ESPON

TERCO
European Territorial Cooperation as a Factor of Growth, Jobs and Quality of Life

Applied Research 2013/1/9

Final Report- **Scientific Report Part I** | Version **31/12/2012**

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The partnership behind the ESPON Programme consists of the EU Commission and the Member States of the EU27, plus Iceland, Liechtenstein, Norway and Switzerland. Each partner is represented in the ESPON Monitoring Committee.

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This basic report exists only in an electronic version.

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Table of contents

SCIENTIFIC REPORT – PART I

Introduction

This project is entitled "European Territorial Cooperation as a Factor of Growth, Jobs and Quality of Life" (TERCO) and is an ESPON applied research project under Priority 1 (2013/1/9). The project commenced on 16th of February 2010 and ends on 31st of March 2013.

The project involves 6 Project Partners from the Northern, Southern, Western, Eastern and Central parts of Europe. The Lead Partner is EUROREG - Centre for European Regional and Local Studies, University of Warsaw (Poland). Other partners are: European Policies Research Centre, University of Strathclyde (Scotland); Free University of Brussels (Belgium); Karelian Institute, University of Eastern Finland (Finland); University of Thessaly, DPRD (Greece) and Autonomous University of Madrid (Spain):

LP EUROREG CENTRE FOR EUROPEAN REGIONAL AND LOCAL STUDIES UNIVERSITY OF WARSAW

PP2 EPRC EUROPEAN POLICIES RESEARCH CENTRE

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This Scientific Report (ScR) consists of detailed research analyses carried out within the TERCO project. It divides into two parts. Part I covers all methods and their results except Case Studies – which together with statistical analyses of all Case Studies are Part II of the ScR.

In particular in Part I, Chapter 1 explains the research logic of the TERCO project, discusses the links between the methods applied and presents the collected databases used in the analyses of the TERCO project. Chapter 2 is an literature review and a short summary of previous ESPON projects on territorial co-operation. Starting from the next chapter the methods are explained and their results. Chapter 3 explains the TERCO Structural Equation Model (TERCO-SEM) showing key factors of successful TC at the beneficiaries level. Chapter 4 is based on Network Analyses which related to co-operation of Twinning Cities as well as transnational and interregional co-operation within European Territorial Co-operation which is an Objective 3 of the Cohesion Policy. Last but not least, the typology of TC determinants is provided which links the characteristics of regions with the types of their territorial co-operation.

Part II consists of three chapters, where Chapter 1 provides statistical analyses of all Case Studies and their systematic comparison. Chapter 2 consists of full qualitative reports from the Case Studies. It is worth underlining that nine Case Studies have the same structure and cover the same blocks of issues referring to TC such as geographical areas, domains, territorial structures of co-operation, driving forces and good governance practices. The last, tenth case study, is different since it is devoted to analyses of governance structures for TC including European Grouping for Territorial Co-operation and good governance practices. Chapter 3 covers issues that TERCO team recommends for further analytical work and research.

The inputs from the *Scientific Report* served to creation of the *Main Report* and the *Executive Summary*. We encourage the reader to refer also to two remaining Final Report files - *Bibliography* and *Abbreviations with glossary* - as well as for visiting ESPON 2013 Database where TERCO data was also included - the description of 4 TERCO databases is provided in the next chapter, section 3.

1. Methodology and databases of TERCO project

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Table of contents

1. The logic of the research

The TERCO research is subordinated to Project Specification which provided main Research and Policy questions to be addressed by the project. Further specification of the research resulted in crating Application of the TERCO project which aimed not only to meet those expectations but also to add some additional interesting issues for research. The Project Specification distinguished 4 main areas of Research Questions: i) Identification of territorial cooperation areas, ii) Identification of domains for cooperation, iii) Identification of adequate territorial structures for cooperation and analysis of specific border situations, iv) Identification of driving forces of and governance structures for cooperation (PS, p.8) as well as 4 unclassified Policy Questions (PS, p.6). TERCO application added the issue of impact of TC on socio-economic development (as one of the challenges in front of cohesion policy) and issue of successful co-operation from the point of view of actors involved in the co-operation. Hence, **the main objective of the TERCO is: to assess the relationship between territorial co-operation (TC) and the socio-economic development of EU and neighbouring regions** while the **subordinate objectives** of TERCO are the following:

1. to estimate the impact that various types of TC has on socio-economic development;
2. to identify key determinants of successful TC;
3. to assess the adequacy of existing TC geographical areas and thematic domains;
4. to establish good governance structures and practices of TC.

As one can see there is a very close similarity between Research Questions from Project Specification and TERCO objectives. However, there are some differences. Firstly, TERCO distinguishes two additional objectives, one related to the title of the project i.e. impact of TC on socio-economic development and the other one related to issue of key determinants of successful TC (they are first two subordinate objectives). Secondly, TERCO does treat identification of territorial structures and specific border situations as separate goals by themselves. However, it address them in the analyses during investigation of adequate geographical areas, and formulation of case studies on specific borders. Identification of driving forces is also not treated as a separate objective because it is comprise in the object 2, since key determinants of successful TC are subgroup of the determinants of TC so in a way this goal comprises the driving forces as well. The last two goals are the same both in Project Specification and in TERCO application.

Table A1 in Main Report tries to enrapture all the areas of research originating from different documents and classify them into consistent blocks. Hence, it has more categories than just project objectives because it aims to address specifically all the Policy, Research and TERCO specific questions.

After formulation of 4 TERCO objectives, they are manifested in the structure of the Main Report. The first two are assessed in Chapter 2 and the remaining two in Chapter 3. This is so, that Chapter 2 presents the results by methods while the Chapter 3 presents the results by specific questions formulated in the Project Specification. Since impact on socio-economic development and key determinants of success were not formulated in Project Specification they are incorporated in Chapter 2 not in Chapter 3. At the same time, Chapter 3 has names following the logic of the Project Specification as it addresses mainly the questions coming from there.

Besides the project research areas expanded comparing to the initial documents (Project Specification and TERCO application) due to comments of Sounding Board and other evaluators of the Project. Hence, the new areas or research appeared such as territorial integration, territorial keys, scope of co-operation. They are included in different parts of the project, where suitable.

2. Methods applied in TERCO

TERCO applied various methods which can be broadly divided into quantitative and qualitative ones.

Qualitative methods included: desk research (literature review, review of policy documentation, review of the results of other projects in the field, and collecting secondary data), conceptual model of TC, case studies (including in-depth Interviews (IDI), and standardised electronic questionnaire (CAWI).

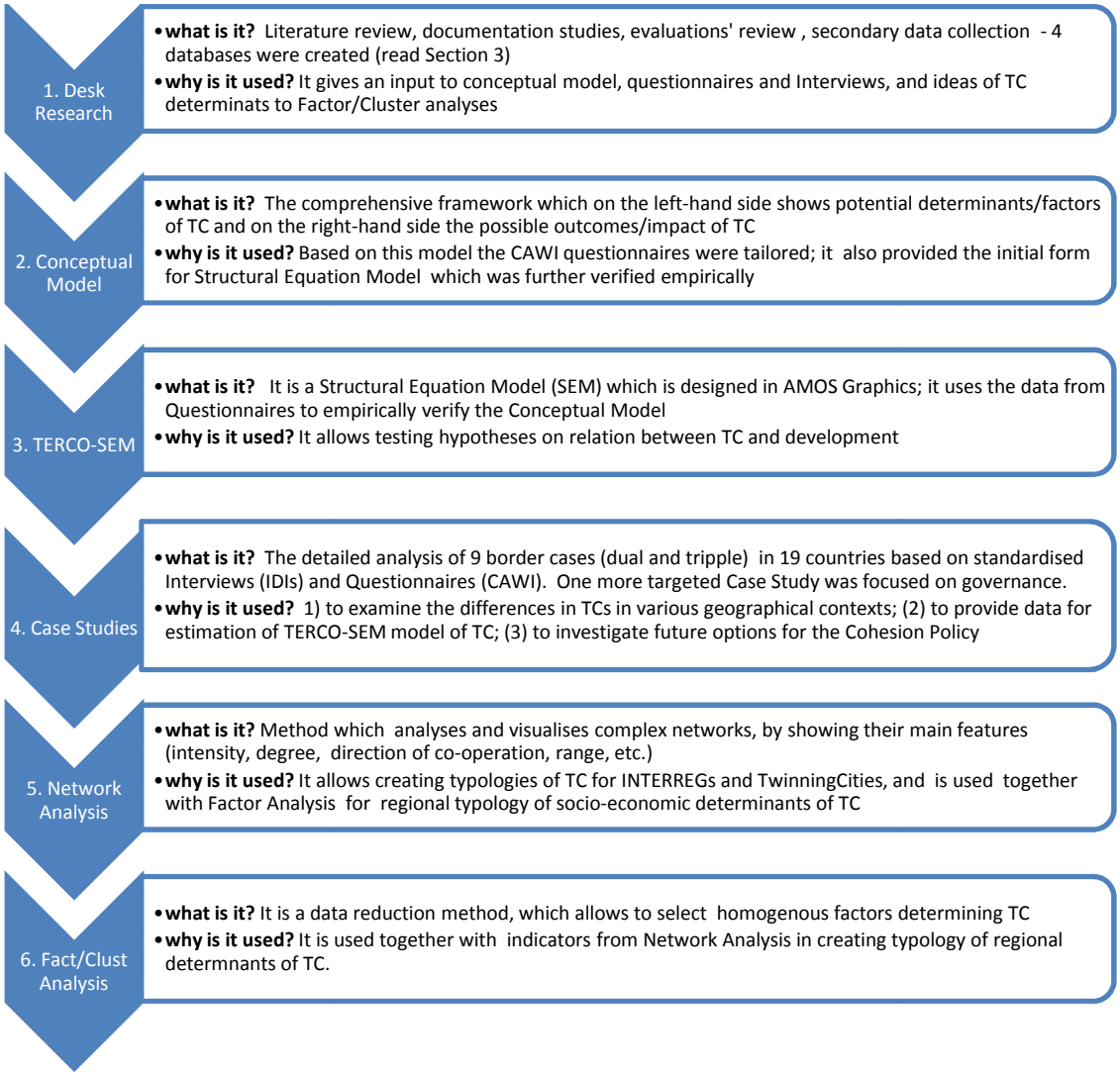
Quantitative data analysis and depiction methods included: building databases, applying multivariate statistical analysis (Factor and Cluster Analysis), Structural Equation Modelling and Network Analysis. The most important 6 methods are presented in Figure 1.

The methods in the project were chosen to complement each other and investigate TC at various levels: level of projects/beneficiaries (TERCO-SEM model), level of TC programs (Network Analyses), level of individual regions (Case Studies) and regional level of ESPON area (factor/cluster analyses and derived from them typology). The links among the methods are as follows. Firstly, the desk research was carried out resulting in a comprehensive literature review and extensive data collections. Literature review provided ideas and concepts of determinants and outcomes of TC used in formulating: a) conceptual model of successful territorial co-operation, b) electronic standardised questionnaire (CAWI) and c) factor and cluster analyses (using also indicators from Network Analyses in order to create typology of TC determinants).

Generally literature review suggested seven determinants of co-operation (culture, regional and local self-government, funding, history, legal background, socio-economic background and geographical conditions) which were turned into measurable indicators used by various methods[1]. The data collections constituted 4 databases: i) pioneer pan-European database on twinning cities, ii) database on INTERREGs III and IV strands A, B, C; iii) database on regional socio-economic determinants of TC, iv) database on transcontinental co-operation. All of them are described in the next section.

[1] The number of determinants used in different methods varies. They all originate from those seven but their operationalisation differs so some were combined while some other had to be omitted due to lack of data. Those methods based on primary data (like SEM) had different operationalization of the determinants than those relying on secondary data (like factor analyses). So the number of determinants differ even if they originate from the same literature review. For a detailed explanation on how the determinants used in factor/cluster analyses relates to 7 determinants from literature review see a footnote in SR, Part I. Ch.5 section on "Variables used in quantitative surveys".

Figure 1: Concise presentation of all methods used in the Project



The standardized case studies were carried out in 19 countries: Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Germany (DE), Spain (ES), Finland (FI), France (FR), Greece (EL), Latin America: Argentina (AR) and Uruguay (UY); Morocco (MO), Norway (NO), Poland (PL), Russia (RU), Sweden (SE), Slovakia (SK), Turkey (TR), Ukraine (UA), United Kingdom (UK). They included bilateral Case Studies (Finland-Russia, Belgium-France, Spain-Argentina, Spain-Uruguay, and Spain-Morocco) as well as trilateral Case Studies (Poland-Ukraine-Slovakia, Poland-Germany-Czech Republic, Scotland-Sweden-Norway, Greece-Bulgaria-Turkey). Their **main objectives** were: (1) to examine the differences in operationalisation and effectiveness of various TCs in various geographical contexts; (2) to provide data for calibration of the TERCO-SEM model of TC; (3) to investigate future options for the Cohesion/ETC Policy based on lessons learnt on what works well / went wrong. Hence the **selection criteria for the case studies** were as follows:

a) balanced geographical coverage: it was assured that regions have balanced geographical coverage so they come from South, West, North, East and Centre of the EU.

b) the regions should be eligible for all five types of TC under investigation: twining cities, INTERREG A, B, C and transcontinental. Since INTERREG A is available only in border regions, then all case studies were located on borders to satisfy this criterion. However, all other types of TC were investigated in those border regions.

c) all combinations of old vs. new and internal vs. external EU borders represented (see Table 1).

d) coverage of different structures: land borders, maritime and river borders were represented in the Cases Studies.

e) coverage of particularly interesting features of TC. For example Russian-Finnish border was chosen because the co-operation is specific there due to low population density in that area and difficult historical past. Another particularly interesting case is Turkey-Greece where any formal territorial cross-border cooperation between the two countries is politically difficult.

Table 1: TERCO Case Study Areas

Border/ Member State	New- New	New-Old	Old-Old
INTERNAL	PL-CZ PL-SK	PL-DE CZ-DE BG-EL	UK-SE BE-FR
EXTERNAL	PL-UA SK-UA		EL-TR UK-NO FI-RU ES-LAT.A. ES-MA

BE – Belgium, **BG** – Bulgaria, **CZ** – Czech Republic, **DE** – Germany, **ES** – Spain, **FI** – Finland, **FR** – France, **EL** – Greece, **LAT.A.** – Latin America, **MA** – Morocco, **NO** – Norway, **PL** – Poland, **RU** – Russia, **SE** – Sweden, **SK** – Slovakia, **TR** – Turkey, **UA** – Ukraine, **UK** – United Kingdom.

The three objectives of the Case Studies were fully achieved. First, balanced geographical coverage allowed for a range of different contexts of the cooperation to be examined, i.e. social, economic, historical, and political even cultural context was tried to be enraptured by quantitative indicators (read the next section on data). Second, TERCO-SEM model required a large number of observation to start running. There were collected 459 questionnaires from the Case Studies which for that methods were turned into 500 unique data points used by the model (read ScR, Ch.3). Then the model was calibrated, it started running and producing reasonable results. Third, case studies allowed to gather opinion on future options for ETC based on different experience (different from Finnish-Russian case study than from Spain-Morocco, etc.). All the opinions of respondents on the future policy options were explicitly

gathered in the summary of each Case Study (see ScR Part II, Summaries of individual case studies).

Two main tools for collecting data in Case Studies were: in-depth interviews (IDIs) and standardised electronic questionnaires (Computer Assisted Web Interviewing - CAWI) – both templates are in Annex 1 to this report.

The logic of the in-depth interview (IDI) design was to cover more complex issues that were not able to be adequately addressed in the electronic questionnaires. Questions were grouped into four sections, as follows: 1) geographical areas of territorial cooperation, e.g. which areas, according to respondents, should be covered by transnational territorial cooperation in the future; 2) driving forces determining participation in TC, and domains most adequate for TC support; 3) territorial structures (e.g. rivers and maritime basins, Euro-corridors, urban areas, etc.) most worthy of EU policy intervention; and 4) governance and other practical aspects of TC implementation which could facilitate or hinder cooperation.

The main characteristics if IDI, in contrast to questionnaire, were the following. First, it went beyond EU programs, and aims to find other forms of territorial cooperation which work effectively. Second, IDI tackled the questions on adequacy of current territorial areas, domains, governing based on specific examples. Third, the orientation of the interviews was on the most desirable future development of the TC policy, at least from the point of view of the interviewed beneficiaries. Drawing on their experience, we also collected good practices of implementing territorial cooperation.

The target group of interviewees were experts, local/regional officials and leaders of the territorial cooperation projects. The template for Case Study report apart from the standardised structure included also guidelines which showed how IDIs were to be used within CS reports (see Section 3.5 of this Chapter). All in all, those standardised IDIs were used together with electronic questionnaires' results (CAWIs) and with background socio-economic data (see database descriptions below), as well as with the assisting documents and knowledge of the authors in writing the Case Study reports. Apart from those standardised IDIs, additional ones were carried out investigate governance issues, including EGTC, in greater detail. Their logic is described in the last Case Study report (ScR, Part II, Ch.2.10)

As for CAWIs, for each of five types of TC, it collected facts and opinions on each construct existing in the SEM: (a) prevailing domains for each TC; (b) scope of cooperation by TC; (c) factors of TC; (d) resources utilized in TC; (e) involvement of TC stakeholders; (f) governance of TC; (g) impact of TC; and (h) future of TC main drivers of and attitudes toward TC. The rationale for questions posed in CAWI was rooted in the TERCO literature review as well as in other empirical studies (see TERCO Interim Report). Hence, in relation to each construct there were specific questions in CAWI. All in all, the design of CAWI is entirely linked to the logic of the SEM model and, as a result, CAWI consists of sections referring to the constructs of the SEM model (read more in ScR Part II, Ch.1).

Apart from primary data collected within Case Studies, also secondary data was collected to facilitate the creation of typology of TC determinants. Network Analyses was also applied primarily for analyses of twinning city co-operation and creating indicators of co-operation used later in the typology.

More details on the specification of those methods in TERCO project are provided in the chapters using those methods, i.e.: Literature review (Ch.2), Conceptual and TERCO-SEM model (Ch.3), Network Analyses (Ch.4), Factor and Cluster analyses leading to typology (Ch. 5), Case Studies (ScR Part II).

3. Description of Databases created in TERCO

Since many methods were applied in the TERCO project, a large amount of data was collected in order to make them work. Four main databases were created as outputs of the project: 1) Database on Twinning Cities, 2) Database on socio-economic indicators/determinants of TC; 3) Database on INTERREGs A, B, C; and 4) Database on transcontinental cooperation of Spain with Morocco, Argentina and Uruguay. They are all described below.

3.1 Database on Twinning Cities

There is no Europe-wide data source on twining cities available. Hence, the challenge of TERCO project was to create such a database from scratch. It was done by applying advanced internet queries in three steps.

Step 1 Writing algorithms for extracting data on Twining Cities from the Wikipedia

The primary data comes from Wikipedia where each city/municipality has its web page with information on its twinning agreements with other cities/municipalities. Unfortunately there are many ways Wikipedia presents this data which makes it difficult to write a proper algorithm for extracting this information. On one hand, putting too many restrictions on the queried data would mean that some cities/municipalities would be omitted, in that case it would be very hard to find latter which cities/municipalities were left out. Hence, the other approach was applied, apply algorithms which allow collection of a large set of information which later on were sorted and invalid information was left out. The latter means in practice that the algorithm had to download every connection existing on the Wikipedia web sites and then differentiate between actual connections between twinning cities versus random connections between other types of Wikipedia pages. Checking out if a page was about a city or not was all but easy task. Two methods were applied here to distinguish the difference. One was to use city lists both from Wikipedia and from EU-27 town list. The second was checking whether there were GPS coordinates on the Wikipedia page. Almost every city has it's coordinates entered (at least in the Wikipedia in its national language) and most other pages don't. This at least lowered the number of actual pages which had to be checked for correctness.

Step 2 Pilot study, testing whether data on Twining Cities are complete and robust

After the initial data download, the data was checked by iterative procedure. Wherever the mistaken web page was downloaded, the algorithm was improved to avoid the same mistake the next time. It was perfected this way by many iterations. One example of mistaken algorithm was when it treated a country as a city, since usually this part on a Wikipedia page contained both city names and the corresponding country name. However, this mistake was one of the easiest to spot and delete. The procedure was continued as long as no more mistakes were found.

Step 3 Designing database on Twining Cities

The database at the city/municipality level contains the following information:

a) Cities – containing an internal city id, country id and GPS coordinates
b) City_Names – containing the names of the cities in all available languages, with three columns: city id, language id, city name
c) Partner_Cities – containing two city id's (this will be a directed graph, because it is possible that one town lists another as a twin city but not the other way around)

When the data collection was finished, the cities were matched. After that the data were aggregated to NUTS 2 level, also used for further analyses.

All the data was prepared in the ESPON template and should be downloadable from the ESPON database 2013.

3.2 Database on regional socio-economic determinants of TC

There are two data sets in this database:

- general (at NUTS2 level) – with indicators of socio-economic development which are potential (mentioned by literature) determinants of TC. Those indicators are used later in the factor and cluster analyses.
- specific (at NUTS3 level) – with basic characteristics of case study regions which are used as background information for cross-border cooperation (CBC) in the analysed case studies.

As for the database at NUTS 2 level, it proposes five blocks of determinants based on literature: (i) transport accessibility, ii) level of socio-economic development, iii) role of local governments/ financial resources, (iv) language competences of the region's inhabitants, (v) tourism potential.

Those determinants collected in databases relate directly to the 7 determinants suggest by literature review as follows (see Table 1): (i) transport accessibility relates to determinant 7. Geographical conditions, (ii) level of socio-economic development relates to determinant 6. Socio-economic background, (iii) role of local governments / financial resources relate to two determinants suggested in literature review: 2. Regional and local self-government and 3. Funding, (iv) language skills is used as a very rough (but only available) proxy for similarity in 1. Culture and 4. History; v) Tourism potential is a proxy for a mix of determinants (economic

conditions and geographical conditions), while legal background was not possible to operationalize at any indicator for all regions at NUTS2 level.

Table 1 Blocks of TC determinants based on literature

Blocks of indicators in the database	Blocks of determinants proposed in literature
(i) transport accessibility,	7. Geographical conditions
(ii) level of socio-economic development	6. Socio-economic background
(iii) role of local governments / financial resources	2. Regional and local self-government and 3. Funding
(iv) language skills of the region's inhabitants	1.Culture and 4. History
(v) tourism potential	6. Socio-economic background and 7. Geographical conditions
no indicators found	5. legal background

Source: Author's own elaboration

Those determinants were operationalised by the following indicators to be close to literature suggestions and at the same time feasible to collect for all NUTS2 regions of ESPON area:

(i) transport accessibility (nationally: measured by distance to national capital; at European level: measured by distance to Brussels as a proxy for EU centre; globally: indicated by category of international airport in the region valued on 5-grade scale);

(ii) level of socio-economic development in terms of: demographics (i.e. population density, population change and its components, and the old-age dependency ratio); economic potential (GDP per capita, GDP purchasing power parity (PPP), national averages and GDP dynamics); economic structure (measured by six sectors) and labour market (employment figures and unemployment rates);

(iii) role of local governments / financial resources (most of data disaggregated from NUTS0 level) institutional settings (regional authorities and number of municipalities); significance and resources of local governments (share in public expenditures, share of taxes in total revenues, general public services expenditures);

(iv) language competences of the region's inhabitants (data disaggregated from NUTS0 level) (pupils learning foreign languages, self-perceived knowledge of foreign languages by adults).

(v) tourism potential (expressed by the actual bed occupancy and the percentage of foreign tourists).

The indicators within the NUTS3 database are more limited (restrained by the data availability) so include more general information such as:

- economic disparities (GDP per capita),
- economic complementarities (GVA structure),

- labour market similarity (employment and unemployment rates),
- demographic situation (density, natural increase, migrations),
- multimodal accessibility

All the data was prepared in the ESPON template and should be downloadable from the ESPON database 2013.

3.3 Database on INTERREGs III and IV strands A, B, C

Database on INTERREGs include all three stands of the programme. Data on INTERREG IIIA and IVA sub-programmes (and including, where relevant, TACIS programmes) cover the area of the European Case Study of the project. The primary information collected is: 1) the domains in which these sub-programmes have launched and funded development projects (that is, the axes, priorities, or measures); 2) the funding devoted to those different domains; 3) the number of projects per sub-programmes and per domains; 4) and the list of regions that have benefited from these sub-programmes. A main source of these data is the Interreg III on-line database of the European Commission (Regional Policy – Inforegio: http://ec.europa.eu/regional_policy/interreg3/) as well as websites of and reports compiled by the individual sub-programmes. However, not all the information is available so readily, responsible managing authorities are contacted for the missing data. Information on INTERREG A supports case studies, which are located in the border regions where INTERREG A programs are present.

The INTERREG III and IV strands B and C database include two tables, both at NUTS 2 level. The first table covers basic data, such as the number of projects and project partners, number of lead partners, number of links to other NUTS2 (linked by participation in common projects), number of NUTS2 regions connected directly (degree centrality: the number of ties that a certain node has). The second table is the cooperation matrix showing links between the regions.

All the data was prepared in the ESPON template and should be available from the ESPON database 2013.

3.4 Database on transcontinental cooperation

There are no comprehensive sources on transcontinental co-operation, so TERCO collected data within its transcontinental case study areas of EU-North Africa (Spain-Morocco) and EU-Latin America (Spain-Uruguay and Spain-Argentina). The data collected informs about types of territorial co-operation being there. In particular it contains information on:

- Name of the territorial co-operation project
- Thematic domain of co-operation project
- Main source of funding
- Spanish partner in co-operation project
- Province where Spanish partner is located
- Uruguayan/Moroccan/Argentinean partner in co-operation project
- City or town where co-operating partner is located
- Region where co-operating partner is located
- Project's starting year
- First source of co-financing (if existing)
- Source of information
- Other information

All three data sets are attached provided to ESPON in the proper template and should be downloadable from ESPON 2013 database.

3.5 Main guidelines for the authors of the Cases Studies

- The report must be **evidence-based** so it is not a notation of interviewees answers. It means that your description has to be based as much on facts as possible, so you need to wherever possible give references – to other documents, legal act, project evaluations, or by giving exact examples from interviews, etc.

- In other words, you write a story, according to the questionnaire, however based not only on what you've heard from interviewees, but also supported by your reading of documents, your knowledge and objective judgements, etc. Hence the answers on the questions have to based on all possible sources you have in hand including interviews. Please refer to different sources as much as you can.

- You also can quote most interesting/controversial/important sentences from interviews to illustrate some points, but you need to do this anonymously (e.g. as one respondent noted, or as a government official with a long time experience indicated, etc) and alike.

- You need to cover all questions although not from all interviewees. So make sure that you raised all questions during the interviewing process or that you have found the answers elsewhere (refer to the sources).

- Please do not repeat the questions from the IDI questionnaire just write a story using those questions as guidelines. Would be great if you bold in your story the parts referring to particular questions so that we follow to which answer you refers to, eg. In this region the **predominant types of TC** include: INTERREG A and ENP instruments. The largest **impact on competitiveness** has ... which is exemplified by ...

- Please read again research and policy questions from the Project Specification to recall what is the main interest in our CS from the point of view of our "clients".

- We agreed that the body of CS report should not exceed 50 pages, however you may have annexes which are not counted to this limit.

ESPON

2. Review of literature and previous ESPON projects on territorial co-operation

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LITERATURE REVIEW OF TERRITORIAL COOPERATION

Territorial cooperation is often described as one of the most visible manifestations of European integration. The policy's aims of overcoming boundaries, promoting networking and generating synergies reflect the overarching aims of the European project. Social scientists from all backgrounds – including political science, geography, economics or sociology – have written about territorial cooperation. However, there is a lack of consensus on exactly what it entails.

This literature review examines territorial cooperation, what it is and what it involves through a study of the theory, determinants and benefits of cooperation between territorial units. It makes use of both academic sources and official documents. The first section provides a background context, introducing crucial concepts such as globalisation, transnationalism and territorial cohesion. Section 2 introduces theoretical approaches to territorial cooperation, notably those approaches that stipulate an important role for regions and other subnational actors in international politics. Section 3 introduces previous research on the determinants of territorial cooperation, i.e. background conditions that facilitate or hinder successful cooperation, before summarising the potential benefits of cooperation in Section 4. Section 5 summarises previous ESPON research that is relevant to territorial cooperation. This section also includes an overview of data sources and indicators relevant to territorial cooperation. The final section concludes by providing an operational definition of territorial cooperation, breaking this down into five levels of analysis, summarising the research questions identified earlier in the literature review and proposing a set of indicators of successful cooperation.

1) *CONTEXT*

This section sketches a context for the analysis of territorial cooperation. It outlines the continued relevance of territorial scales in a world where states have gradually been weakened by processes of globalisation. It also highlights the possible link between territorial cooperation and territorial development, while showing that more research is needed to establish this link.

Territorial cooperation must be seen against the background of globalisation and ever-increasing interconnections between states, regions and individuals. Global flows of capital, goods and services have long led to weakened state control over national economies, while the modern communications infrastructure has enabled a multitude of interactions across borders (Held et al., 1999). The concept of the 'container state' that enfolds most political, economic and social life has been questioned as a result of these developments (Taylor, 1994).

On the one hand, this has been linked to a process of 'de-territorialisation', whereby national sovereignty is weakened as borders become more permeable (Agnew, 1994). De-territorialisation is particularly pronounced in Europe. Integration in the European Union has produced, among other achievements, the Schengen zone of passport-free travel and a single

market where competition is distorted as little as possible by national rules. The success of European institutions is exemplified in the recent eastward enlargements of the EU that saw the Union expand to 25 members in 2004 and to 27 in 2007.

On the other hand, and despite processes of de-territorialisation, conditions on the ground continue to be relevant for economic development and living conditions. The end of the notion of the container state and the perforation of boundaries have together led to new territorial scales that are becoming increasingly relevant, something that has been referred to as 're-territorialisation' (ÓTuathail and Luke, 1994, Jessop, 2002). In other words, territory remains an important determinant of people's cultural attachments and identities, of economic development and living standards and of political decision-making, but this is increasingly shifted from the state to other territorial scales such as the supranational (e.g. the EU), the subnational (regions or communes) and even the transnational (crossing national borders).

Territoriality is also highly relevant to the external borders of the European Union where the preconditions for territorial co-operation are very different as compared to the internal EU context. Whereas at the internal EU borders the focus is on 'building cohesion and blurring divides', co-operation across the external borders is often concerned with the 'ambiguity between co-operation and control' (Cronberg, 2003). In a similar vein, Bialasiewicz et al. (2005), in their analysis of the ways in which territoriality is inscribed into the EU's Reform Treaty, distinguish between 'aspirational' territoriality in an internal European Union context and 'hard' territoriality in an external context. Whereas the former 'relates to Europe as a putative space of values and area of solidarity' and to some extent aims to transcend traditional state territoriality, the latter revolves around issues such as 'border controls, jurisdictional limits, and a concern for territorial integrity and sovereign rights' (Bialasiewicz et al., 2005).

The transnational scale is particularly relevant for current purposes because it is connected with territorial cooperation. It involves two dimensions. First, transnational relations are similar to international relations insofar as they link different countries. However, there is a strong territorial dimension. In other words, transnational relations nearly always refer to relations between geographically close countries, spanning national borders or involving several countries of the same region (Wille, 2008). Second, transnationality goes beyond intergovernmental relations and affects ordinary citizens. In the words of two commentators, 'More and more societal groups are included in the process of transnationalisation. Living environments that have hitherto been integrated into and enclosed in the nation state are increasingly opening up' (Mau and Mewes, 2007). Territorial cooperation of the kind witnessed in Europe tends to accelerate this process when regions cooperate in such areas as planning, tourism or services infrastructure.

The relevance of other spatial scales besides the nation state is also apparent in the way that sub-national territories are affected by the effects of globalisation and related challenges. The

recent 'Europe 2020' report, for instance, identified four types of risks that affect regions differently:

- Globalisation: while trade flows and global competition are likely to benefit the highly competitive regions in Europe's core, the more peripheral regions in southern and southeastern Europe are increasingly at risk of falling further behind in their economic development.

- Demographic change: many regions are affected negatively by an overall population decline and by ageing populations. Moreover, migratory pressures from the European neighbourhood affect the regions of the Mediterranean most of all.

- Climate change: climate change is expected to affect most European regions, but particularly those in southern and eastern Europe, where extreme weather is more likely.

- Energy: energy security, efficiency and sustainability are also distributed differentially across Europe, with the regions of Central and Eastern Europe and some southern regions particularly vulnerable (Commission of the European Communities, 2008a).

Territorial cooperation between states, regions and municipalities is closely linked to territorial development goals. This is particularly the case for border regions. These are by definition located on the geographical periphery of their state and often less developed than more central regions (AEBR, 2004, Molle, 2007). Cooperation across borders can help to create synergies and to stimulate development impulses by encouraging mutual assistance between regional firms. It has been pointed out that territorial cooperation should underpin and build on existing linkages across borders that together form 'functional regions', i.e. areas of interdependent territories that do not necessarily coincide with political-administrative territorial units and that often span national borders (Schamp, 1995).

An all-region approach to economic development has been adopted by most EU member states. This means that regions try to identify and exploit their territorial capital, i.e. comparative advantages that allow them to grow (Davoudi, 2005). Despite the normative assumption that it may help regions to identify their endogenous growth potential, the precise role of territorial cooperation in regional development has not yet been examined in any great depth. There is an argument that regions benefit from the networking and cooperation opportunities that the new European environment affords. In this sense, cooperative links, learning opportunities and potential synergies are an asset that is part of a region's territorial capital (Knippschild, 2008, Molle, 2007). However, this argument has rarely been subjected to empirical scrutiny.

In development terms more generally, there are concerns about Europe's division into a geographical and developmental core and a periphery. The core – roughly stretching from London to Paris, Milan, Munich and Hamburg (the so-called 'pentagon' area) - has benefited from the economic opportunities that emerged following the creation of the single market

while the territories outside the pentagon continue to lag behind (Robert, 2007, Commission of the European Communities, 2008b). However, in the wake of the financial and economic crisis, there is also evidence that some regions, notably in the new member states of East Central Europe, are catching up (Schadler et al., 2006, Davies et al., 2010).

