics.

The research avenues elaborated in this work package question the mechanisms that underlie the world and European connections in terms of polycentric development. As such, polycentrism is analysed through the capacity of cities to network i.e. their capacity to be included in multiple networks of relations at various territorial scales.

Until now, the analysis of city networks at the world as well as at the European scale remains incomplete. The vast majority of existing researches in this area seeks to produce knowledge on the cities themselves, to evaluate their strengths and weaknesses, and to estimate their growth rates. Consequently, this means that a large majority of studies constantly produced and reproduced urban typologies. Peter Taylor (2002) denounce the paradox of researches on the world cities in the following way: whereas the essence of world cities is their relations to each other, studies continue focusing on case studies and comparative studies evaluating patterns within cities and neglecting ipso facto intercity relations. This study tries to go beyond certain too static images of the world that reduces it to a hierarchy of poles where the only wealth production processes are taken into account.

By repositioning the questioning of Europe in the world in terms of inter-urban relations which places the mobility and the exchanges in the centre of the analysis, this work package will contribute to answer, for example, the following questions:

Domination and dependence:

- What are the main privileged associations at the World, European, and meso-regional levels?
- Can we identify huge differences in the evolution of the dominant/dependant structure defined by the major world city networks?
- How several territorial inequalities within the European space are related to the flows that link Europe to the rest of the world?

Gateways of the world system:

- Where do the processes of internationalization occur in the world system?
- What are the main European gateways for air traffic? We do believe that the new "frontier" of EU is several international gateways cities and not only some external borders of the EU 25 either at its Eastern limits or at its Southern ones.

"Global cities, World Networks"

- How could we define the "world metropolitan archipelago"? Is it a reality?
- Does it correspond to the only largest cities of the world?
- How this global city network organizes the world system?

All these analyses should enable us to answer the way Europe perform in the World system of air exchanges mainly whether the world air network draw a polycentric image of the world networking system. The WP will include qualitative commentary noting that the fastest increase in emissions in Europe is now from the transport sector, and that environmental organisations are calling for Emission Trading Systems to be applied to aviation. Thus a sustainable development dimension will be added to the analysis.

WP 3.3 Europe and its neighbours (resp. LADYSS, ITPS, RIATE)

The WP 7. on concepts will provide a quick synthesis of the geopolitical notion of European region according to the EU policies: before the ENP, there was no identification of any formal European region and / or any geographical influence zone; there was a pragmatic but low efficient juxtaposition of territorial policies towards eastern (Tacis) and southern (Meda) neighbours.

We propose to analyse the differences between eastern neighbours on the one hand, and southern on the other; whether it is possible or not to consider eastern neighbours as a whole, and southern as another, is important in regard to policy recommendations on neighbourhood (WP 4.5.). We will discuss the three following questions: (i) when measured with GDP index, levels of development are not that different among eastern and southern neighbours; but the economic structures are quite different, as well as the environment stakes (industrial pollution and nuclear risk on the one eastern hand, water concern and urban booming on the southern hand). (ii) Demographic structures, too, are very different, as well as training forces; the labour forces stakes are not the same on the eastern and on the southern side of Europe. (iii) The eastern side benefits (or suffers?) from a leading country, Russia, that reorganizes the economic flows of its margins; whereas southern countries benefit (or suffer?) from a polycentric and non hierarchical geographic structure (except in Eastern Mediterranean Sea with Israel and Turkey but partially), which highlights the EU's role in this part of the globe. . (iv) European consumption patterns will spread to the neighbouring areas, as well as immigrants will bring new consumption pattern with them. There are also European social and cultural norms and values, in a wide sense, influencing neighbouring areas as well as neighbouring areas will influence Europe. The global organisation of world according to the centreperiphery model (*Figure 5*) should probably be adapted when focusing to the specific case of European neighbourhood.

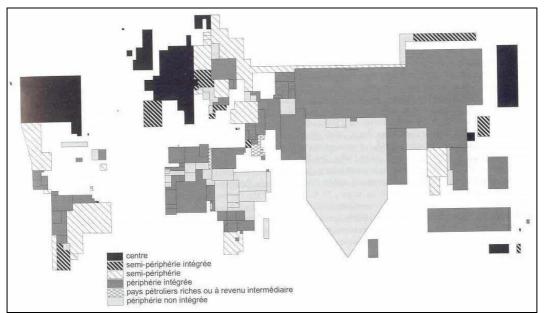


Figure 5: Typology of world state according to the model centre-periphery

Source : Vandermotten C., Marissal P., 2003, *La production des espaces économiques*, vol. 2, Presses de l'ULB, Bruxelles, 295 p.

Then we propose to discuss if the notion of region is relevant to understand the structure and flows inside the set of neighbouring countries indicated in ToR. Benefiting from the results of other key questions (3.2., 3.1 3.4.) we will compare the "Euromediterranean region" hypothesis with the "global" hypothesis (insertion of Europe in the world dominated by large scale flows with Northern America and Eastern Asia) and with the "archipelago" hypothesis (domination of multi-directional urban region-to-urban region links, involving many European cities with no clear neighbouring impacts).

This analysis will provide outputs to the dictionary of concepts (WP. 7) through a couple of dilemmas: functional Euromediterranean area vs "cultural" or "Civilizational" areas; borders-hinges vs borders-barriers.

WP 3.4 Internal differentiation of European territory (resp. IGEAT, Géographie-cités, LADYSS)

The Espon project 3.4.1 stresses on the relations between Europe and its neighbourhood. This WP will study the differentiations between European states according to the level of their relations with the neighbouring countries. Within the Europe 27, some states are closely linked to neighbours (energy dependence, massive in-migrations, etc...) whereas others are not. European countries do not have the same interests in energy (dependence to Russia, Middle East, North Africa), migrations (because of strong differences in national demography within EU), trade, capital (FDI) or tourist flows, thus in the neighbourhood policy.

LADYSS could also handle some qualitative information or partial data on the following topics:

- the mosaic of linguistic areas in Europe, which shows connections with neighbouring countries
- the part of national minorities (especially when coming from a neighbour country) in the European countries.

On the basis of the analyses elaborated in WP 2, we will analyse the internal differentiation of Europe concerning the relations of its regions to the rest of the world.

For example, on the basis of the economic analysis of WP2.2, and through the combination of regional openness levels, recent structural evolutions and the results of the sectoral typology, enhanced with different qualification indicators we will elaborate a synthetic map of the ESPON regions according to their potential strengths and weaknesses in the context of a globalising economy. This will allow to distinguish on the one hand, those decision-making and/or technological regions that will profit from the process of internationalisation from, on the other hand, those regions which in regard of their specialisations are the most likely to suffer from external competition (for example in the form of unqualified and cheap labour).

We will provide such an analysis for each of the thematic fields of WP 2 (obviously depending on availability of data on regional scale). The results of project 1.1.4 and of WP 2.1 will allow a precise picture of regional demographic evolutions with migratory patterns as the international element. The work of projects 1.2.1 and 2.1.1 will allow completing the picture elaborated in WP 2.3 and showing the integration of regions into international transport networks. Elements of location and of position obviously also play an important role in determining the impact of neighbourhood relationships on specific regions, just as the mental images that, for example, enterprises have of the European territory. WPs 2.5 and 2.6 will provide the input for this analysis.

Finally, the different themes will be integrated into a cross-analysis in order to elaborate a complete picture of the regional impacts of globalisation in all its aspects.

WP 4: Policy recommendations

<u>Objective</u>: This work package has the final tasks to deliver political proposal to the Monitoring Committee of the ESPON program, according to the different topics indicated in the ToR pp. 4-6. It is directly connected with previous work package 3.

Teams involved: RIATE, Géographie-cités, IGEAT, ITPS, LADYSS, HWU

Internal organisation:

WP 4.1 Aid flows and development (resp. ITPS)

WP 4.2 ESDP (resp. IGEAT)

WP 4.3 Polycentrism and Gateway cities (resp. Géographie-cités)

WP 4.4 Lisbon Strategy (resp., HWU)

WP 4.5 Neighbourhood policy (resp. LADYSS)

WP 4.6 Territorial Cohesion (resp. RIATE)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.4.a	First ideas on policy recommendations at	All	03/05 (FIR)
	European level		
D.4.b	Particular focus on the possible involvement	LADYSS, All	03/05 (FIR)
	of the "geographical neighbourhood" in		
	relation to existing territorial policy		
	orientations		
D.4.c	First ideas on strategic projects for	IGEAT, HWU, All	03/05 (FIR)
	improving EU competitiveness in the World		
D.4.d	Final version of policy recommendations at	All	05/06 (FR)
	European level		
D.4.e	Presentation of access points and concrete	RIATE	05/06 (FR)
	ideas for policy responses to the detected		
	results that could improve territorial		
	cohesion		

Precise description of work realised in WP. 4

Creativity often arises at an interface, where different viewpoints come together. We propose to use this approach in developing our recommendations. Our intention is to have dialogues with a number of other bodies from different backgrounds and parts of the world as we develop our recommendations. These will of course include our colleagues working on projects 3.2 and 3.3. Others that we have identified are the World Wide Fund's European Policy Office, an American urban and regional development research foundation such as the Urban Land Institute and the Eastern Asian and Pacific Regional Organisation for Planning and Housing. We also see scope to use the dialogues in the run up to the UN's World Urban Forum in 2006 as a means to explore our developing recommendations

WP 4.1 Aid flows and development (resp. ITPS)

Many studies have shown that the transfer of money by immigrants from developing countries to Europe is generally higher and more efficient than the official transfer of money from rich to poor countries. The common conclusion is that opening European borders to people from the Third World countries may be an efficient way to help these countries. Alas, this conclusion is misleading: development aid is generally used for investment in infrastructure and social over-head capital, while remittances from family members abroad are used for private consumption and investment in family property. Compared with aid programs, remittances may be a more efficient way to *transfer* money, but this can be explained by lower transaction costs.

It is important to bear in mind that in many developing countries families and households, rather than individuals, induce migration. In developing countries the need of risk diversification and risk minimisation is dependent on the perceived functioning of markets, or missing markets. The family members abroad will bring in remittances to the family or household, money that will be *saved* and only used in economically hard times. This is a very unproductive use of money, and it does not promote wealth or economic growth.

Aid and development can be very useful in fulfilling the aims of the Millennium Objective; e.g. good governance, sound macroeconomic policies, securing fiscal sustainability, social security and safety nets, strengthening of the financial sector and integrating the informal sector into the formal economy, which will not be reached in many developing countries without aid and development programs. Aid and development programs and remittances are not supplementary, but complementary.

WP 4.2 ESDP (resp. IGEAT)

The ESDP defines global objectives for the development of European territories, such as territorial cohesion, polycentricity, equal access to general services, etc. All these heavily depend on internal (infra) structures and relationships, but also, and increasingly so, on international and global elements. On the basis of the internal differentiation developed in WP 3.4, recommendations will be elaborated concerning the means to mitigate negative impacts on fragile regions (for example, a shift along the production chain from labour-intensive to knowledge / capital intensive production for those regions that are suffering from competition

by cheap labour), but also to foster positive evolutions on issues such as connectivity. As the notion of polycentricity inherently depends on scale, the analyses of the different WPs, notably WP 2.5 on neighbourhood relations will also put into perspective certain findings concerning polycentricity based on the observation of the sole ESPON space. The same holds true for issues of sustainable development, as questions such as climate change are obviously of global scale and cannot be treated for the ESPON space in isolation.

WP 4.3 Polycentrism and Gateway cities (resp. Géographie-cités)

This work package will focus in particular on policy recommendations that sustain the emergence and consolidation of a polycentric Europe in a polycentric world. Referring to the Terms of references of the tender, we will give a detailed attention to the various levels which organize the flows i.e. worldwide networks, Europe networks with the rest of the world, and networks between Europe and its neighbours.

The recommendations will be oriented towards strategies and arguments that help spatial planners developing and taking decision on the best way to implement, in various territorial contexts, networking and cooperation between urban areas. Three main avenues are given below:

- o Does a city have to specialize its traffics (mono-direction, multi-oriented, mono-types, multi-category....) in order to constitute privileged gateways of Europe?
- o How a city could perform its linkages on a medium term?
- o Which model of spatial integration (centre-periphery, metropolitan networks, clusters of cities, muti-oriented polycentrism....) must be privileged in the long term in order to create a better European territorial dynamics which supports social and territorial cohesion?

WP 4.4 Lisbon Strategy (resp., HWU)

Lisbon is very much about growing the human capital of Europe. One territorial implication is that progress will reflect the attractiveness of regions to those at the leading edge of knowledge-based economies. In other words, where do people want to live? What makes a region attractive to people who are drivers of knowledge-based economies? These concerns link strongly into project 1.1.4. We would also hope that the research in 3.4.1 will reveal insights into the human capital attractions of the GIZ areas outside Europe.

We see good quality environment as a factor in promoting attractive living areas that in turn draw in highly skilled residents. However, the risk is always that growth begins to undermine the environmental qualities of a territory. Recommendations therefore need to take account of the macro, meso, and micro scales.

A working hypothesis is that a new kind of social capital characterises the knowledge-intense sectors of the economy and that the knowledge economy's continued growth is dependent on the development of this new social capital. In a spatial context this means that regions that are not able to transform their social capitals will meet great difficulties in transforming to the knowledge economy and then also hamper a sustainable development.

The WP will work with these ideas, the findings of project 3.4.1 and networking with other relevant ESPON projects (notably 3.3, of course) to develop policy recommendations.

WP 4.5 Neighbourhood policy (resp. LADYSS)

The Euromediterranean (again, the notion encompasses eastern neighbours too) stakes mean:

- thinking Europe in terms of influence and in some cases (economic) domination, whereas the European process hitherto dealt with symmetry and equilibrium
- associating countries that are much poorer than the new EU members, which means a brand new policy set
- delimitating the range of countries belonging to this neighbouring partnership, which may lead UE to go further than Tacis and today ENP states to what extend?
- involving European means towards theses countries in a height that could be much higher than the today Meda and Tacis funds
- defining a specific and long term partnership with Russia which indeed will never accept to be a simple member of the European neighbouring partnership.

The WP 4.5. will focus on the two major policy axes:

- the ENP Four Mobilities, according to three possible scenarios: (i) enclosure (few FDI UE/neighbours, reduction of in-migrations); (ii) dichotomy (North-to-South or East mobility of capital vs lack of mobility of East or South-to-North migrants); (iii) regionalisation (significant European FDI to eastern and southern neighbours, qualifying migrations, huge investment in southern human capital and organisation of the regional market of training)
- The Spatial Development: Europe/neighbours and neighbours/neighbours transport system; spatial structuring devices in health and training fields; urban services (transport, sanitation and so on); environment (will European countries export polluting activities in neighbourhoods?); cross-border development with East and South (along with WP 4.3.).

WP 4.6 Territorial Cohesion (resp. RIATE)

Taking benefit from the current research of TPG ESPON 3.2. on the elaboration of a European Territorial Cohesion Index (ETCI) we propose to introduce a 4th dimension (World/Europe) in the classical 3-level approach (European/National/Local) developed in the Espon program. It means that the situation of European territories should be evaluated not only by comparison to European mean, national mean or average of neighbouring regions, but also through a comparison with World mean or average value of countries located in the periphery of Europe. This is of utmost importance for the regions of European Union located near the external border which can appear attractive when compared to countries or regions located out of the European Union. Therefore, a big challenge to be solved in common by ESPON 3.2 and ESPON 3.4.1. will be the identification of a selection of indicators which can be computed either at European scale (by regions) and at world scale (by states).

As a very simple example, the maps of absolute and relative discontinuities of GDP/inh. which has been elaborated at regional level in ESPON 3.1 should be compared with the same discontinuities calculated between world states in order to evaluate their real value in the context of globalisation. In the study realised by ESPON 1.1.3, it was noticed that some discontinuities observed at the external borders of UE (like Finland-Russia) are much more important than internal discontinuities inside EU. But it is a point that has to be verified in a global perspective if we admit that discontinuities are at the same time opportunities and threat for the development of flows of people and investments which can increase or reduce the spatial heterogeneity and the social cohesion. As it can be seen on Figure 6, the world perspective provides very important inputs for the correct evaluation of territorial disparities observed inside the European Union. The maps indicate that some of the more important international discontinuities of GDP/inh. at world scale are located inside the European Union. For example, the intensity of the difference of GDP/inh. between Germany and Poland is comparable to the discontinuity observed at the border between USA and Mexico. The maps are different according to the choice of an absolute or relative measure of the gradient of GDP/inh,

Territorial cohesion should of course not limited to the analysis of structures and we will follow the recommendations of the Hypercube elaborated in ESPON 3.1 in order to explore all dimensions of the concept, but focusing only on what is modified by the introduction of the world perspective. In the case of flows, it is for example obvious that the level of connectivity of cities or region should not be evaluated only in terms of internal relations with other parts of the European territory but also in connexion with the rest of the world. This point will be especially developed in WP. 4.4 but is a crucial dimension of territorial cohesion.

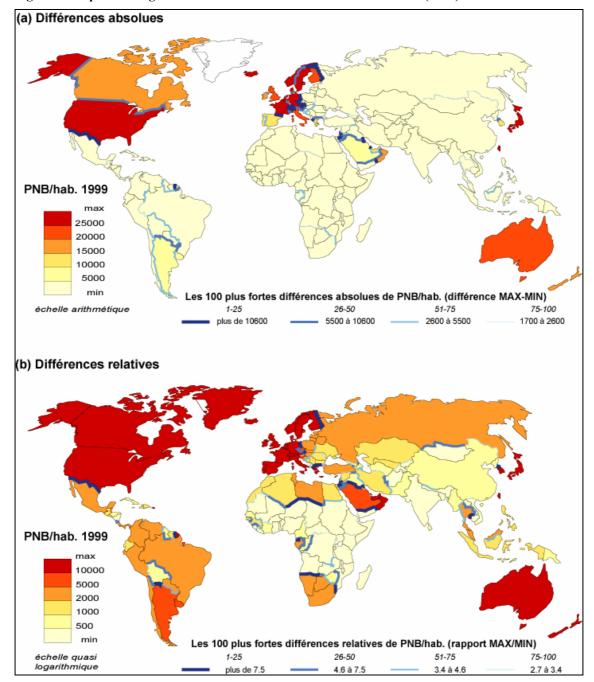


Figure 6: Top 100 of highest discontinuities of GNP/inh. between states (1999)

Source: Grasland C., 2005, Article "frontieres » in Ghorra-Gobin C & al.., Dictionnaire de la Mondialisation,

WP 5 : Database and Maps

Objective: According to the primary research questions of the ToR (p.6) the objective of this workpackage is to make "proposal for an effective statistical and cartographical framework for the needs of the research, in particular in relation to the questions of geographical projection and by adapting the level of aggregation to the specific needs of European policy". The work will be based on the rationale and structure proposed in the ToR (p.8). This workpackage will be more generally responsible from the harmonisation of maps and statistical tables produce in the rest of the TPG and in particular in WP. 2.

Teams involved: RIATE, Géographie-cités, IGEAT

Internal organisation:

WP 5.1 Cartographical harmonisation (resp. Géographie-cités, RIATE)

WP 5.2 Statistical harmonisation (resp. RIATE)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.5.a	Comprehensive list of territorial units to	RIATE	12/04
	be covered by data collection.		
D.5.b	Preliminary definition of standards for	Geographie-cités	03/05 (FIR)
	the cartography of the World		
D.5.c	Preliminary definition of aggregates for	RIATE	03/05 (FIR)
	the statistical analysis of the world		
D.5.d	Preliminary collection of harmonised	RIATE	12/05 (SIR)
	maps and statistical tables		
D.5.e	Final definition of standard for	Geographie-cités	05/06 (FR)
	cartography of the World		
D.5.f	Final definition of aggregates for the	RIATE	05/06 (FR)
	statistical analysis of the world		
D.5.g	Final collection of harmonised maps and	RIATE	05/06 (FR)
	statistical tables		
D.5.h	Ideas for further development linked to	RIATE	05/06 (FR)
	mapping facilities		

Precise decription of work realised in WP. 5

This work package will fulfil two crucial objectives of harmonisation: (i) harmonisation of maps and (ii) harmonisation of database. As it was noticed in the part A.3 (*Principles to be followed for efficient results*) we are obliged to introduce a strong division of work between core-teams responsible from data collection and thematic analysis, which could introduce a risk of heterogeneity of the results in both statistical and cartographical areas of work. To avoid this risk, we have established this work package 5 which will have the central mission to harmonise the production of database and maps and to provide strict guidelines to the project partners. A professional cartographic engineer of UMS RIATE (Nicolas Lambert) will take the responsibility of this work package.

WP 5.1 Cartographical harmonisation (resp. Géographie-cités, RIATE)

As it was noticed in the part A. of the preliminary study on Europe in the World realised in the framework of ESPON 3.1, "The realisation of maps presenting the situation of Europe in the world is related to many technical questions (projection, framework, aggregation level, ...) which are of crucial importance from scientific and political points of view". Many choices should be made related to (i) the choice of map projection, (ii) the choice of basic territorial units (states or eventually part of states in the case of the biggest ones – Russia, Bresil, China, Canada, India), (iii) the choice of world divisions in regions of interest in a European perspective, (iv) the specific template to be adopted for the analysis of European neighbouring countries.

The preliminary proposals established in the framework of ESPON 3.1 are certainly not definitive and should be very carefully assets by scientific researcher and validate by political level (Espon Monitoring Comitee). The author of the preliminary study (C. Grataloup, Géographie-cités & C. Grasland, UMS RIATE) will therefore propose a further development of their initial work, taking benefit from the collective expertise of all teams involved in project ESPON 3.4.1. which will suggest improvements from their specific points of view (economical, demographical, environmental, network, ...) in order to choose the best compromise or, if it is not possible, to propose alternative solutions. On the particular question of territorial divisions of the world, crucial inputs will be received from WP. 2.6 (Mental maps of international organisations) and WP 8.6 (Survey on the "Weltanschauung" of the Espon community). On the question of the cartographic template to be analysed for European neighbouring countries, an iterative process will be engaged with WP. 2.5 (Database on neighbouring countries) and 3.3 (Delimitation of European influence area) because it is not possible to define the good cartographical framework before to have obtained answer on the delimitation of European influence area according to flows and structure. It is also important to observe that areal units (states, world regions) will be complete by specific maps on cities and network which define the Global City and that specific cartographic solutions will be elaborated for the harmonisation of both types of representations.

According to the complexity of those interlinked problems (see. *Figure 7*) and the limited time and resources available, we do not suggest at this stage of the ESPON program to produce a complete atlas of the position of Europe in the World and limit our ambition to the realisation of a set of harmonised and coherent maps. But we will establish solid grounds for the realisation of such an Atlas in the future of the ESPON program.

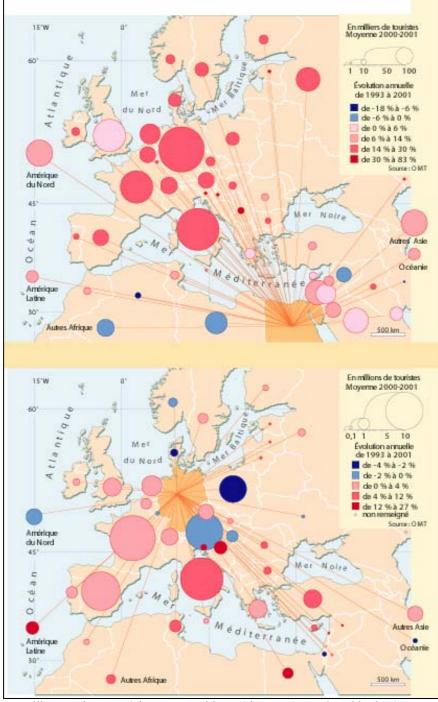


Figure 7: Map of touristic flows in Euromediterranean area

Those maps illustrated some of the cartographic problems to be analysed in the framework of WP. 5.1:

- Which cartographic projection is chosen and which limits are assigned to the map, especially in southern and eastern direction?
- Is it useful to introduce information on flows with countries not represented on the map in order to evaluate what is internal-external to the system of Europe+Neighbourhood?
- Is it interesting to combine information on flows, structure and dynamics on the same map or is it better to propose separate analytical maps?

Source : Beckouche P., Richard Y. 2004, , *Atlas d'une nouvelle Europe : l'Europe élargie et ses voisins – Russie, Proche Orient, Maghreb*, Préface de P. Lamy, Autrement, Paris, pp. 26-27

WP 5.2 Statistical harmonisation (resp. RIATE)

Statistical harmonisation of databases elaborated in the framework of ESPON 3.4.1 is a crucial task because it is the necessary condition for cross thematic analysis of results elaborated by each partner teams in WP. 2. Some problems has yet been discussed in the previous part on cartographical harmonisation (choice of basic territorial units, choice of world divisions in regions, ...) but other are more specifically related to database management. More precisely, this work package will fulfil the following objectives:

- Establish very early a minimum list of territorial units which should necessarily be covered by data collection (e.g. States with a minimum size of population and superficy). Other units should be systematically involved in a specific category (e.g. "rest of the world", "rest of Asia", ...) in order to obtain correct sum when aggregated procedure are applied to the tables.
- Propose a systematic code of basic territorial units (ISO) to be used by all partners in order to insure the compatibility of results. The native codification used by statistical organisations or project partners will be systematically compiled in a dictionary of territorial units.
- Propose a classification of aggregation keys (typologies) for the elaboration of information at upper level of analysis. Some of those aggregation keys are yet provided by existing international organisation (UN, OECD, ...) but other will be specific results from the work realised in ESPON 3.4.1, especially in WP. 3.4 (Divisions of the World). This work implies not only the realisation of typologies of states but also the elaboration of keys for the connexion between state and cities.
- Propose tables of correspondence for territorial units which has been subject to modification through time (ex. Former USSR, former Yugoslavia,...) in order to be able to establish coherent time series in a medium or long term perspective (target period 1960-2004).
- Propose a strong methodological framework for the compilation or original sources of information, according to the methodology of long term database elaborated in ESPON 3.1 and ESPON 3.2

The amount of resources allocated to this crucial task may appears limited but, taking benefit of the common participation of several teams of our consortium in ESPON 3.2 and ESPON 3.4.1. (IGEAT, RIATE, Géographie-cités), we expect to develop synergies with the work package on long term database of ESPON 3.2. and to reduce therefore the final cost of the work. This joint elaboration by TPG ESPON 3.2 and ESPON 3.4.1. of a common long term database on European regions and World states will also induce the previous advantage of a full compatibility of some variables and indexes elaborate at each geographical level. A point of discussion with the CU and the MC could be the tentative elaboration of a "world version" of the ESPON Hypertalas elaborated in the framework of ESPON 3.1 and presented at the ESPON meeting of Nijmegen in October 2004. Indeed, the method of multiscalar territorial analysis which has been elaborated for a three-level of European regions (deviation to European, National and Local level) could be transposed to a three level approach of World states (deviation to Global, "Regional" and Local levels) which should provide very efficient tools for the analysis of world structures (Cf. Exemple of CO2 on Figure X***). But the elaboration of such tool remains too expensive for the actual budget of ESPON 3.4.1 because it would be necessary to introduce some modifications in the initial software (especially concerning the choice of various cartographic projection). It seems more pragmatic to wait for the final evaluation of the ESPON Hyperatlas before to propose such addendum to the work programme of ESPON 3.4.1.