Against this background, territorial cooperation has recently increasingly been linked to the concept of territorial cohesion, e.g. in the EU's Territorial Agenda or the Green Paper on territorial cohesion. Territorial cohesion was established in the Lisbon Treaty as a third Union objective, along with economic and social cohesion. It is not entirely clear what territorial cohesion entails as the European Commission has not put forth an explicit definition of the concept, but it is usually referred to as a combination of polycentric development, aiming to cultivate several clusters of competitiveness and innovation across Europe (Davoudi, 2003, CEC, 1999), balanced development with the primary aim of reducing socio-economic disparities and avoiding imbalances (CEC DG Regio, 2004), accessibility and networking (CEC, 1999).

Divergent interpretations notwithstanding, there is near-universal acceptance that territorial cooperation is conducive to territorial cohesion. The Green Paper on territorial cohesion, for example, argued that cooperation, both horizontally and vertically, is an appropriate channel for reinforcing territorial cohesion (CEC, 2008). For this reason alone, territorial cooperation is an important element of EU cohesion policy. The main objectives of territorial cooperation as funded by the EU are overcoming the negative effects of borders, maximising synergies and promoting joint solutions to common problems, thus supporting the harmonious and balanced integration of EU territory.

The EU has certainly been one of the main bodies supporting territorial cooperation, though not all forms of territorial cooperation. The Community Initiative INTERREG was first introduced in 1990 to support cooperation between regions of different states. It was the main financial instrument to support territorial cooperation before becoming one of the three objectives of cohesion policy in 2007. Since 2000, it has supported three strands of cooperation:

a) Cross-border cooperation. This strand promotes cross-border cooperation between adjacent regions, particularly in so-called Euroregions, i.e. voluntary associations of municipalities across national boundaries. It currently receives the largest share of the Objective 3 budget (€5.6 billion).

b) Transnational cooperation. Involving national, regional and local authorities, this strand aims to promote better integration through the formation of large groups of non-contiguous European regions. This strand has been budgeted with €1.8 billion.

c) Inter-regional cooperation. This strand aims to improve the effectiveness of regional development policies through large-scale information exchange across the entire EU (Mirwaldt et al., 2009). The smallest of the three strands receives €445 million from the Objective 3 budget.

In terms of resources, the territorial cooperation objective amounts to a mere 2.5 percent of the overall budget for Cohesion policy. Overall, there has been a shift in resources towards cross-border cooperation (strand a). In an external context, the Instrument for Pre-Accession Assistance (IPA) and European Neighbourhood and Partnership Instrument (ENPI) represent financial instruments that, despite not having a particularly strong territorial focus, can facilitate territorial co-operation between EU-members and non-members. It has been pointed out that the availability of EU support was crucial in bringing about the mushrooming of cooperation initiatives in the 1990s (Perkmann, 2002, Perkmann, 2003). Indeed, EU-funded cooperation support makes up the bulk of territorial cooperation in Europe. At the same time, it is important to note that there are other initiatives that predate the introduction of INTERREG or that are funded independently of the EU, including the first Euroregions and multilateral networks such as the Four Motors for Europe.

Following from this section, the main questions that remain to be answered relate to the relationship between territorial cooperation and territorial development: to what extent are cooperative links part of a territorial unit's territorial capital? What factors can explain the relationship between territorial cooperation and regional development? The next section introduces a range of theoretical concepts that are relevant to the analysis of territorial cooperation.

2) THEORIES OF TERRITORIAL COOPERATION

This section introduces a number of theoretical perspectives that have tried to shed light on territorial cooperation. In particular, it examines a range of approaches that have cast regions and other subnational units as international actors, notably 'paradiplomacy', the 'new regionalism' and the notion of territorial 'governance'.

Henk van Houtum (2000) has identified three approaches to border studies in Europe that can also be used to examine territorial cooperation more generally:

1) The flow approach: in this approach, borders and the obstacles that they represent (such as tariffs or geographical obstacles) 'cause discontinuities and an increase in the marginal cost of interaction' (van Houtum, 2000, Nijkamp et al., 1990).

2) The people approach: this approach focuses on the individuals who are engaged in cross-border encounters and how such encounters shape people's behaviour, ideas and identities. In this approach, borders are seen not so much as lines on the ground but rather as the distinctions that people make between 'them and us' (Paasi, 1999, Leimgruber, 1991, Berg, 2000, Donnan and Wilson, 1999, Minghi, 1991).

3) The cross-border cooperation approach: this approach analyses EU funding for cross-border cooperation, relying on case studies that demonstrate how borders are being overcome. In this view, Euroregions and other such cooperation areas are seen as 'laboratories of European integration' (Kirchner, 2003).

As part of the first approach, the economic literature has investigated the spatial effects of integration and the effects of economic adjustment in specific border areas (Niebuhr and Stiller, 2002). For example, traditional locational theory implies that, while border regions are weakly developed in closed economies, they might be affected positively by the reduction of border impediments (Niebuhr and Stiller, 2002). The new economic geography, as another example, deals with the distribution of economic activities across space and explains regional disparities through endogenous location decisions. Accordingly, economies of scale, trade costs and the mobility of labour create agglomeration dynamics, inducing firms and labour to move to larger markets (Krugman, 1991, Fujita, 1993). Moreover, physical geography and transport linkages are seen as important factors. Thus, market access is associated to a large extent to the notion of 'accessibility', i.e. transport infrastructure, telecommunication networks, institutional factors, and a series of political and cultural parameters (Topaloglou et al., 2005).

More recently, the second, 'people', approach has cast borders as a social outcome (Wilson and Donnan, 1998). In particular, the correlation between borders and collective identities and the dialectic relationship between space and social reality have become important objects of study (Paasi, 1992, Paasi, 1996, Kaplan, 1994, Pettman, 1996, Rabinowitz, 1998). In other words, the geopolitical analysis of borders is increasingly associated with culture, language, nationality and other socioeconomic characteristics of border regions (Reitel et al., 2002, Arbaret-Schulz et al., 2004). Thus, Paasi argues that borders are not simply lines on the ground or on a map but institutions which possess their own internal rules and functions and their own mechanisms (Paasi, 1998). Within this context, 'border-institutions' define 'who we are' and 'who the others are'. As functional boundaries, they also impose entry and exit regulations and act as 'filters' in determining the extent of the penetrability of goods, services, individuals and ideas (Ratti, 1993b, Williams and Velde, 2005). In cases where cross border interaction is directed towards metropolitan concentrations of two neighboring countries, borders can operate as a 'tunnel' by strengthening polarity (Petrakos and Topaloglou, 2008).

While the first two approaches have something to say about how borders mediate relationships between people, regions and organisations, the third approach is most relevant for current purposes because it is focused explicitly on territorial cooperation: the cross-border cooperation approach to the study of borders analyses processes of networking and integration with a particular emphasis on Europe (Perkmann, 2003, Anderson et al., 2003, O'Dowd, 2002, Scott, 2002). There is a broad consensus that territorial cooperation is potentially very beneficial in promoting trade, knowledge exchange and synergies (Hansen, 1983, Hanson, 1996). As van Houtum puts it, scholars who adopt the cross-border cooperation approach to borders search for 'strategies to describe and guide potential opportunities for contact, networking, and integration … thereby reducing the barrier effect of borders.' (van Houtum, 2000). Cross-border cooperation is alternatively seen as a means of improving joint problem-solving (Perkmann, 2003), social capital (Grix and Knowles, 2002), and even a notion of democracy that transcends the borders of the state (O'Dowd, 2002).

Contact, networking and integration between cities and regions of different countries have led scholars to coin the term 'paradiplomacy' – the involvement of subnational governments in international politics (Keating, 1999, Keating and Hooghe, 1996). The argument reads that European integration has provided subnational actors with many opportunities to pursue their political or economic agendas independently of national channels. French and British towns, for example, have been engaging in their own foreign diplomacy, in the shape of town twinning, since the 1940s (Vion, 2002, Clarke, 2010). To name another example, the setting-up of the Euregio Karelia co-operation framework across the border between Finland and Russia contributed to the elevation of sub-national governments to the role of international actors, albeit some initial resistance from both the Finnish and Russian national levels and uncertainties concerning competences (Cronberg, 2003).

A similar phenomenon has been captured by conceptualisations of the so-called 'new regionalism' and of the 'Europe of the regions' (Jeffery, 2000, Keating, 1998, Jeffery, 1997). These concepts refer to the continued relevance of territorial units for development, political interest articulation and expressions of regional identity. A core question of the new regionalist approach to territorial cooperation is how regions achieve their particular ends by making use of national and supranational opportunity structures. The new regionalism was initially applied only to Western European regions. However, during the process of EU enlargement, several Central and East European states devolved significant powers to newly-created administrative regions, enabling these to develop and pursue their own agendas (Brusis, 2002, Jordan, 2001).

The concepts of paradiplomacy and the new regionalism commonly assume that regional politicians are autonomous actors with their own agendas and channels of influence. This assumption has led many scholars to conceptualise territorial cooperation as a bottom-up process, where regional actors opt for cooperation because it serves their interests. The first forms of territorial cooperation in Europe certainly had a bottom-up character.

Town twinning, for example, developed largely as a result of municipal activism in the post-war period. In this context, there is an important distinction to be drawn between twin cities and sister cities. Sister cities are usually geographically distant cities of different states that have more or less formal agreements with each other. Twin cities are a special case, geographically connected and sometimes a former single city but separated by a state border. 'Binational cities' or 'border crossing cities' have also been put forward as labels for such urban-territorial situations (Buursink, 2001). Twin cities, such as Guben and Gubin at the Polish-German border or Ruse and Giurgiu at the Romanian-Bulgarian border, are defined here as a special case of cross-border cooperation, whereas the term sister cities is used for partnerships such as Bristol and Bordeaux or Lisbon and Budapest (Zelinsky, 1991 , Jajesniak-Quast and Stoklosa, 2000).

The first Euroregion, as another example, was the 'Euregio' that began in 1958 as a voluntary association of Dutch and German municipalities. Cooperation was seen as a way of addressing the negative effects of the borderlands' peripheral location in the Netherlands and

Germany respectively and by the neglect of the border region by national institutions. In developing institutionalised cooperation, these border municipalities lobbied jointly for concrete goals such as improvements in cross-border infrastructure or support for business in the border region and thus strengthened their bargaining position. The 'Euregio' has subsequently been described as a 'model' for cross-border cooperation, as similar associations followed suit in the 1970s (Perkmann, 2003, Scott, 1996).

Territorial cooperation, and cross-border cooperation in particular, became much more common in the 1980s, as the Council of Europe adopted framework legislation on cooperation. Thus, the so-called Madrid Convention commits the signatory states to facilitating and fostering cross-border cooperation (Perkmann, 2003). In an additional Protocol signed in 1995, member states recognised territorial communities' right to conclude cross-border agreements. Although these conventions only contain non-binding guidelines that need to be put into national law, they were an important step in enshrining a legal right to cooperation between subnational units of different states (Janssen, 2007).

The proliferation of cooperation initiatives after the adoption of framework legislation suggests that local or regional activism from the bottom-up - in the shape of lobbying, networking or cooperation - requires an opportunity structure at the national or regional level. The influence of the EU in enabling regions to engage in territorial cooperation has certainly been crucial. Such influence has led some to argue that a large proportion of territorial cooperation across the EU has developed in response to top-down endeavours to establish a legal foundation for territorial cooperation in the 1980s or the European Commission's financial incentives from the 1990s onwards, rather than genuinely from the bottom-up (Perkmann, 2003, Perkmann, 2002, Perkmann, 1999, Church and Reid, 1999). The present research project is not concerned with explaining the origins of territorial cooperation; however, the controversy shows that local conditions 'on the ground' and supranational opportunity structures must both be taken into account when analysing territorial cooperation.

In general, approaches that examine the role of the regions and other subnational units in the EU polity are concerned more with processes of governance, networking and channelling regional influence than with the institutions of government. The multi-level governance model, developed by Liesbet Hooghe and Gary Marks, describes the dispersion of policy-making competences to different levels of governance (Hooghe and Marks, 2001, Marks and Hooghe, 1996). Taking cohesion policy as their starting point, Hooghe and Marks argue that competences were no longer entirely held by national governments. Rather, they were also dispersed to the European Commission and to the meso–level of political decision-making that comprised regions such as German Länder or Spanish comunidades autónomas. Marks defines multi-level governance as:

> "a system of continuous negotiation among governments at several territorial tiers - supra-national, national, regional and local - as the result of broad process of institutional creation and decisional reallocation that has pulled some previously

> centralized functions of the state up to the supra-national level and some down to the local/regional level" (Marks, 1993).

In this view, regions have been empowered through the introduction of the 'partnership principle' in 1988, an event that played a major part in the development of the multi-level governance model (Hooghe and Marks, 2001, Keating and Hooghe, 1996, Marks and Hooghe, 1996). The increasing weight of subnational units is also exemplified in the fact that some regions have significant powers to restrict the national bargaining space at EU level, especially so in federal states such as Belgium or Austria (Kaiser et al., 2009). And finally, other actors, such as interest groups, NGOs or private interests, can use regional channels rather than national ones to achieve their ends.

Governance, with a focus on the act of governing rather than formally accountable government, is a widespread notion in the EU. Stressing administration over politics, networks over hierarchies and voluntary compliance over hard-and-fast rules, EU policy-making exemplifies governance (Eberlein and Kerwer, 2004, Bulmer, 1998). In 2001, for example, the European Commission published a White Paper on Governance. This characterises good governance in terms of openness about what the EU does and the decisions it takes, participation of key stakeholders in the policy process, accountability and clarity about legislative and executive processes, effectiveness and coherence of policies as well as proportionality and subsidiarity (Commission of the European Communities, 2001). Practically, this translates into the fact that the EU is a unique access point for subnational actors and that it wants to promote policy decision-making at the lowest level of governance possible.

There is an assumption that the trend is towards more flexible and less hierarchical modes of governance, though there is also some evidence to the contrary (University of Valencia et al, 2006). Thus, one can draw a distinction between three forms of association that vary in terms of their formality and flexibility. First, there is a difference between networks and partnerships. In general, networks between individuals, public bodies or other organisations are governed informally rather than through formal agreements. They have fluid memberships and no fixed – or changeable – formal goals. In contrast, partnerships are much more formalised. They are established by formal agreements that lay down guiding objectives, and their membership tends to be fixed (Cameron and Danson, 1999, McCabe et al., 1997). One might add a third form of association, namely organisations. Organisations are most formalised. Similar to partnerships, they are generally based on formal agreements, fixed membership and well-defined goals. But in addition, they feature common and permanent institutions and enshrined forms of interaction. The degree of association between territorial units - partnerships, networks and organisations – is an important feature of territorial cooperation in the context of governance. In particular, given variable local contexts, some modes of governance may be more suitable for certain forms of cooperation than others. This supposition has not yet been analysed in any great detail.

To summarise, theory suggests that subnational units have their own territorial interests and that the European opportunity structure allows them to pursue these interests at the supranational level. Following from this, it would seem obvious that territorial cooperation is an important factor in a region's 'territorial capital', i.e. its endogenous potential for development, implying that cooperation in different domains is highly dependent on the distinctive context. At the same time, it is important to identify broader patterns, for example, which policy domains can best be addressed in the different cooperation areas. Two key questions have yet to be answered empirically: what lessons can be drawn regarding the effectiveness of different types of territorial cooperation for specific types of territorial units? What forms of association (network, partnership, organisation) are most suitable at which levels of cooperation? The following section will identify some commonly accepted benefits of territorial cooperation, but it will also highlight a range of factors with the potential to hinder cooperation.

3) DETERMINANTS OF TERRITORIAL COOPERATION

As the previous section suggests, the emergence and proliferation of territorial cooperation must be seen within the framework of opportunity structures that the European integration process in the EU and other European institutions provides. Cooperation is widely seen as part of a new assertiveness of subnational units that have been empowered in different ways. This section summarises previous research on the background conditions that either enable or hinder successful territorial cooperation. It also provides a short overview of the domains of cooperation that are most frequently associated with different forms of cooperation, such as sister towns or cross-border cooperation.

Territorial cooperation creates fields for functional cooperation in the areas of competence of the territorial units and is seen as pragmatic cooperation that is oriented towards problem-solving (Schmitt–Egner, 2005). The cities, regions and states that are engaged in cooperation seek to solve common problems, exploit development potentials jointly and to strengthen their position nationally and internationally. If regions can find joint solutions to shared problems, or benefit from synergies, then territorial cooperation has had a positive impact.

Territorial cooperation has followed different development paths in different contexts, as it tends to be influenced strongly by the local environment. However, policy evaluations have identified seven background conditions that shape cooperation:

1) Culture: on the one hand, culture refers to the way that individuals, cities and regions from different countries relate to each other. For example, widespread language competence is a crucial factor in the success of territorial cooperation, whereas language barriers are often identified as one of the most important barriers. The broad heading of culture also covers psychological barriers such as negative stereotypes among the populations or nationalist media. One might also add reservations about cooperation itself among populations and policy-makers alike, e.g. when the then Czech Prime Minister Václav Klaus presented cross-border cooperation with Germany as a 'Trojan horse' (Bazin, 2003).

On the other hand, administrative culture needs to be taken into account when discussing territorial cooperation and its implementation. There are as many organisational and management styles as there are instances of cooperation (Hofstede, 2001, Ratti, 1993a). It has been argued that cooperation is most likely to be successful between partners that share a similar administrative culture (Bachtler et al., 2005). Administrative obstacles include insufficient resources allocated to cooperation and deficient relations between administrative institutions and different administrative levels (Assembly of European Regions, 1992).

2) Regional and local self-government: while it is not certain that the position of local and regional actors influences the success of territorial cooperation, it has been hypothesised that 'experienced and dynamic regional and local actors, well-positioned in the national administrative hierarchy, provide good conditions for successful programming and create pressure, especially on central administrations, to progress the programme' while weaker sub-national government makes successful territorial cooperation more difficult to achieve (Bachtler et al., 2005). In cooperation between regions of different states, problems often result from differences in administrative structures and subnational competences that hinder coordination (Assembly of European Regions, 1992).

3) Funding: insufficient financial resources are a major obstacle to territorial cooperation. There are often no genuinely common resources, making it difficult and time-consuming to take budgetary decisions (Assembly of European Regions, 1992).

   EU-funded territorial cooperation suffers from the bureaucratic effort involved in implementing these programmes. Thus, where other funding instruments are available, programme managers and project owners tend to concentrate on these (Bachtler et al., 2005). Moreover, as far as cooperation with partners from non-EU member states is concerned, funding comes from different financial instruments that can have radically divergent parameters. In the 2000-2006 period, for example, fiscal guidelines diverged between INTERREG and its mirror fund Phare CBC because Phare CBC was allocated annually and INTERREG required multiannual programming. Moreover, subnational involvement at the programming, application and implementation stages of INTERREG was much greater than was the case for the relatively centralised Phare programme.

4) History: past experiences have a crucial influence on the cooperative environment. There are many positive examples of Western European partnerships with their long history of post-war reconciliation and cooperation. In Central and Eastern Europe, the Iron Curtain largely put a brake on such endeavours. On the one hand, historically motivated suspicions, particularly of Germany, made cooperation with Western European partners more difficult after the end of the Cold War. On the other, there is also a weak tradition of territorial cooperation in Central and Eastern Europe. This is problematic because, in general, the longer the experience with territorial

cooperation, the more smoothly cooperative initiatives tend to run (Bachtler et al., 2005).

5) Legal background: territorial cooperation often takes place on an uncertain or vaguely defined legal basis. As most cooperation initiatives have no legal personality and no public law status, they sometimes lack the legal instruments to implement decisions (Assembly of European Regions, 1992). For example, decisions of cooperating bodies may have no legal force because national rules define cooperation as foreign relations. As already mentioned above, the Council of Europe adopted framework legislation to facilitate territorial cooperation in the 1980s and 1990s. However, a new legal instrument – the European Grouping for Territorial Cooperation (EGTC) – that was introduced in 2007 is particularly important in putting territorial cooperation on a legal footing by giving an EGTC legal personality.

6) Socio-economic background: the socio-economic background includes the level of development (GDP, unemployment rate, diversification etc.), discrepancies in development between the cooperating regions as well as competition between these regions. In cross-border regions, asymmetries in development tend to make programmes more dynamic (Bachtler et al., 2005). At the same time, they can also give rise to mutual suspicions between the populations and drawbacks such as smuggling or prostitution.

   An absence of links between socio-economic actors in the participating cities, regions or states, as well as compartmentalised markets, tends to inhibit cooperation (Krätke, 1999). A further obstacle arises from labour market protection, notably the decision of 13 old EU member states to limit access to their labour markets for citizens from the 12 newest EU member states.

7) Geographical conditions. The final category of obstacle is particularly relevant to cross-border cooperation as a special form of territorial cooperation. Apart from physical distance, these include barriers such as rivers of mountain ranges. Lacking communications and transport infrastructure can also be problematic. A further problem at the external borders of the EU includes the bottlenecks caused by the Schengen border and the border of the European customs union.

Legal, institutional and socio-economic obstacles are most frequently singled out as barriers to cooperation (Church and Reid, 1999, Perkmann, 1999). However, there has not yet been any comparative analysis of the preconditions of territorial cooperation and their relative importance in determining the quality of cooperation, especially as territorial cooperation takes place in a range of policy domains. Different domains may be appropriate for one form of cooperation but not for other forms. For example, the last INTERREG III evaluation has shown that cross-border cooperation tends to focus on socio-economic development, which covers a range of areas including business development, tourism and R&D, but also on promoting integration between citizens and institutions (Panteia, 2010). In less-developed border regions the focus tends to be on physical infrastructure while more highly developed

regions focus on the elaboration of spatial development strategies in such areas as the environment, planning, transport, tourism and service delivery (Bachtler et al., 2005).Transnational cooperation frequently covers environmental cooperation, management of cultural and natural resources and spatial development (Panteia, 2010). Sister towns tend to focus on visits between high-profile officials, on education, culture as well as civic exchanges (Clarke, 2010, Vion, 2002). Moreover, cooperation has taken place in the areas of quality of life and living conditions, energy, services infrastructure, emergency services and disaster prevention as well as public security. Finally, interregional cooperation, or Strand C of INTERREG or Objective 3 is concerned almost exclusively with learning and the exchange of good practice (Bachtler et al., 2005).

Such variation means that it is not yet clear which policy domains are most suitable for achieving common goals at different levels of territorial cooperation. Moreover, where there is cooperation at several levels, it is necessary to examine how these different initiatives complement each other's efforts with a view to territorial development goals. In other words, two main questions remain to be answered: what is the relationship between different territorial scales and domains of cooperation? Which domains are most suitable for developing and implementing shared strategies at different scales?

4) BENEFITS OF TERRITORIAL COOPERATION

Evaluations that have been carried out show that it is notoriously difficult to pinpoint the effects of territorial cooperation (Gorzelak et al., 2004, Bachtler et al., 2005). On the one hand, the opportunities for building networks and learning that territorial cooperation affords have been highlighted (Colomb, 2007, Böhme et al., 2003b). On the other, it has been pointed out that the added value of cooperation is difficult, if not impossible, to identify. This is especially the case for more informal forms of cooperation that are not funded by the EU such as sister cities or transcontinental cooperation. But even where many formal evaluations are available, as for INTERREG and Objective 3 initiatives, these have yielded unclear results. Some claim that these initiatives have brought very few tangible benefits (Böhme, 2005). Others argue that some of the declared goals of transnational cooperation – such as the anticipated Europeanization of spatial planning and policy transfer – has not taken place (Dühr and Nadin, 2007). The reason why it is so difficult to assess cooperation initiatives is 'due to their complexity, to the particular fuzziness of their objectives, and to shortcomings in monitoring systems and data collection' (Barca, 2009).

It has been suggested that there are four main ways of measuring the effectiveness of INTERREG programmes 1) by reviewing financial progress, 2) by analysing participation in the by geography and type of organisation; 3) by summarising the commitments of approved projects, and 4) by comparing physical achievements to programme targets and financial commitments (Bachtler et al., 2005). However, this approach focuses on process much more than effects of territorial cooperation. The actual impact of cooperation has been described in terms of potential benefits, i.e. as potential quantitative and qualitative effects (Mirwaldt et al., 2009).

As for quantitative effects, EU funding can leverage additional resources for economic development (Martin and Tyler, 2006). The European Commission credits INTERREG with a significant leverage effect (€165 for every €100 invested), and a study of INTERREG IIIB projects in Germany found that INTERREG resources supported the mobilisation of financial resources (Bundesamt für Bauwesen und Raumordnung, 2008, CEC, 2007). A recent evaluation of INTERREG III found moderate financial leverage effects. These effects amounted to 3.8% of public expenditure in cross-border cooperation programmes but to only 1% or less in Strand B or C programmes. Among cross-border programmes, smaller ones were better able to mobilise private capital (Panteia, 2010).

At the same time, however, it is widely acknowledged that territorial cooperation can have a 'qualitative impact', e.g. through opportunities for exchange of experience and learning, the adoption of innovative elements, processes or responses into domestic policy. Although the three strands of INTERREG tend to be addressed separately, four outcomes have been identified.

1) Additionality and innovation

Perhaps more than other Structural Funds programmes, INTERREG programmes are additional to domestic policy initiatives (EKOS Ltd., 2006). Due to their transnational nature, 'it is highly unlikely that many projects would have appeared in their cross-border or transnational format without EU assistance' (Bachtler et al., 2005). They support distinctive fields of intervention. For instance, in the past, INTERREG has been the only EU funding instrument that explicitly dealt with territorial development and spatial planning, increasing awareness of place-based opportunities (Böhme, 2005, Colomb, 2007). Programmes can also address specific problems that could not have been addressed through other support programmes, notably by helping to solve inertia problems (Lähteenmäki-Smith and Dubois, 2006). And INTERREG programmes and projects are linked to innovations in areas ranging from the purely technical to communicative and organisational processes (Bundesamt für Bauwesen und Raumordnung, 2008, Federal Ministry of Transport and Federal Office for Building and Regional Planning (BBR), 2009).

2) Learning and exchange

One of the most widely recognised contributions of INTERREG programmes is the opportunity for learning and exchange of experience and good practice in policy, public participation, administration and planning procedures. (Bachtler et al., 2005, Bundesamt für Bauwesen und Raumordnung, 2008, Federal Ministry of Transport and Federal Office for Building and Regional Planning (BBR), 2009, Böhme et al., 2003b). According to Claire Colomb, frequent exchanges of experience and knowledge facilitate learning as the main added value of INTERREG (Colomb, 2007). This has been a particular goal of Strand C, which aims to generate learning in a range of policy areas (including spatial planning and cross-border development). The same applies to ESPON and INTERACT, part of whose function is to

generate and disseminate information and new perspectives. More generally, through, INTERREG encourages routine interactions and networks with cooperation partners, permitting policy transfer, institutional adaptation and horizontal learning between participating regions, national administrations and the EU level (Dühr and Nadin, 2007, Bundesamt für Bauwesen und Raumordnung, 2008, EKOS Ltd., 2006, Böhme et al., 2003a, Giannakourou, 2005, Pedrazzini, 2005).

3) Trans-border relationships

Programme activities can result in a significant increase in the number, intensity and dynamics of cross-border contacts at national, regional and local levels. It has been suggested that cross-border regions can be characterised as 'terrains for the emergence of new transnational actors and new opportunities for existing actors' (Perkmann, 1999). Thus, INTERREG is credited with the 'invention' of new regions as spaces and arenas for cooperation at the cross-border and trans-national level (Gualini, 2008).

At the same time, new partnerships or networks are established. Relationships are institutionalised, as territorial cooperation is enshrined in institutions such as joint councils, secretariats or even just regular meetings. Where there were pre-existing institutions before the introduction of INTERREG, these can be amended (Bachtler et al., 2005).

Moreover, decentralised programming and the partnership principle have encouraged civil society participation. Indeed, some programmes have set aside funds to promote the creation of linkages among the broader population and firms. So-called small projects funds have, for example, been established in many cross-border programmes to promote citizen interaction and social capital formation in border regions (Gorzelak et al., 2004). According to one study:

> INTERREG III generated important soft leverage effects in terms of actor mobilisation, an increased inter-cultural understanding and also the development of social capital. The 18,000 projects supported by INTERREG III directly mobilised 1 million individuals representing around 68,000 different organisations coming from different levels of government and various sectors throughout Europe. Co-operation and the exchange between actors from different countries and professional backgrounds significantly improved inter-cultural and cross-sector understanding. Social capital was built up through the individual and organisational learning effects associated with programme and project-level co-operation. (Panteia, 2010)

4) Internationalisation and decentralisation

By their nature, INTERREG programmes involve a high level of horizontal and vertical communication and coordination. They bring together regional politicians and administrators, social and other partners and civil society actors, creating private-public partnerships. In many cases, local or regional actors have been empowered within their national polity, as decentralisation was sometimes as a requirement of EU cohesion policy in general and territorial cooperation more specifically. Territorial cooperation brings a wide range of actors

into the programming process and help ensure that projects are genuinely bottom-up (Perkmann, 1999). It can thus encourage new public conceptions of regions and the creation of new identities, institutions and cross-border governance systems. In some cases, local and regional authorities' involvement in the INTERREG programme can mean that they enter a field long reserved for central state actors (Bachtler et al., 2005).

The recent ex-post evaluation of INTERREG III has highlights similar findings. On the one hand, the lack of focus on a limited number of priorities of most programmes makes it difficult to identify concrete results. On the other, it was found that cross-border cooperation contributes substantially to the development of the cross-border areas. The main ways in which this is achieved are investments in physical infrastructure and 'soft cooperation', i.e. through networking or joint strategising. Cross-border cooperation tends to be most successful when it is implemented in a decentralised and genuinely joint fashion (Panteia, 2010).

The same study deemed transnational cooperation to be effective but mostly through the effects of soft cooperation and through the establishment of large transnational partnerships. On the whole,

> The main factor preventing Strand-B from achieving better co-operation performance during the 2000-2006 period was the variable quality of the initial diagnosis of shared needs and problems, the joint but less inclusive decision-making system and the joint programme management system which was less integrated compared with Strand A (Panteia, 2010).

At the same time, it was found that INTERREG had much more than just learning effects. The study noted the creation of 12,000 new networks and co-operation structures. In socio-economic terms, the Community Initiative contributed directly or indirectly to the creation or preservation of 115,000 jobs and nearly 5,800 start-ups and businesses (Panteia, 2010). Still, the lack of straightforward impact indicators was highlighted as a major weakness.

If territorial cooperation leverages additional resources and allows for the exchange of experience, lesson-learning, common problem-solving and joint policy formulation, one would expect it to be one of the factors underpinning the sustainable development of territorial units. Even so, the relationship between the form of association and territorial development has not yet been analysed in any great depth. Thus, what lessons can be drawn regarding the effectiveness of different types of territorial cooperation for specific types of territorial units? What forms of association (network, partnership, organisation) are most suitable at which levels of cooperation? Even though there are no unambiguous indicators to measure the impact of territorial cooperation in general and INTERREG in particular, previous research suggests some ways to approach the question, as the next section will show.

5) EXISTING ESPON DATA AND PROJECTS

Territorial cooperation has been a major focus for the ESPON programme of research into spatial developments in the EU. Four projects are particularly important as a background for

the current project, namely ESPON projects 1.1.1, 1.4.3, 2.3.2 and 2.4.2. Having summarised the results from these projects, this section provides an overview of available territorial indicators that will be used in this project.

The key challenge for territorial governance was identified as creating the conditions that allow for collective action. Those conditions are linked to the concept of territorial capital. The notion of territorial capital, which was extended from a first approach in **ESPON 1.1.1**, 'refers to the potential of a territory and is the summation of six other forms of capital: 1) Intellectual capital (socially constructed knowledge resources), 2) Social capital (nature of relations among actors), 3) Political capital (power relations and the capacity to mobilise other resources to take action), 4) Material capital (financial and other tangible resources, including fixed assets and infrastructure), 5) Cultural capital (material and immaterial heritage), 6) Geographical capital (natural features, constraints/opportunities)'.

The project was based on a first set of 29 national overviews about institutional structure and governance forms. From this, and based on expert proposal, roughly 50 case studies at different territorial levels were identified (transnational and cross-border, national, urban/ rural, regional polycentric/urban network, FUA/metropolitan regions, intracity) and a quite exhaustive questionnaire on territorial governance was implemented. On this base, the project found that there are trends towards multi-level modes of governance and towards the increasing involvement of non-governmental actors from the private sector, the voluntary sector and social movements. The project also contradicted an assumption frequently encountered in the literature, namely that territorial governance is moving towards more flexible and less hierarchical modes of governance. The project showed that national, regional and local governments still play an important role and that hierarchical relations determine many of the preconditions and parameters for decision-making, problem-solving, management and conflict resolution.

The conclusions indicate that there are several key dimensions that pose challenges for closer integration and more successful territorial governance: national regulative and institutional frameworks; political will; capacity of local authorities; funding; identification of final beneficiaries and citizen involvement, stakeholders and interested parties; consensus building; and cross-sector co-ordination (e.g. between local authorities and working groups). They also underline that several new questions were raising, which have to be considered 'as starting points or starting hypotheses for future research in the field'.

ESPON Project 2.3.2 on the 'Governance of territorial and urban policies' analysed, described and evaluated territorial governance actions (TGA) along three dimensions:

1) using contextual indicators to describe the general structural conditions, features and dynamics of the territory and the territorial preconditions to define and implement TGAs (institutional thickness, innovative milieu, territorial capital);

2) using indicators of territorial policies, instruments and procedures for governance;

3) using indicators of TGAs to evaluate the results of governance processes at different levels, considering both process criteria and results criteria as well as their interaction (does a good process always correspond to a good result?).

The project was based on roughly 50 case studies at different territorial levels. The project found that there are trends towards multi-level modes of governance and towards the increasing involvement of non-governmental actors from the private sector, the voluntary sector and social movements. The project also contradicted an assumption frequently encountered in the literature, namely that territorial governance is moving towards more flexible and less hierarchical modes of governance. The project showed that national, regional and local governments still play an important role and that hierarchical relations determine many of the preconditions and parameters for decision-making, problem-solving, management and conflict resolution.

The conclusions indicate that there are several key dimensions that pose challenges for closer integration and more successful territorial governance: national regulative and institutional frameworks; political will; the capacity of local authorities; funding (availability of INTERREG funding in particular and the need for other sources of funding); identification of final beneficiaries and citizen involvement, stakeholders and interested parties; consensus building; and cross-sector co-ordination (e.g. between local authorities and working groups).