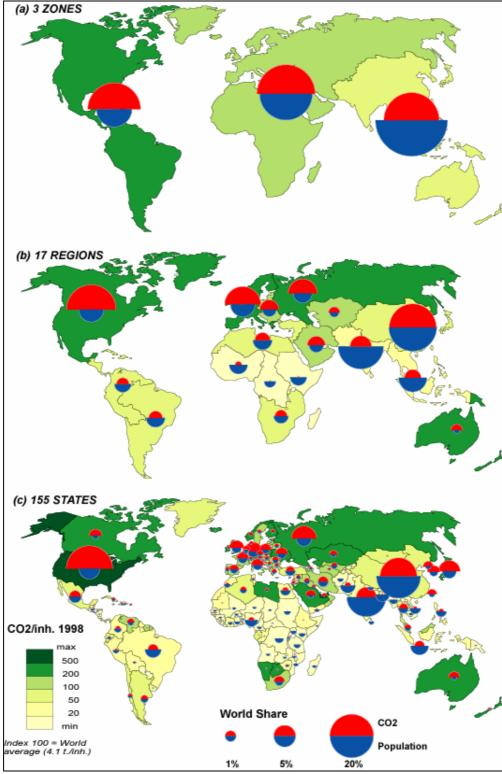


Figure 8: Multiscalar analyis of CO2/inh. (1998)

Those maps indicates that the perception of a structural phenomena (e.g. population and production of carbon dioxyde) is strongly modified according to the chosen level of aggregation. For example, China and Japan has deficit or excess of population and CO2 which are in equilibrium when we considered the ESPON region of Eastern Asia as a whole. In the case of Europe, the equilibrium between share of population and share of CO2 is obtained at a higher level of aggregation (Eurasia+Africa). United States has structural excess of CO2 according to their population at all levels of aggregation.

Source: Grasland C., 2005, Article "frontieres » in Ghorra-Gobin C & al.., Dictionnaire de la Mondialisation,

WP 6: Dictionary of tools

Objective: This work package has the task to propose quantitative methods derived from statistics and spatial analysis in order to integrate thematic analysis of flows and structure in a common global framework of linkage analysis It will therefore provide a synthesis of thematic results (WP 2) which will directly provide answers to the cross-thematic analysis of key questions to be analysed in (WP.3). It will also insure the development of research in a long term perspective, by securing the methods developed in ESPON 3.4.1 for the rest of the ESPON community.

Teams involved: RIATE, Géographie-cités, IGEAT, ITPS

Internal organisation:

WP 6.1 Flows analysis (resp. RIATE, Géographie-cités, IGEAT, ITPS)

WP 6.2 Structural analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)

WP 6.3 Synthetic analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)

WP 6.4 Dictionary of tools (resp. RIATE, Géographie-cités, IGEAT, ITPS)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.6.a	Overview on methodology and hypothesis used for	RIATE,	03/05 (FIR)
	the cross-analysis of flows and structures	Géographie-cités,	
		IGEAT, ITPS	
D.6.b	Presentation of the methodology for cross-	RIATE,	12/05 (SIR)
	thematic studies	Géographie-cités,	
		IGEAT, ITPS	
D.6.c	Comprehensive presentation on the spatial analysis	RIATE,	05/06 (FR)
	tools and statistical methods developed in the	Géographie-cités,	
	framework of ESPON 3.4.1	IGEAT, ITPS	

Precise description of work realised in WP. 6

The detailed presentation of methods and tools used for the analysis of flows and structures and for their combination is detailed in **Annexe 2** where it has been illustrated by simple examples of data analysis of 7 western Mediterranean countries. In the present part, we limit our presentation to a common understanding of the nature of flows and structure and the way to integrate their analysis in a quantitative way.

WP 6.1 Flows analysis (resp. RIATE, Géographie-cités, IGEAT, ITPS)

The terms of reference indicates very clearly that the analysis of flows should be the core of the research to be developed in EIW but does not provide a clear definition of the concept of "flows" which is associated to other concepts like "relation" or "linkage". The objective of the analysis of flows are not very clear because they can be applied to very different political concepts like measures of "cooperation", "influence", "integration", "domination". Therfore, we propose to clarify those both points: what are flows? which political questions can they help to answer?

Flows must be defined from 5 points of view: theoretical, space, time, thematic, statistics.

From a *theoretical point of view*, flows can be defined as everything what happen and can transform the state of a system. In this very wide sense, flow is equivalent to "process" or "dynamic" in opposition with "structure" and "static". For example, death and birth can be considered as flows which modify the structure of a population.

From *spatial point of view*, a flow can be defined as the move of a quantity of something from one place to another place. In the previous demographic example, death and birth are not spatial flows (they are not related to a move in space) but spatial events. But migrations (in-migration and out-migration) are spatial flows.

From *time point of view*, the flows can be measure either by their <u>intensity</u> at a given point of time (t) or either by their <u>volume</u> during an interval of time [t,t+1]. In the case of a river, we can for evaluate the intensity by the number of m3/s of water which is transported but this measure is generally very variable through time and the value of intensity are generally a mean value during a period of time. In this case, we define the intensity of the phenomena over a period of time.

From *thematic point of view*, flows can be classified in very different ways according to the nature of what is transported from one place to another. A classical typology is based on the nature of the phenomena like people, goods, money, energy and information but this typology can be criticised because, for example, the migration of people can be considered as the same time either as a flow of people, information and money.

From *statistical point of view* the same phenomena can be evaluated in very different ways which has very important consequences for the interpretation of the results. For example, the flows of goods can be evaluated according to their weight (tons) or to their value (\$) but they are also sometime evaluated in weight.km if the purpose is to measure the amount of energy used for the transportation. In any case, it is important to keep in mind that each measure of

flow is related to a particular system of observation which introduces biases or implicit assumptions in the analysis of the real phenomena which is not directly observable.

- □ In the framework of EIW, we propose to reduce the analysis of flows to the particular case of **spatial flows over a period of time**. All matrixes of flows suggested by the ToR are indeed measures of quantity moving from one place to another and can be initially defined as a volume, even if they can be transformed into measure of intensity in different ways.
- This definition exclude from the concept of flows many other forms of linkage which are not directly related to the move of a quantity of something from one place to another. For example, the existence of a direct air connexion between two cities is not a flow but a structure which make possible the flows. Reversely, the number of passengers travelling by air between two cities is a flow. As we will see later, some phenomena are ambiguous and can be considered both as flow and structure like the number of planes between two cities which is at the same time a structure (condition for passengers flows) and a flow (quantity of plane).
 - A preliminary sample of methods useful for flows analysis is presented in Annex 2.1 and illustrated by simple examples of data analysis of 7 western Mediterranean countries

WP 6.2 Structural analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)

From a *theoretical point of view*, a structure can be defined as a set of attributes which characterised the elements of a system at a given point of time. In this very wide sense, structure characterise the "static" of a system when flows characterise the "dynamic" of the system. For example, the repartition by age and sex of a population define its demographic structure which is modified by four types of flows: birth, deaths, in-migration and out-migration.

From a *spatial point of view*, the spatial structure can be defined as the particular case of a set of attribute of territorial units which are the basic element of the system to be analysed. In the case of spatial structure analysis, the attributes of the territorial units will define social, economic or environmental aggregates (population, economic activities or natural resources located inside the boundary of each territorial units) which are various components of the spatial structure based on different basic elements (individuals, social groups, firms, ...) which are indirectly observed through the framework of the spatial structure. Spatial structures are at the same time a cause and a consequence of the evolution of flows related to the social, economic and environmental dynamics. For example, the level of economic development of states and their social organisation can increase or reduce the flows of migration between those states and, therefore, modify their spatial structure.

From a time point of view, the spatial structure can not be evaluated at a given point of time t without considering their history i.e. the previous structure from which they are inherited and the previous flows which has determined the present situation. In the case of migrations of population, the actual level of foreign-origin population located in a given place create a structural link which can influence the future migrations and related changes in the structure of population: even if in-migration is actually limited, the past migration remain an active dimension for the evolution of the spatial system and can produce changing effects (e.g. the

migration of Indian engineer specialist of Informatics toward Silicon Valley in the 1980's and 1990's has actually deep consequence on the flows of investment between United States and India).

From a *statistical point of view*, it is important to distinguish between various forms of structural information which are not necessarily related to the classical form of a table describing the attributes of spatial units through time. It is certainly true that the three-dimension table which cross space, time and attributes (called "Geographical Information Matrix" by the geographer Brian Berry) is certainly the most typical example of structural statistical information. Many other information about spatial structure are related to the geometry of spatial units (like the presence of a common border or there belonging to a territorial division of higher level) and to the networks who linked the territorial units together (like the presence/absence of a direct air connection between two cities). As we will demonstrate in the section B.3, the structures can be considered both as attributes of units (e.g. language spoken in different states) and linkage determining potential relations between units (e.g. presence of a common language between two states) which means that the information on structure can be structured either in attributes form (Geographical Information Matrix) or in linkage form (matrix of linkage between units).

⇒ A preliminary sample of methods useful for structure analysis is presented in Annex 2.2 and illustrated by simple examples of data analysis of 7 western Mediterranean countries

WP 6.3 Synthetic analysis (resp., RIATE, Géographie-cités, IGEAT, ITPS)

To fulfil the objectives of the ToR, it is necessary to realise an integration of the results of flows and structure which has been initially developed in an analytical way. More precisely it is necessary to realise two types of integration of the results, as explained in *Figure 9*:

Demography Economy Other SYNTHESIS Demographic Economic Other Flows Flows Flows Flows Flows Synthesis Demographic Economic Other Structural Structures Structures Structures Structures Synthesis Global Other Demographic Economic SYNTHESIS Synthesis Synthesis Synthesis Synthesis

Figure 9: The two dimensions of results synthesis

• Integration of flows analysis and structural analysis on a given thematic field is firstly necessary because, as it was explained in previous section, it is not possible to separate the static and dynamic dimension in the analysis of a given spatial system. For example in the case of demography, we should not separate the analysis of

demographic structure (age, sex, fertility, expectancy of life...) and the analysis of migratory flows (work migration, refugees, ...) because they are obvious feed backs between both area of research. Typically, this integration of flows and structure will be realised through the building of spatial interaction models where structural factors define push and pull factor between places of origins and destination of migration and where the various forms of accessibility (neighbourhood, air connections, common language, historical relations, ...) can contribute to increase or reduce the volume and the intensity of flows between states. Spatial interaction model can be used either for a filtering of the main structural factors in order to discover preferential relations and barriers effects (analysis of residual of the model) or for the realisation of prognosis of future flows of migration under various assumptions (simulation model with changing parameters).

• Cross thematic field integration of results is necessary as far as the various thematic fields to be analysed (demographic, economic, environmental...) are not autonomous dimension of social life and are strongly connected each other. For example, in the case of the demographic dimension, we can not isolate demographic structures and demographic flows from other structures and flows related to economy, environment, etc. The demographic transition which defines the level of fertility and mortality of states and their age structure is strongly related with economic transformations like the decrease of agriculture part in activity and GDP or the increasing level of urbanisation. The intensity of migratory flows can not be isolated from structural changes in world economy and from ecological problems related to climate change in a long term perspective. A cross thematic analysis of flows and structure is therefore necessary if we want to produce a correct view of global changes in world organisation, able to define correctly the present and future situation of Europe in the World.

Both approaches are necessary steps before the elaboration of a global cross-thematic synthesis of flows and structure (see. Figure X***). The work plan of the TPG 3.4.1 is precisely made in order to fulfil both objectives. Each thematic field is fully covered by a single TPG which will realise data collection, flows and structure analysis (WP2) and provide a thematic synthesis which will be an input for the cross-thematic integration of results related to flows and structure (WP3).