Above mentioned **ESPON Project 1.1.1** ' Potentials for polycentric development in Europe' was producing an exhaustive list of the Functional Urban Areas (FUAs) for 29 European countries, , building new concept as 'PUSh' (Potential Urban Strategic Horizons (PUSH). and PIA' (Potential polycentric integration areas). The indicators were linked to size of population and economy, knowledge, position in the transport system, attractiveness and position in private and public decision systems. Three concepts are used for the typology, (1) Metropolitan European Growth Areas (MEGAs), (2) Transnational / national FUAs and (3) Regional / Local FUAs. The aim was to identify FUAs that can complement the Pentagon functionally.

The project has also developed important corpus of theory and research on cooperation and partnership in spatial policies. It postulated that: "The benefits of partnership are described as synergy creation, transformation and consensus construction, budget enlargement, place promotion, co-ordination, and the legitimisation of pro-growth policies. In the literature, the rise of partnerships is mainly described as an approach to tackling urban problems". Two questionnaire surveys of existing partnerships were undertaken to provide an overview of institutional networking and partnership arrangements around spatial strategic issues, at inter-municipal co-operation at the level of FUAs (21 countries responding), and inter-regional and trans-national co-operation at the European level.

Cooperation was identified as being 'institutional' (voluntary cooperation, joint project and strategies) or 'structural' (more spontaneous). Functional complementarity is not a pre-condition for cooperation. What is important here is that 'two or more cities develop common

projects in order to build thematic and joint projects, actions and strategies, to exchange knowledge, best practices etc. and to share equipment and upgrade infrastructure (cultural, social, transport, etc.). Several main fields of cooperation were identified: economy strategy, spatial strategy, transport strategy, overall strategic plans, as well as some more punctual. Another strong distinction was underlined, between 'connections' over large distances and 'connections' based on proximity. Nevertheless, strong criticisms were raising on the results on FUAs and polycentricity mapping (It was decided that a 'ESPON study' should go further on deepening and enhancing the Project 1.1.1 results.

ESPON study 1.4.3 'Urban functions' was not to establish a new exhaustive list of the FUAs but to enhance the methodology, mainly with incorporating the Morphological Urban Areas (MUAs) of the cities in the definition of the FUAs, which was necessary because if 'the FUA, which corresponds to the employment pools, is of course an essential concept in functional terms and imposes itself more and more in a context of suburbanisation and growing mobility of active populations, however, the MUA, as a dense and coherent morphological whole, remains an essential concept. With identical populations, it clearly appears that FUAs which have better opportunities are those having a strong MUA in their centre…'.

The list and the delimitations of the MUAs was systematically examined. In order to stay close to that European perspective the same homogenous criteria for every country was used, which was not the case in ESPON 1.1.1, relying on national expert using each one a specific methodology. ESPON 1.4.3 was listing the European cities on a morphological base by selecting the FUAs (from the ESPON 1.1.1 list) with more than 50,000 inhabitants and characterizing them at the NUTS-5 level, using the NUTS-5 database developed by NORDREGIO and IRPUD for the European Commission. From this database the number of inhabitants was extracted for each NUTS-5 unit and put on a map of Europe. Creating this list of all the NUTS 5-units contained in each European MUA and in the FUAs of some countries was a main contribution to the study of the European urban network. By lack of data during the time of the project it was not possible to define the FUA areas in NUTS-5 units for a majority of countries. Nevertheless this is going on currently in the ESPON 2013 DATABASE project. The identification of the MUAs was also providing a comprehensive list of transborder FUAs, as well as a typology, which is in strict keeping with the European dimension and for which the FUA approach is not sufficient (list, typology and maps are presented in Final Report of the ESPON 1.4.3).

The ESPON project 2.4.2 ('Integrated analysis of transnational and national territories') analysed territorial weaknesses and development opportunities at different territorial scales. In particular, the project analysed the meso-level in order to identify those spatial patterns with a high potential for added value through transnational co-operation and in order to point out imbalances, bottlenecks and barriers hampering territorial co-operation.

Firstly, cluster and discriminant analyses identified transnational spatially-connected and unconnected areas with specific common characteristics. This analysis revealed a North-South and an East-West division of the ESPON space. It also showed that nearly all identified

clusters contain regions from more than one country. Finally, the regions of several countries are joined in just one or two clusters rather than being spread across a larger number of types of regions. This finding highlights the importance of national specifics in a cross-thematic analysis.

Secondly, the project studied patterns of transnational co-operation under INTERREG IIIB with regard to spatial locations of project partners, territorial allocation of co-operation budgets and with respect to different thematic fields of co-operation. The aim was to identify the most important fields of co-operation and territories that have a lot of potential for cooperation in general or in certain thematic areas. The project highlights those regions that show above-average co-operation intensity in certain thematic fields, so-called 'high-intensity-co-operation-nodes'. It also identifies bottlenecks and imbalances as well as areas of low participation in transnational co-operation. Additionally, the patterns of co-operation intensity have been depicted overall and in several fields: joint planning, demography, polycentrism, competitive towns and regions, rural areas, urban-rural relations, transport and infrastructure, energy, knowledge, cultural heritage, nature and environment.

The analysis delivered the first assessment of current transnational co-operation projects, their topics and budgets. Generally, for some thematic fields, homogeneity of co-operating regions appears to be more important than for other fields. For example, while cooperation is intense in the environmental field, gaps and potentials for more regions to participate were identified in the fields of demography, polycentric development and cultural heritage. Activities in the areas of rural development and transport are concentrated in certain types or regions, notably in regions with extensive agricultural production and peripheral as well as poorly accessible regions respectively.

There have been several attempts to analyse territorial cooperation in considerable detail. One such attempt was a database that was maintained by the Association of European Border Regions in the early 1990s. However, this 'LACE' database (Linkage, assistance and cooperation for the European Border Regions) has long been discontinued. Another attempt was an INTERREG database which was developed by the German Bundesamt für Bauwesen und Raumordnung and which contains information on all IIIB projects that German regions were involved in. While this permitted analyses of cooperation at the project level, it does not shed any light on the connection between territorial cooperation and regional development. An ESPON-Interact study has been carried out with the aim to analyse how the experience of INTERREG programs could contribute to better future actions at crossborder regional areas, identify gaps, and stimulate synergies to increase territorial cohesion and regional competition. The study has produced a typology of borders in NUTS3 regions participating in INTERREG IIIA Programmes and has also examined intensity of co-operation in terms of numbers of projects. In addition, the German Bundesamt für Bauwesen und Raumordnung has carried out analyses of Interreg IIIB programmes as part of the ESPON 2006 programme.

The ESPON programme features a project entitled 'ESPON 2013 Database', which has recently been made available on the ESPON website. It collects territorial indicators in order

to 'create, improve and manage a geo-referenced information system' in the areas of territorial cooperation, territorial cohesion and development more generally (Europa Press Release 2009). The ESPON database permits analysis of a whole range of relevant indicators including the following areas: economy (GDP and GDP growth), Lisbon performance (productivity, employment rate, expenditure on R&D, R&D business enterprise sector, highly educated population/total population), labour market (unemployment, development of unemployment, youth unemployment, labour force replacement ratio, employment density, employment in tertiary sector), demography (ageing, reproduction potential, population growth), naturalness (artificial surface, natural surface, agriculture intensity), natural hazards (floods, winter storms, earthquakes, dry spells and droughts, forest fires), technological hazards (oil hazards, chemical plants), and accessibility (potential accessibility by road, rail, air, and time to market meso-scale). The regional information provided by the ESPON 2013 Database concerns NUTS 3, NUTS 2, NUTS 1 and NUTS 0 levels.

Eurostat also provide a wide range of complementary indicators, notably on population, growth and employment at NUTS 0, NUTS 1, NUTS 2 and, to a more limited extent, NUTS 3 levels. Some additional measures that gauge 'softer' aspects of regional background conditions have been collected as part of Eurostat's Eurobarometer surveys. There are, for example, measures of people's trust in government, their trust in other nations and their European identity that are available at the regional level. Other indicators, e.g. the World Bank's measure of regulatory quality or Transparency International's measures of transparency and corruption, are only available at country level.

6) CONCLUSIONS

The next section draws together the conclusions from this literature review, summarises gaps in the literature, offers operational definitions and a classification of forms of territorial cooperation.

As we have seen, there is a large volume of literature on territorial cooperation, covering a range of activities and processes. Be that as it may, a clear definition of exactly what is meant by territorial cooperation is commonly lacking. For the purposes of this study, it is important to work with a clear working definition. Based on the literature review the following definition is proposed:

> Territorial cooperation is collaboration between administrative bodies and/or political actors in Europe and beyond, representing their respective territories, which can also engage other stakeholders as long as their involvement is within the same institutionalised framework.

Territorial cooperation initiatives vary in terms of size, regulatory span, fields of action and institutionalization. They range from sporadic information exchanges and consultation or selective cooperation to extensive, wide-ranging programmes and the creation of common institutions. Territorial cooperation can also be categorised according to judicial status, distinguishing between associations with or without legal personality. Following from the

above definition, it is possible to distinguish at least five levels of cooperation distinguished mainly by two criteria: i) the level of territorial unit involved and ii) relative location of the cooperating units as they are presented in Table 1.

Not all of these forms are funded by the European Union. City twinning, for example, dates back to the 1940s and 50s and is thus much older than any INTERREG initiatives(Clarke, 2010, Vion, 2002).

Table 1. Five types of TCs according to two distinctive criteria

Type of TTC	**Units (NUTS or equivalent)**	**Proximity**			**Coverage**
		Close (neighbouring)	**Distant in Europe**	**Distant out of Europe**	
TwinningCity	**Cities or coummunes** (always with twinning agreement)	Yes*	Yes	-	Europe
Cross-border (e.g. Interreg A)	**NUTS 3**	Yes	-	-	Internal and external European borders
Interregional (e.g. Interreg C)	**NUTS 2**	-	Yes	-	Europe
Transnational (e.g. Interreg B)	**NUTS 2**	Yes, i.e. within macro-region			Europe
Transcontinental	Respective units (**NUTS2,3, LAU 2)**			Yes	North Africa and South America

* only if they have twinning agreements

The literature review has also highlighted number of important gaps in the literature on territorial cooperation, which set a framework for this study. In particular, most of the literature is focused on cross-border cooperation and, to a lesser extent, on transnational cooperation while other forms of cooperation have received considerably less attention. Strand A of the EU's Territorial Cooperation Objective (sponsoring cross-border cooperation)

is arguably the most important, as the lion's share of the Objective 3 budget is earmarked for this strand. Nevertheless, non-EU funded forms of territorial cooperation are also important, if because comparison between EU-funded and non-EU funded cooperation permits examining the role of local obstacles as well as facilitating factors and the European opportunity structure that, at least financially, is available only to Objective 3 programmes.

As shown above, there has not yet been any large-scale comparative analysis of the preconditions of and obstacles to territorial cooperation. In order to do this, it is necessary to take into account the quality or 'maturity' of cooperation. The following dimensions should be taken into account when measuring this:

1. How old are traditions of cooperation?
2. How joint are joint funds or institutions?
3. How formal are relations and rules?
4. How frequent are meetings and how cordial are personal relations?

For EU-funded initiatives, one might add the following four indicators:

1. When did the new programmes start for the 2007-2013 period?
2. How many projects are conducted?
3. What do evaluations conclude?
4. What do cooperation projects achieve?

In addition to large-scale comparative analysis, intensive case studies are necessary in order to shed light on the ways in which territorial cooperation influences territorial development. Case studies should cover all five levels of cooperation, from cross-border to transcontinental. They should also vary in terms of the background conditions that hinder or promote territorial cooperation, but in particular in terms of legal and institutional arrangements as well as levels of socio-economic development.

TERCO project took the above suggestions into account which is mainly visible in the tools developed for the case studies: electronic CAWI questionnaire as well as in the IDI questionnaire (see ScR Part I, Annex 1). Definitely, maturity and the scope of the co-operation (as defined by Colomb, 2007) where investigated deeply in the project. However, the main contribution of the literature review into the project were ideas and concepts of determinants and outcomes of TC used in three methods: a) conceptual model of successful territorial co-operation, b) electronic standardised questionnaire (CAWI) and c) factor and cluster analysis. Generally literature review suggested seven determinants of co-operation (culture, regional and local self-government, funding, history, legal background, socio-economic background and geographical conditions) which were turned into various measurable indicators in the above mentioned methods . The types of particular indicators

varies among the methods because they rely on different data (primary vs. secondary, NUTS2 vs. local level, for the whole ESPON vs. for CSA) and hence some determinants were not possible to be represented by measurable indicator. Description of each method explains which indicators were selected and how they were measured, but the initial choice of indicators was based on the above literature review and only if the one suggested were not possible some other were invented as a proxy.

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3. TERCO Structural Equation Model of TC

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Table of contents

List of Figures

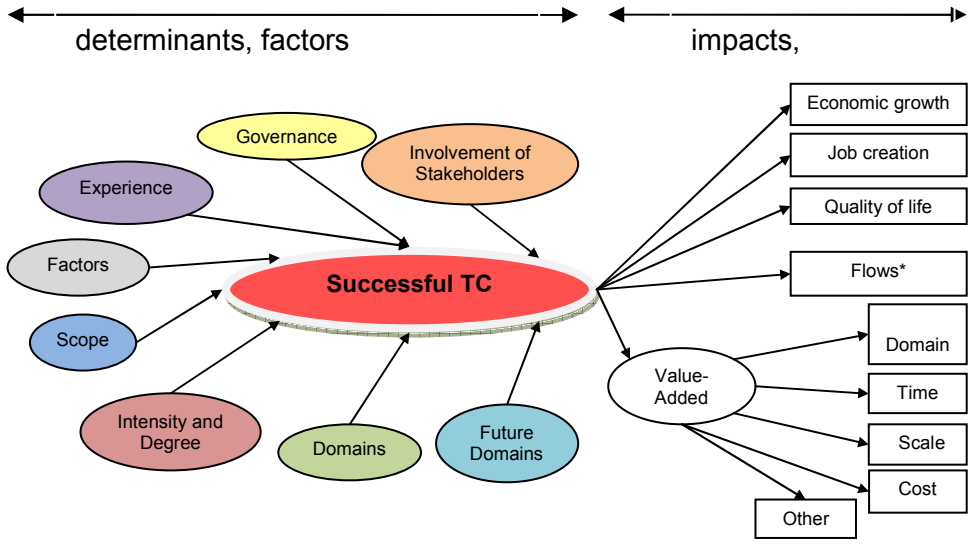
List of Tables

1. THEORETICAL MODEL OF CO-OPERATION – LITERATURE REVIEW

Based on the project's literature review a conceptual model of territorial co-operation (called TERCO-SEM) was proposed (Figure 1). It is worth mentioning that so far there was no concise model of this type, which attempts to put into one framework all the factors shaping territorial co-operation and assesses their relative importance in terms of producing positive outcomes from the co-operation. The model draws on key concepts and findings established by the project's literature review. For instance, it draws on Colomb's (2007) concept of the scope of co-operation; Barca's (2009) notion of the value added that TC can bring ("by dealing with relevant, over-the-border interdependencies and promoting co-operation networks and collaborative learning involving both public and private actors" - Barca, 2009), and the expected effectiveness of TC in "facilitating worker mobility" (Manifesto, 2008), etc. The model has been created in an effort to capture and conceptualise the determinants and outcomes of successful territorial co-operation (TC).

Figure 1 Theoretical model of successful co-operation

a) Theoretical model of successful co-operation



Determinants, factors:
- Involvement of Stakeholders – various actors involved in TC (*5 variables: e.g. NGOs, business, local residents, etc.)*
- Governance – various stakeholders initiating TC (*10 variables: e.g. EU bodies, local government, etc.)*
- Experience – length of experience in TC (*i.e. when TC was started*)
- Factors – facilitators and hindrances of TC (*17 variables: e.g. historical links, language, level of development, etc.*)
- Scope – extended to 6 steps in Colomb's (2007) scale of co-operation (*e.g. exchange of experience, common actions, …. read more in 'Abbreviations and Glossary' file*)
- Intensity and Degree – number of projects and partners, engagement of resources
- Domains – thematic domains of current TC (*8 domains*: e.*g. economy, natural environment, tourism, etc.)*
- Future Domains – domains that are most important for future development (*8 domains: as above*)

Impact, outcomes:
- Flows: International trade, Foreign Direct Investment (FDI), commuting to work, tourism, social commuting (e.g. visits to friends, shopping, etc), Educational exchange (students, pupils), migration, etc.

Source: Authors' elaboration based on literature review

The **successful territorial co-operation is defined as that which brings the highest, joint socio-economic development to the co-operating territorial units**.

The development is described by economic growth, job creation and increasing quality of life. This definition is consistent with the name of TERCO project (European Territorial Co-operation as a Factor of Growth, Jobs and Quality of Life). In addition to this definition two other elements were added: transnational flows and value added. As for the Conceptual Model the left hand side of it sets out factors influencing territorial co-operation. The right hand side sets out indicators that make up the successful co-operation. Causality is depicted by arrows. Hence logically, all the factors/determinants on the left hand side, such as governance, experience, drivers, scope, etc. have arrows directed towards 'successful TC', as they determine whether it takes place. The opposite is the case with such constructs as economic growth, quality of life, jobs, value added, etc.

This model was developed for two purposes. First, as a comprehensive framework which visualise expected causalities between TCs and socio-economic development, the model was a base on which the TERCO-CAWI Questionnaire was designed. Secondly, the conceptual model provided the initial form for Structural Equation Model which was verified empirically.

2. STRUCTURAL EQUATION MODELLING – FROM THEORY OF CO-OPERATION TO PRACTICE

Structural Equation Modelling (SEM) is a powerful statistical technique for testing and estimating causal relations between latent (not-directly observable) variables or 'constructs'. SEM allows most of all confirmatory, but also exploratory modelling, meaning it is suited to both theory testing and theory development. A hypothesised model (Figure 1) is tested using the obtained data to determine how well a model fits the data. The causal assumptions embedded in the model often have 'falsifiable' implications, which can be tested against the data. Technically, SEM estimates a series of separate, but interdependent, multiple regression equations as specified in the structural model. SEM is distinguished by two characteristics: 1) the scope to estimate multiple and interrelated dependent relationships, 2) the ability to represent unobserved concepts in these relationships and account for measurement error in the estimation process (Hair, Anderson, Tatham, Black, 1998). SEM allows also for a graphical presentation of complex models which makes an analysis more transparent. The arrows show the causal links, which have been specified based on theoretical grounds. The estimation of model parameters can show which of the assumed causalities are in fact significant and which are not on the basis of the existing data. The statistical information that is compiled during the process of structural model verification allows a researcher to improve the model – to modify the causality structure and to test the hypotheses repeatedly, as long as a satisfactory explanatory power of the model is achieved. The verification of existing theories is a good starting point for constructing a SEM, as the model is improved by 'falsifying' some relations and replacing them with new ones, thus improving overall model fit.

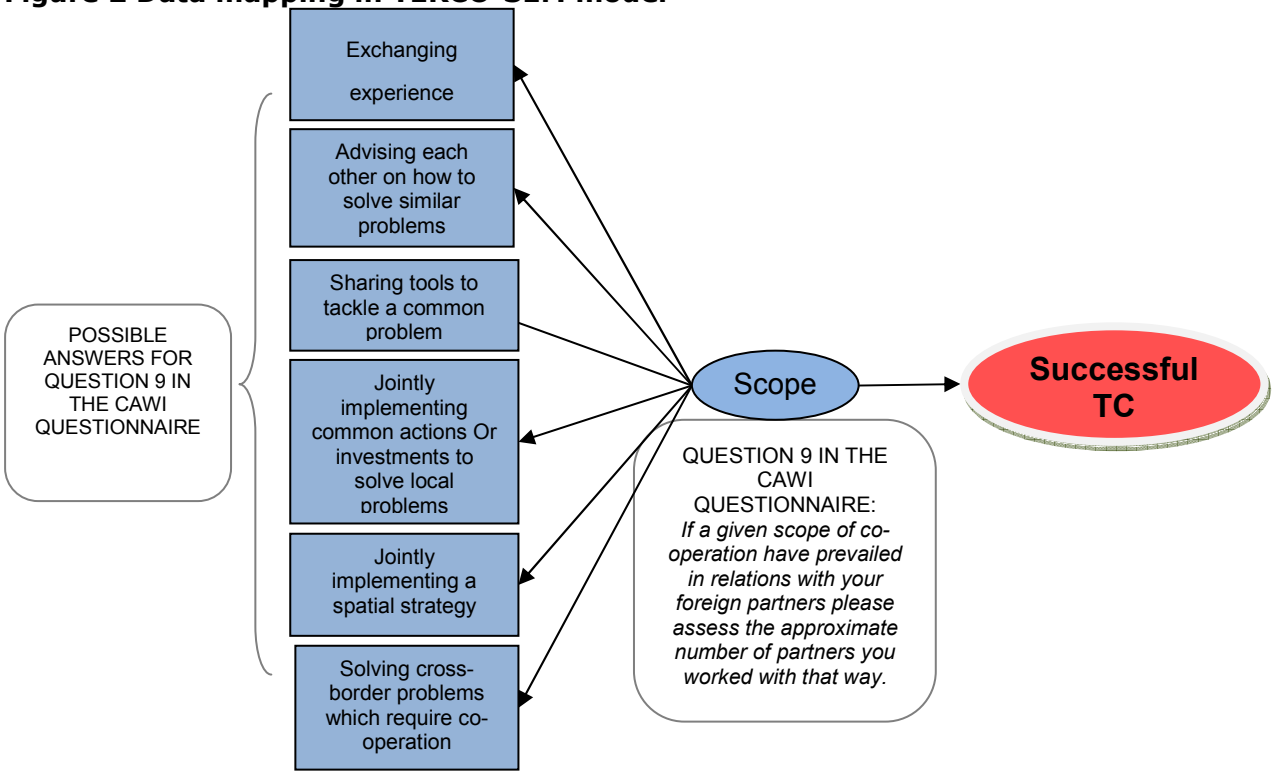
3. TERCO-SEM MODEL

In TERCO project SEM analysis was based on the TERCO-SEM conceptual model described in previous section.
The main reason for using SEM is to deal with important driving forces that, potentially, determine the success of TC but are not directly observable. TERCO-SEM conceptual model is a theoretical model, that need to be verified by using SEM analysis. The main assumption underlying the model is the main TERCO hypothesis (Transnational territorial co-operation (TC) is one of the factors underpinning the socio-economic development of territorial units.). SEM analysis enabled to verify empirically that hypotheses and address some research questions in a robust and consistent way: based on reliable data from the same source (CAWI). So SEM results enabled to verify the main TERCO hypothesis whether the co-operation has any influence on socio-economic development: a) economic growth, b) jobs, c) quality of life?; to answer which determinants listed from literature are the most important for successful co-operation?; and to develop a consistent story (theory) deal with driving forces of TC which are not directly observable.

4. DATA FOR SEM – CAWI AND DATA MAPPING

The most appropriate type of data for SEM modelling are survey data. Thus, the CAWI questionnaires was designed in a way that allows for the collection of data useful for verification of the specific hypotheses. By assigning data from CAWI to the theoretical model we could run the model and start to verify it – step by step. Each of the 7 factors (colored ellipses on Figure 1) was described by one or more questions of TERCO CAWI questionnaire. For example one such driving force is scope of co-operation, measured by the modified, six-step Colomb's scale (Figure 2).

Figure 2 Data mapping in TERCO-SEM model



Source: Authors' elaboration

However, it has to be remembered that the ability to test the model empirically depends primarily on the quality of data. The following conditions have to be satisfied in order to make the model work:

- Large and homogenous sample. SEM requires large number of observations to start running and they have to be homogenous, which means that the set of data for each type of TC has to be large. In practice, there is no exact threshold under which the software (AMOS) cannot be applied. However, a general rule is that the size of a sample should be 20 times larger than the number of measured variables in the model. For the purposes of this project, the data need to be gathered for each TC type.
- Normal distribution of variables. In order to have appropriate estimations of relations between the variables and to test hypothesis, we need a normal distribution of the answers, because all the estimators and statistics are asymptotically unbiased.
- No missing data points. The model is sensitive to missing observations. It means that the questionnaires with blanks under some questions have to be deleted from the sample or some special statistical procedures, aimed at handling the missing data, had to be applied. These conditions are very strict and demanding. At the same time number of questionnaires obtained during the research wasn't very high. That's why some statistical procedures had to be applied to improve the quality of the model.

5. STEPS OF MODELLING

SEM modelling was developed in 5 main stages:

a. Data collection

As it was already mentioned data for SEM modelling were provided by CAWI questionnaires (in electronic and paper version), filled by respondents in 19 countries. The questionnaire was sent to all municipalities in TERCO case study areas. After using many different methods aimed at increasing the rate of return (multiple e-mail requests, phone calls, personal visits etc.), 459 filled questionnaires, usable for the SEM analysis, were obtained.

b. Database preparation and transposition

From all 459 questionnaires only 291 were filled in by beneficiaries of territorial co-operation programmes (i.e. persons who actually participated in TC). Those 291 respondents refereed to 5 types of co-operation (Twinning Cities, Interreg A, Inetrreg B, Interreg C, Transcontinental). In SEM the unit of analysis is a relation (respondent's opinion on each type of TC is a separate relation) and each respondent had on average 1,72 co-operation relations hence final SEM worked on 500 unique records.

Because SEM modelling is very sensitive to missing data points, and due to still relatively small sample, missing data were supplemented with arithmetic mean of the values for a particular country or, if this was not possible, of the values for the whole sample. In TERCO

CAWI questionnaire there were two types of questions – with dichotomous and interval scale of answers. To ensure that both types of questions will enter the model with the same probability, all variables were standardised.

c. Preliminary modelling

Preliminary modelling was based on (already described) theoretical conceptual TERCO-SEM model (Figure 1). After this first step of modelling it was obvious that some factors (determinants, colored ellipses) aren't consistent. To improve the quality of the model some factors had to be modified. Firstly, variables with the lowest factor loadings were excluded from the model. Usually these variables were related to answers in CAWI questionnaires: "Other, please specify". Secondly, if a particular factor contained more variables with low factor loadings, exploratory factor analysis was conducted. All exploratory factor analysis were conducted using SPSS® instead of AMOS®. Hereby the factor was divided into smaller, more consistent factors. Thirdly, some factors were combined with each other. This procedure was applied , for example, to the factor "Domains" and "Future Domains". Finally, despite described statistical procedures, some variables had to be excluded from the model. For example all variables related to Value Added factor (on the right hand side of the model) had to be excluded due to very high missing data rate.

d. Modifications of the model based on its fits

The aim of this stage of modelling was to improve model's fit rates. The AMOS® software enables wide diagnosis of these rates, and it helps to find out which variables are the weakest and how to improve the quality of the model. Almost all factors from the preliminary model had to be modified (i.e. set of variables that build up different factors had to be changed). During the modification procedure variables were grouped into factors on the basis of statistical procedures of factor analysis. Variables of the same factor are strongly correlated to each other and significantly affect the factor. Apart from changes on the left hand side of the model (factors/determinants of successful TC), also the right hand part had to be modified. At the beginning it was assumed that Successful TC (unobservable, latent variable) consists of 6 elements (variables that form Successful TC on the basis of factor analysis). During the modelling process however it turned out that all variables of Successful TC are strongly correlated with each other. It means that respondents described impact of TC on all elements of socio-economic development and flows similarly - similarly low or similarly high. This means that each variable build the Successful TC with similar factor loading and differences between the influence of Successful TC on each area (economic growth, quality of life, job creation etc.) are relatively small. This situation leads to conclusion, that probably the impact of successful TC on different areas is indistinguishable for the respondents. Territorial co-operation influence many areas and its impact is rather comprehensive. Probably respondents didn't see many direct and clear results of TC, but rather overall small or large influence of TC on general situation in specific area.

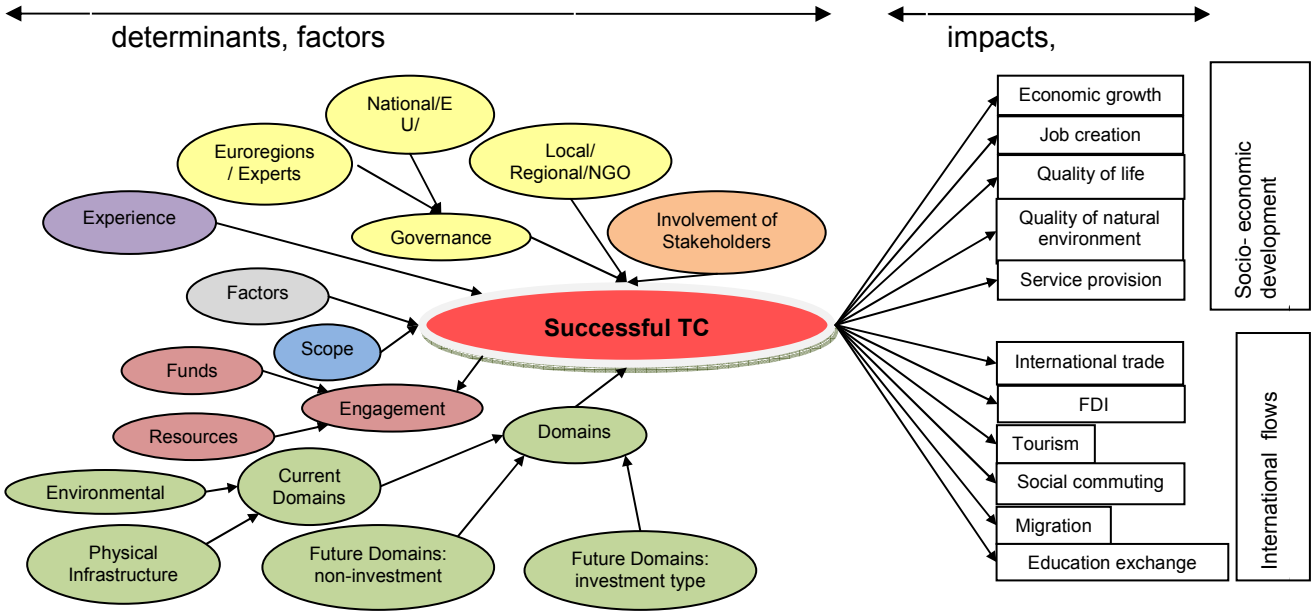
All these procedures and statistical techniques improved quality of the model. As a result fit rates achieved a satisfactory level. In TERCO-SEM two basic rates of the model's fitness were chosen: CFI (Comparative Fit Index) and RMSEA (Root Mean Square Error of Approximation). These rates describe fitness of a singular model. According to the literature (e.g. Barbara M. Byrne „Structural Equation Modelling with AMOS", Routledge 2010) the value of the CFI rate should be ≥ 0.9 and the value of the RMSEA rate ≤ 0.1. In the TERCO SEM model the value of the CFI rate is 0.775 and of the RMSEA rate 0.078. Low value of the CFI rate is a result of small sample size and relatively low differentiation of data (respondents' answers). However, taking into account small number of questionnaires, fit rates are relatively high. It should be also stressed that higher number of questionnaires would not necessary improve the quality of the model. During collecting the questionnaires it was very visible that the share of positive questionnaires (from respondents that had any experience in TC), that were the basis of the SEM analysis, was decreasing very rapidly after the first one or two rounds of collecting the questionnaires. It can be assumed that respondents that had any experience in TC were also the ones that filled in the questionnaires at the beginning of the survey.

e. Final model

The final TERCO-SEM model, after modifications described above, is shown on Figure 3 and described in details in Table 1. It can be seen that modifications of the model lead not only to exclusion of some elements, but also to rename some factors and to distinguish sub-factors. Only two factors in the final model are built exactly the same (with the same variables, i.e. the same CAWI questions) as in the preliminary, conceptual TERCO SEM model, i.e. Involvement of stakeholders (level of involvement of key actors in TC projects) and Scope (measured with extended Colomb's scale). Also Factors (factors that facilitate or hinder TC) were modified only a little bit by removing variable related to the CAWI answer "Other, please specify".

The factor that was changed in the greatest extent was Domains (thematic domains of TC projects) – it was actually combined with another factor – Future Domains (preferred future thematic domains of TC projects which are the most important for future development of the area), and then modified once again. As a result on the model there is one big factor Domains and 3 smaller sub-factors: two related to future domains ('soft' that contains variables related to preferred thematic domains of future TC projects: tourism, cultural eventy, educational exchange; and 'hard': economy, natural environment, physical infrastructure) and Current Domains (from all variables of primary factor Domains). In the last factor (Current Domain) two sub-factors were distinguished: Environmental (that contains variables related to thematic domains of TC projects: natural environment and risk prevention) and Physical infrastructure (that contains variables related to thematic domains of TC projects: roads and other physical infrastructure). Other current domains didn't build any consistent separate factor but were included directly into factor Current Domains (economy, cultural events, educational exchange, social infrastructure, tourism, joint spatial planning).

Figure 3 Empirical model of successful co-operation



- Local/Regional/NGO – stakeholders initiating TC are NGOs, local and regional governments
- Governance: National/EU/Agencies – stakeholders initiating TC are national government, EU bodies, development agencies and chambers of commerce
- Governance: Euroregions/Experts – stakeholders initiating TC are Euroregions and other cross-border institutions, consultants, external experts
- Experience – length of experience in TC and changeability of TC partners
- Engagement: Funds – source of funding *(five types of sources)*
- Engagement: Resources – availability of funds and staff resources
- Future Domains: 'soft' – tourism, cultural events, educational exchange
- Future Domains: 'hard' – economy, natural environment, physical infrastructure
- Current Domains – economy, cultural events, educational exchange, social infrastructure, tourism, joint spatial (physical) planning
- Current Domains: Environmental – natural environment and risk prevention
- Current Domains: Physical infrastructure – roads and other physical infrastructure

Source: Authors' elaboration based on literature review and data from TERCO case studies

These modifications were made on the basis of the results of statistical analysis of the first version of the model. As it was already mentioned factors and sub-factors were distinguished and built on the basis of factor analysis. Variables in the same factor are strongly correlated to each other and significantly affect the factor. It means that if some variables build the factor or sub-factor (e.g. Environmental) answers related to them were relatively frequently chosen by the same CAWI respondents.