A preliminary sample of methods useful for synthetic analysis is presented in Annex 2.3 and illustrated by simple examples of data analysis of 7 western Mediterranean countries

WP 6.4 Dictionary of tools (resp. RIATE, Géographie-cités, IGEAT, ITPS)

Since the ESPON meeting of Matera, it has been regularly underlined by ESPON guidance papers that the fact to secure the methodology developed in each TPG was a necessary condition of success for ESPON in the long term perspective. Therefore, the methodology used for the quantitative analysis will be stored in a dictionary of tools which will allow the future development of results in more recent databases or more complete informations. Therefore, we can combine efficiency in the short term and scientific sustainability for the future of ESPON. This elaboration of a dictionary of tools will be realised by the lead partner (*UMS RIATE*) which has yet proved his capability on similar subject in the framework of TPG ESPON 3.1 (methodology of Multiscalar Territorial Analysis).

WP 7 : Dictionary of Concepts

<u>Objective:</u> This work will focus on the clarification of concepts and theories related to selected key-questions which are of utmost importance for the understanding of the position of Europe in the world. This work package will be mainly based on a review of existing literature and will provide inputs and outputs to other TPG. He will have the specific task to bridge the gap between policymakers and scientists through the definition of a common understanding of concepts and the elaboration of a dictionary.

Teams involved: RIATE, Géographie-cités, IGEAT, ITPS, LADYSS, HWU

Internal organisation:

- WP 7.1 Definition of main concepts (resp. HWU, LADYSS, All)
- WP 7.2 Linkage between concepts (resp. HWU, LADYSS)
- WP 7.3 Dictionary of concepts (resp. HWU, LADYSS, RIATE, all)

Deliverables & Timetable:

Code	Description	Responsible	Date
D.7.a	Installation of web infrastructure on the Intranet	RIATE	01/05
	for the discussion of key-questions and the		
	elaboration of the dictionary		
D.7.b	Presentation of the methodology for the	HWU, LADYSS	03/05 (FIR)
	elaboration concepts and definitions		, ,
D.7.c	Preliminary version of the dictionary	All	12/05 (SIR)
D.7.d	Final version of the dictionary of concepts	All	05/06 (FR)
D.7.e	Proposals for further development.	HWU, LADYSS,	05/06 (FR)
		All	

WP 7.1 Definition of main concepts (resp. HWU, LADYSS, All)

The first step of the elaboration of the dictionary of concepts is to summarize a primary collection of definitions. According to its specialisation in the division of work, we propose to divide the collect of concepts as follow.

- WP 7.1.1 Aid to development and Millenium Objective (ITPS)
- WP 7.1.2 International Division of Labor & Competitiveness (resp. IGEAT)
- WP 7.1.3 Global City & Network (resp. Geographie-cités)
- WP 7.1.4 Global Integration Zones (resp., HWU)
- WP 7.1.5 Geopolitical & Cultural Areas (resp. LADYSS)
- WP 7.1.6 Flows and structures (RIATE)

WP 7.2 Linkage between concepts (resp. HWU, LADYSS)

The primary collection of concept will reveals overlaps and holes in the definitions which will be completed by the coordination team (HWU, LADYSS) in the stage of establishing connexion between concepts provided by the partners. It will be also important to establish connexions between concepts and illustrations (maps, case studies, ...) derived from the output of the TPG.

- WP 7.2.1 Definition of connexions between concepts (HWU, LADYSS)
- WP 7.2.2 Definition of examples and illustrations of concepts (HWU, LADYSS)

WP 7.3 Dictionary of concepts (resp. HWU, LADYSS, All)

Once the elaboration will be sufficient (critical size in terms of definition, examples and links), the results will be put on the intranet of ESPON 3.4.1 in order to form an Hypertext version which can be interactively improved.

- WP 7.3.1 Technical support (Hypertext) on the Intranet (RIATE)
- WP 7.3.2 Scientific coordination of the dictionary (HWU, LADYSS)
- WP 7.3.3 Proposals for future development (HWU, LADYSS, RIATE)

WP 8: Case studies and expert contributions

<u>Objective:</u> The aim of this work package is to precise results of quantitative analysis by special focus on example where a more in-depth analysis is necessary. The case studies focus either on thematic, geographical or political concerns, generally combining several of these dimensions.

<u>Teams involved</u>: RIATE, Géographie-cités, IGEAT, ITPS, LADYSS, HWU, CRS, CASA, TIGRIS, SOGES, Zürich

Internal organisation:

- WP 8.1: Labour shortage, outsourcing and replacement migration
- WP 8.2: The impact of relocalisation on the position of European regions in value chains
- WP 8.3 : Focus on selected European Gateway cities (resp. Géographie-cités)
- WP 8.4: Exploration of Gateways and GIZs in other continents (resp. HWU)
- WP 8.5: The Estonia-Russia border: barrier or contact and cooperation zone in the Baltic area? (resp. LADYSS)
- WP 8.6 :Survey on the "Weltanschauung" of the ESPON community (resp. RIATE)
- WP 8.7: The new Eastern and Southern external border of the EU (resp. CRS-HAS)
- WP 8.8: Focus on geographic patterns and flows of knowledge in Europe (resp. CASA)
- WP 8.9: Focus on Romania as eastern border of EU (resp. TIGRIS)
- WP 8.10 : Focus on Switzerland (resp.ETH, Zürich)
- WP 8.11 : Focus on Internationalization of Italian enterprises (resp. SOGES)

Deliverables & Timetable:

D8.a	Precise definition of objectives and	All	03/05 (FIR)
	sources for each case studies.		
D8.b	Preliminary results of case studies	All	12/05 (SIR)
D8.c	Final results of case studies	All	12/05
D8.d	Integration of case studies in the answer to	Core teams	05/06 (FR)
	key questions and the elaboration of		
	policy recommendations		

Precise decription of work realised in WP. 8

Each case study is strongly related to several key questions from WP 3.

	Division of the world	European nettworks	European neighbourhood	Internal differenciation
WP 8.1 : Labour shortage	Х	Х		Х
WP 8.2: The impact of relocalisation		Х		Х
WP 8.3 : Gateway cities	Х	Х		
WP 8.4 : GIZ	X	X		
WP 8.5 : The Estonia-Russia border			X	X
WP 8.6 : "Weltanschauung" of the ESPON	Х		Х	
WP 8.7 : The new E. and S. border			X	X
WP 8.8 : Patterns and flows of knowledge		X		X
WP 8.9: Focus on Romania			Х	Х
WP 8.10 : Focus on Switzerland			X	X
WP 8.11 :Internationalization of Italian enterprises		X	Х	

WP 8.1 Labour shortage, outsourcing and replacement migration (resp. ITPS)

Three case studies on labour shortage and its implications for the European Union will be made:

- (1) The prevailing demographic trends in Europe will lead to a long-run shortage of labour, which has led to discussions on e.g. an increased labour immigration and replacement migration. Historically, situations of long-term labour shortages have led to labour being replaced through technological, institutional and organisational changes. This may well happen again. Furthermore, labour immigration can counteract the structural transformation of the economy, as stagnating trades and sectors could be kept afloat through access to cheap labour. Historically, increased labour immigration has been used to deal with short-term labour shortages. A case study will be made in an area where labour has been replaced by cheaper means of production.
- (2) Labour immigration will only take place if it is cheaper for a firm to transfer labour to an area that is experiencing a labour shortage than to outsource the production to a geographical area with a labour surplus. Increasing globalisation will lower the cost for outsourcing production to other continents, and may be a lubricant for a global social cohesion. It may also be more efficient than regular aid programs. A case study on outsourcing and its implication will be done.
- (3) In the future, the greatest labour demand will be within the service sector. A shortage of technical employees, primarily graduate engineers and IT specialists, industrial workers and some types of construction workers is feared within the private sector. The proportion of the labour force employed within industry, construction, and forestry and agriculture will fall, however, in the next 20 years. The shortage of engineers and technical specialists is not a new

phenomenon; it has arisen before and is about bottlenecks in the system when the economic structure changes. In professions where the substitutability is high between domestic and immigrant labour, labour immigration is possible. Finally, it is very easy to make statements that there are hundreds of millions of presumptive migrants in some countries and areas outside Europe. It is another thing entirely whether these presumptive migrants really are of interest from a European perspective. Finding the *right* labour could be more difficult than many might think. A case study on labour immigration and the substitutability of labour will be made.

WP 8.2: The impact of relocalisation on the position of European regions in value chains (resp. IGEAT)

Through their economic structure, regions position themselves within (often international) value chains. The Global Value Chain Initiative (http://www.ids.ac.uk/globalvaluechains/) defines value chains as the « full range of activities that are required to bring a product from its conception to its end use and beyond. This includes activities such as design, production, marketing, distribution and support to the final consumer. The activities that comprise a value chain can be contained within a single firm or divided among different firms. » (see also Kaplinsky (2000)).

Processes of relocation of production, for example through competition by low-cost labour areas, are, generally, relocations of one part of a global value chain. Those areas which have been « victim » of such relocation face several possible paths:

- 1)an economic decline because no replacement activities can be initiated
- 2)the rise of other economic activities that are part of other value chains
- 3)the shift of the regional activities along the value chain, generally to more knowledge and/or more capital intensive segments

The third element leads to a situation in which the "victim" area does not lose its part of the value it captured through the old activities.

We propose to study this third element on two scales:

• EU

We will study whether the relocation of certain activities from the EU to other regions is accompanied by a parallel rise of exportations of means of production from the EU to the new locations.

regions

In case we observe such a rise, we will then, through case studies, analyse whether this rise of exportations profits the "victim" areas that have shifted their production along the value chain or whether other regions (independent of the relocated segments) have captured these markets.

WP 8.3: Focus on selected European Gateway cities (resp. Géographiecités)

Cities are the points at which the internationalization processes of a territory begin and materialize. Consequently, our proposal is to focus on a few European cities to better understand these processes in particular in connections with the internationalization and diversification of air traffic. This work will highlight the effects of the internationalization of air traffic on the activities of the cities and in a wider view on its whole dynamic. But it will also take into account the fact that a given city, according to its national position and to its own characteristics such as (concentration of headquarters, university, administration, cultural and tourist opportunities), could have an impact on the way flows are distributed among an urban network.

Taking support on our former work in ESPON 1.1.1., three cities could be proposed as relevant case studies for several relevant reasons summarized as follow:

- · Paris: as the second giant airport in Europe with a wide range of connections all over the world and in particular with important connections with the countries from the Southern part of the mediterranean sea.
- Madrid: with a very high share of extra-European passengers (similar to Paris and Amsterdam for example) and a more mono-oriented flows towards mainly South America.
- Stockholm and/or Copenhagen: as dominant cities at the meso-regional level consolidating their role of Northern gateway of Europe attracting flows from Baltic countries.

WP 8.4 : Exploration of Gateways and GIZs in other continents (resp. HWU)

We propose exploratory studies, using secondary sources and interviews with some personal contacts, to begin to understand the connectivity intra- and inter-nationally of key gateways / GIZs in North America and Asia. In this we hope to concentrate on the policy interventions that have been taken to project the global dimension of each of the areas. We aim to use our links with the Department of Geography at DePaul University in Chicago to develop a short analysis of Chicago. For Shanghai or Beijing we plan to use contacts in the China Academy of Urban Planning and Design – Beijing offers a chance to look at the use of the Olympics as a driver of global connections tied to infrastructure and territorial development. Finally we propose to work with connections in the Malaysian Institute of Planners to present the way a strategy has connected 12 cybercities within Malaysia to international networks, as a key part of the national aim to leapfrog into the information society.

WP 8.5: The Estonia-Russia border: barrier or contact and cooperation zone in the Baltic area? (resp. LADYSS)

Several case studies will be chosen in the European neighbourhood among the ENP countries (see also WP. 8.7, 8.9 and 8.10). The case studies must be chosen in order to illustrate the typologies proposed above in the study. Each example must show a typical kind of relations between a country and the European Union: (i) countries highly linked to EU (e.g. Croatia), (ii) countries partly linked to EU, but also linked to other countries such as Russia or USA

(e.g. Ukraine), or continents such as Asia, (iii) countries much more related to other countries than to EU (e.g. Armenia).

Each focus must aim at several goals:

- show what kind of relations exist between each neighbour country chosen and EU (flows and structure): level and type of the linkages (dependency or interdependency).
- analyse the spatial trends in that country and to which extend those trends can be related to the relations with EU.
- verify any sub-regional integration process.

Concerning the oriental neighbourhood, the Baltic countries would be an interesting case study because of the nature of their relations with EU, with the whole Baltic space and with Russia.

When it comes to the NEP, one of the sharpest stakes is the eastward projection of the Schenghen frontier. As it is not possible to study the whole frontier running from the Baltic Sea to the Black Sea, we will make an in-depth study of one relevant segment. Particularly since the enlargement of NATO and UE, the frontier between Russia and the Baltic States, and especially Estonia, is very much related to the aim of the Espon 3.4.1 project. UE considers that this frontier is of utmost importance because of the necessary partnership with Russia; Russia considers that the Baltic States are no more reliable neighbours and has recently decided to develop its own Baltic coastline.

Because of those dramatic changes, one might think that this border, formerly opened because it was within the USSR, has become a hard barrier (see the recent tensions and debates about Kaliningrad, about Russians' transit through the Baltic States to Russia, and about the Russian speaking minorities in the Baltic States). Does it jeopardise the new relations between Estonia and the nearest Russian oblasts (Leningrad, Pskov, etc)? Does it put an end to ancient relations that existed either in the soviet context and even during the imperial period (before 1917)?

Direct inquiries (local authorities and economy actors) will answer the following questions:

- What are the nature and the level of relations of flows through this border since the last 15 years?
- At a local level, what are the programs of cross border cooperation between east Estonia and Russian regions located along the border (oblasts of Pskov, Leningrad and Novgorod)?
- Eventually (depending on the quality of available data in Estonia an Russia), has the new proximity of the EU any territorial impact on those Russian regions' development?
- Is there a Baltic sub-regional process of integration involving not only the Baltic States but also the north-western part of the Russian territory? More precisely, what about the city of Saint-Petersburg and its relations with the rest of the Baltic space?

This case study will help evaluating the impact of some European politics towards Russia (Cooperation and Partnership Agreement, Northern Dimension, Political strategy of EU towards Russia, Neighbourhood policy, and at a local scale TACIS cross border cooperation). It will take into account the results of other Espon TPG, and especially the Espon 1.1.3 group, which researches are focused on the impact of the enlargement with a special attention paid to border regions. This WP will also benefit from the results of WP 2.1, 2.2 and 2.3 dedicated to

the study of flows, cities network (relations between Russian cities and Tallin) and accessibility.

WP 8.6 Survey on the "Weltanschauung" of the ESPON community (resp. RIATE)

As complement to the database on official world divisions produced by international organisations, NGO and private companies (WP 2.6) we propose to realise a specific survey on the perception of the position of Europe in the World inside the ESPON community.

- (1) The survey will be realised on a target population of 200 individuals which will involved the various members of the ESPON community:
 - Members of the DG region (5-10 answers)
 - National representatives of the MC (20-30 answers).
 - Members of the CU and the MA (5-10 answers)
 - Members of the ECP network and national experts (5 answers for each ECP = 100 answers)
 - Members of other active TPG's (5 answers by TPG = 50 answers)
 - According to a pessimistic assumption of 50% answers, we expect to use a minimum sample of 100 answers.
- (2) The survey will be firstly test on a limited sample of 10-20 individuals before to be realised on the whole target population. In the initial version of the survey, we propose to ask the following questions:
 - Individual attributes (age, sex, nationality, position in the ESPON program, ...) described in maximum 1 page.
 - "What is your delimitation of Europe?" The question is asked without further explanation and the people are just invited to draw a line on a map of the world where the name of states is quoted. An open question is added on "Which criteria has you used for this delimitation?". (1 page)
 - "Divide the World in 2 to 15 regions" As in previous case, the question is asked without further explanation and the people are just invited to draw lines on a map of the world (polar projection) where the name of states is quoted. An open question is added on "Which criteria has you used for this delimitation?". (1 page)
 - "What are the cities of Europe which can be considered as main gateways to the rest of the world?" A map of main European cities (MEGA) is proposed with only indication of names but no informations on size on other topics. People are invited to quote eventually other cities not mentioned in the map. An open question is added on "Which criteria has you used for this selection?".
 - The survey is limited to 4 pages and people should be able to answer in a maximum time of 20 minutes.
 - (3) The exploitation of the survey will be realised with classical statistical tools in a quantitative way (correspondance analysis, cluster analysis, lexicometry) and qualitative way (analysis of map designs, analysis of justifications, ...). The aim of the analysis is to answer to the following questions:

- What is the "dominant Weltanschauung" of the Espon community (if it exists)
- Are they several types of "Weltanschauung" in the ESPON community?
- Are they relations between the status of individuals (age, sex, nationality, profession, ...) and their favourite "Weltanschaung"?

WP 8.7: The new Eastern and Southern external border of the EU (resp. CRS-HAS)

Since the economic-political change in Eastern Europe in 1989-90, a new dividing line is emerging in this part of Europe between the new EU members and the countries remaining outside of the European Union. This dividing line is mainly of economic nature, but it has social and political aspects as well. One of the most serious issues is that this area is one of the least developed, most peripheral, and most depressed areas of Europe. It is not only the Eastern regions of the new member states that are at a lower development and income level than the average of the respective countries. The regions on the other side of the new external border (Western Ukraine, Moldova, Kaliningrad oblast) are now the poorest areas within the former Soviet Union. Because of dramatic economic decline, the same is true for the Serbian border. This dividing line represents a serious tension and threat for the new Europe. The problems of this area are the subject of the case study. The main topics are the following:

- 1. History and political developments along the new external border.
- 2. National, ethnic and religious divisions and cross-border problems of the area.
- 3. Economic and trade problems (the consequences of the disruption of the old trade relations and the difficulties to establish the new ones).
- 4. Transport problems: railway lines and roads cut by the new borders, the different gauges, peages problems, the lack of bridges across river borders.
- 5. Environmental problems: flood and pollution threats of rivers (in the Baltic sates and in the Carpathian basin) flowing from outside of the EU area.
- 6. Demographic problems along the new external border.
- 7. Options and possibilities of cooperation and the necessary methods and institutions.

WP 8.8 : Focus on geographic patterns and flows of knowledge in Europe (resp. CASA)

At the Lisbon Summit, EU governments called for a better use of European research efforts through the creation of an internal market for science and technology, a "European Research Area". However it is difficult to quantitatively understand to which extent and where knowledge, research and technology have circulated within and outside the ERA. Our proposal is to investigate and map the status of this market both within the EU and between EU countries and the rest of the world.

Krugman (1991) stressed that knowledge flows are invisible and cannot be measured and tracked. This view however has been opposed by Jaffe *et al* (1993) which suggested that indeed knowledge flows may leave a "paper trial", in the form of patent citations.

Our work will develop from previous research carried out at CASA on the geography of scientific citation (Batty, 2003) and from the existing methodologies for the analysis of

innovation network and knowledge flows through patent citations (Balconi et al. 2002, Jaffe and Traitenberg, 2002)

To this purpose we will investigate, statistically analyse and map the patterns and flows of scientific citations and selected FP6 Networks of Excellence. We will develop an ad hoc database building on existing work carried out at CASA using the ISI Highly Cited database which includes data of the top 100 scientists in 21 scientific areas grouped by Institution, by place, by country and by world region. Our methodology will be based on the integration of Social Network Analysis and Geographic Information System. The methodology has been previously tested on patent citations by Paci and Battetta, 2003 and it has proven useful to map core-periphery patterns and geographic clusters by looking at flows rather than patterns. A particular attention will also be given to the European Research Area by applying the methodology to existing FP6 Network of Excellence.

WP 8.9: Focus on Romania as Eastern Border of EU (resp. TIGRIS)

Romania cannot be considered only as a European periphery: the country has a complex situation, as an interface between the EU, the Middle East/ Asia Minor and the Russian-Asian area. Such a complex situation leads to the entanglement of manifold dynamics: the immigration of Kurds, Arabs, Pakistanis, Chinese; the plethora of little investors from Turkey and China; the arrival of big Russian oil companies; the perspective of EU membership...

Enlarged Europe will have to deal with the hindrances and opportunities inherent to this particular geography, throughout the Romanian and Bulgarian areas. Moreover, Romania is also singular when it is considered as the next EU border, contiguous to countries whose EU membership is likely to be far more remote. Because of its geostrategic situation and its internal territorial difficulties, the country can either be the window of success or failure in the internal and external EU policies.

Our case study aims at showing forces and processes of "up-ward" globalisation together with "creeping" globalisation phenomena, which escapes from the decisions of the main political and economic centres. The analysis will begin with the Romanian territory heterogeneity, in order to emphasize the different behaviour of regions and cities towards the European policy and the *underground* pressures of neighbouring spaces.

WP 8.10 : Focus on Switzerland (resp. ETH)

Case study on Switzerland: Global integration of Switzerland (with focus on the EU)

The case study will analyze and provide results for the following questions:

- Demographic flows between Switzerland EU World
- Economic flows and division of labour between Switzerland EU World
- Accessibility of / from Switzerland
- Meaning of the ESDP for the Swiss Guidelines on Territorial Development

Neighbourhood policy: the bilateral treaties between Switzerland and the EU and their meaning for spatial development

WP 8.11 : Internationalization of Italian enterprises (resp. SOGES)

The focus proposed by Soges group concerns the process of internationalization of Italian enterprises. It is well known how the current processes of *economic globalization* and *space-time compression* (Harvey, 1989) determine the widening of the economic horizons of enterprises. In fact, firms compete more and more on international level, often defining geographical strategies of trans-continental scale. Basically, referring to the fundamental theoretical contributions of Dunning (1981), the logics behind such internationalizations can be classified in two typologies: a) penetration of foreign markets; b) search for low-cost inputs, such as labour costs. The first family reveals the presence of *horizontal networks*, involving flows (goods and investments) between countries and regions with similar development level; the second typology refers to *vertical networks*, typically involving geographical areas characterized by different economic situations (Shatz and Venables, 2000), determining the renowned phenomenon, as called by Hymer (1979), of the *new international division of labour* (Barff, 1995; Shatz and Venables, 2000).

The SOGES contribution will analyze networks and flows originated by Italian enterprises involving Eastern European countries (both inside and outside EU 25) and Southern Mediterranean ones (i.e. Tunisia, Algeria, Morocco). Such analysis will consider both quantitative and qualitative (i.e. national and international literature, interviews with key actors) sources. From the quantitative point of view, we will mainly consider data concerning *Foreign Direct Investments* (FDI) and/or *international shareholdings*. The basic source of data will be UIC (*Italian Exchange Office*), providing statistics on investments at country level (Nuts 0). However, such data will be integrated - if possible - with other sources of information that will be identified: a first hypothesis refers to the use of the *Amadeus database*, proposed by *Bureau Van Dijk*, concerning (despite some limits) firm structures and industrial locations in Europe. Eventually, a specific regional focus will deepen the investigation at the sub-national scale. The aim of the analysis is to define the geography of the internationalization of Italian enterprises, and particularly the eventual development of a spatial division of labour between Italian firms (particularly those in North-Eastern regions) and those located in Eastern European and Southern Mediterranean countries, a phenomenon often debated by both scholars and entrepreneurs. The proposed focus overlaps with recent works of the researchers of the group, such as:

- Interreg IIIb AlpenCorS (Alpen Corridor South) Working Package 5 Territory. Research report: Dipartimento Interateneo Territorio (2004), *Structures, networks and identification of scenarios*; http://www.alpencors.net.
- P. Bonavero, F. Rota and A. Vanolo (2004), Firms networks and transnational transport infrastructures: a study of the industrial geography in the regions of the Pan-European Corridor 5, paper presented at the *International Geographical Union Conference*, Glasgow, 15-20 August.
- S. Conti, V. Demetrio and Alberto Vanolo (2002), Research and development and innovation, in Conférence des Régions Périphériques Maritimes d'Europe (ed.), Study on the Construction of a Polycentric and Balanced Development Model for the European Territory. Volume 3: Thematic Reports, Crpm, Rennes, pp. 28-59
- P. Bonavero, E. Dansero and A. Vanolo (eds., forthcoming), *Geografie dell'Europa*, Utet, Torino.

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Annexe 2: Methodological framework for the analysis of flows and structures

This aim of this annex is to illustrate the methodology which will be developed in WP6. To make the reading of this part easier, we have systematically take example of simple datasets of flows and structure related to 7 western Mediterranean countries (France, Spain, Italy, Morocco, Algeria, Tunisia and Libya). This Annex 2 can be considered as a draft version of the deliverable D.6.a of the FIR.

1) Preliminary sample of methods for flows analysis

It is not the place to define all possible methods which can be applied to the analysis of flows but it is important to give a first overview of the different interpretations and applications which can be derived from matrix flows in conceptual terms. To illustrate this, we will analyse a very simple sample matrix of trade flows between selected states from Northern and Southern Mediterranean that will be considered for simplicity as an isolated system. Normally, the rows define the origin of flows and the column their destination as in Table 1 where, for example the figure located in 1st row, 2nd column indicate that the average annual value of exportation from France to Italy was 27.6 billions of dollars during the time period 1996-2000.

Tab. 1: Mean annual value of trade flows 1996-2000 (millions of US	Tab.	1	: Mean	annual	value	of tra	de flows	1996-2000	(millions of U	JS S	5)
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Fij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA	0	27626	24224	2145	2322	297	2103	58717
ITA	27446	0	12873	830	561	977	1564	44251
ESP	19739	9525	0	664	966	162	334	31391
ALG	1878	2137	1665	0	124	1	79	5884
MAR	2533	427	739	14	0	107	53	3873
LBY	467	4269	1199	2	58	0	241	6235
TUN	1640	1209	276	35	40	225	0	3425
Total	53703	45193	40976	3689	4071	1770	4374	153775

1.1) Absolute level of flows and hierarchy

The hierarchy of flows in absolute terms is the first information to consider in the analysis. It is of course related to the size of territorial units which send (push factor) and receive (pull factor) but it has also a specific significance and can help to define a hierarchy of relations between territorial units. In the example of Table 1, this analysis of the magnitude of flows reveals a clear typology of relations of high magnitude between northern Mediterranean countries (10-30 billions of dollars), low magnitude between southern Mediterranean countries (less than 0.3 billions of dollars) and medium magnitude between northern and southern countries (0.5-5 billions of dollars).

The symmetry/asymmetry of flows is a topic of crucial importance for the political analysis of relation between territories. For this reason, the geographer W. Tobler has propose to transform systematically the initial matrix of flows **F** into a symmetric component **F**+ which

describe the sum of flows in both directions (Fij+Fji) and an asymmetric component **F**- which describe the difference between flows in both directions (Fij-Fji).