Table 2 Factors and variables of empirical model of successful co-operation

Factor (***question in CAWI questionnaire)***	Variable **(answers available*)**
Involvement of stakeholders (*If any of the following actors/stakeholders are involved in the TC in your area please assess its level of involvement*)	• Local authorities • Regional authorities • Local residents • NGOs • Business
Scope (*If a given scope of co-operation have prevailed in relations with your foreign partners please assess the approximate number of partners you worked with that way*)	• Exchanging experience • Advising each other on how to solve similar problems • Sharing tools to tackle a common problem • Jointly implementing common actions or investments to solve local problems • Jointly implementing a spatial strategy • Solving cross-border (transnational or transcontinental) problems which require co-operation
Factors (*Please indicate to what extent each of the following factors hindered your organisation/authority from participating in TC*)	• Level of growth (development) • Presence of minority groups • Physical geography between the regions • Level of infrastructure • Historical relations • Religion • Language • Cultural background • Previous involvement in TC projects • Availability of funding • Geopolitical position of the regions • Institutional background • Civil society • Shared environmental concerns • Business community • EU membership • Political will
Governance (*Please indicate 3 key stakeholders initiating TC in your area)*	
Euroregions/ Experts	• National government • EU bodies • Development agencies • Chambers of commerce
National/EU/ Agencies	• Euroregions and other cross-border institutions • Consultants, external experts
Local/Regional/NGO	• Local government • Regional government • NGOs
Experience (*Please indicate to what extent your co-operating partners have changed since 2000*) (*When did your organisation/authority first become involved in TC?)*	• All the same partners • Mostly the same partners • Similar number of previous and new partners • Mostly new partners • All new partners • before 1994 • 1994-1999 • 2000-2006 • since 2007

Factor (*question in CAWI questionnaire)*	Variable (answers available*)
Engagement	
Funds (*In recent years, which of the following sources have funded your TC? Please indicate the level of their significance*)	• Own • Public-private • Foreign partners • European Union funds • National (public other than own)
Resources (*Please assess the extent to which the following resources are available in your organization/institution for participation in TC projects*)	• Funds • Staff
Domains	
Future Domains (*please indicate 3 domains which are the most important for future development of your area*)	
Future Domains: hard	• Economy • Natural environment • Physical infrastructure
Future Domains: soft	• Cultural events • Educational exchange • Tourism
Current Domains (*Please indicate the types of co-operation with which your organisation/authority has been involved*)	• Economy • Cultural events • Educational exchange • Social infrastructure • Tourism • Joint spatial (physical) planning
Environmental	• Natural environment • Risk prevention
Physical infrastructure	• Roads • Other physical infrastructure
Successful TC (*If there is an impact of TC on your area, please indicate in which theme and what is its level*) (*In relation to the following flows/exchanges, please indicate how you perceive the impact of TC on your area*)	• Economic growth • Job creation • Quality of life • Quality of natural environmental • Service provision • International trade • Foreign direct investment • Commuting for work • Tourism • Social commuting • Migration • Educational exchange

Source: Authors' elaboration

So described modifications of factor Domains and Future Domains may lead to the conclusion that current domains of TC projects are strongly related to preferable future thematic areas of co-operation that are seen as the most important for future development of specific area. This might be a result of two situations: current domains of co-operation are also seen as those that are the most important because they really are very important, or respondents find

important those domains in which they have some experience in TC. At the same time it should be remembered that in some cases, especially in new Member States or non-EU countries, involvement in TC project is a matter of chance e.g. invitation to the project by more experienced partner. In these situations thematic domain of the project is not always an answer to the real needs and problems of a specific area. Another conclusion from above mentioned modifications of the factor Domains is that some domains often coincide (in respondents' answers) with each other and form thus sub-factors (Future Domains 'soft': tourism, cultural eventy, educational exchange; Future Domain 'hard: economy, natural environment, physical infrastructure; Current Domains 'Environmental': natural environment and risk prevention; Current Domains 'Physical infrastructure': roads and other physical infrastructure). This may lead to the conclusion that if current domains of TC projects are taken into consideration, there is a rather clear preference for two thematic areas (natural environment and physical infrastructure) while other domains don't coincide in any meaningful pattern.

On the other hand if we consider preferred future domains of TC projects (the most important for future development of the area) two types of preferences can be distinguished: the one focused more on culture, education and tourism, and the one geared more towards economy, natural environment and physical infrastructure.

Quite distinctive modifications were made also in regard to the factor Experience. In this case variable related to the length of experience is strongly correlated with the variable related to the diversification of partners (in the preliminary model it was a variable of the factor "Intensity and degree"). It means that the longer the experience the more stable set of partners of TC. It leads to the conclusion that as the time passes patterns of co-operation (in regard to choosing partners) are more and more stable and closed. In the final model the factor Experience consists of only two mentioned variables. The factor Intensity and degree was also strongly modified, rebuilt and renamed. Variables that remained in that factor (now named Engagement) were grouped into two sub-factors: Resources (extent to which resources of staff and funds are available) and Funds (source of funding for TC projects: own, public-private, from foreign partners, EU funds, public other than own).

The last modified factor was Governance, that described key stakeholders initiating TC. Here variables indicating as key stakeholders local and regional authorities and NGOs were so distinctive from all other, that they create a separate factor (called Local/Regional/NGO), that can be described as locally driven model of TC. In this situation factor Governance consists of two distinctive sub-factors: National/EU/Agencies and Euroregions/Experts. Distinguishing these three factors indicate, in a very general way, three types of TC in regard to key stakeholders initiating territorial co-operation. The most distinctive is here a model with strong involvement of local and regional governments, supported by NGOs. Distinguishing factor Euroregions/experts indicates that Euroregions and other cross-border institutions, as well as consultants and external experts, are strongly involved in TC in these areas where public authorities (local, regional and national, as well as EU bodies) and professional organisations (such as NGO, development agencies and chamber of commerce) aren't so

active. At the same time in areas where national government and EU bodies are strongly involved in TC, also professional organisations (like development agencies or chambers of commerce) are found as important actors initiating TC. It should be also stressed that from all three types of Governance (described above) only Local/Regional/NGO are consistent enough to be a significant (from statistical point of view) factor of Successful TC. Two other types of governance are also internally consistent but their factor loadings are much smaller than for factor Local/Regional/NGO (due to small number of questionnaires with those answers). In fact, it would be even statistically justified to remove them from the model, but it was decided to leave them because of their merit and theoretical importance.

6. CONCLUSIONS

Based on the TERCO-SEM model we positively verified our hypothesis that territorial co-operation underpins socio-economic development. This verification was based on the following reasoning. In the theoretical (conceptual) model it was assumed that successful TC is one of the factors that underpins the joint socio-economic development of co-operating territorial units. This assumption was reflected in the structure of the conceptual model where on the right hand side were placed various indicators of socio-economic development (economic growth, job creation, quality of life) as well as various flows connected with the development (FDI, migrations, etc.) and value added. Hence the right hand side indicators were the potential impact indicators of successful co-operation. On the left hand side were depicted the potential determinants and factors of TC, which may lead to success. After applying the data and carrying out the analyses, the empirical and statistically significant version of the model was obtained. It contained statistically significant statistical relations between Successful TC and elements of socio-economic development. In other words, the statistical relationship was established between 'determinants and factors' of TC (left hand side of the model) and 'impacts' of TC (right hand side of the model).

In particular, the results of the SEM analysis provided information on the role of particular 'determinants and factors' in achieving successful TC measured by several 'impact' indicators. Secondly, it became possible to assess the extent to which particular 'determinants and factors' contributed to particular 'impacts'.

The empirical TERCO-SEM model showed 12 significant impact variables. Each variable is characterised by its weight that describes the power with which a variable explains the Successful TC. The weights of all variables are described in the Table 3 below. Although from the first sight the weights are relatively similar, some differences should be distinguished: the factors that are the most manifested in Successful TC are economic growth, quality of life, quality of natural environment and service provision, while much less are job creation and flows. Thus it seems that success in TC translates more to the overall socio-economic development rather than to cross-border flows and functional integration of co-operating areas. In this respect TC can be seen as an instrument which so far is more oriented on achieving socio-economic development (however, not always joint) of co-operating territories

rather than a way to reduce the role of barriers by intensifying various flows. And statistically it proved not only within EU and Schengen area but also for co-operation with non-EU countries.

Table 3 Variables measuring impact of Successful TC

Name of the impact variable	Weight
1. Economic growth	9.1%
2. Job creation	8.5%
3. Quality of life	9.0%
4. Quality of natural environment	8.9%
5. Service provision	8.9%
6. International trade	7.9%
7. Foreign direct investment	8.1%
8. Tourism	7.7%
9. Social commuting	8.4%
10. Migration	8.2%
11. Educational exchange	7.8%
12. Other	7.5%

Source: Authors' elaboration

After investigating all determinants and factors (from the left hand side of the model) on the Successful TC we distinguished 3 groups of them that had different level of importance for successful TC (Table 4).

Table 4 Determinants and factors of successful TC and their importance

Factor	Weight (Standardized Total Effects)	Determinants and Factors
Local/Regional/NGO	9.1%	Very Important
Engagement: Funds	8.7%	
Engagement	8.6%	
Governance: Euroregions/Experts	8.6%	
Future Domains: hard	8.2%	Important
Current Domains: Environmental	8.0%	
Current Domains	8.0%	
Engagement: Resources	7.9%	Moderately Important
Scope	7.9%	
Experience	7.7%	
Current Domains: Physical Infrastructure	7.5%	
Future Domains: soft	7.3%	
Involvement of stakeholders	1.3%	Of Little Importance
Factors	1.2%	
Domains	-	Not Important
Governance - National/EU/Agencies	-	

Source: Authors' elaboration

The first group consists of v*ery important determinants and factors of successful TC*, since their weights (Standardised Total Effects) are the highest (>8.5%). This group includes factors related to key stakeholders initiating TC (Local/Regional/NGO and Euroregions/Experts) and Engagement, especially the financial one. It means that for TC involvement of organisations and experts and local and regional authorities, as well as availability of funds, are key determinants of success. Also important, but not so much, are factors from the second group – *important determinants and factors of successful TC*. They are related to Domains (both current and future domains) especially related to hard investments (building border crossings, cross-border transport connections, etc.) and projects devoted to economy, natural environment and physical infrastructure. As for *determinants and factors of moderate importance*, they are: Engagement of various resources (financial resources and staff), Scope of TC (measured with the Colomb scale), experience in TC projects, and some current and future domains related to hard projects (building physical infrastructure) but also soft projects (generating cultural, educational and tourism exchanges). Surprisingly the *least important determinants and factors* are those related to the 'stakeholders involved in TC' (note however, that the factors related to the 'stakeholders initiating TC' play the most important role in determining TC success). Here belong also variables describing factors that hinters and facilitate TC. So the main conclusion from this part of the analysis is that for successful TC the most important are factors that initiate co-operation (both people – stakeholders - and resources), while factors that might affect on-going co-operation (such as stakeholders involved, facilitators of TC, etc.) are less important.

Results of the SEM modelling assess the impact of not only of the whole determinants and factors, but also particular variables behind those factors. So in each of above mentioned factors the most important variables can be distinguished. These variables describe types of domains, sources of funding, scope of TC etc. that have the greatest positive influence on successful TC (contribute to the successful TC in the greatest extent). Hence:

- in factor Current Domains these variables are: cultural events, tourism, economy, natural environment and infrastructure;
- in Scope: exchanging experience, sharing tools to tackle a common problem and advising each other on how to solve on similar problems;
- in Funds (sources of funding): own or EU funds;
- in Governance (stakeholders initiating TC): local and regional government

To this group of the most important variables in creating successful TC also belong experience in TC projects, stability of partners and sufficient availability of resources (staff and funds). Analysis of the results at the level of individual variables confirms that the least important for successful TC those related to the level of involvement of actors and factors that facilitate or hinder on-going co-operation.

Results of SEM modelling allow also to assess the impact of individual variables on impacts of Successful TC (Table 5). For economic growth the most vital determinants leading to success of co-operation are: political will, EU membership (i.e. less likely economic growth is achieved

in co-operation with non-EU partners) and the role of business community, 2 domains of TC – joint spatial planning and cultural events, and initiating role of regional government, as well as involvement of NGOs and business. Surprisingly the role of current or future projects in thematic domain "economy" is minimal. Thus it seems that the most important factors for TC-driven economic growth are those related to the overall conditions of economic activity and active role of local and regional actors.

Table 5 The most important determinants/factors for individual impact indicators of successful TC

economic growth is most likely to be achieved via TC under the following conditions:	**job creation** is most likely to be achieved via TC under the following conditions:	**quality of life** is most likely to be achieved via TC under the following conditions:	**quality of natural environment** is most likely to be achieved via TC under the following conditions:	**service provision** is most likely to be achieved via TC under the following conditions:	**economic flows** are most likely to be achieved via TC under the following conditions:	**people flows** are most likely to be achieved via TC under the following conditions:
Good political will, EU membership, active business community	Preferred future domain: cultural events	Current domain: joint spatial planning, risk prevention, economy	Preferred future domains: natural environment, educational exchange, cultural events	Stakeholders involved in on-going TC: NGOs	Stakeholders involved in on-going TC: NGOs	Scope: Solving cross-border problems which require co-operation
Scope of TC is spatial planning and theme are cultural exchanges	Stakeholders initiating TC: Euroregions and other cross-border institutions, local government	Preferred future domain: economy		Preferred future domain: cultural events, tourism	Experience in TC projects	Preferred future domain: cultural events
Stakeholders initiating TC are regional and governmental actors	Stakeholders involved in on-going TC: local residents	Stakeholders initiating TC: national government		Factors* of TC: EU member-ship	Scope: Solving cross-border problems which require co-operation	Current domain: cultural events
						Stakeholders involved in on-going TC: NGOs

*Factors facilitating or hindering TC

Source: Authors' elaboration

For job creation key determinants seem to be preferred future domains of TC – cultural events, initiating role of local government, Euroregions and cross-border institutions and involvement of local residents in on-going TC projects. In this area involvement of local actors seems to be the most important. Successful TC in terms of quality of life is related mainly to 3 types of domains - joint spatial planning, risk prevention and economy, and active role of national government as an initiator of TC. For successful TC in area of the quality of natural

environment key factors are TC domains: natural environment, educational exchange and cultural events. Thus in this area it seems that key role plays perspective thinking not only about environmental investments, but also ecological education and promotion of ecological behaviours. When successful TC is considered in terms of service provision the most important determinants are involvement of NGOs, EU membership as a factor influencing TC, and 2 domains of TC projects – cultural events and tourism. For successful TC in terms of flows, few variables seem to have crucial role. In creating successful TC in international trade there is a substantial impact of co-operation based on solving cross-border problems, as well as experience in TC projects and involvement of NGOs. The two last factors are also very important when successful TC is described as FDI. Successful co-operation in terms of intensive commuting to work is related mainly to TC domain: cultural events, while successful TC in terms of tourism – with domains tourism and cultural events. The same factors are also important for successful TC in terms of social commuting, and, additionally, involvement of local residents in TC projects is in that case also very important. TC based on solving cross-border problems is a key determinant of successful TC in terms of migration, while educational exchange projects are key to success in terms of educational exchange flows.

ESPON

4. Spatial patterns of Twinning Cities networking, INTERREG B and C

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EUROPEAN UNION
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Table of contents

1. PATTERNS OF TRANSNATIONAL AND INTERREGIONAL COOPERATION WITHIN ERDF

1.1 Scope and sources of data

This chapter discusses cooperation between entities from various European regions taking place within projects financed from EU funds. The analysis concerns two types of cooperation: transnational cooperation and interregional cooperation. Transnational cooperation takes place across large multi-national spaces. Interregional cooperation concerns non-contiguous regions across the whole territory of the EU. The cooperation takes place as part of projects financed from ERFD funds. In 2000-2006 transnational cooperation was financed within 11 operational programmes within INTERREG IIIB initiative. In 2007-2013 transnational cooperation is financed as part of 13 transnational programmes under the European Territorial Cooperation Objective (the name INTERREG is not officially used, but due to large similarity of the initiatives in this paper, for the sake of brevity, we will use the term INTERREG IVB). Also interregional cooperation is financed from ERDF funds, in 2000-2006 within INTERREG IIIC programme, and in 2007-2013 within INTERREG IVC.

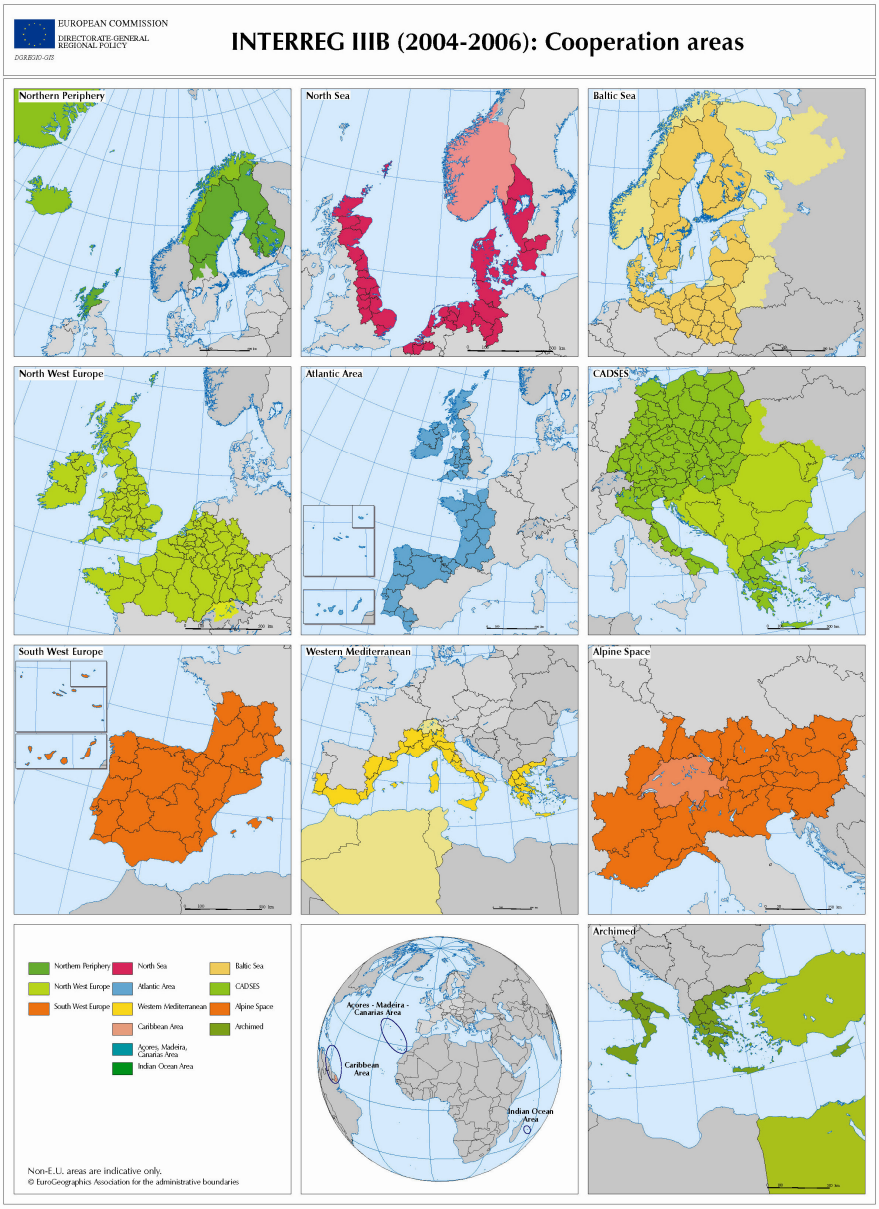
The report uses data on INTERREG III and IV projects collected for the purposes of the project from official publications (databases, reports, projects lists, etc.) of institutions managing particular programmes. Due to low importance for spatial analyses of ESPON space the analysis excludes one INTERREG IIIB programme, namely "Madeira-Azores-Canary Islands" and three INTERREG IVB programmes, namely "Indian Ocean Area", "Macronesia" and "Caribbean Area". Source data represent the state of affairs as of the beginning of 2011 – consequently they include all of the completed programmes from 2000-2006, and for programmes from 2007-2013 the data are fragmentary and include projects which had been started or approved for implementation by the beginning of 2011. Based on the primary data a database of projects and partners taking part in a given project was built, including all the programmes taken into account. Subsequently project partners were ascribed to particular European regions at NUTS2 level (according to the location of the seat of the organization, or the location of the division taking part in the project). Partners were located qualitatively, which required manual ascription of each record. It is important to underline that the project has been using primary data on projects and partners (above all derived from programme level databases). However, during TERCO project lifetime, KEEP tool and database has been developed by the INTERACT programme. KEEP Database contains projects'- and partners' data sets from the 2000-2006 INTERREG / 2007-13 European Territorial Cooperation programmes. KEEP database gives great opportunities for research in the area of territorial cooperation, but due to TERCO project timeline KEEP tool has not been used for this project.

1.2 Transnational cooperation

Eligible areas in INTERREG IIIB and IVB

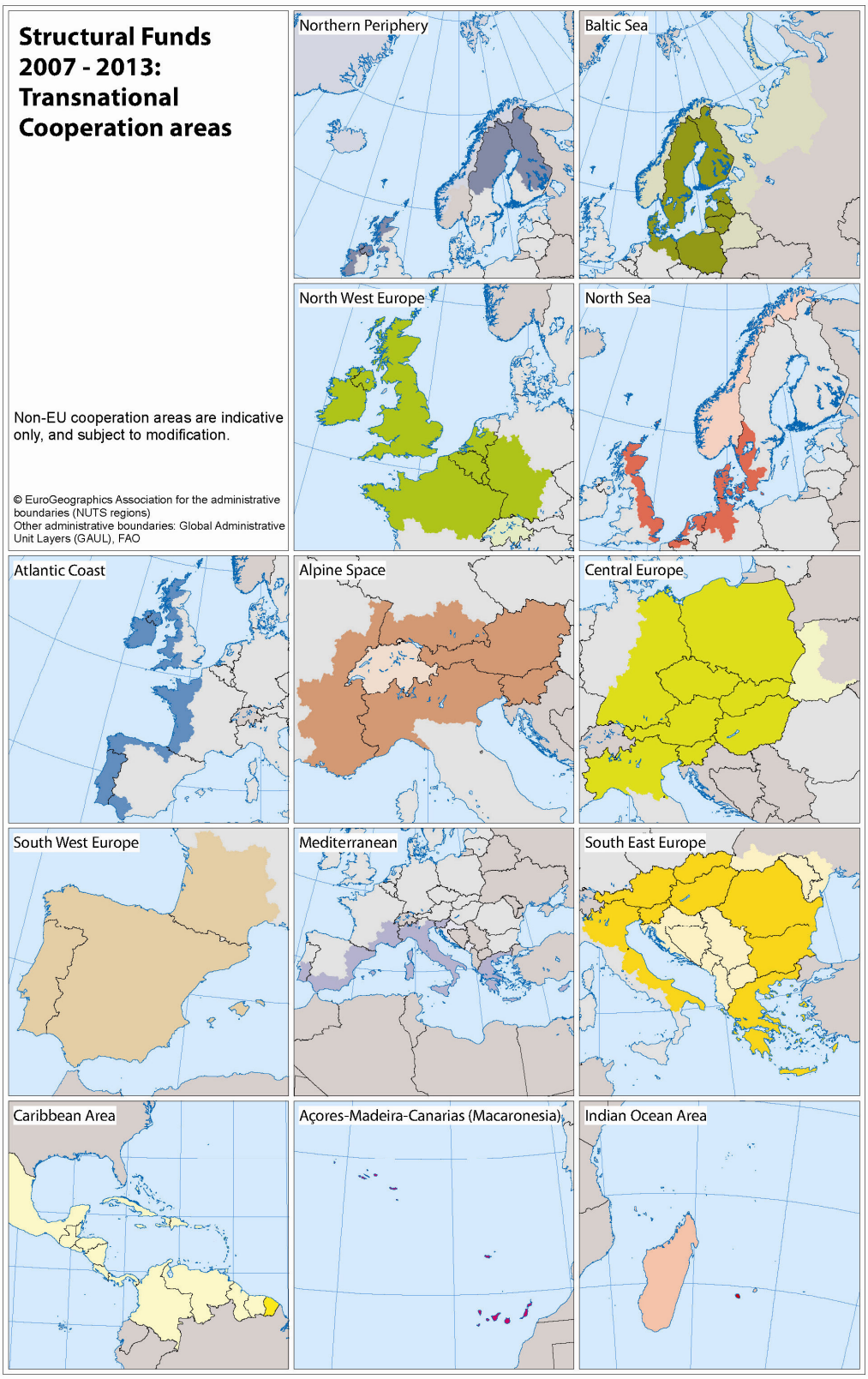
Implementation of projects within INTERREG IIIB and IVB programmes took place within the frames of predetermined areas, including both the EU countries and the neighbouring countries. The cooperation areas within particular programmes are presented in figures 1 and 2. Note that the areas of cooperation changed to some extent in both of the analysed periods. Moreover the areas of particular programmes are not mutually exclusive – i.e. some regions may participate in more than one programme (maximum in 4).

Fig. 1 Eligible areas in INTERREG IIIB



Source: European Commission

Fig. 2 Eligible areas in INTERREG IVB

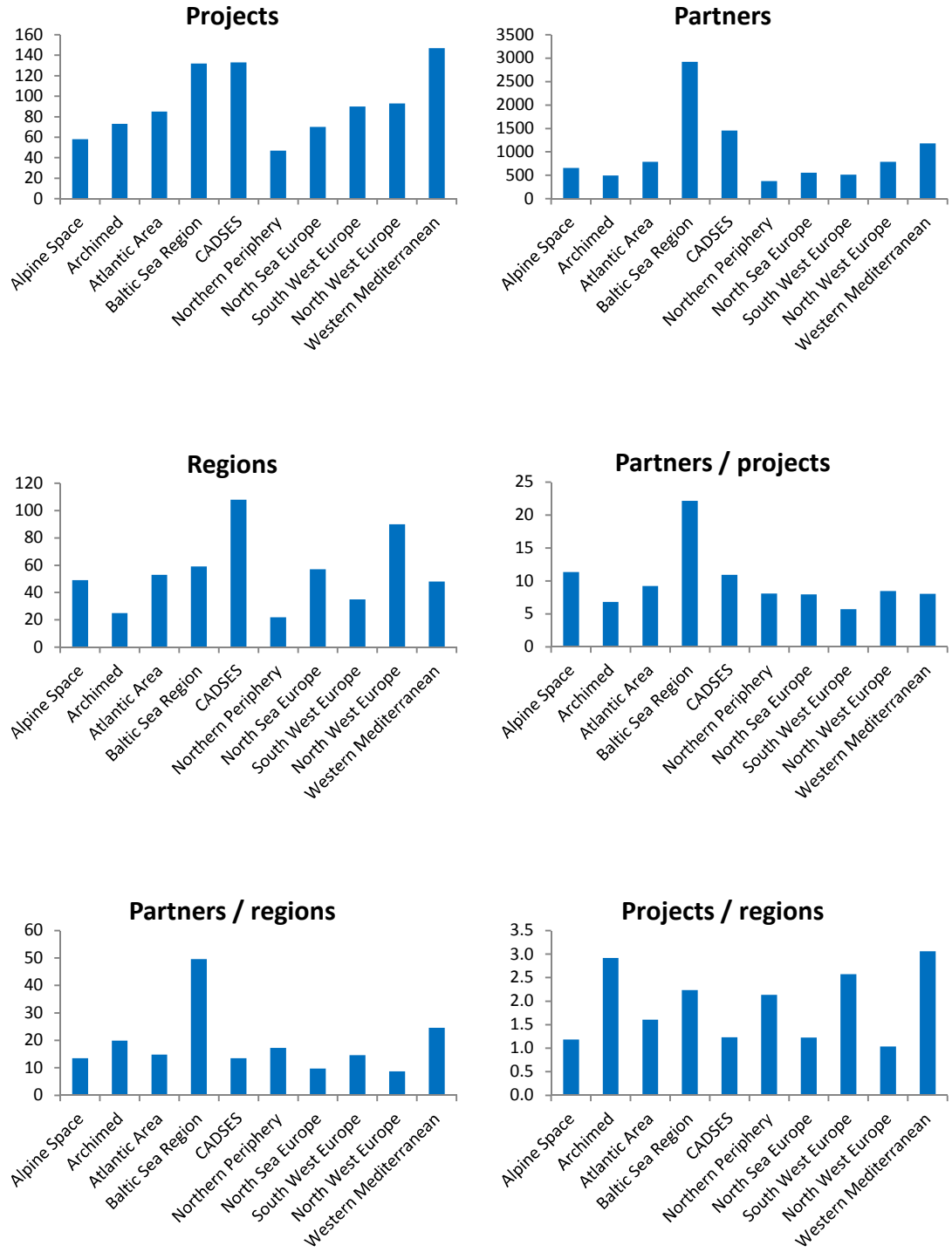


Source: European Commission

Basic characteristics of INTERREG IIIB and IVB

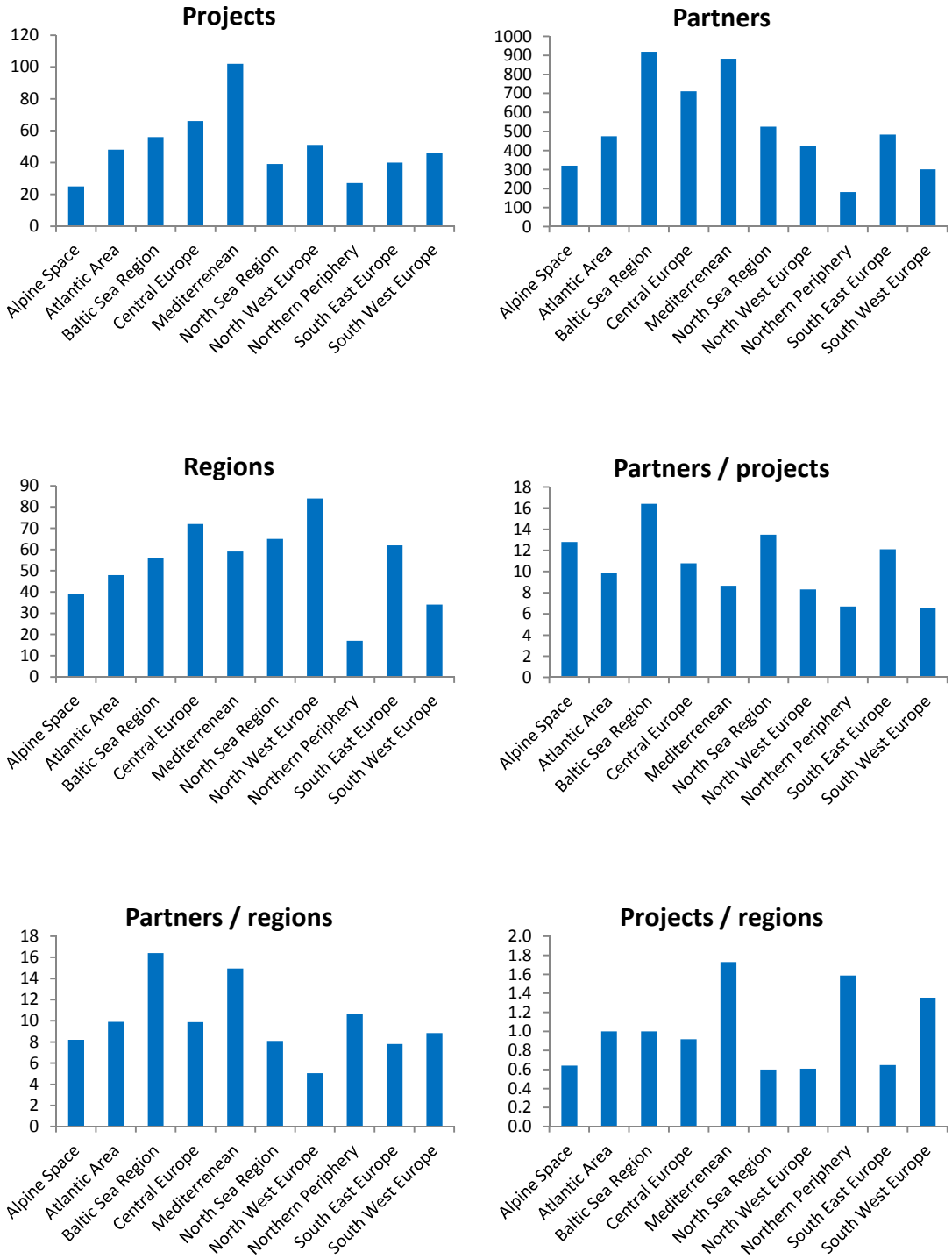
In 10 programmes within INTERREG IIIB initiative implemented were less than 1 thousand projects, in which participated about 9.7 thousand partners (a partner is interpreted here as each participation of a given entity in a project, i.e. if a given entity took part in two projects it is counted as two partners). On the other hand within INTERREG IVB programmes by the beginning of 2011 implementation was started in the case of 0.5 thousand projects, having over 5.2 thousand partners. Particular programmes are quite diverse, both in terms of the number of implemented projects and the number of partners, but also the number of NUTS2 regions the partners came from. Also diversified are the relative measures characterizing the programmes, such as the average number of partners per one project and the number of projects per region in which the projects within a given programme were implemented (see Fig. 3 and 4). Large diversity of programmes – both within INTERREG IIIB and INTERREG IVB – makes that general comparative analyses or analyses including the whole ESPON space more difficult, and their results depend largely simply on the characteristics of the programmes, which in turn result from the principles assumed in particular programmes.