⇒ The volume of relation is described by Tobler's symmetric component of flows F+ and defines the global level of connexion between both territorial units, under the consideration that, whatever the direction, a flow create a non-oriented linkage. In our example the most important volume of relation is observed between France and Italy and the less important between Algeria and Libya.

F+ij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA	0	55072	43963	4023	4855	764	3743	112420
ITA	55072	0	22398	2967	988	5246	2773	89444
ESP	43963	22398	0	2329	1705	1361	610	72367
ALG	4023	2967	2329	0	138	3	114	9573
MAR	4855	988	1705	138	0	165	93	7944
LBY	764	5246	1361	3	165	0	466	8005
TUN	3743	2773	610	114	93	466	0	7799
Total	112420	89444	72367	9573	7944	8005	7799	307550

⇒ The balance of relation is described by Tobler's asymmetric component of flows F- and defines the gain and lose of a territorial unit in relation with another territorial unit. The matrix present symmetric values with opposite signs and create an *oriented linkage*. In our example, the most important differential in the commercial balance is observed between France and Spain, in favour of France (+4.9 Billions of dollars).

F-	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA	0	180	4485	267	-211	-170	463	5014
ITA	-180	0	3348	-1307	134	-3292	355	-942
ESP	-4485	-3348	0	-1001	227	-1037	58	-9585
ALG	-267	1307	1001	0	110	-1	44	2195
MAR	211	-134	-227	-110	0	49	13	-198
LBY	170	3292	1037	1	-49	0	16	4465
TUN	-463	-355	-58	-44	-13	-16	0	-949
Total	-5014	942	9585	-2195	198	-4465	949	0

⇒ The directional asymmetry of relations can be also described in relative terms by the index F-/F+ which is strictly comprise between -1 and +1. A negative value indicates that a territorial unit receive much more than he receives (as Maroc toward Algeria) and a positive value indicates the reverse situation (as Algeria toward Maroc). An index value equal or near to 0 indicates that the relations are more or less equal in both direction. The exchange between France and Spain which had the highest balance in previous analysis (±4.5 Billions of \$) are in fact characterised by a low level of directional asymmetry (±0.10) as compare to the balance of exchanges between Maroc and Algeria which has a lower absolute value (±0.11 billions of \$) but with a very high level of directional asymmetry (±0.76)

F+/F-	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		0.003	0.102	0.066	-0.043	-0.223	0.124	0.045
ITA	-0.003		0.149	-0.441	0.136	-0.628	0.128	-0.011
ESP	-0.102	-0.149		-0.430	0.133	-0.762	0.095	-0.132
ALG	-0.066	0.441	0.430		0.797	-0.333	0.386	0.229
MAR	0.043	-0.136	-0.133	-0.797		0.297	0.140	-0.025
LBY	0.223	0.628	0.762	0.333	-0.297		0.034	0.558
TUN	-0.124	-0.128	-0.095	-0.386	-0.140	-0.034		-0.122
Total	-0.045	0.011	0.132	-0.229	0.025	-0.558	0.122	0.000

1.2) Relative level of flows and influence

The analysis of flows in relative terms introduces a completely different type of analysis because the importance of flows is not evaluated from an external point of view but from the internal point of view of origins and destinations. The transformation which is applied consist in the division of each line (or column) of the matrix by the marginal sum. As an example, we will consider the analyse of the volume of relations between two states (F+) which is normally a symmetric linkage in absolute terms but which can produce very important asymmetry when it is analysed in relative terms.

The structural asymmetry of relation is related to the difference of size (capacity of import and export of units) which is fundamental for the definition of influence areas. In our isolated system, Morocco account for 4% of France's volume of trade which is mainly linked with Italy (47%) and Spain (41%). But in the same time, France account for 65% of Morocco's trade relation which has also secondary important relations with Spain (19%) and Italy (11%). This asymmetry is not related to the direction of flows (we have taken the example of the matrix F+) but to the structural difference of size between the partners of the relation. This structural asymmetry introduces a relation of power and dependency between the territorial units. Indeed, in the case of a commercial conflict between the two partners of the relation, one of them will be much more vulnerable than the other (respectively 4% and 65% of the trade relation to be reoriented toward other partners).

codei	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		47%	41%	4%	4%	1%	4%	100%
ITA	62%		29%	2%	1%	2%	4%	100%
ESP	63%	30%		2%	3%	1%	1%	100%
ALG	32%	36%	28%		2%	0%	1%	100%
MAR	65%	11%	19%	0%		3%	1%	100%
LBY	7%	68%	19%	0%	1%		4%	100%
TUN	48%	35%	8%	1%	1%	7%		100%

The structural asymmetry of relations is strongly dependant from the spatial framework used for its computation. In previous example, we have neglected the relations between our isolated system and the rest of the World, which can produce false conclusions on the real level of dependency between the selected countries. For example, the structural influence of France on Tunisia is divided by 2 (48% to 27%) if we take into account the trade relations between Tunisia and the rest of the World. But we can notice that at the same time the small influence of Tunisia on France is divided by 5 (3.6% to 0.7%) because the northern Mediterranean countries like France are much more connected the rest of the World (70-80% of their trade relations) than the southern Mediterranean countries (40-60% of their trade relations)

codei	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Rest of the world	Total
FRA	0%	10%	8%	1%	1%	0%	1%	79%	100%
ITA	13%	0%	5%	1%	0%	1%	1%	79%	100%
ESP	19%	10%	0%	1%	1%	1%	0%	69%	100%
ALG	17%	13%	10%	0%	1%	0%	0%	59%	100%
MAR	28%	6%	10%	1%	0%	1%	1%	54%	100%
LBY	5%	36%	9%	0%	1%	0%	3%	45%	100%

TUN 27% 20% 4% 1% 1% 3% 0% 43%	100%	
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1.3) Other measures of flows intensity

Measures of flows intensity can be produced by adding structural information out of the flow matrix. This topic is of special importance when the diagonal of the matrix of flows is not filled i.e. when the internal movement inside each territorial unit are not taken into account³. Many measures of flows intensity can be produced according to the nature of the flow and the assumption made by the observer of the relations. It is not possible to specify a general solution as it depends strongly on the type of flows which are analysed. For example the intensity of migratory flows can be divided by the population of territorial units (in- and out-migration rates) when the intensity of economic flows can be better related to the GDP of the territorial unit (dependency to external trends).

Modelisation of flows according to various assumptions on structural factor determining the relations between states are certainly the most important topic as its aim is to go behind the simple description of relations toward their explanation and their simulation. A classical solution is the family of the gravity model of spatial interaction which propose to explain the flow Fij between two territorial units i and j by structural factors characterizing the origins, the destination and the distance between origin and destination. Many other variables can be added, as it will discuss in the following part on the concept of structure and the linkage approach.

2) Preliminary sample of methods for structure analysis

As in the case of flows, we will not try here to define all possible methods which can be applied to the analysis of structures but it is important to give a first overview of the different interpretations and applications which can be derived from structural information in conceptual terms and how it can be linked to the analysis of flows. To illustrate this, we will analyse a very simple sample matrix of attributes of the previous sample of states from Northern and Southern Mediterranea. As in previous case, we consider for simplicity the 7 selected states as an isolated system.

Tab. 2: Structural characteristics of selected Mediterranean countries (1999)

Name	SUP	AGR	POP	BIR	GNP	GDP	CO2			
France	552	195	59.1	709	1550	1130	391			
Italy	301	109	57.7	519	1160	1040	436			
Spain	506	192	39.4	355	571	555	251			
Algeria	2382	80	30.8	924	46	91	102			
Libya	1760	21	5.0	140	10	24	44			
Morocco	447 96 28.2 649 36 102 30									
Tunisia	164 49 9.5 209 20 50									
Total	6112	742	229.7	3505	3393	2992	1271			
Definition of variab	les									
SUP	Superficy	in 1999 (tl	housands	of km2)						
AGR	Agricultur	e area in 1	999 (thous	sands of kr	m2)					
POP	Populatio	n in 1999 (millions of	inh.)						
BIR	Natality in	n 1999 (tho	usands of	births)						

³ Many mistakes in the interpretation of flows are related to this problem of lack of information on the internal moves of territorial units. For example, an analysis of *international* air flows can give the false impression that Europe plays a major role in air traffic at world scale, simply because the internal air traffic of United States is not taken into account

GNP	Gross National Product in 1999 (in billions of US \$)
GDP	Gross Domestic Product in 1999 (in billions of US \$ p.p.a)
CO2	Carbon Dioxyd Emission in 1998 (millions of tons)

2.1) Size and hierarchy

The hierarchy of sizes of territorial units is the first dimension to introduce in structural analysis, whatever the family of criteria under consideration (economic, demographic, environmental). Size is defined by raw count variables ("stocks" of population, superficy, GDP, ...) which can de added and transform into a proportion or rank of the system which is analysed for better comparability. Sizes define the potential influence of a given element in the system under consideration and are directly related to their ability to establish flows with the other elements of the system (push and pull factors). The choice of the size criteria should be made very carefully and clearly related to the problem to be analysed. For example, if we are interested on agricultural matters, the potential of states should be evaluated by agricultural area (where France and Italy represent 52% of the total) and not simple superficy (where Algeria and Libya represent 68% of the total). When several criteria are considered to be important for the elaboration of a synthetic index of size is a very complicated question because it is related to the selection of variables, to their possible transformation (rank, proportions, standardised values, ...) and to the methodology used for the elaboration of the syntheis (arithmetic mean, weighted mean, factorial analysis, ...).

For example, the size of Libya appears greater than the size of Tunisia when we use the methodology of the mean proportion on all criteria (because Libya has a very larger superficiy) but the situation is reversed when we consider the mean rank on all criteria (because Tunisia has better ranks on most criteria).

Size as proportion of the whole system

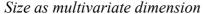
Name	SUP	AGR	POP	BIR	GNP	GDP	CO2	mean
France	9%	26%	26%	20%	46%	38%	31%	28%
Italy	5%	15%	25%	15%	34%	35%	34%	23%
Spain	8%	26%	17%	10%	17%	19%	20%	17%
Algeria	39%	11%	13%	26%	1%	3%	8%	15%
Libya	29%	3%	2%	4%	0%	1%	3%	6%
Morocco	7%	13%	12%	19%	1%	3%	2%	8%
Tunisia	3%	7%	4%	6%	1%	2%	1%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%

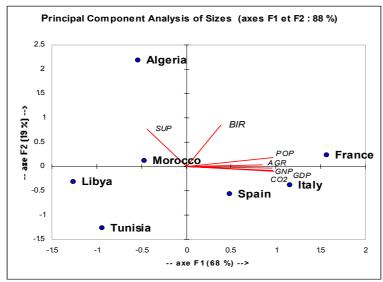
Size as rank of elementary spatial units

Name	SUP	AGR	POP	BIR	GNP	GDP	CO2	mean
France	3	1	1	2	1	1	2	1.6
Italy	6	3	2	4	2	2	1	2.9
Spain	4	2	3	5	3	3	3	3.3
Algeria	1	5	4	1	4	5	4	3.4
Libya	2	7	7	7	7	7	5	6.0
Morocco	5	4	5	3	5	4	6	4.6
Tunisia	7	6	6	6	6	6	7	6.3

It is of crucial importance to notice that size can not always been reduced to a single dimension when several criteria are taken into consideration. In many cases, it is necessary to consider size in a multidimensional way according to the groups of correlation between

attributes defining the size of the units. In our example, the 1st factor of a Principal Component analysis define a global size of states on the criteria of Population, GDP, GNP, Agriculture area and CO2 emissions. But this factor account only for 68% of the initial information and a second factor define a secondary component of size which is rather related to natality and superficy of states and adds complements for 19% of the initial information. Typically, Algeria has a medium score on the first dimension but a very high level on the second one.





2.2) Dissimilarity and identity

The analysis of similarities/dissimilarities between economic, social and environmental structures of the territorial units defines a second field of investigation where the attributes are not necessary related to size and will rather focus on the relative intensity of the factors, all things being equal with the size of the territorial units⁴. As an example, we will consider a set of variables which are ratio between initial variables describing the size of territorial units and where the initial size effect has been formally removed. The variables which have been selected in various field normally result from the work of an expert which will choose the most relevant index, according to the phenomena under consideration and the political demand to be addressed. In our example, a specialist of demography can consider that simple population density (DEN1) is not sufficient because many states like Libya and Algeria has whole part of their territory with desertic areas. Therefore, the expert could provide an additional index which is a proxy of net density based on the ratio between population and agricultural area (DEN2). The same is true in the case of economics where the expert can consider that two different measures of wealth per inhabitant introduce complementary informations (ECO1, ECO2). And finally, the environmental expert can propose two different measures of the consumption of CO2 according to the fact that one focus on a social approach (ENV1) or an economic approach (ENV2) of the problem of pollution.

Tab.3 : Selected demographic, economic and environmental characteristic ratios

Name | DEM1 | DEM2 | DEM3 | ECO1 | ECO2 | ENV1 | ENV2 |

⁴ But it is not an absolute rule and, in certain cases, factors related to size and relative intensity of phenomena can be combined together in the same analysis.

France	107	303	12	26200	19100	6.6	0.35							
Italy	192	192 529 9 20100 18000 7.6 0.42												
Spain	78	78 205 9 14500 14100 6.4 0.45												
Algeria	13 385 30 1500 3000 3.3 1.12													
Libya	3	3 238 28 2000 4800 8.8 1.83												
Morocco	63	63 294 23 1300 3600 1.1 0.29												
Tunisia	58	58 194 22 2100 5300 1.8 0.34												
West. Medit.	West. Medit. 38 310 15 14800 13000 5.5 0.42													
Definition of variables														
DEM1	Gross po	pulation de	nsity in in	h/km2 (POI	P/SUP)									
DEM2	Net popu	lation dens	ity in inh	km2 (POP	/AGR)									
DEM3	Natality ra	ate (BIR/Po	OP)											
ECO1	GNP in \$	per inhabi	tant (GNI	P/POP)										
ECO2	GDP in p	.p.a per inh	nabitant (0	GDP/POP)										
ENV1	CO2 in to	ns per inha	abitant (C	O2/POP)										
ENV2	CO2 in kç	g per \$ of C	SDP (CO2	2/GDP)										

As in the case of the analysis of size, it is possible to introduce many transformations in the initial table (rank, standardisation, ...) and we do not further develop the crucial importance of this step but insist on the fact that it can heavily modify the following results of the analysis. We would rather insist on the fact that they are two complementary ways for the analysis of such a table, according to the fact that the focus is made on the variables (correlation) or the territorial units (similarities). Each type of analysis produces different output which has different applications for political decision in the ESPON program.

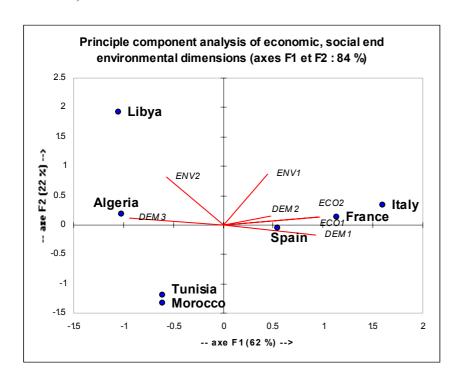
⇔ Correlation analysis focuses on the analysis of dependencies between variables describing the territorial units in order to propose more synthetic parameters like factors which summarise the initial formation in a more synthetic way. In the sample of data on Mediterranean countries it is possible to identify more or less trivial relations: it is obvious that the two measures of GDP/inh are highly positively correlated (+0.99) and has a negative correlation with the natality rate (-0.86 and -0.92); but less trivial relations can be noticed as in the case of gross population density which is correlated with the previous variable which is not the case of net population density. The lack of significant relation between the environmental variables and the economic and demographic parameters is also interesting, even if it is partly related to the small size of the sample.

)	DEM1	DEM2	DEM3	ECO1	ECO2	ENV1	ENV2
	DLIVI	DLIVIZ	DLIVIS	LCOT	LCOZ	LINVI	LINVZ
DEM1	1	0.618	-0.841	0.765	0.815	0.251	-0.643
DEM2	0.618	1	-0.212	0.353	0.349	0.209	-0.085
DEM3	-0.841	-0.212	1	-0.864	-0.919	-0.376	0.641
ECO1	0.765	0.353	-0.864	1	0.986	0.540	-0.438
ECO2	0.815	0.349	-0.919	0.986	1	0.573	-0.448
ENV1	0.251	0.209	-0.376	0.540	0.573	1	0.452
ENV2	-0.643	-0.085	0.641	-0.438	-0.448	0.452	1

in black, values signiifcant at level alpha=0.05 (bilateral test)

As in the previous case of the analysis of the size variables, the factorial analysis is very helpful for summarizing the correlation matrix in order to propose more global factors of spatial differentiation. In our example, a first factor is defined by the combination of economic and demographic variables with a clear opposition between northern and southern Mediterranean countries. But the environmental dimension (emissions of CO2 per inhabitants

or \$) reveals another opposition between southern Mediterranean countries with an economy based on oil resources (Libya, Algeria) and countries with a different industrial basis (Tunisia, Morocco).



Similarity analysis focus on the differences between state which can be expressed by a typology (cluster analysis) but can also provide a very previous information on linkage between states through the elaboration of a similarity matrix between states which can be directly connected to other linkage matrixes, as we will see in next section. In our example, the dissimilarity matrix⁵ reveals a very strong pattern of opposition between two groups of states located in North and South of the Mediterranean See. But they are some exceptions, like in the case of Spain which has a higher level of dissimilarity with Italy (3.68) than with Morocco (3.43) or Tunisia (2.97). Libya is also very different from Morrocco (4.20) and Tunisia (3.96) but difference are also very strong with northern countries. The related classification tree⁶ confirms the strong opposition between the two groups of states and introduce some minor differences inside northern group (Italy / France & Spain) and southern group (Algeria & Libya / Morocco and Tunisia).

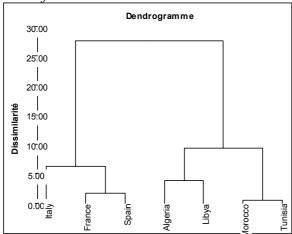
Dissimilarity matrix

	Frau	Ita	Spa	Alg	Lib	Mor	Tun
France	0.00	2.66	1.81	4.89	5.15	4.30	4.10
Italy	2.66	0.00	3.66	5.52	6.12	5.14	5.35
Spain	1.81	3.66	0.00	4.22	4.25	3.43	2.97
Algeria	4.89	5.52	4.22	0.00	2.76	2.28	2.67
Libya	5.15	6.12	4.25	2.76	0.00	4.20	3.96
Morocco	4.30	5.14	3.43	2.28	4.20	0.00	1.00
Tunisia	4.10	5.35	2.97	2.67	3.96	1.00	0.00

⁵ Based on the classical euclidean distance between standardised variables.

⁶ Based on Ward's criteria applied to Euclidean distance between standardised values

Classification tree



2.3) Differences and complementarity

The analysis of differences (or gradient) is statistically very near from the previous topic of dissimilarities but is conceptually very different because it introduce an asymmetric dimension in the analysis of the structural relations between states. As we have seen before, the *dissimilarity* is a symmetric linkage where the value which describe the link between 2 territorial units i and j is equal to the value which define the link between j and i. In the case of *differences*, the relation is asymmetric and the relation between i and j is the opposite (or the inverse) of the relation between j and i. This crucial difference can be explained through the simple exemple of the differences of GNP/inh. between our sample of Mediterranean countries.

The *absolute differences* can be measure in a very simple way as the arithmetic difference between the territorial units. For this criteria, the difference of GNP/inh between France and Italy (±6100 \$/inh.) is considered as much more important than the difference between Tunisia and Algeria (±600 \$/inh).

Xi-Xj	Fra	Ita	Spa	Alg	Lib	Mor	Tun
France	0	6100	11700	24700	24200	24900	24100
Italy	-6100	0	5600	18600	18100	18800	18000
Spain	-11700	5600	0	_13000	12500	13200	12400
Algeria	-24700	-18600	-13000	0	-500	200	-600
Libya	-24200	-18100	-12500	500	0	700	-100
Morocco	-24900	-18800	-13200	-200	-700	0	-800
Tunisia	-24100	-18000	-12400	600	100	800	0

⇒ The *relative differences* take into account the relative level of GNP/inh. or the couple of state and can be measure in a very simple way as the ratio of the value of the indicator for each couple of territorial units. For this criteria, the difference of GNP/inh between France and Italy (1.3.) is considered as much more important than the difference between Tunisia and Algeria (±600 \$/inh).

Whatever their method of evaluation, matrix of differences are a crucial structural component for the analysis of flows because they define opportunities of relation related to the concept of

complementarity. It is conceptually very different from the matrix of dissimilarities which can also have an effect on flows but are rather related to the concept of **identity**.

2.4) Spatial proximity: geographical neighbourhood and network accessibility

The various measure of **spatial proximity** can also be considered as structure as far as they determine in several way the possibility of flows between territorial units according to time or cost of relation. It is not the place to develop in detail the various measure of spatial proximity which can be introduced in the analysis of the position of Europe in the World but it is important to make a clear distinction between two very different forms of structural links according to the fact that they define a continuous (geographical neighbourhood) or discontinuous (network accessibility) approach of space.

Geographical neighbourhood can be defined as an information which is mainly related to the geometry of spatial units and based on the existence of common borders (contiguity) or the physical distance in kilometres between various points of the area of each territorial unit. The geographic definition of European neighbours under geographical criteria is not trivial as it can be seen on the example proposed in Figure 1. If we use a map with a low level of spatial resolution -indicating only the main area without small islands or territories located out of the main territorial body of each state - we will eliminate many case of contiguity between territorial units. For example the common border between Spain and Morroco through Ceuta and Melilla or the common border between Russia and Poland or Lithuania through the district of Kaliningrad. In certain cases, the question is not only technical but also political as in the case of the definition of a contiguity between Cyprus and Turkey which would be, de facto, a recognition of the occupation of the northern part of the island... The existence of a common border between two states is a very fundamental topic for many type of flows (e.g. juridic consequence of unofficial migrations toward the territories of Ceuta and Mellila) but it is also a very symbolic information which modify the representations of people and policymakers. We have limited here our example to the case of the pan-european area but it is obvious that the question should be analysed in a world wide perspective in ESPON 341 because many states of Europe (in particular France and UK) has remote territories wich create geographical neighbourhood between EU and many other continents (e.g. contiguity between France and south American countries through the département of French Guyane).

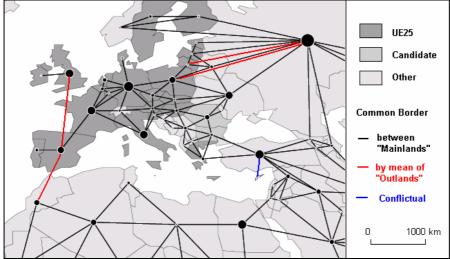


Figure 1 : Common border between states in pan-european area

The question of the definition of contiguities has also important consequences on the cartography of structure. If we decide for example to produce a map of relative discontinuities of GNP/inh. at international level (Figure 2) we will produce a :map where important discontinuities can be pointed in central and eastern part of Europe (e.g. between Finland and Russia) but we will not provide any informations on the discontinuities which exist between northern and southern coast of the Mediterranean See and are of comparable importance, as we have seen in the previous section. We will neither sea the discontinuities of wealth between European Union and the Balkanic countries, despite the high level of flows which are related to this structure (e.g. migrations between Albania and Italy).

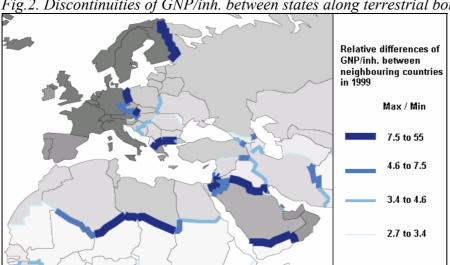


Fig. 2. Discontinuities of GNP/inh. between states along terrestrial borders

In this situation it is of utmost importance to propose other measures of geographical proximity, based for example on the minimum distance between the borders of states separated by sea and to consider that the neighbourhood exist if the minimum distance is lower than a given threshold (e.g. 50 or 100 km) and if the sea can be crossed easily. But we sea that, in this situation, the geographical neighbourhood is not based only on geometry and take into account other informations on the possibility for migratory flows to cross channels which mean that we are in fact introducing a proxy of the concept of network accessibility.

Network accessibility is not based on an hypothetical effect of physical distance but introduce explicit assumptions on the technical or practical solutions which contribute to the realisation of flows between territories. According to the nature of flows which are considered of interest, various form of network accessibility can be defined related for example to different modes of transportation (air, rail, road, ...) and their possible connexion in multimodal networks. In the framework of the limited budget of ESPON project 3.4.1, it will probably not be possible to analyse this point in too much details but it is important to keep in mind that network accessibility does not exist without consideration of the flows which can be related to a particular infrastructure of communication. It is also of utmost importance to introduce a social dimension in the measure of network accessibility because all types of networks can not be used by all social groups according to their resource or knowledge (e.g. internet).

From conceptual point of view, network accessibility is fundamentally different from geographical neighbourhood because it is often related to connexion between nodes which are located in a discontinuous space (e.g. gateway cities). It is related to difficult questions concerning the scale of analysis, the basic territorial units of the study. Indeed, the fact that a state has a good airport connexion in a given point of his territory does not mean that all other parts of the territory of this state can benefit from this infrastructure, depending on internal networks which connect secondary centers to the main Hub. Reversly, a state which do not have a good airport on his own territory can benefit from the infrastructure of other neighbouring states, at less in the border area.

Geographical neighbourhood and network accessibility are complementary structure which should both be taken into account if we want to get a sound interpretation of flows between Europe and the rest of the World

3) Preliminary sample of methods for synthetic analysis

We will now briefly explain how the various types of synthesis can be proceeded, without going in two much details.

3.1) Thematic synthesis

Thematic synthesis on a particular field will be based on the use of models who integrates flows and structure in a systemic way. As a very simple example, we will illustrate the methodology of gravity model of spatial interaction applied to the economic exchanges between northern and southern Mediterranean states which has been previously analysed.