Fig. 3 Basic information on INTERREG IIIB programmes



Source: Authors' elaboration

Fig. 4 Basic information on INTERREG IVB programmes



Source: Authors' elaboration

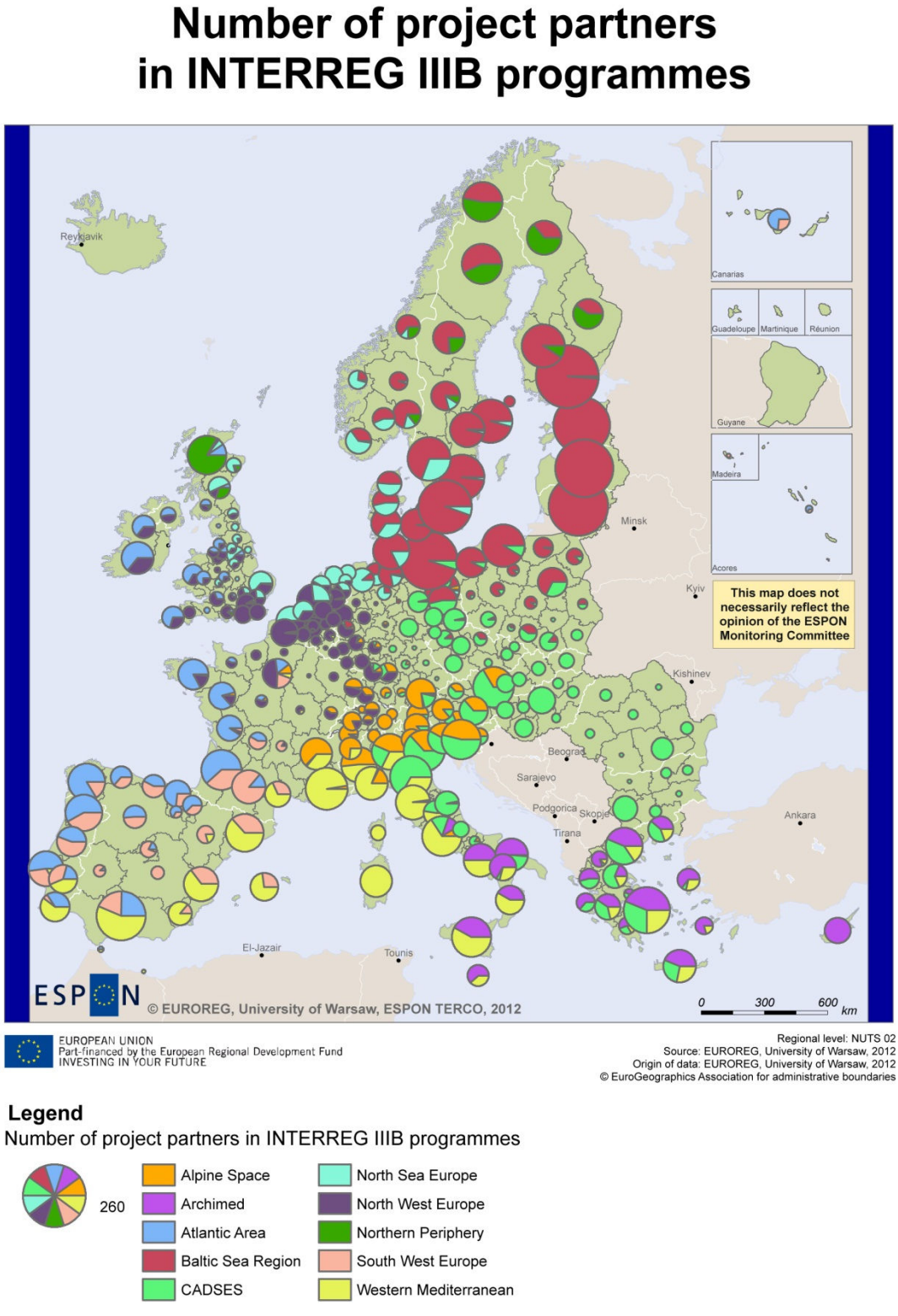
Spatial patterns of collaboration in INTERREG IIIB and IVB

European regions (NUTS3) differ significantly in terms of involvement in implementation of projects within INTERRREG IIIB and IVB initiatives. This is connected to some extent with the aforementioned diversity of particular programmes. Moreover, an important factor determining the diversity is the fact that some regions could have benefited from more than one programme both in the period of implementation of INTERREG IIIB initiative and the INTERREG IVB initiative. Therefore it seems that the observed diversity should be treated as resulting largely from the accepted set-up of INTERREG IIIB and IVB initiatives and particular programmes within them.

In the case of projects within INTERREG IIIB initiative one can see a very high level of activity of institutions from the area included in the Baltic Sea Region programme. A large number of projects is also typical for Italian regions and those French, Spanish and Portuguese regions located in the Mediterranean or the Atlantic Ocean region – in their case the projects were implemented within more than one programme. In the case of some countries – in particular Spain, France, Germany and Poland – perceivable is the difference in the level of activity between coastal regions, which are characterized by a large number of project partners, and the hinterland regions, where the number of partners implementing the projects was significantly smaller (see Fig 5).

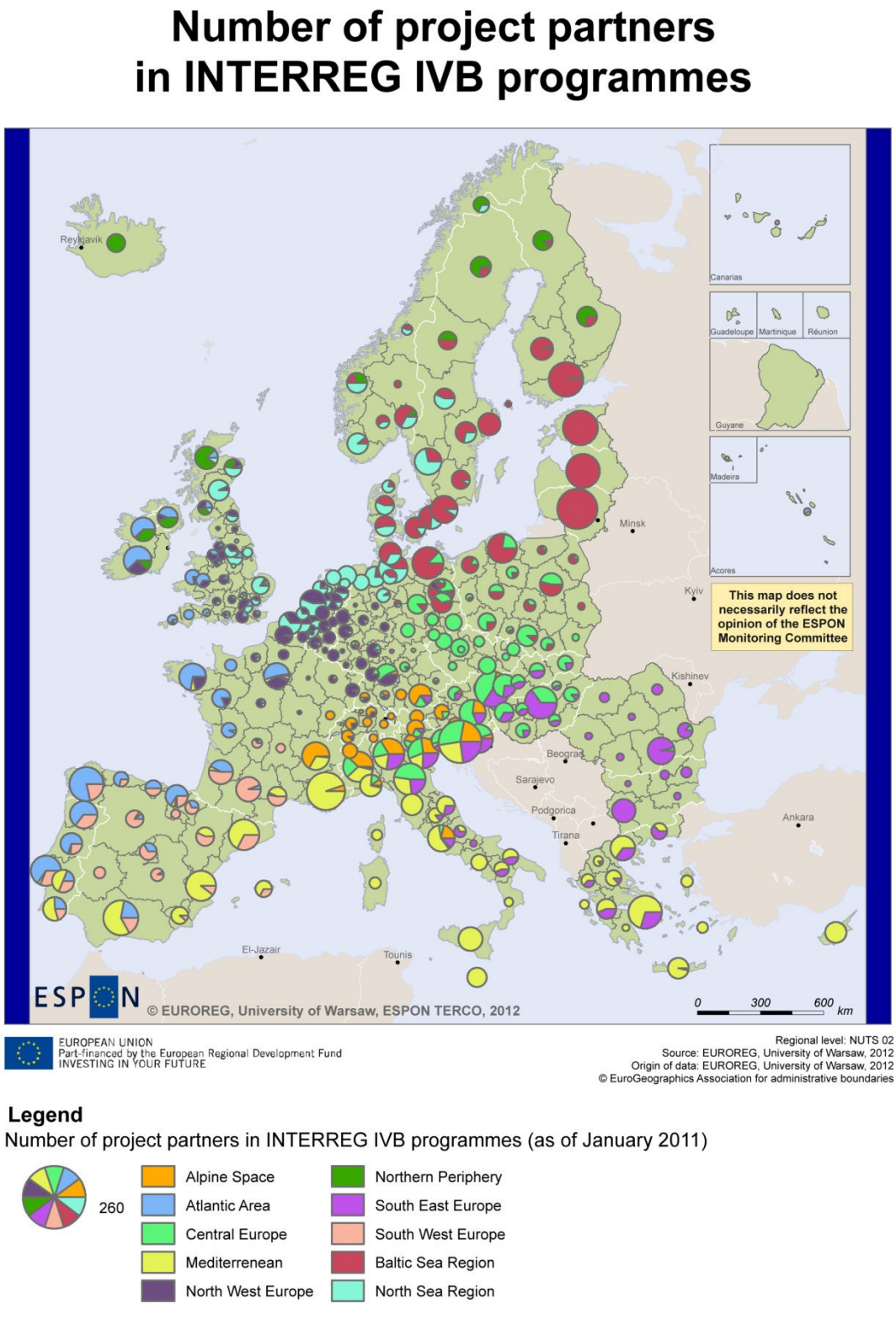
In the subsequent period (INTERREG IVB) the pattern of participation in implementation of transnational cooperation projects is quite similar (see Fig 6). Still visible is greater interest in projects in seaside and Atlantic regions than those in the hinterland of particular countries. One of the more pronounced changes is the relative decline in the number of projects implemented in the Baltic Sea basin. Moreover, notable is the large involvement of regions in Northern Italy and Slovenia, which are active in as much as four various programmes (which should be interpreted as one more manifestation of the influence of the set-up of the initiative under discussion – i.e. the entities from regions ascribed to more than one programme use the created opportunities and implement projects within various macroregions designated in particular programmes).

Fig. 5



Source: Authors' elaboration

Fig. 6



Source: Authors' elaboration

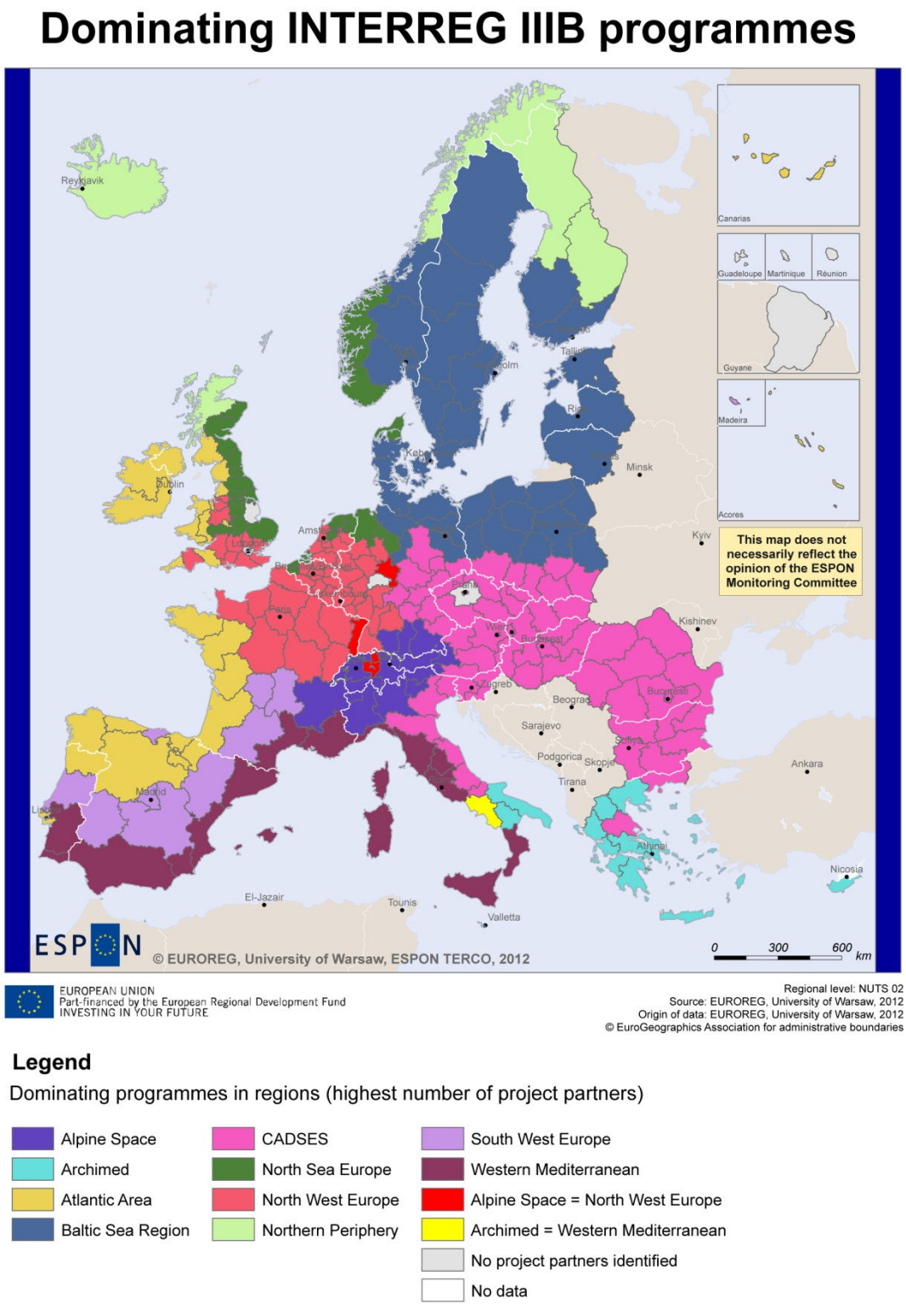
Because in a large part of the regions entities located in them could take part in more than one transnational cooperation programme (as can be seen in Fig. 5 and 6) it is possible to analyse their preferences of participation in particular programmes. By ascribing each region to a programme in which the highest number of partners from it participated we obtain a simpler typology of cooperation areas within transnational cooperation. Due to predetermined areas of particular programmes and the fact that some regions were included only in one programme the results of such typology have to be interpreted with great caution. Simultaneously an unquestionable benefit of the proposed typology is the fact that it divides in a complete and exclusive manner the whole ESPON space (as opposed to the areas specified in particular transnational cooperation programmes, which are not mutually exclusive).

In the case of INTERREG IIIB the typology of areas of preference in cooperation within particular programmes seems to form functional areas (see Fig. 7), such as e.g. the Baltic Sea basin, the North Sea basin, the Alpine Space, the Mediterranean coast, Atlantic coast, hinterland areas of Spain and France, the European Pentagon area (but excluding its southern part). Of particular interest is the division in the area of the countries which are included in whole or in a significant part in more than one programme. Therefore in the case of Poland one can clearly see sensible and obvious division into the northern part predisposed towards cooperation with the Baltic Sea area and the southern part cooperating with the Central and Eastern European regions.

The typology resulting from the analysis of INTERREG IVB is very similar (see Fig. 8). Larger differences are connected with changes in the programmes' areas. This applies in particular to the division of CADSES programme (from INTERREG IIIB initiative) into two programmes, Central Europe and South East Europe, as well as combining two previously separate areas of the Western Mediterranean and Archimed into one area of Mediterranean programme. The pattern emerging from the analysis of predominance of INTERREG IVB programmes is less pronounced than in the case of the previous initiative. This results from the fact that the programmes are still under implementation and therefore the number of partners and projects taken into account is two times lower than in the case of INTERREG IIIB – it should be expected that upon taking into account all projects the coherence of areas thus established will increase.

The presented simple typology seems to confirm the fact that the areas of particular programmes are determined firstly quite broadly, and secondly that such delimitation allows (or rather does not prevent) the entities implementing the projects to reconstruct the functional areas of cooperation.

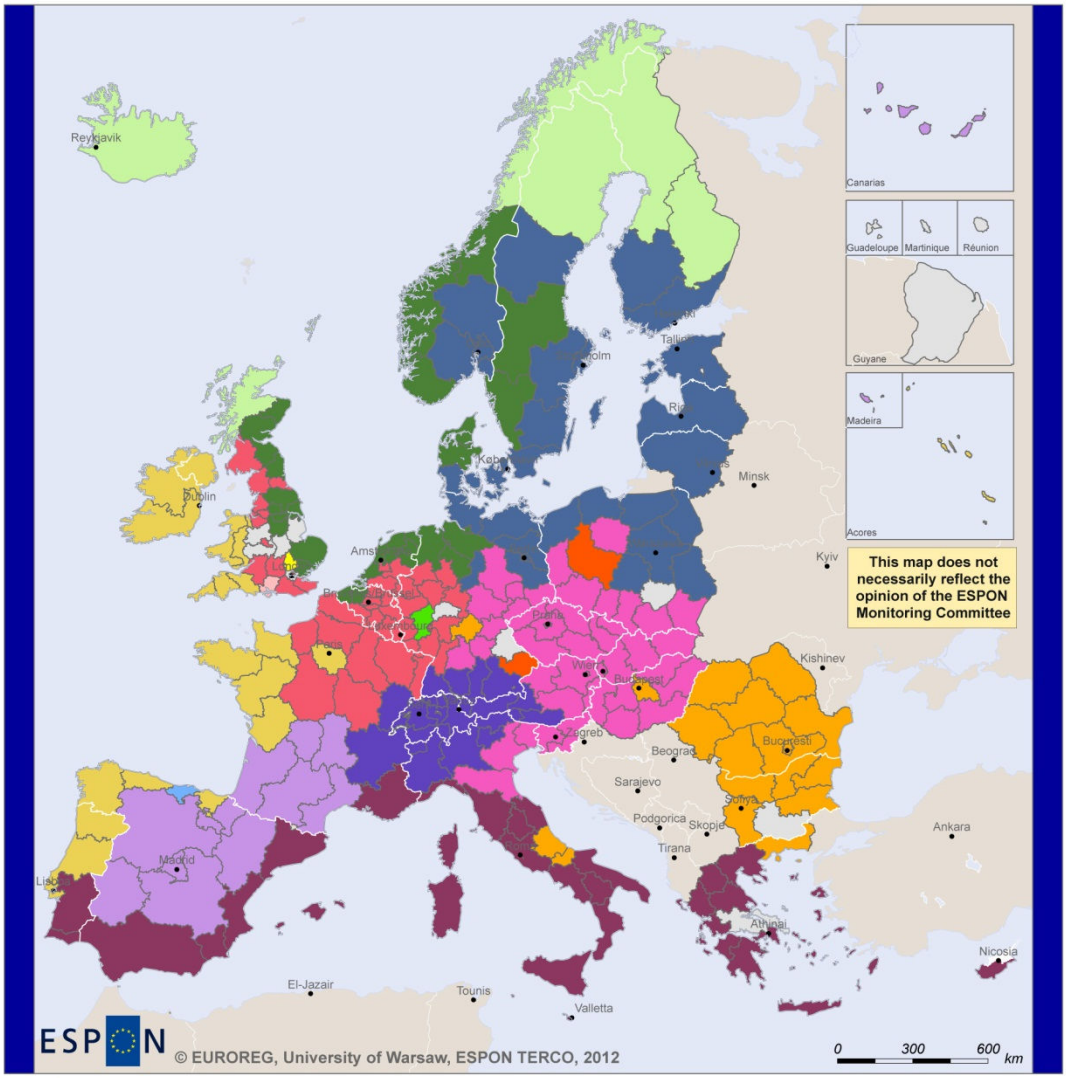
Fig. 7



Source: Authors' elaboration

Fig. 8

Dominating INTERREG IVB programmes



Legend

Dominating programmes in regions (highest number of project partners)

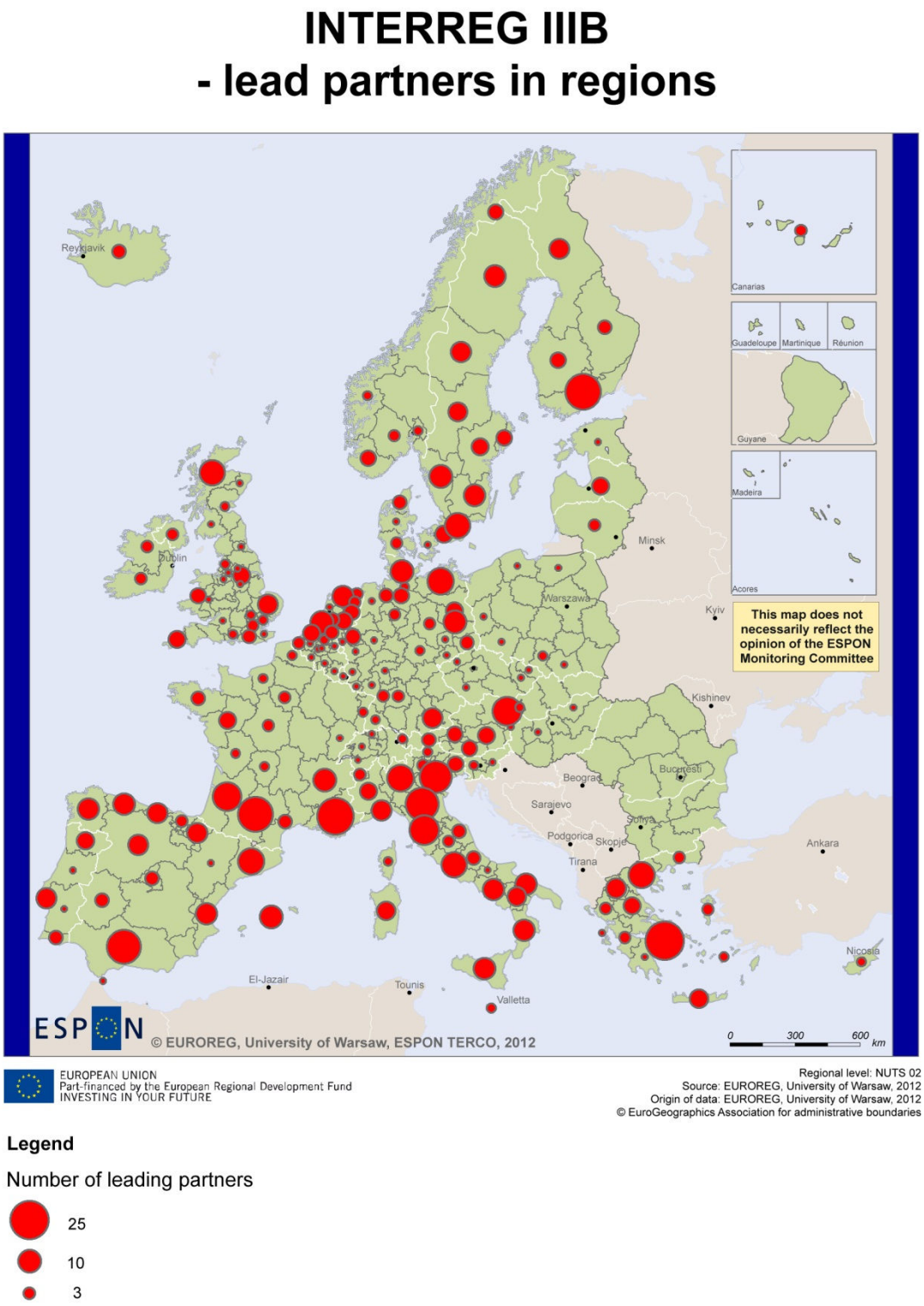
- Alpine Space
- Atlantic Area
- Baltic Sea Region
- Central Europe
- Mediterranean
- North Sea Region
- North West Europe
- Northern Periphery
- South East Europe
- South West Europe
- Central Europe = Baltic Sea Region
- Atlantic Area = South West Europe
- Atlantic Area = Mediterranean = North Sea Region
- Atlantic Area = North West Europe = North Sea
- Alpine Space = Central = North West = South East
- No project partners identified
- No data

Source: Authors' elaboration

An important factor determining the European transnational cooperation space is the location of project leaders. Despite partner-based, cooperative character of the projects the role of a consortium leader is privileged, which usually can be seen in the decisive influence on the subject-related shape of the project (determined largely at the stage of preparation of the concept of the project by the future leader, who, can but does not have to, take into account the propositions of the partners), and also in higher level of financing connected with greater extent of coordination works that the project leader must perform. Important is also the fact that the project leader has a large freedom in selecting partners for implementation of the project.

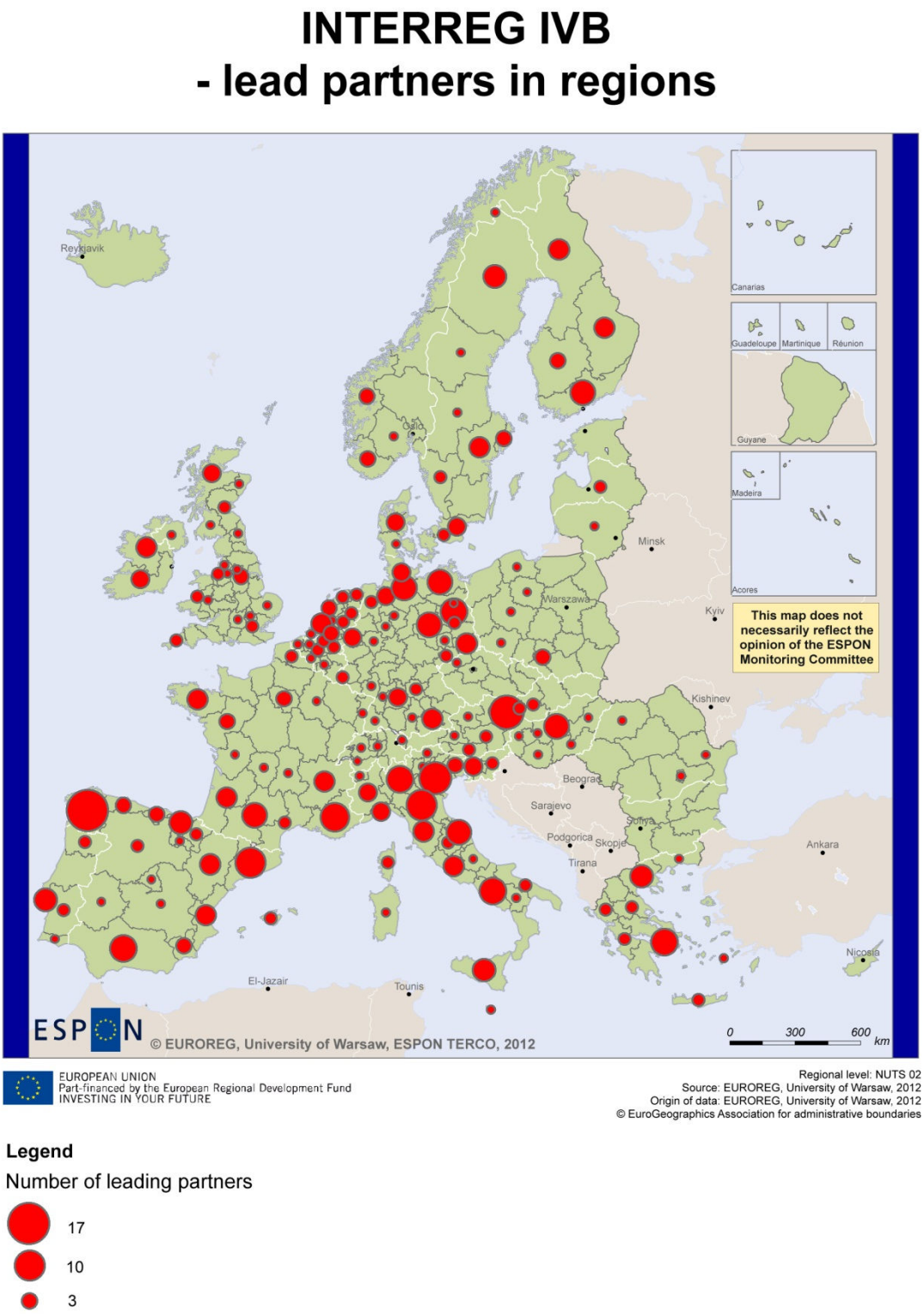
The analysis of spatial distribution of INTERREG IIIB projects' leaders mostly shows a small number of leaders coming from new member states, i.e. from EU12 (see Fig. 9). This confirms the predominance of cooperation within this initiative by partners from so called "old" EU countries, who are additionally concentrated in only some regions. This situation results probably from lesser experience in implementation of projects of entities from the new member states. Consequently benefits from cooperation may be unevenly distributed, to the disadvantage of the regions of the new member states (providing that the coordinators from the "old" EU, more or less consciously, shape the projects in a way which is better suited to the needs of their home regions). In subsequent programming period (INTERREG IVB) the situation remains very similar (see Fig 10), which may result from still limited experience and slow pace of organizational learning by entities from the new member states (or constantly growing potential and competitive advantage resulting from accumulation of experience in the case of the "old" EU countries).

Fig. 9



Source: Authors' elaboration

Fig. 10



Source: Authors' elaboration

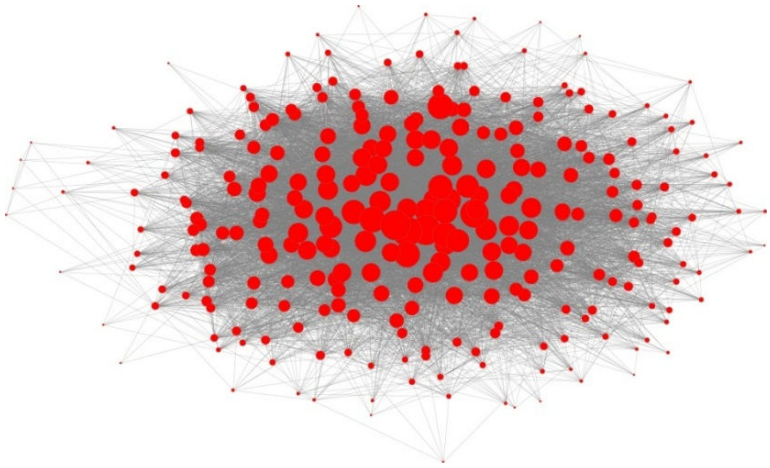
1.3 Interregional cooperation

Interregional cooperation projects within INTERREG IIIC and INTERREG IVC initiatives could have been implemented by project consortia from the whole ESPON space. This means that the entities from particular regions had formally equal opportunities in implementation of projects. Thus is seems that in this case the cooperation network has more natural character than cooperation networks in transnational cooperation (INTERREG IIIB and IVB), where the cooperation had to fit the predetermined areas. IIIC and IVC have exactly the same spatial delimitation and for that reason they can be analysed together (unlike IIIB and IVC, where spatial delimitation has significantly changed between 2000-2006 and 2007-2013 periods). However, it should be noted that the INTERREG IIIC and IV programme requirements also have impact on the shape of cooperation network, as they prefer project consortia consisting of representatives of various European regions and macroregions.

Under INTERREG IIIC and IVC initiative implemented were 384 projects (as of January 2011), that had over four thousand partners. Spatial distribution of project partners is presented in Fig. 12. Similarly as in the case of transnational cooperation (INTERREG IIIB and IVB), also within INTERREG IIIC and IVC noticeable is a small number of project leaders coming from regions of the new member countries (EU12) (see Fig. 13).

The cooperation network between regions within ESPON space built upon participation of entities from particular regions in project consortia creates one coherent component with typical network characteristics – first of all it is a scale-free network, i.e. the distribution of the number of relations to other regions is not a natural distribution, but an exponential one: there is a large number of regions with small number of relations to other regions, and few regions with links to numerous other regions. Therefore, the analysed regional cooperation network has typical, so called "scale-free network" shape (see Fig. 11).

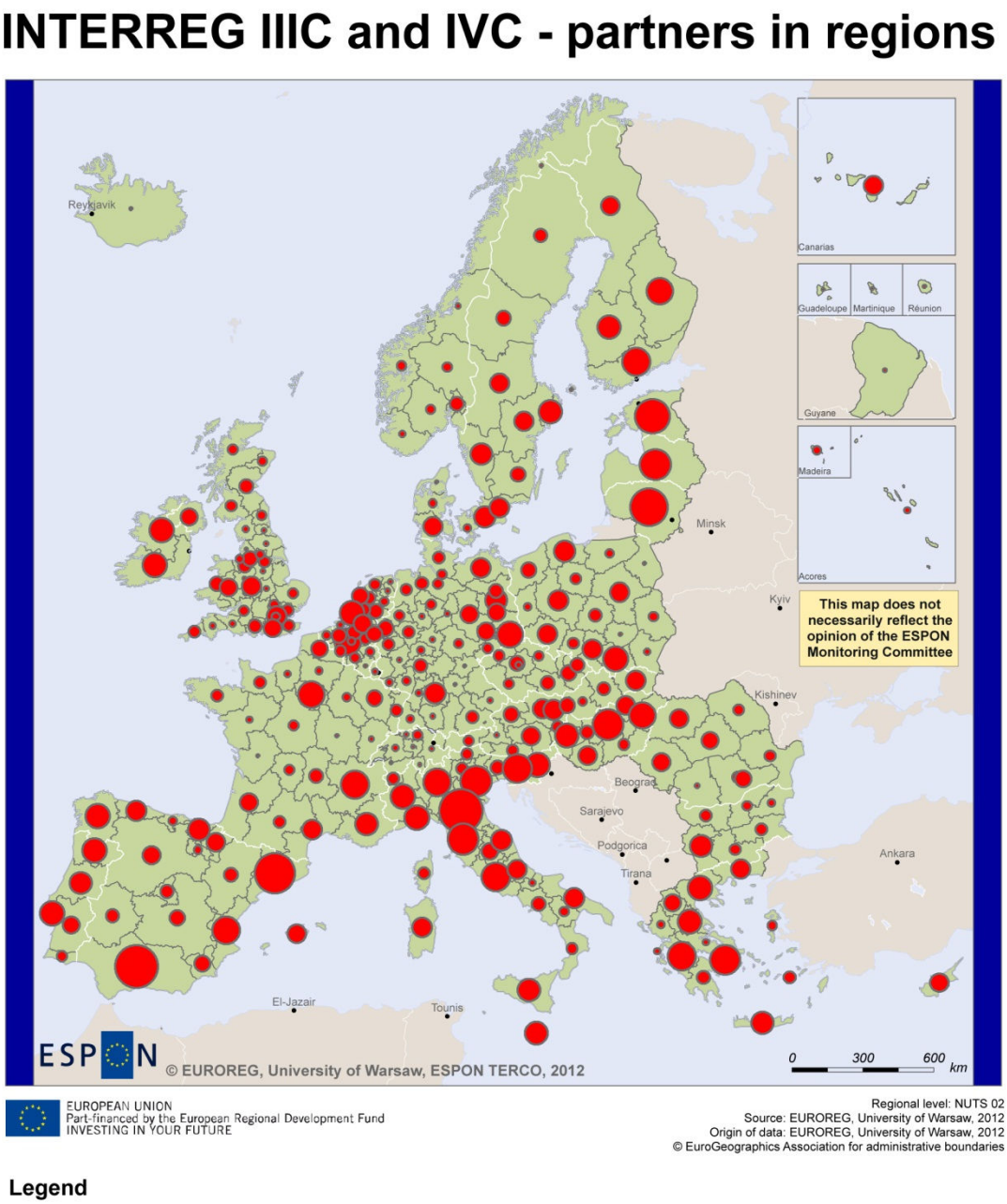
Fig. 11 Regional network of cooperation within INTERREG IIIC and IVC.



Nodes represent NUTS2 region (ESPON space); size of nodes represents number of INTERREG IIIC and IVC project partners in a given region.

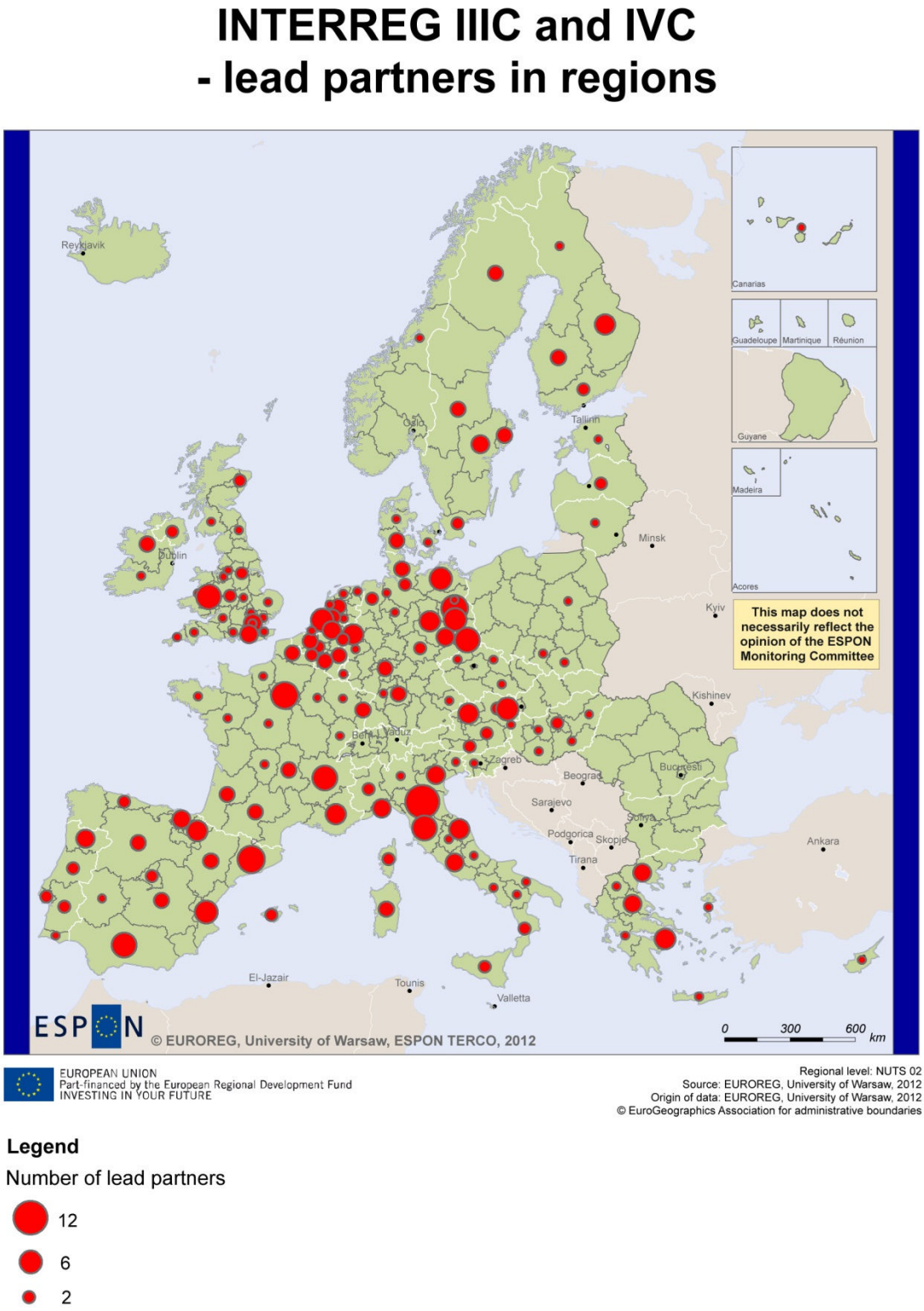
Source: Authors' elaboration.

Fig. 12



Source: Authors' elaboration

Fig. 13



Source: Authors' elaboration

Correlational analysis of the number of projects and the number of partners in particular regions as well as the basic measures describing the regional cooperation network within INTERREG IIIC and IVC – the number of relations with partners from other regions and the number of regions with which there is at least one relation – shows very high correlation coefficients, amounting to over 0.9 (see Fig. 14). This means that the basic factor explaining the spatial distribution of cooperation network is in this case simply the number of implemented projects in regions or entities – project partners – involved in them (moreover, it can be added that the spatial pattern based on all the four analysed measures is very similar, and consequently there is no need to make detailed analyses – i.e. create and analyse maps – for each of these dimensions).

Fig. 14 INTERREG IIIC and IVC correlations on NUTS2 level

	no of partners	**no of projects**	**links to partners**	**connected regions**
no of partners	x	0.99	0.97	0.90
no of projects	0.99	x	0.96	0.91
links to partners	0.97	0.96	x	0.92
connected regions	0.90	0.91	0.92	x

Source: Authors' elaboration

1.4 Transnational and interregional cooperation – relative measures

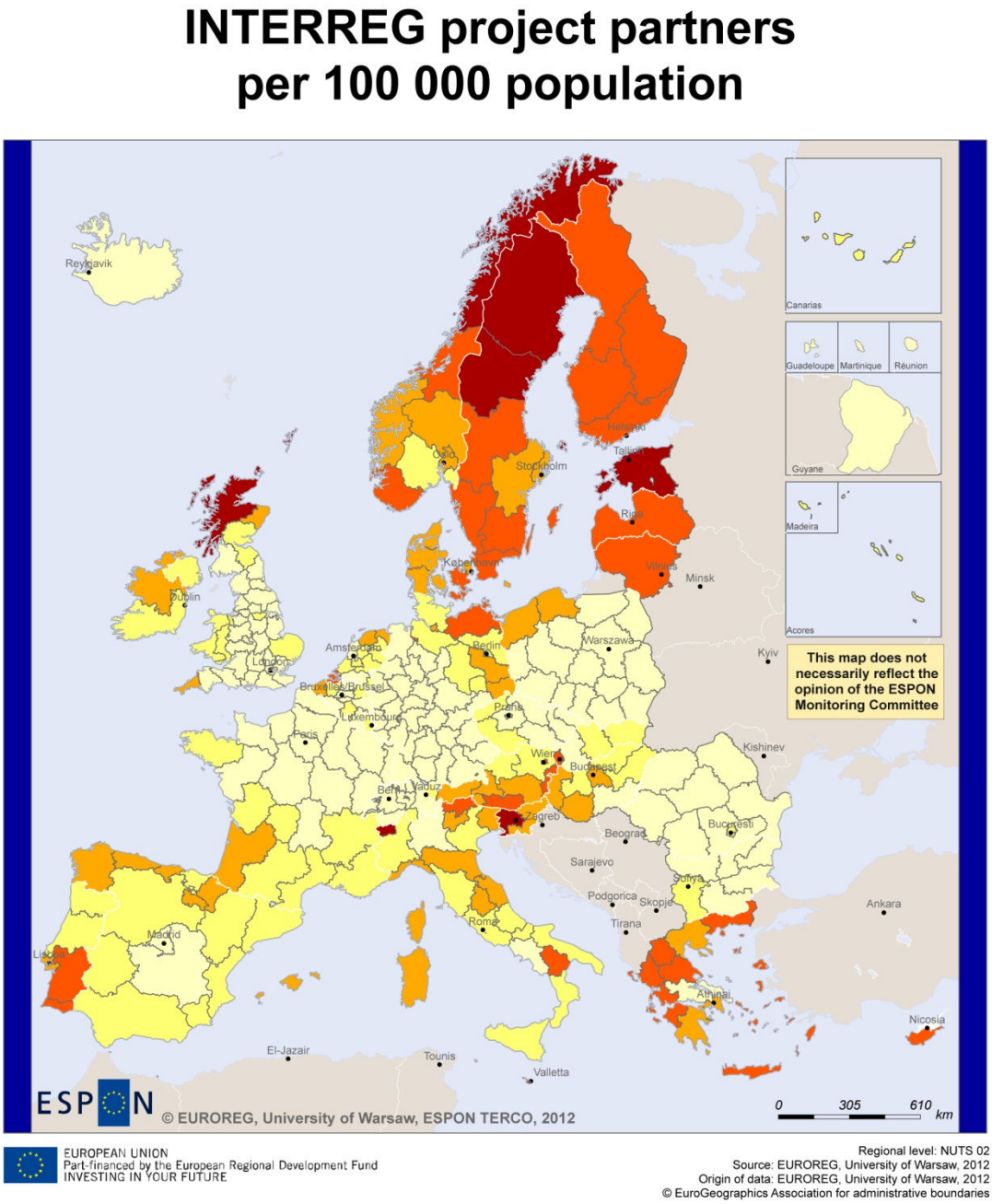
The analyses presented above were based on the basic absolute data. In order to better understand the spatial diversity it is also worth looking at the relativized data. In order to do so the data on transnational and interregional cooperation projects were made relative to the number of inhabitants of the regions, to the regional GDP, and also to the number of local authorities in a given region. The analyses are based on total data on all projects implemented within the discussed INTERREG IIIB, IVB, IIIC and IVC programmes.

Relativization of the number of project partners with the number of inhabitants of regions can be interpreted as a sort of measure of intensity of involvement in cooperation. The highest values of this index are recorded in regions with large number of projects, but also those with small population. Particularly noticeable is the activity of Scandinavian regions. This complies with a general trend for greater intensity of cooperation in regions located in the spatial peripheries as compared to the European centre. Worth noting is especially the small relative involvement into implementation of projects in a vast majority of regions constituting the continental centres, i.e. the so-called Pentagon (see Fig. 15).

Quite similar picture emerges from the map representing the number of project partners in regions relativized with the value of the regional GDP (see Fig 16). In this case, however, the predominance of Scandinavian regions is less pronounced – of course due to the fact that their GDP is very high – and the relatively poorer regions of Central and Eastern Europe, the Balkans or the Iberian Peninsula have a stronger position. In this perspective also the European Pentagon does not seem to be an area of particularly intensive transnational and interregional cooperation.

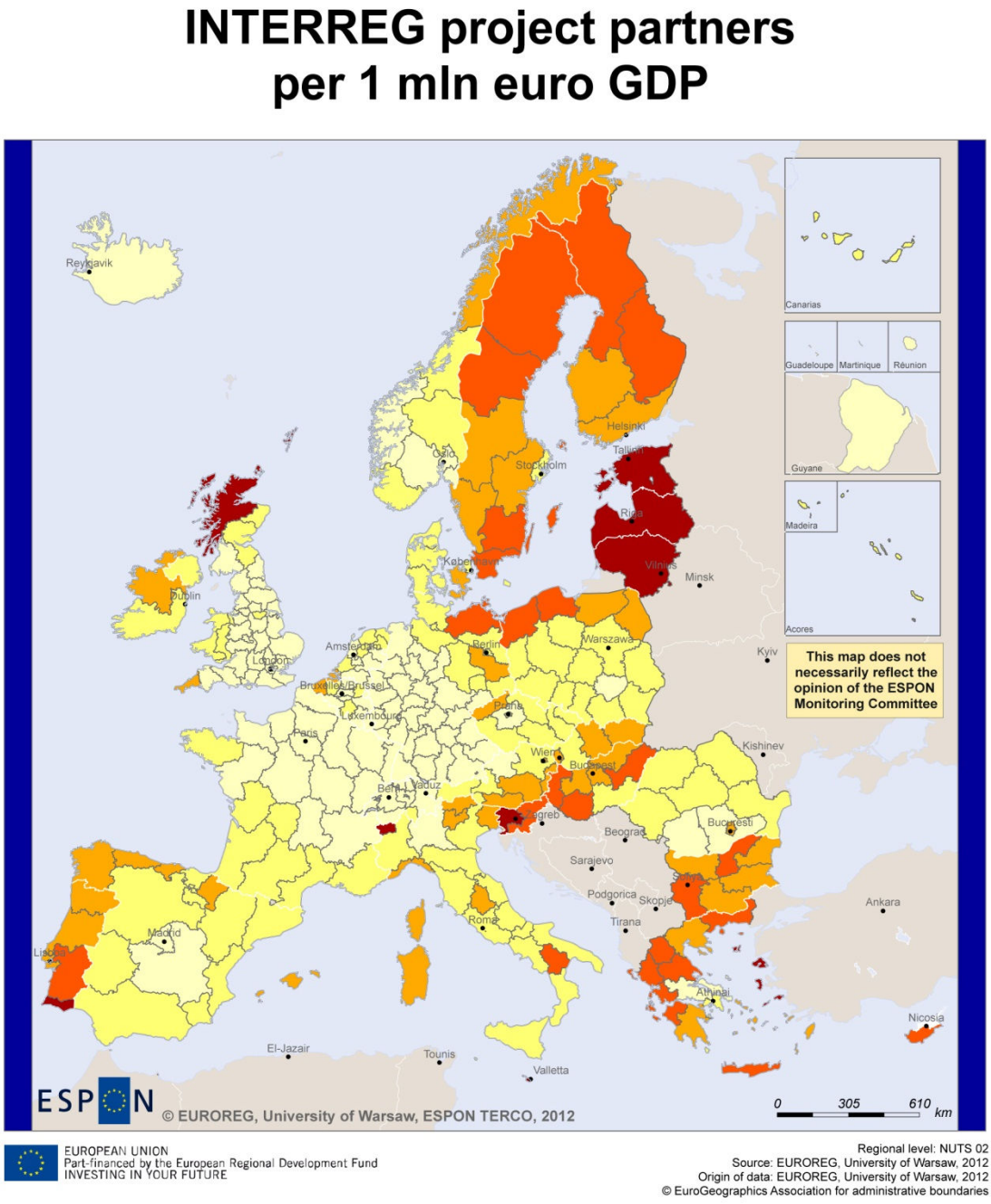
In constructing the third relative measure used were the data on the number of local authorities in the region, defined for the purpose as the number of NUTS5 units in a given NUTS2 region. It should be stressed that due to various approaches of local authorities in particular countries to establishing their competences, including the territorial competence, the countries differ significantly in the number of NUTS5 per an average region. For example in France there is a large number of communes with small areas, and in Sweden communes are vast and consequently their number is much smaller. Consequently it comes as little surprise that the regions of countries in which communes are relatively large and consequently their number in NUTS2 regions is smaller have the highest values of the discussed index (Scandinavian and Baltic countries). Attention should also be directed to the regions of Netherlands and Belgium which in the previously discussed two relative approaches recorded mean results, but stand out in this approach. High values of the index are also recorded – for obvious reasons – in regions consisting of one city simultaneously constituting a region, such as Prague, Bucharest or Berlin.

Fig. 15



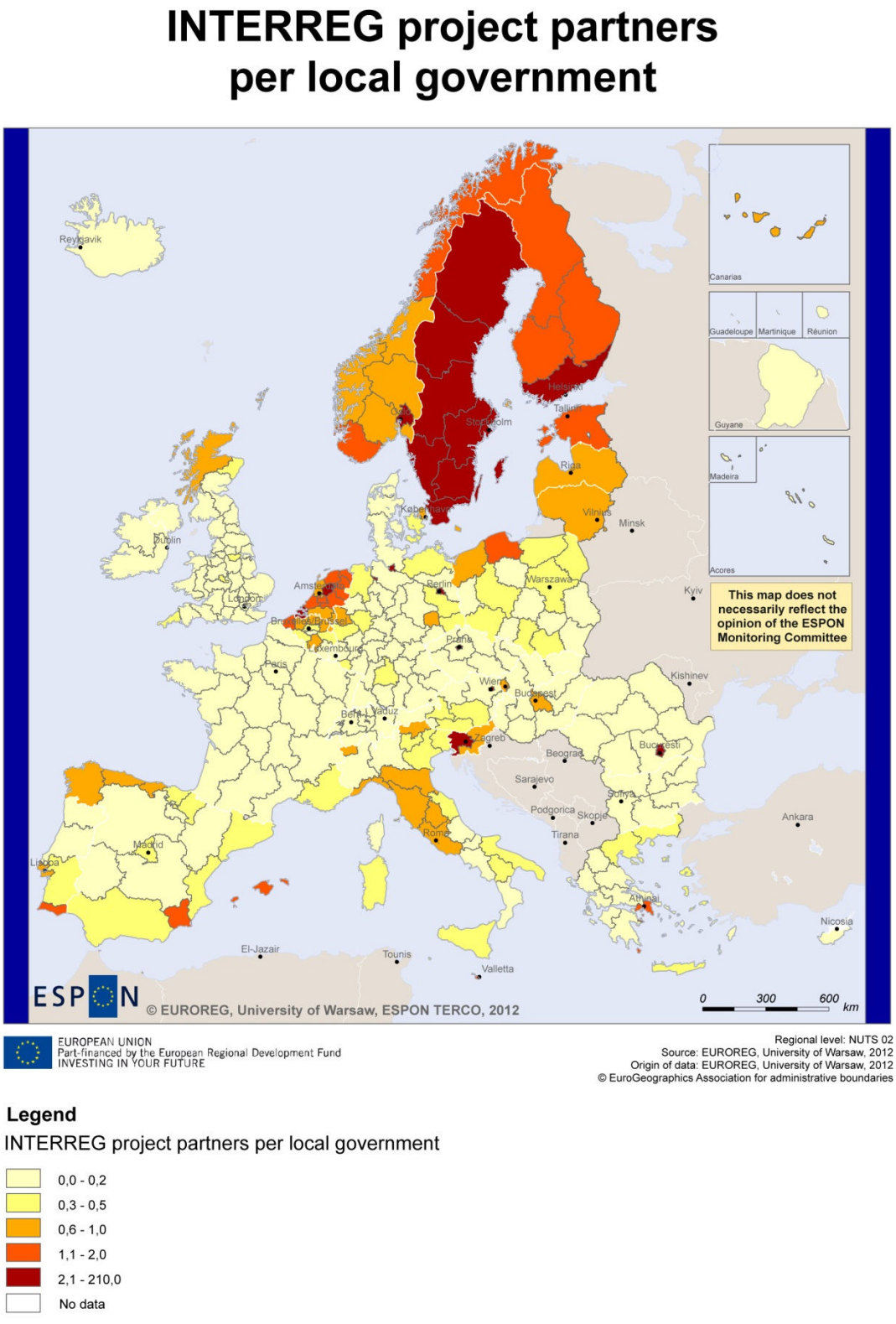
Source: Authors' elaboration

Fig. 16



Source: Authors' elaboration

Fig. 17



Source: Authors' elaboration

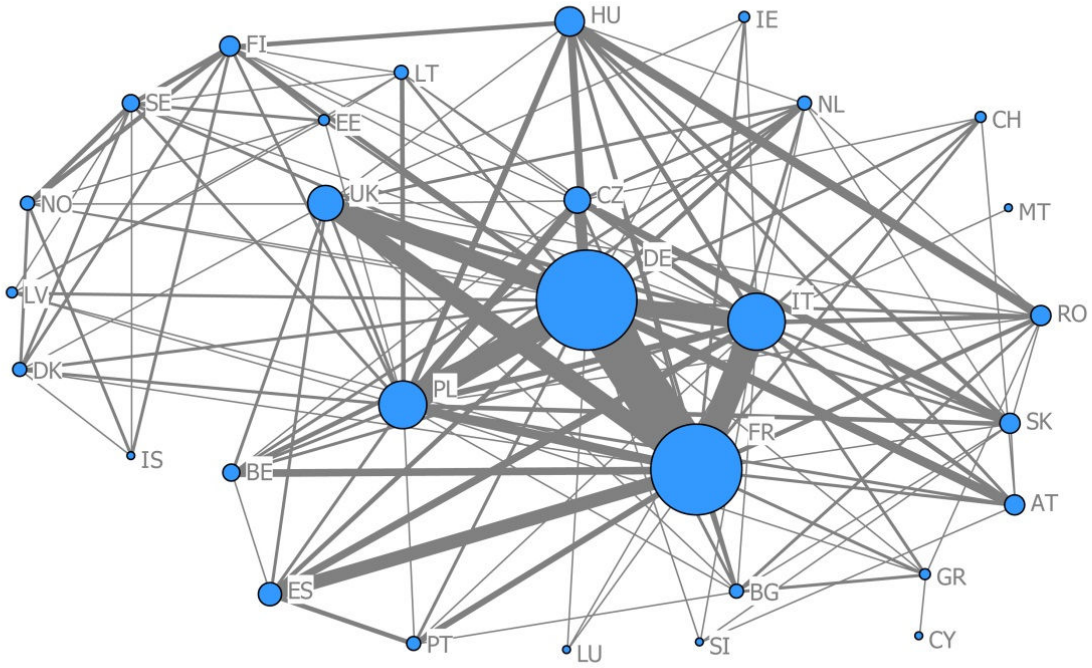
2. TWINNING CITIES

This chapter presents various spatial aspects connected with cooperation within the frames of twinning cities – formal cooperation agreements made between local commune (city) authorities. The cooperation as part of twinning cities usually takes place between cities (communes) located in different countries. The data used in this chapter were collected for the purposes of this project based on analysis of Wikipedia pages of communes and cities. Use of this source of data was dictated by lack of official sources. The data from Wikipedia were collected in the period of July-October 2011.

Twinning cities – national level

By aggregating all twinning cities agreements at the national level we can trace the general pattern of cooperation within this form of cooperation in ESPON space. The largest number of twinning cities agreements was recorded in Germany (3.3 thousand), France (2.5 thousand), Italy (2 thousand), Poland (1,2 thousand), Spain (0,9 thousand) and in the United Kingdom (0.8). The analysed number of twinning cities agreements depends, of course, on the size of the country, and in particular on the number of communes (cities) that can enter into such agreements. The highest number of twinning cities agreements per commune (local administrative unit) have: Finland (1,15), Sweden (1), Estonia (0,59), the Netherlands (0,55), Belgium (0,54), Norway (0,54), Iceland (0,52), Malta (0,51), Poland (0,5), Slovenia (0,45) and Luxemburg (0,45). Taking into account the frequency of relations between particular countries underlined should be very high number of agreements between communes (cities) of France and Germany (0.65 thousand), France and Italy (0.35 thousand), Germany and Poland (0.31 thousand), France and United Kingdom (0.24 thousand), Germany and Italy (0.22 thousand), and Germany and United Kingdom (0.22 thousand) (see Fig. 18).

Fig. 18 Twinning cities on country level



The size of the nodes corresponds to the number of twinning cities agreements in a given country

The thickness of the lines joining the nodes corresponds to the number of twinning cities agreements between specific countries

Source: Authors' elaboration

Twinning cities – regional level

All the analyses presented in the further part of the paper were made at the NUTS2 level – i.e. they use data on twinning cities agreements aggregated at the regional level. The largest number of twinning cities agreements among regions in ESPON space is recorded in Île-de-France region, having 474 agreements. The next region, Rhône-Alpes, has significantly smaller number of twinning cities agreements – 305. Generally speaking all regions in ESPON space are involved in cooperation in the form of twinning cities – even though there are obvious differences in intensity of this cooperation, understood as the number of agreements per communes of a given region (see Fig. 19). More detailed analyses of the values relativized with the regions' population, size of the regional GDP, and the number of local authorities show even more dimensions of diversification.

In respect of the number of twinning cities agreements per 100 000 inhabitants of a region the regions that stand out are Iceland, regions of Finland, some regions of

Norway, Estonia, regions of Eastern Germany and Western Poland, the Czech Republic, Slovakia, and Hungary (see Fig. 20). On the other hand particularly low values of the discussed index are recorded in the regions of United Kingdom – which probably results from relatively limited competences of the local authorities in this country (they have no appropriate potential for developing cooperation), and additionally it should be kept in mind that the regions there are quite populous.

On the other hand looking at the number of twinning cities agreements relative to the size of the regional GDP one can see a high position of countries of Central and Eastern Europe (see Fig. 21) – in this case the results depend on both high activity in this form of cooperation and relatively low values of regional GDP in the area.

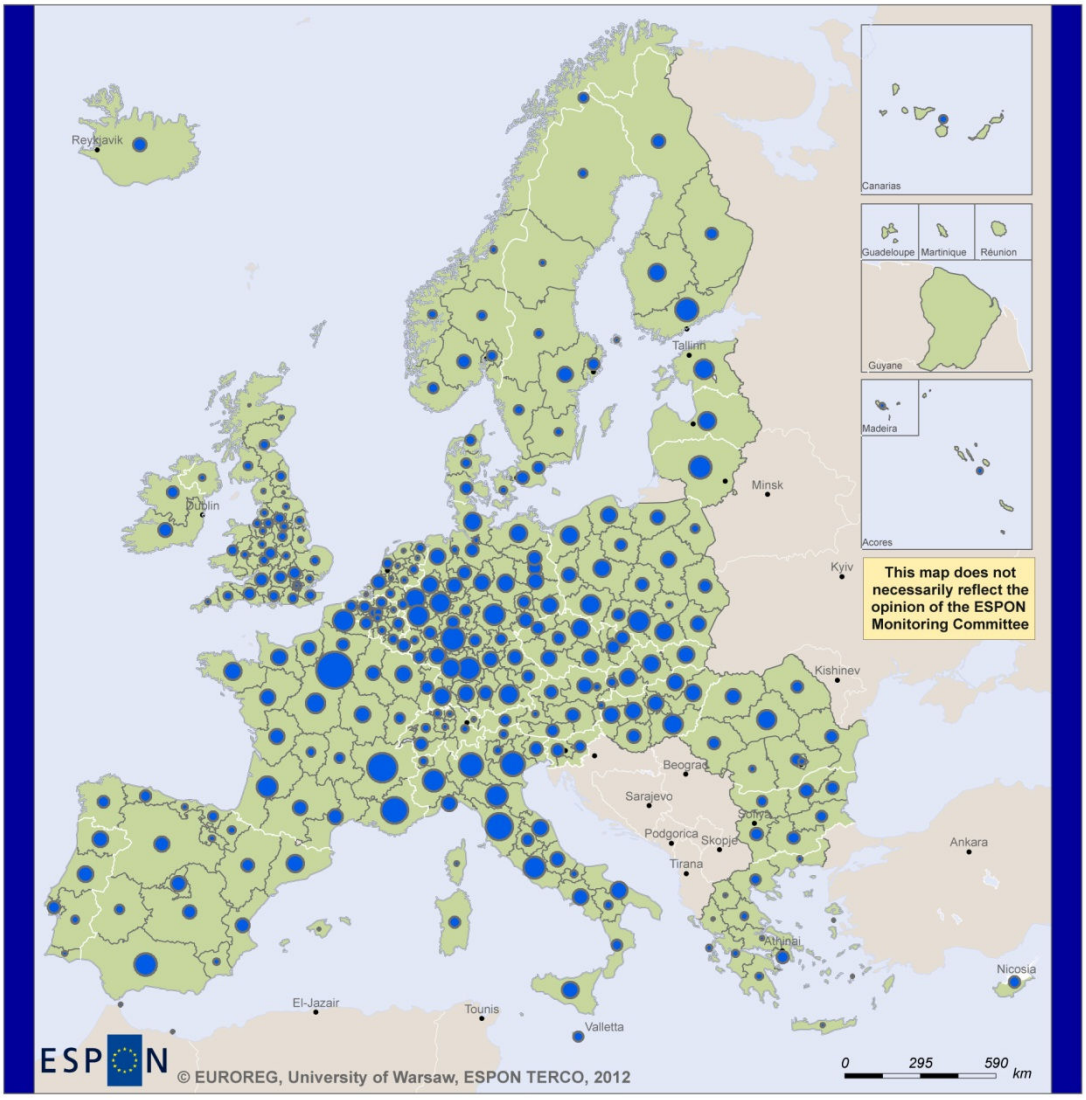
Still different aspect of diversities can be observed when comparing the number of twinning cities agreements to the number of local authorities in the regions. In this case the regions that particularly stand out are the Nordic countries (excluding Denmark, however) as well as regions of Northern-Western Germany (Ruhr region) (see Fig. 22).

In the majority of European regions only a small percentage of communes have twinning cities agreements (see Fig. 23). Only in some regions in this form of cooperation involved is more than 20% of communes – these are in particular some regions of Sweden, Norway and Finland, Belgium, Netherlands, North-Western Germany, Western Poland, and Central Italy.

Taking into account the mean number of twinning cities agreements per commune with at least one such agreement it can be seen that most regions have the average of 2-3 agreements (see Fig. 24). Higher values of the index, i.e. 4-5 or more agreements, are recorded mostly in regions located in Eastern part of ESPON space (in particular Finland, Baltic countries, Poland, Slovakia, Hungary, Romania, and Bulgaria).

Fig. 19

City twinning



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Regional level: NUTS 02
Source: EUROREG, University of Warsaw, 2012
Origin of data: EUROREG, University of Warsaw, 2012
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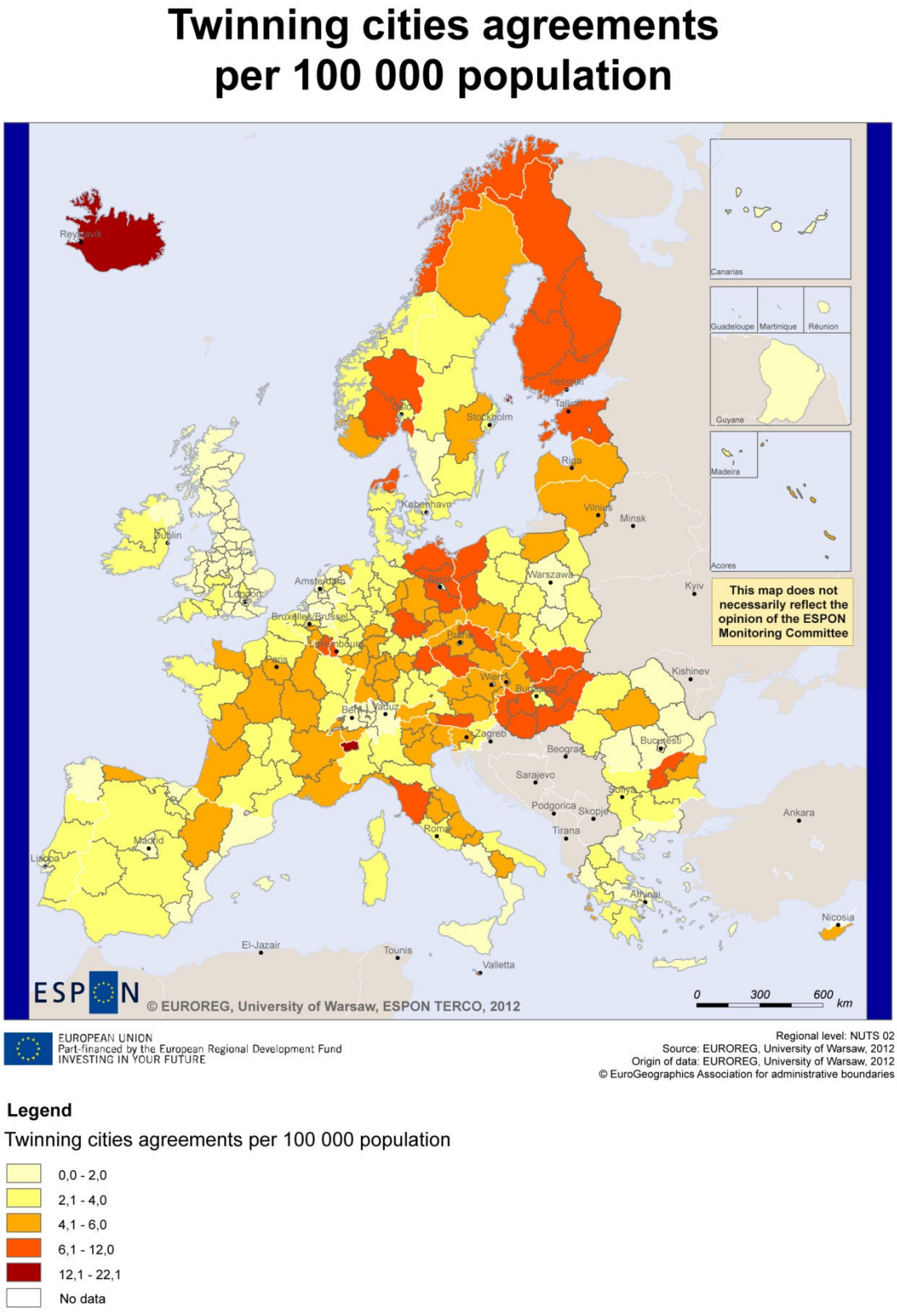
Legend