We propose to estimate the trade flows (Fij) between two states as a function of the economic capacity described by the GNP of the country of origin (GNPi) and the GNP of the country of destination (GNPj). We introduce also an assumption on the role of geographical distance (Dij) and geographical neighbourhood described by the presence of a common border (Cij). The structure of the model is a classical gravity assumption that:

Fij =
$$\alpha$$
. (GNPi) $^{\beta 1}$. (GNPj) $^{\beta 2}$. (Dij) $^{\gamma}$. δ (Cij)

The parameters are estimated by linear regression after logarithmic transformation:

$$Log(Fij) = a0 + a1.log(GNPi) + a2 log (GNPj) + a3 log(Dij) + a4.Cij$$
=> With $\alpha = exp(a0)$; $\beta 1 = a1$; $\beta 2 = a2$; $\gamma = a3$; $\delta = exp(a4)$

The analysis of the results of multiple regression indicates that both push and pull factors (GNPi and GNPj) has significant positive effect on the level of trade flows between partner state but not the geographical distance (Dij) and the geographical neighbourhood (Cij) which do not appears to have a significant influence of trade flows between the set of countries which has been selected. The value of geographical parameter indicate that the presence of a common border has a slow positive effect on trade flows (+36%) but it is not significant has it is not a regular result. More surprisingly, distance appears to have a small positive effect, which means that trade increase when distance increases, which is very unusual but can be explained by the relative homogeneity of distance and the fact that we have use a very rough definition of proximity (Euclidean distance between geometrical centre of states). As we will see later, this contradiction is related to a bad specification of distance.

The proposed model explains 72% of the variation of flows between states but let unexplained 28% of the initial information on trade flows. The analysis of the residuals of the model is therefore a very interesting way for the discovery of other explanatory variables which has been introduced in the initial formulation of the model. Absolute residuals are computed as the difference between observed and predicted flows and relative residuals as the ratio between observed and predicted flows (see. below)

Observed trade flows

Fij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		27626	24224	2145	2322	297	2103	58717
ITA	27446		12873	830	561	977	1564	44251
ESP	19739	9525		664	966	162	334	31390
ALG	1878	2137	1665		124	1	79	5884
MAR	2533	427	739	14		107	53	3873
LBY	467	4269	1199	2	58		241	6236
TUN	1640	1209	276	35	40	225		3425
Total	53703	45193	40976	3690	4071	1769	4374	153776

Expected trade flows

Expected trade	Expected trade flows												
F*ij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total					
FRA		36728	20346	1479	431	1255	725	60964					
ITA	37274		8682	1173	355	956	546	48986					
ESP	21409	9001		666	379	589	338	32382					
ALG	1769	1383	757		57	83	98	4147					
MAR	558	452	465	62		28	17	1582					
LBY	1520	1141	678	84	26		83	3532					
TUN	905	672	401	102	16	86		2182					
Total	63435	49377	31329	3566	1264	2997	1807	153775					

Absolute residuals (Fij - F*ij)

F*ij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		-9102	3878	666	1891	-958	1378	-2247
ITA	-9828		4191	-343	206	21	1018	-4735
ESP	-1670	524		-2	587	-427	-4	-992
ALG	109	754	908		67	-82	-19	1737
MAR	1975	-25	274	-48		79	36	2291
LBY	-1053	3128	521	-82	32		158	2704
TUN	735	537	-125	-67	24	139		1243
Total	-9732	-4184	9647	124	2807	-1228	2567	0

Relative residuals (Fij/F*ij)

Fij	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		0.75	1.19	1.45	5.39	0.24	2.90	0.96
ITA	0.74		1.48	0.71	1.58	1.02	2.86	0.90
ESP	0.92	1.06		1.00	2.55	0.28	0.99	0.97
ALG	1.06	1.55	2.20		2.18	0.01	0.81	1.42
MAR	4.54	0.94	1.59	0.23		3.82	3.12	2.45
LBY	0.31	3.74	1.77	0.02	2.23		2.90	1.77
TUN	1.81	1.80	0.69	0.34	2.50	2.62		1.57
Total	0.85	0.92	1.31	1.03	3.22	0.59	2.42	1.00

- ⇒ The analysis of the margin of the matrix of residual indicates firstly that some states are more involved in the trade of the area than other. For example, we can notice that northern Mediterranean countries export less than expected with other countries selected when southern countries export much more than expected. The situation is not exactly the same for importation where we can notice exception to the previous rule (Spain, Libya).
- ⇒ The analysis of the internal part of the matrix of residuals reveals specific linkages between couples of states which have significant positive or negative residuals, indicating preferences or barriers effects according to the variables introduced in the model. For example, if we focus on north-south trade relations, we can observe that France has significant positive residuals in both directions with Morrocco, Tunisia and at a less degree Algeria (only for exportation) but negative residuals with Libya. Italy has significant positive residuals in both direction with Tunisia and at a less degree with Libya and Algeria (only for importation) and Morocco (only for exportation). Spain has positive residuals with Morocco in both directions and at a less degree with Algeria and Libya (only for importations). The analysis of residuals suggest very clearly missing variables in the model like historical inheritage related to colonisation (France with Maghreb and Italia with Libya) or common language (France and Maghreb). It can also reveals some misspecification in the parameter introduced in the model like geographical distance which has been measured as distance between gravity centre of superficy but would be better described by minimum distance between external borders (explaining therefore the intensity of relations between Italy and Tunisia or Spain and Morocco).

This example indicate clearly how the step of joint modelisation of flows and structure help to discover hidden factors and suggest connexion with other thematic fields of interest for a better estimation of the model which can be improved and calibrated in a hypothetico-deductive process.

3.2) Structural synthesis

This point will not be developed as most methods for joint analysis of several thematic structures are similar to the methods which have been presented for the analysis of a single structure (see. B.2). Multivariate analysis (factorial analysis, classification, similarity, discontinuity can be either applicated to a homogeneous table of economic variables or to a table combining social, economical, demographical and environmental data.

The only point to precise is the mathematical type of variables introduced in the analysis (quantitative, qualitative, ordinal, ...) because it can modify the choice of the most relevant statistical tools to be applied to structural analysis. For example, if we want to analyse the correlation between the qualitative variable "Belonging to EU" and other quantitative variables we will not use classical correlation or regression model but variance analysis. For example, the variance analysis indicates clearly the existence of a very significant opposition between and northern and southern Mediterranean countries on the criteria of economic development measured by GNP/inh (90% of variancy explained, significant at level 0.001). But this opposition is not systematic and, for example, it is not possible to define a significant north-south opposition on the criteria of ecological efficiency measured by CO2 per \$ of GNP (20% of variance explained, non statistically significant). In this case, the real opposition is rather between countries with oil production (Lybia, Algeria) with emission of CO2 per \$ and all other countries of the area.

Relation between economic development (GNP/inh.) and belonging to EU.

Source	ddl	SSQ	Mean Square	F - Fisher	Pr > F
Model	1.000	589360119	589360119	42.748	0.001
Residual	5.000	68934167	13786833		
Total	6.000	658294286			

r2 = 90%

Relation between Ecological efficiency (CO2/GNP) and belonging to EU.

Source	ddl	SSQ	Mean Square	F - Fisher	Pr > F
Model	1.000	0.409	0.409	1.274	0.310
Residual	5.000	1.604	0.321		
Total	6.000	2.013			

r2 = 20%

Many ideas for structural synthesis are related to the research on synthetic indexes of human or sustainable development which are actually analysed in ESPON 3.2 in the work packages related to the construction of a European Territorial Cohesion Index. Therefore, the TPG ESPON 3.4.1 will take benefit from this existing material in order to gain complementarity between the different parts of the whole ESPON program.

3.3) Flows synthesis

As it was explained in part B.1, the various type of flows are not independent from each other and correlation or causal relation can be established between various types of flows which link states together. The synthesis of various types of flows is not necessary difficult if the methodology used by the different partners in charge of the various thematic flows is made similar and coherent at the very beginning. As they are many solutions for the transformation of initial matrix of flows (*see. B.1*), it is crucial to introduce common methodology and common indexes in all work packages, even if some adding methodologies and variables should be applied on particular types of flows (like air connexion). It is obvious that the elaboration of a cross-thematic database of flows, which is a main concern of project ESPON 3.4.1. will introduce a sensible reduction of the initial information because, for example, the territorial units available in each matrix of flows will not be exactly the same and because the elaboration of a common territorial breakdowns will oblige to reduce the spatial resolution of the analysis.

As an example, the analysis of air connexions should normally be realised at city or airport level in a first step, but data will be further aggregated at national level in order to be combined with economic or migratory flows which can not be obtained at city level.

The same problem will appear in the case of introduction of an historical dimension in the analysis of a given type of flow. As limits of states are changing through time and that many states has been broken in several others after 1989 (Soviet Union, Yugoslavia, Czechoslovakia, ...) it will not be possible to introduce any historical dimension in the analysis of flows without geographical aggregation of territorial units. In certain cases, it is possible to try a reconstitution of past flows in new borders but is very expensive and impossible as regard to the limited resources available in ESPON 3.4.1. In certain cases, it is

only between very big aggregates of world region that it is possible to proceed to such evaluation of flows through time.

In many cases, due to lack of information (holes in matrixes of flows) and difficulty to harmonise various types of criteria, will we limit our synthesis to the comparison of qualitative variables indicating if flows are, for example "High", "Medium" or "Low". Those typologies introduce a dramatic reduction of initial information but are probably the most efficient solution for cross-thematic synthesis of flows in the context of our project.

In our Mediterranean example, we have seen that it was relatively easy to distinguish three levels of trade flows, because of strong discontinuities in the statistical distribution⁷. According to the level of bilateral commercial exchanges (*Trade*), we can associate to each couple of origin and destination a qualitative value according to level of flows. We do the same for two other matrixes of flows describing the number of air passengers between states (*Air1*) and the number of couples of cities connected by a minimum number of passengers (*Air2*)⁸. As variables are strongly correlated, it is relatively easy to define a global synthesis, except in particular case where we can observe a heterogeneous combination of high and low flows (e.g. France and Libya with low level of commercial trade but high level of air connexions).

Synthesis of three types of flows between Mediterranean countries

Origin/Dest.		Quantitative flows			Qualitative flows			Flows
I	j	Trade	Air1	Air2	Trade	Air1	Air2	synthesis
FRA	ITA	55072	5494041	284	3	3	3	3
FRA	ESP	43963	5052059	288	3	3	3	3
FRA	ALG	4023	1448096	42	2	3	3	3
FRA	MAR	4855	3144	4	2	1	2	2
FRA	LBY	764	2121522	79	1	3	3	2*
FRA	TUN	3743	2656246	67	2	3	3	3
ITA	FRA	55072	5494041	284	3	3	3	3
			•••			•••	•••	
LBY	TUN	466	53002	2	1	1	1	1
TUN	FRA	3743	2656246	67	2	3	3	3
TUN	ITA	2773	105502	10	2	2	2	2
TUN	ESP	610	213556	24	1	2	2	2
TUN	ALG	114	0	0	1	1	1	1
TUN	MAR	93	0	0	1	1	1	1
TUN	LBY	466	53002	2	1	1	1	1

Trade = bilateral commercial flows; Air1 = number of passengers; Air2 = number of city connexions 3 = Main flows; 2= Medium Flows; 1 = Small fFows; * indicate a mixture of high and low flows. Qualitative transformation is based on statistical discontinuities in the distribution of each type of flow

It is now easy to propose a synthetic analysis of flows between Mediterranean countries which can be represent in matricial or graphic form.

Synthesis of air and trade flows between selected western Mediterranean countries

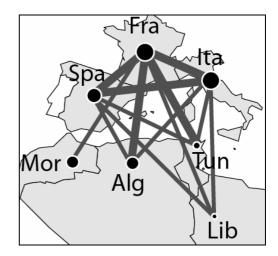
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⁷ Many statistical methods like Jenk's algorithm can help in the objective determination of typologies of quantitative variables, but it is also important to take into account the expert advices on each subject.

⁸ Notice that the introduction of this variable help to limit the lose of information introduced by the aggregation of flows between airport at state level.

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Synt.	FRA	ITA	ESP	ALG	MAR	LBY	TUN	Total
FRA		3	3	3	2	2	3	16
ITA	3		3	2	1	2	2	13
ESP	3	3		2	1	2	2	13
ALG	3	2	2		1	1	1	10
MAR	2	1	1	1		1	1	7
LBY	2	2	2	1	1		1	9
TUN	3	2	2	1	1	1		10
Total	16	13	13	10	7	9	10	78



The synthetic pattern of flows which is derived from the synthesis demonstrate clearly a high level of integration between northern Mediterranean countries which are connected by high level of flows on all criteria and, reversly, the lack of integration between southern Mediterranean countries which has always low level of flows in their relation to each other. Concerning north-south relations, the major role is played by France which has high level of flows with Algeria and Tunisia and medium level of flows with Morocco and Libya. Italy and Spain has a medium level of relation with all southern Mediterranean countries, except Morocco which appears as the less connected to the rest of the area for the selected criteria of flows (trade and air connexions). Those results are not surprising but they illustrate the way we propose to deliver relatively simple and synthetic messages, useful for political decisions .