Number of twinning city agreements

- 474
- 200
- 50
- No data

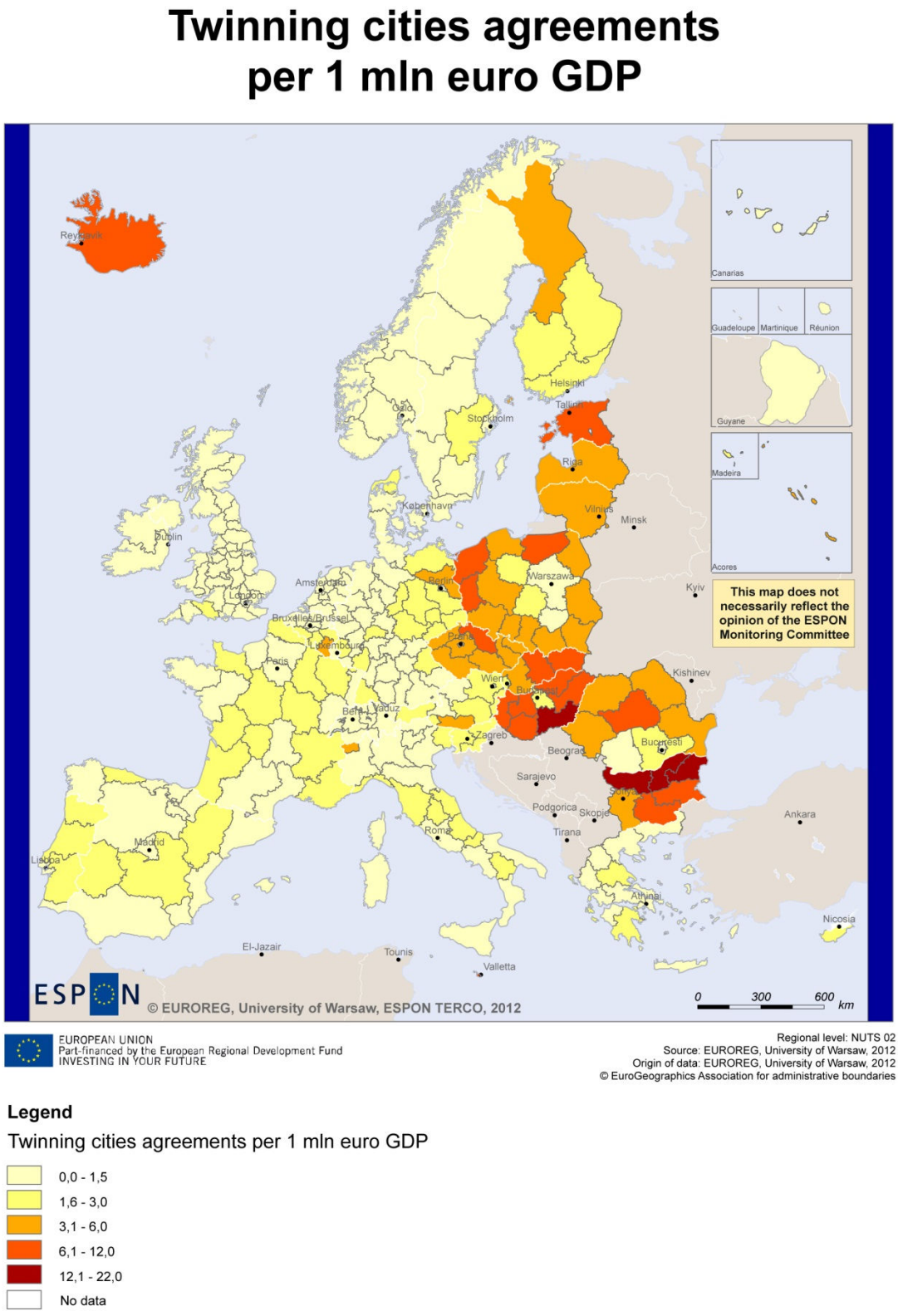
Source: Authors' elaboration

Fig. 20



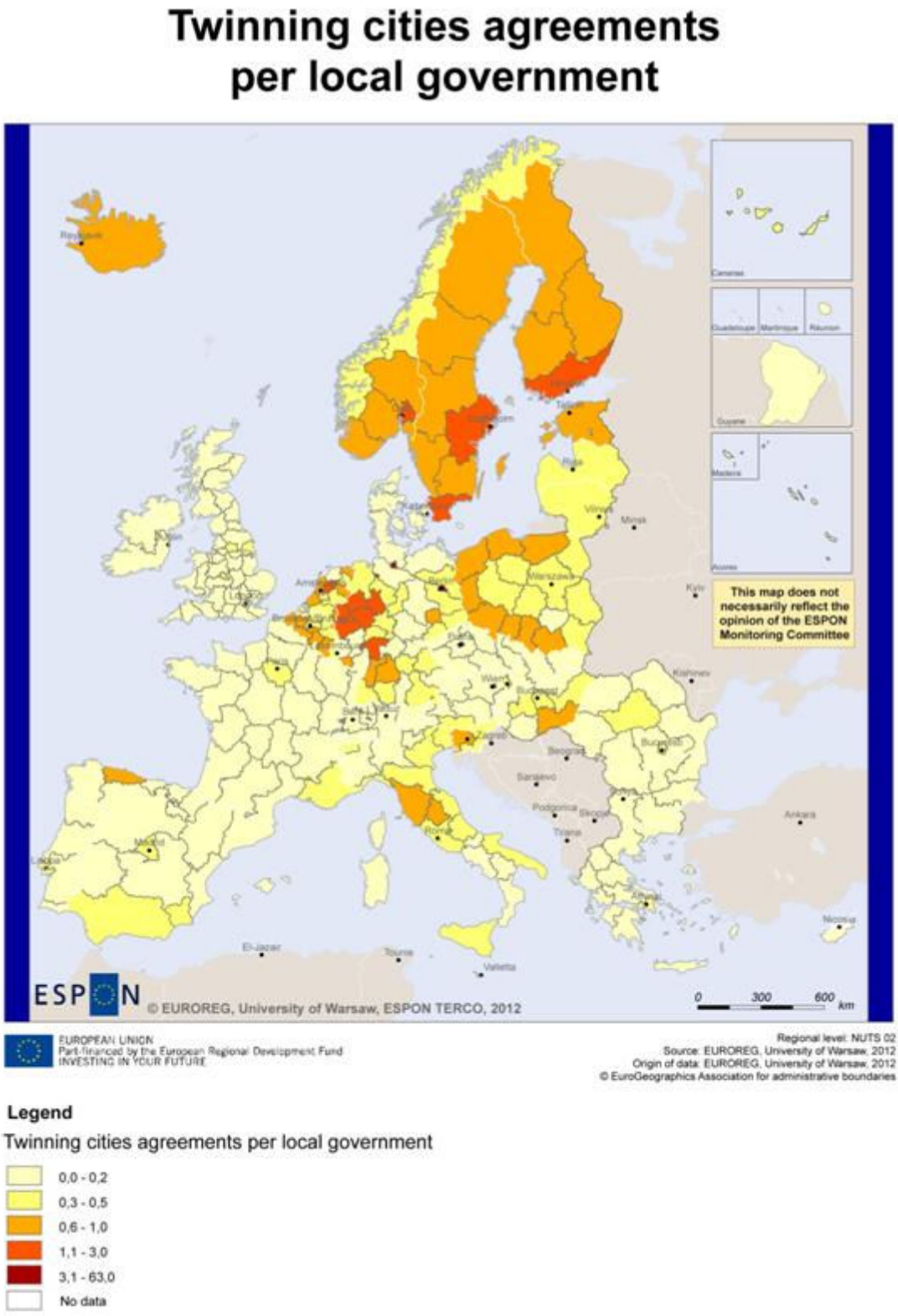
Source: Authors' elaboration

Fig. 21



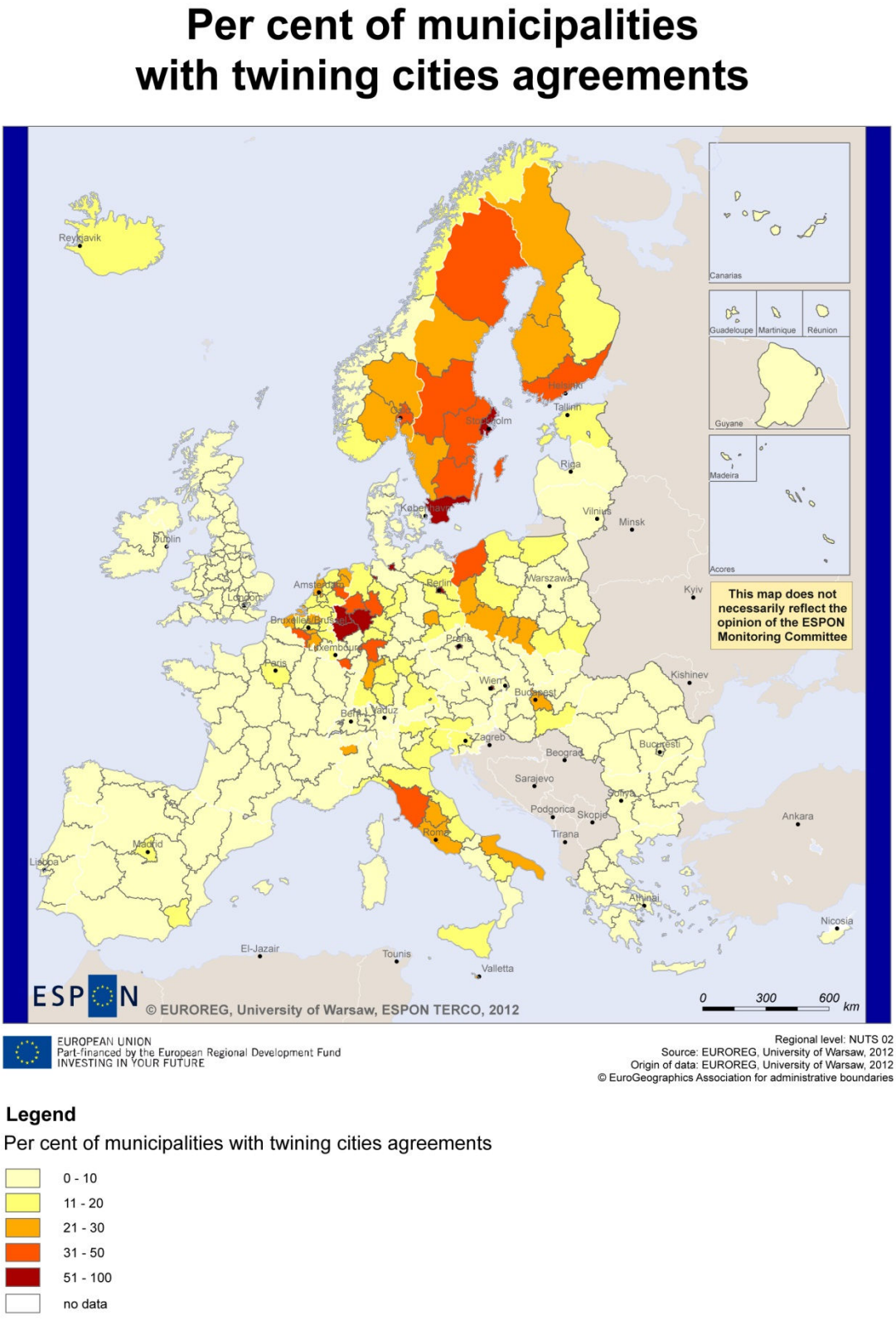
Source: Authors' elaboration

Fig. 22



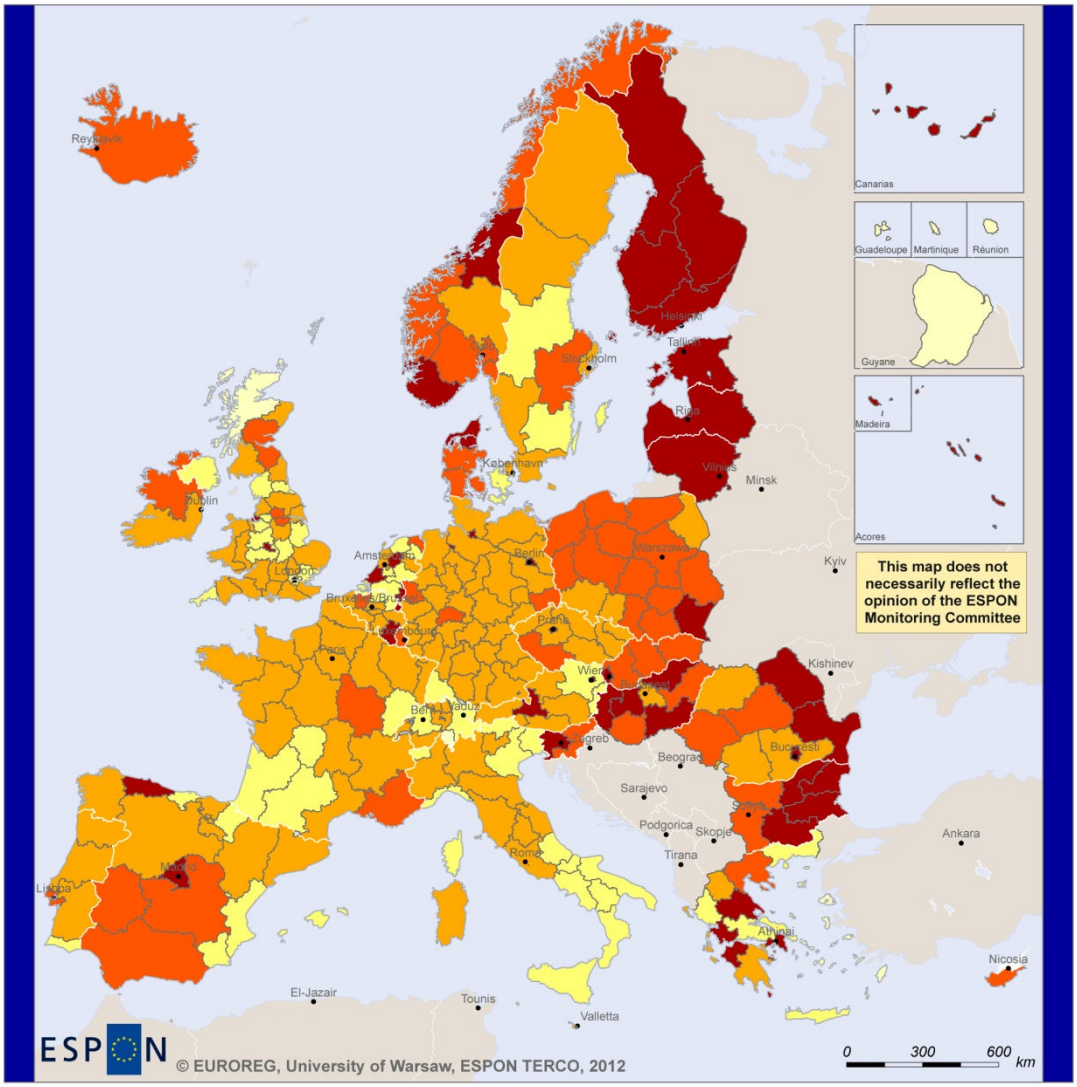
Source: Authors' elaboration

Fig. 23



Source: Authors' elaboration

Fig. 24. Average number of twining cities per municipality with at least one twinning cities agreement



Source: Authors' elaboration

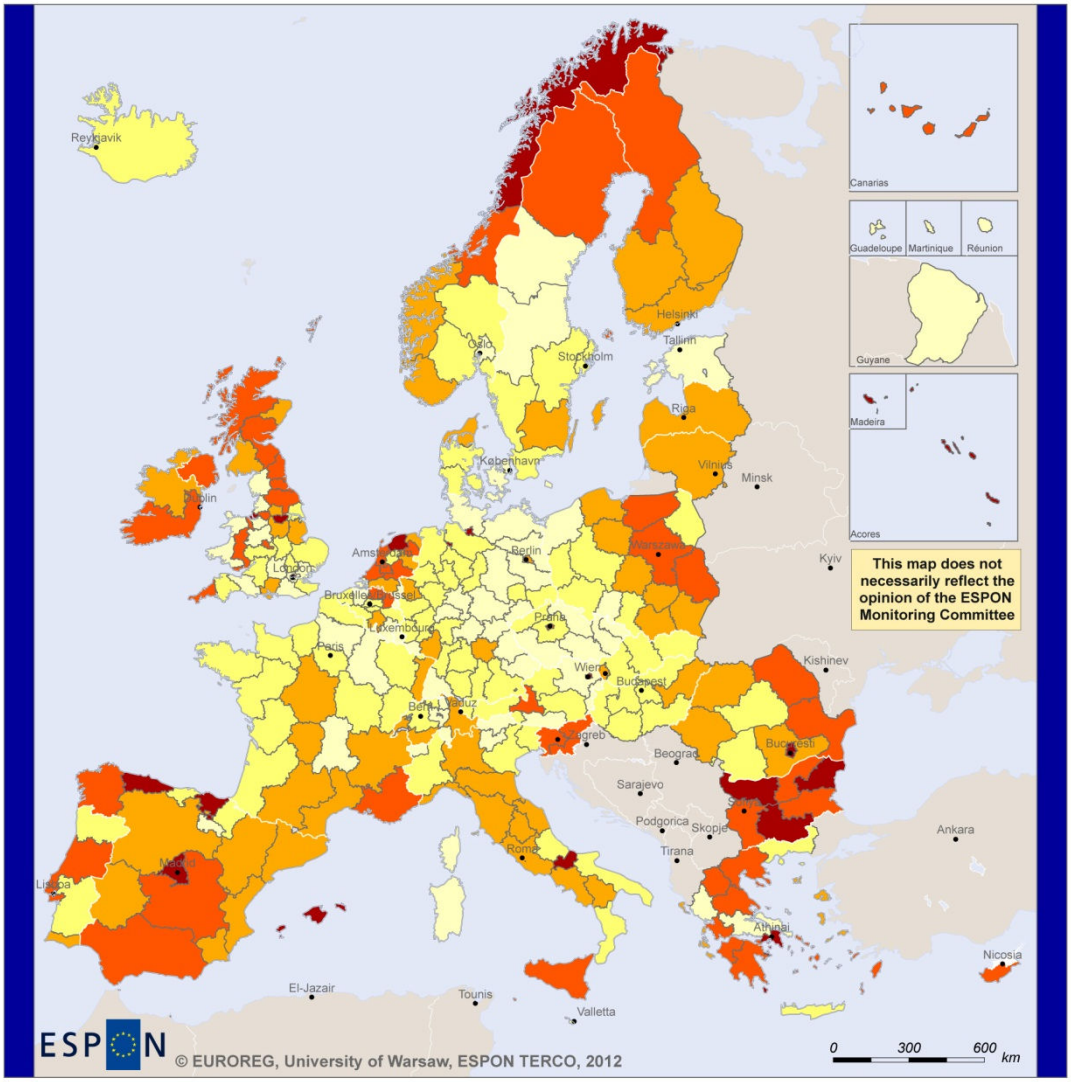
Twinning cities – cooperation beyond ESPON space

The data on cooperation within twinning cities agreements also allow for analysing cooperation going beyond the ESPON space (as twinning cities agreements are made between communes and cities throughout the world). Particular regions within ESPON space differ in their involvement in cooperation outside of this space (see Fig. 25). Greater involvement in cooperation outside ESPON space is visible in regions located in the peripheries of the analysed space. It should be underlined, however, that an exception to this rule are the regions of Netherlands, which are located in the geographical and economic centre of the EU and in which cooperation going beyond the ESPON space is significant.

Subsequent maps present the intensity of cooperation with selected countries (regions) of the world. Cooperation with communes and cities in the USA as part of twinning cities takes place in almost all regions of ESPON space (see Fig. 26), but it is significantly more frequent in the west of the continent. Particularly noticeable is the significant involvement of Irish communes and cities into cooperation with communes and cities in the USA. In cooperation with countries from Latin America, on the other hand, particularly active are Spain, Portugal, and Northern regions of Italy (see Fig. 27). This shows the importance of cultural closeness as well as the influence of history on the directions of cooperation within twinning cities. Similar explanation may be offered for cooperation with Russia and Ukraine, although in this case important is not only the cultural, but also the spatial closeness (see Fig. 28 and 29).

Fig. 25

per cent of non-ESPON space twinning cities



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Regional level: NUTS 02
Source: EUROREG, University of Warsaw, 2012
Origin of data: EUROREG, University of Warsaw, 2012
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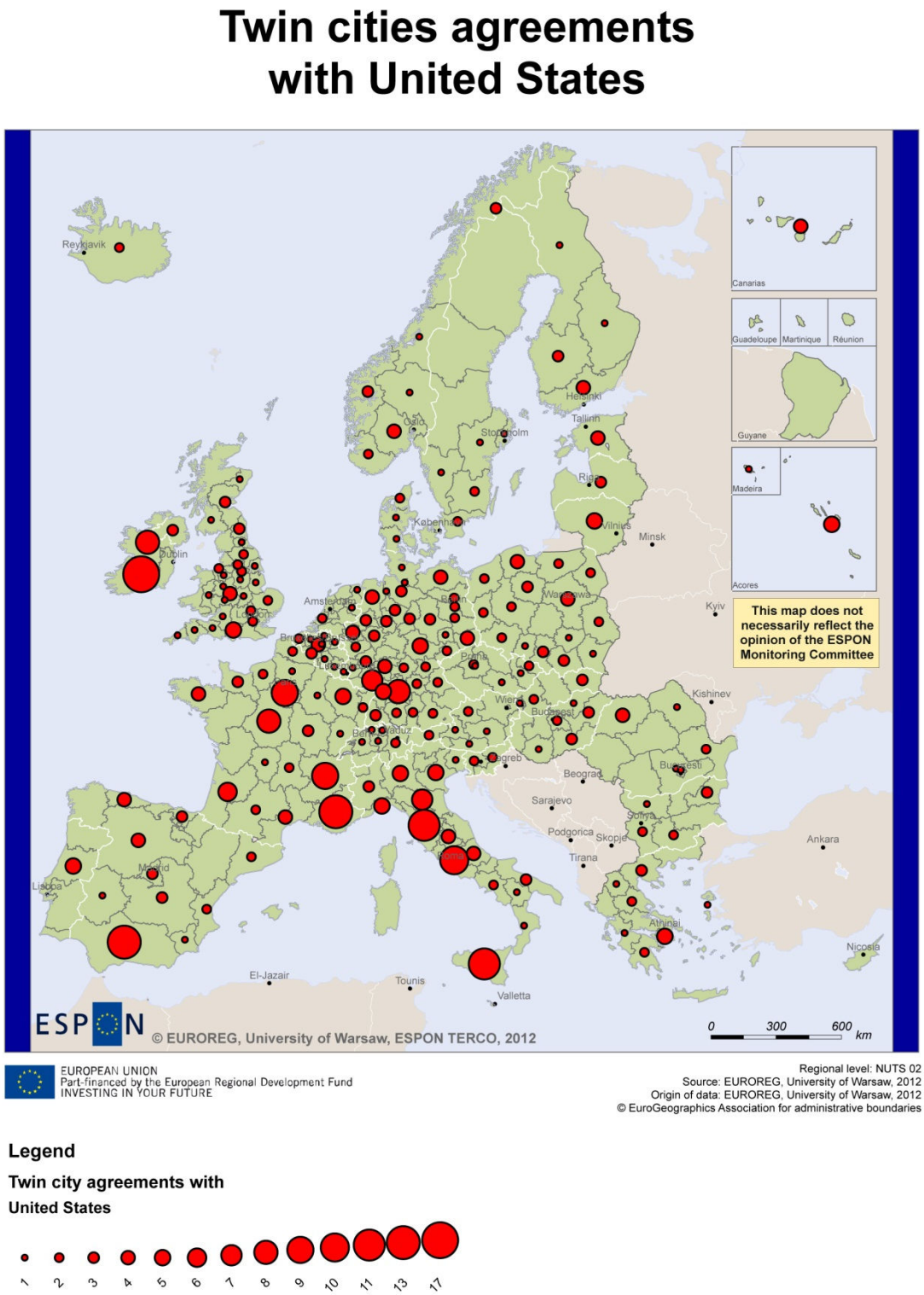
Legend

Per cent of non-ESPON space twinning cities agreements

- 0,0 - 10,0
- 10,1 - 20,0
- 20,1 - 30,0
- 30,1 - 50,0
- 50,1 - 84,0
- no data

Source: Authors' elaboration

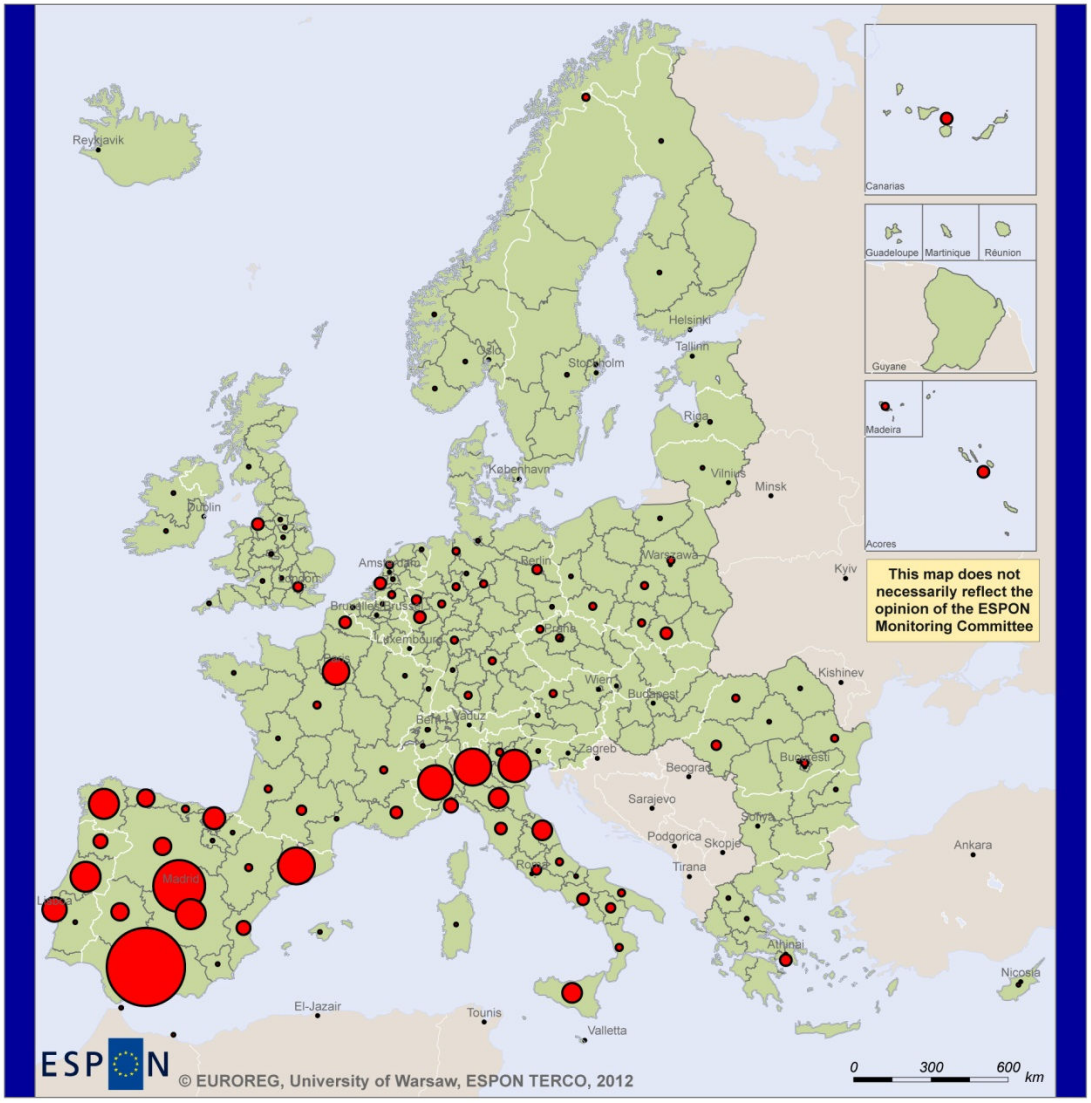
Fig. 26



Source: Authors' elaboration

Fig. 27

Twin cities agreements with Latin and Central America



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Regional level: NUTS 02
Source: EUROREG, University of Warsaw, 2012
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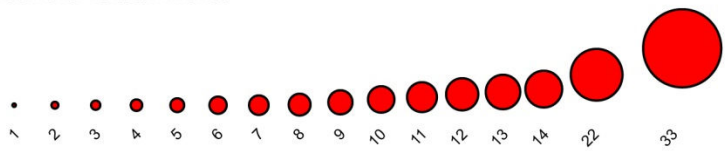
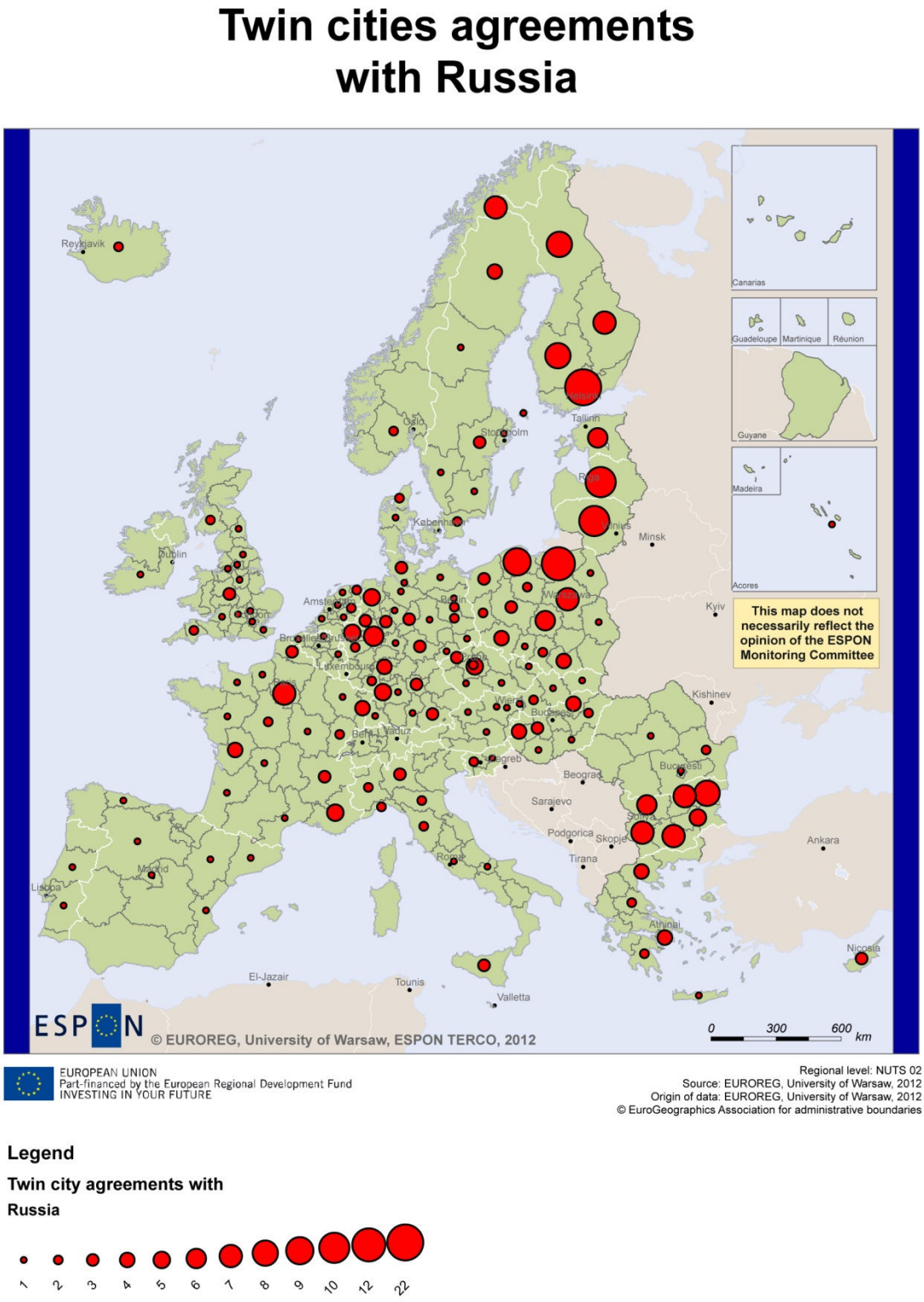
Twin city agreements with Latin and Central America



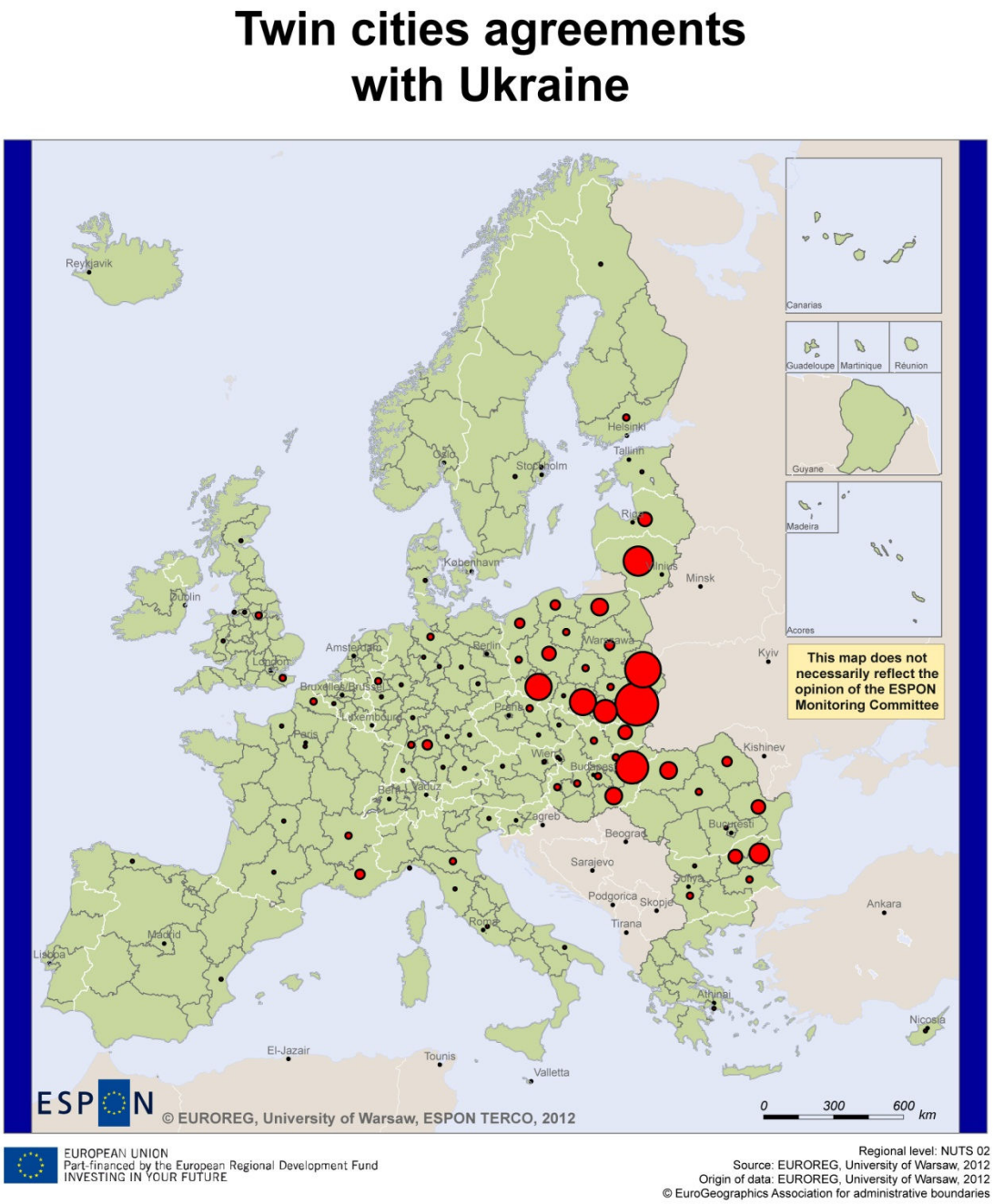
Source: Authors' elaboration

Fig. 28



Source: Authors' elaboration

Fig. 29

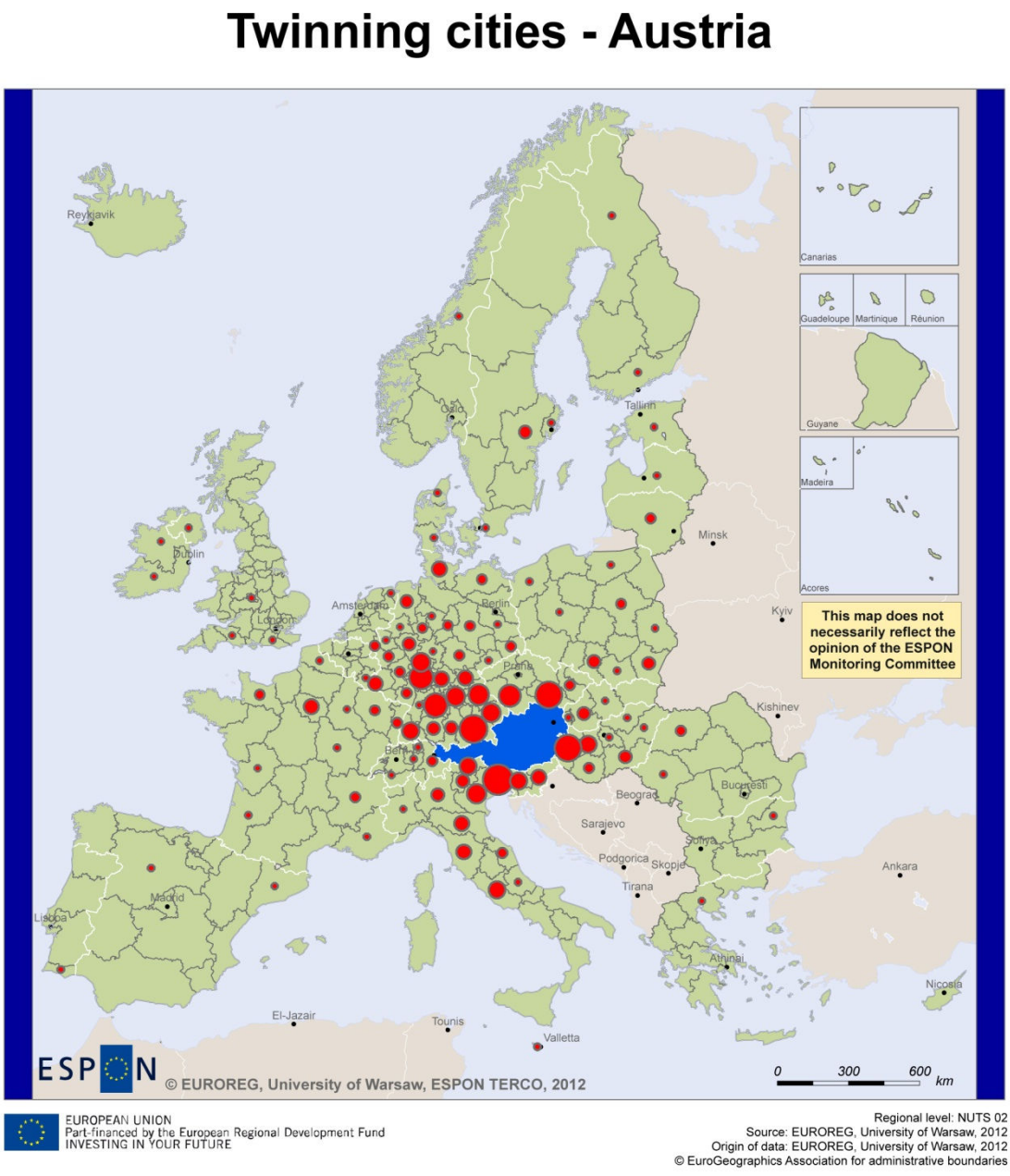


Source: Authors' elaboration

Twinning cities – directions of cooperation within ESPON space

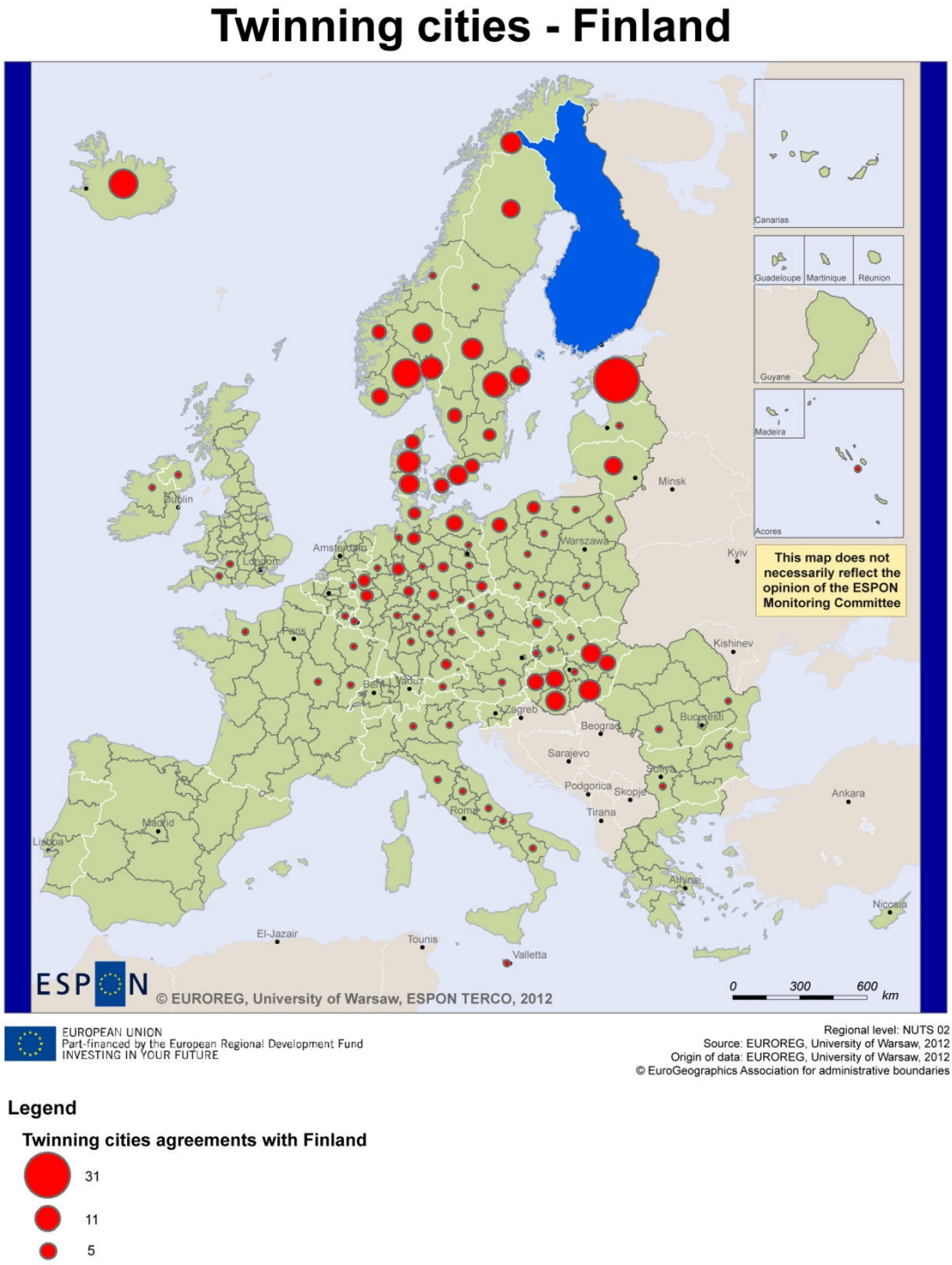
This part of the report presents maps showing patters of cooperation within twinning cities for 10 selected countries (see Fig. 30-39). The basic conclusion that can be formulated based on the maps concerns great importance of spatial closeness. In the case of all 10 countries it is visible that cooperation is particularly intensive with the closest neighbours, while the relations with regions located far away happen relatively rarely. An additional factor apart from spatial closeness is connected with historical and cultural determinants (it should be underlined that they are usually inextricably connected with spatial closeness). These are precisely the historical and cultural factors that can explain particularly intensive cooperation between communes and cities from Hungarian and Romanian regions: North-West, Centre, and West, that in the past used to be the Transylvania region connected with Hungary. Cultural factor may also explain significant cooperation between Finland and Hungary (see Fig. 31). These distant countries are culturally linked by Finno-Ugric languages family.

Fig. 30



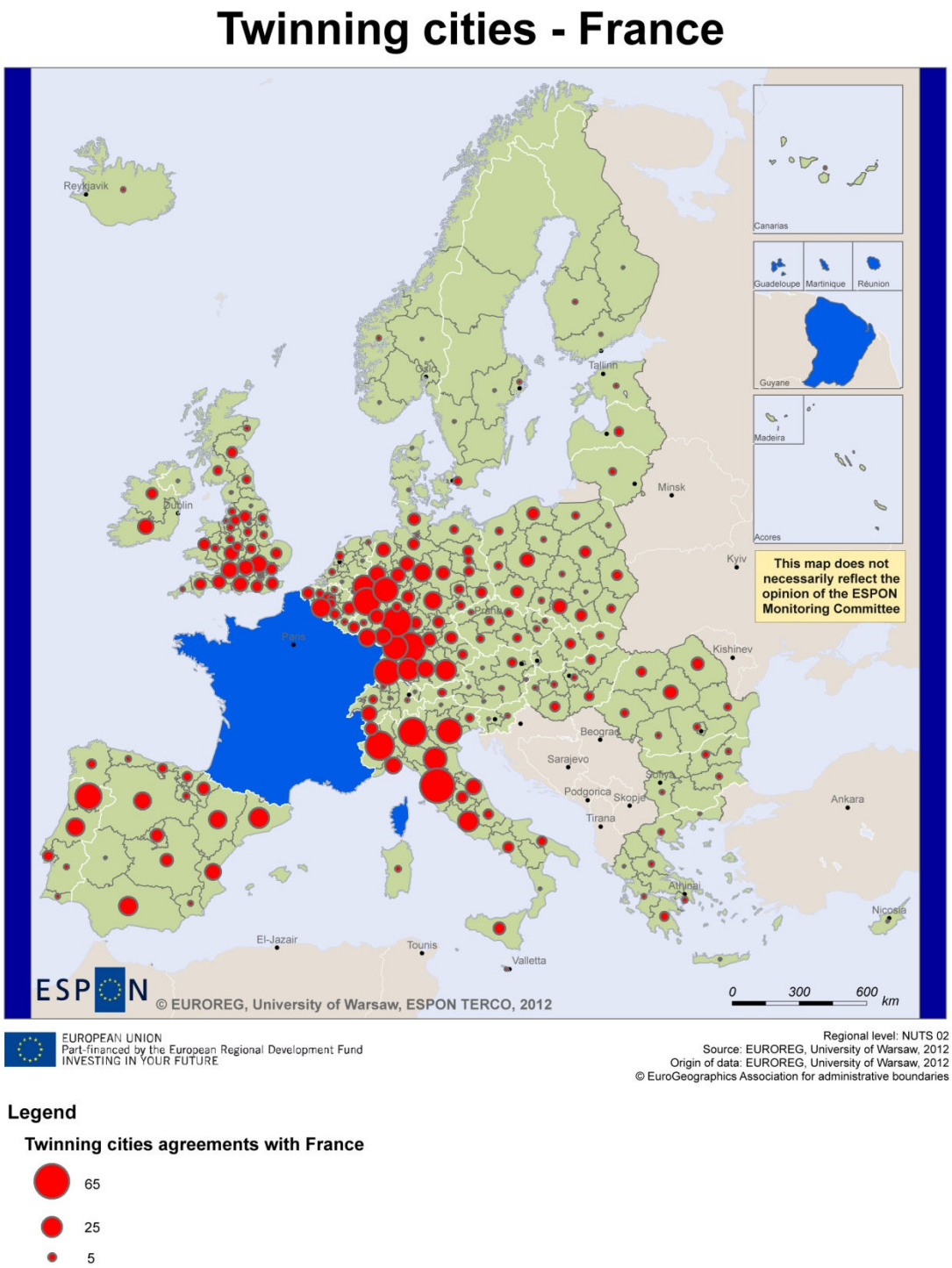
Source: Authors' elaboration

Fig. 31



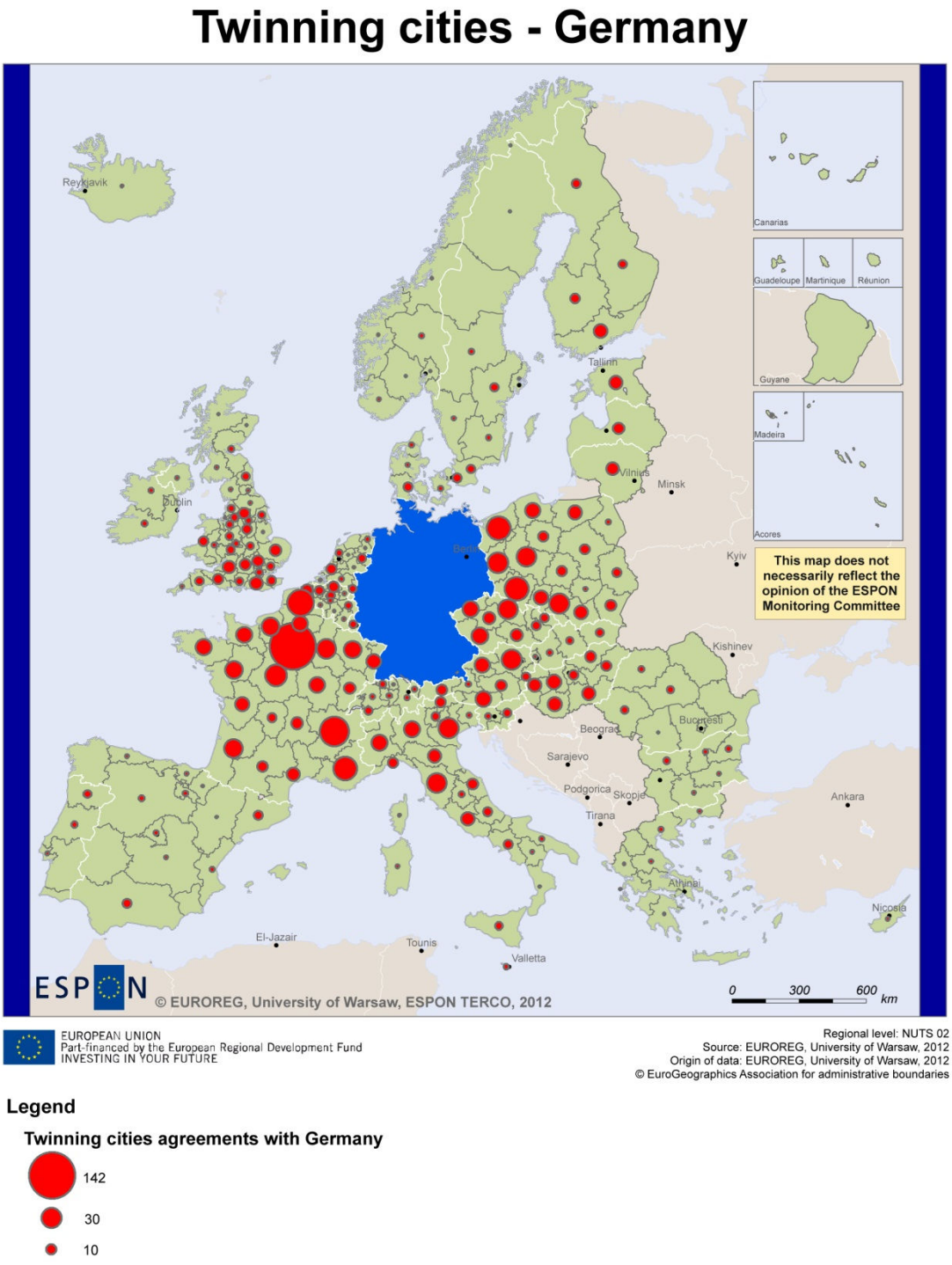
Source: Authors' elaboration

Fig. 32



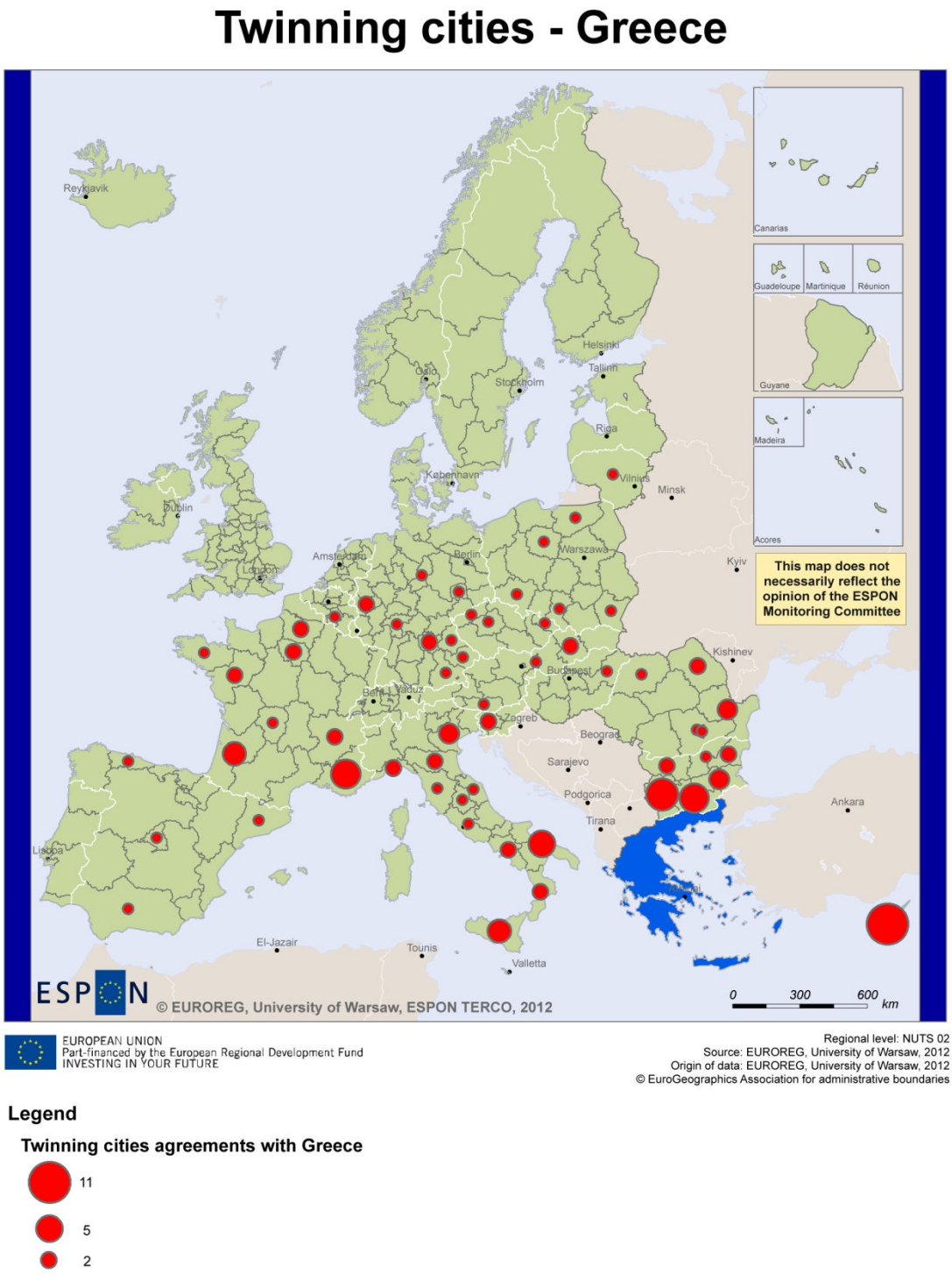
Source: Authors' elaboration

Fig. 33



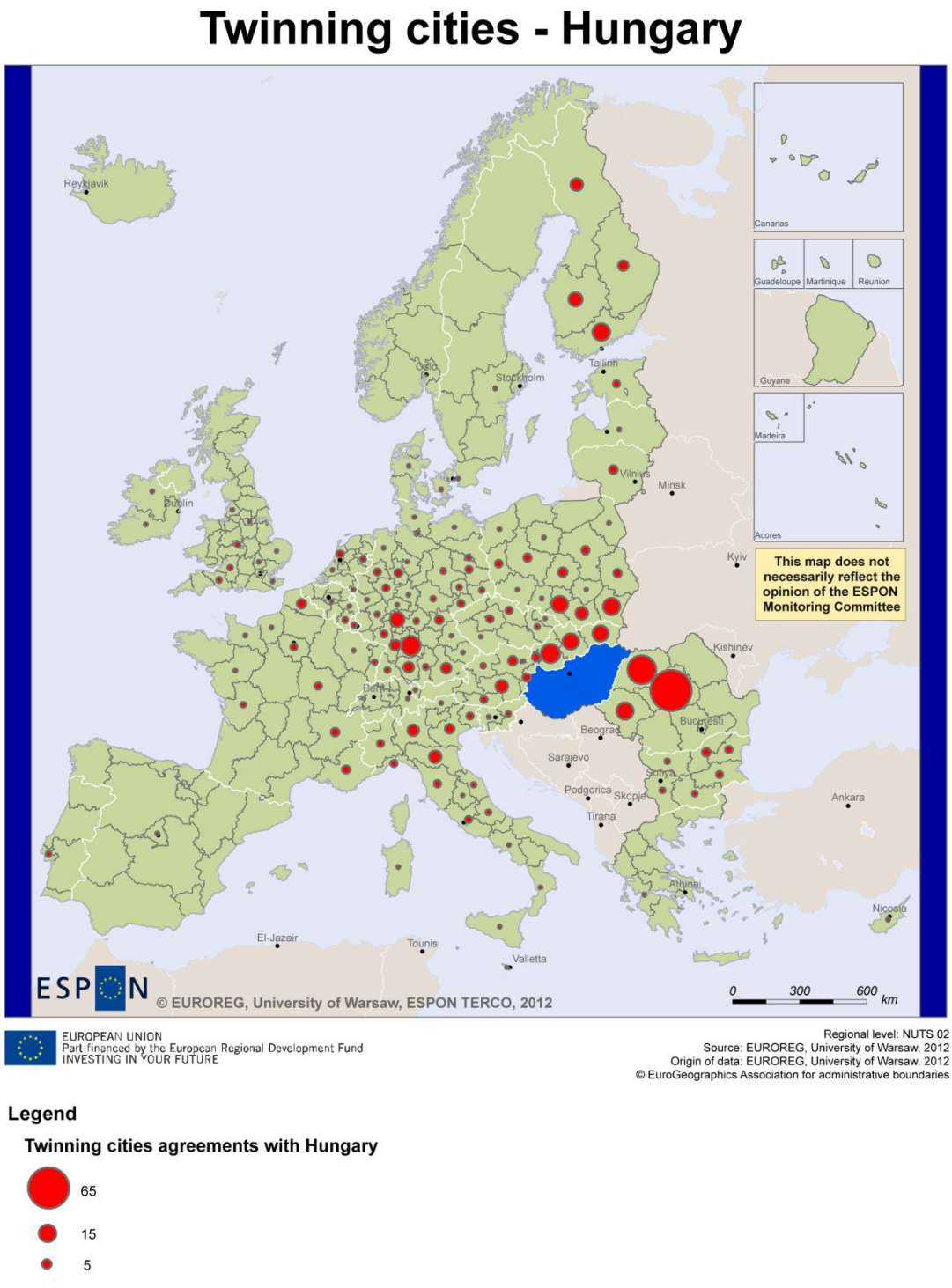
Source: Authors' elaboration

Fig. 34



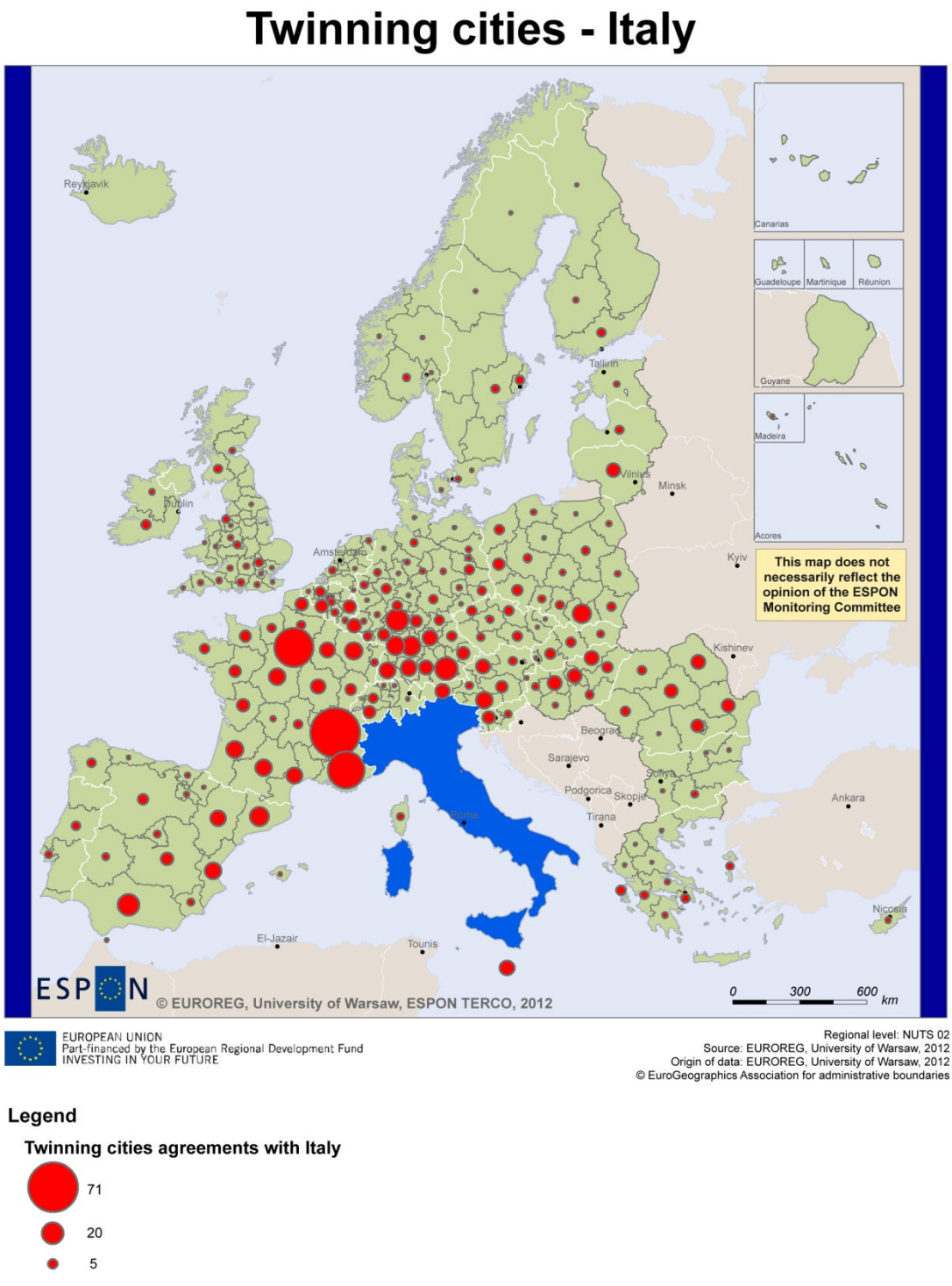
Source: Authors' elaboration

Fig. 35



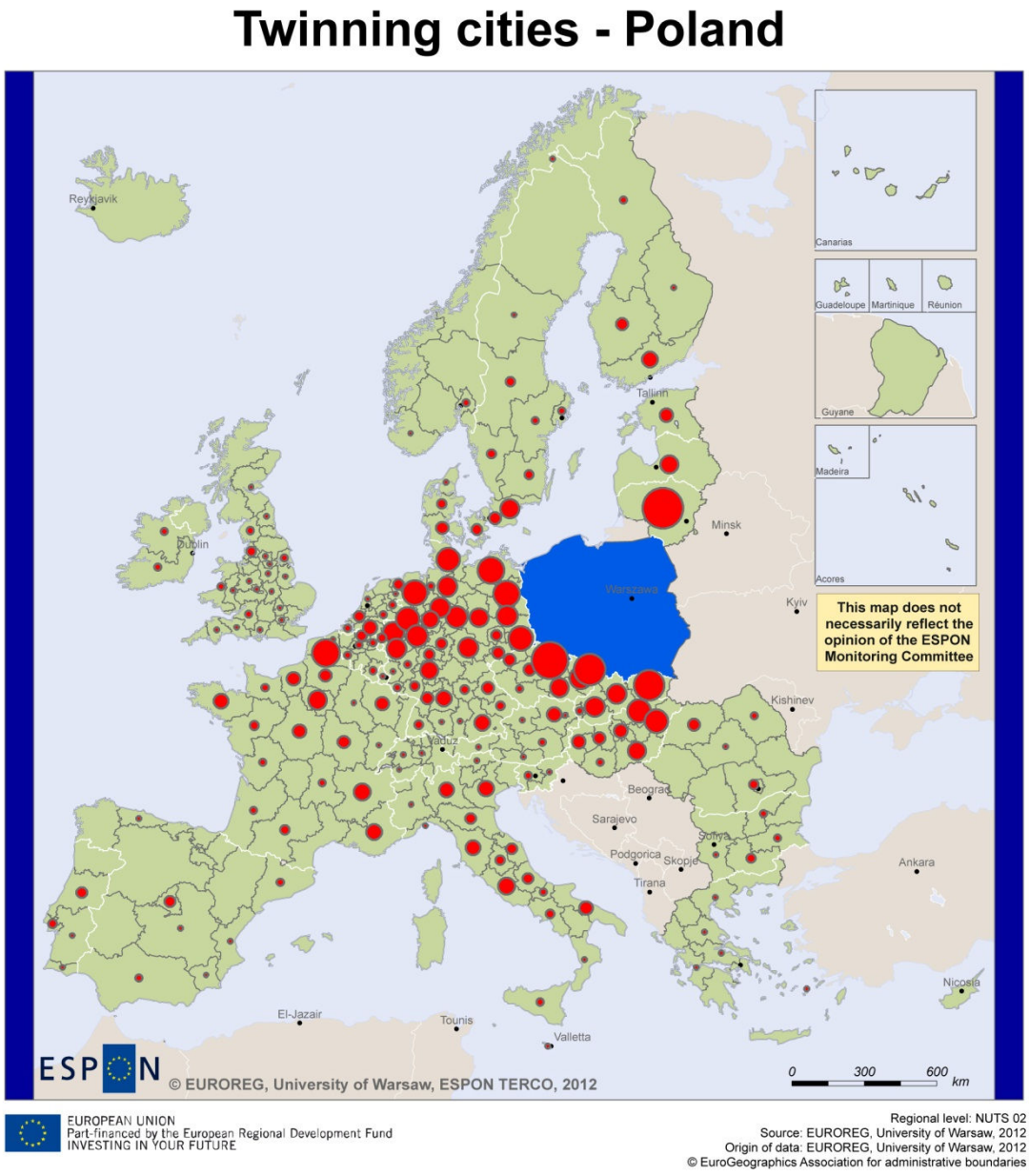
Source: Authors' elaboration

Fig. 36



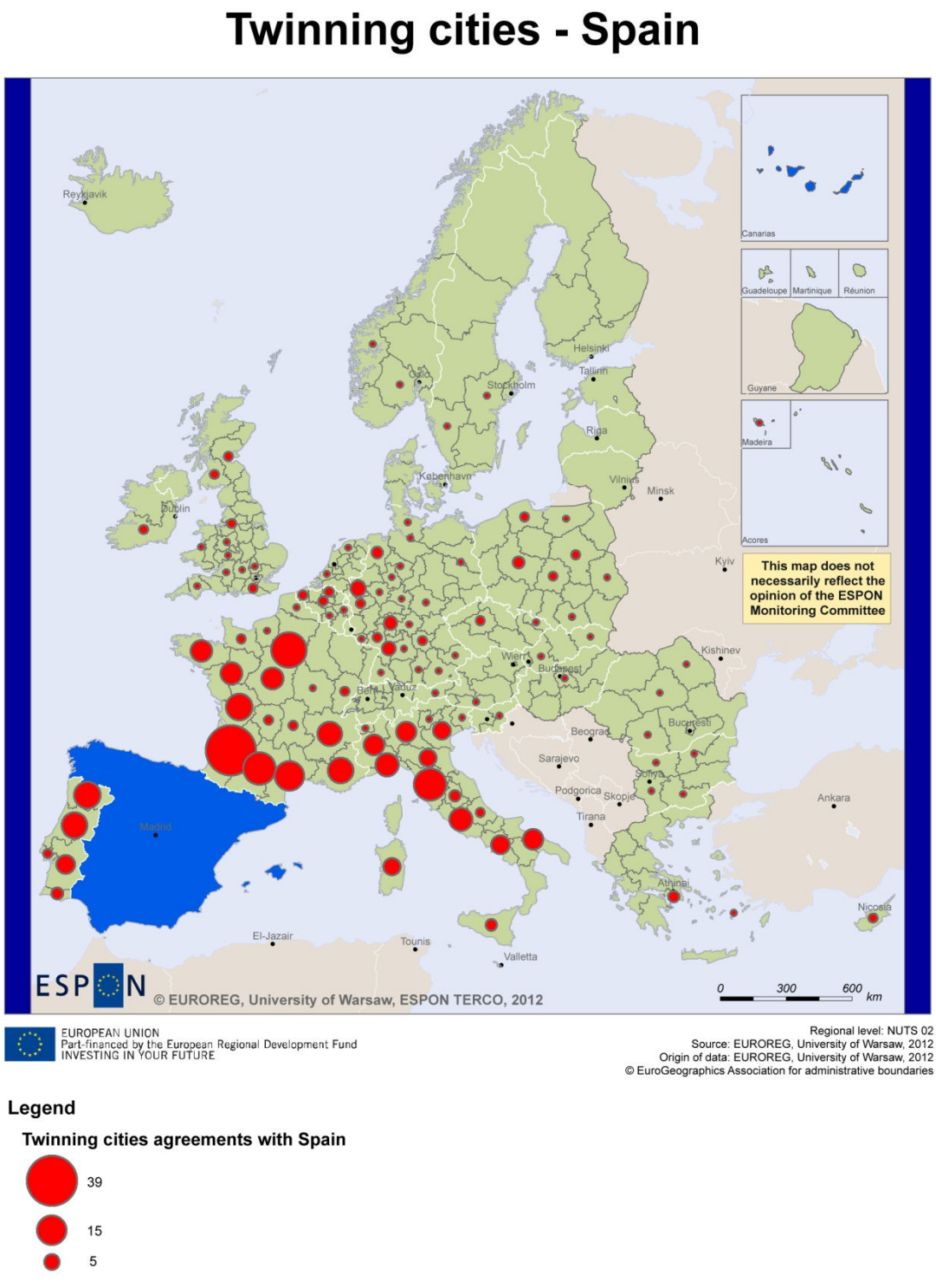
Source: Authors' elaboration

Fig. 37



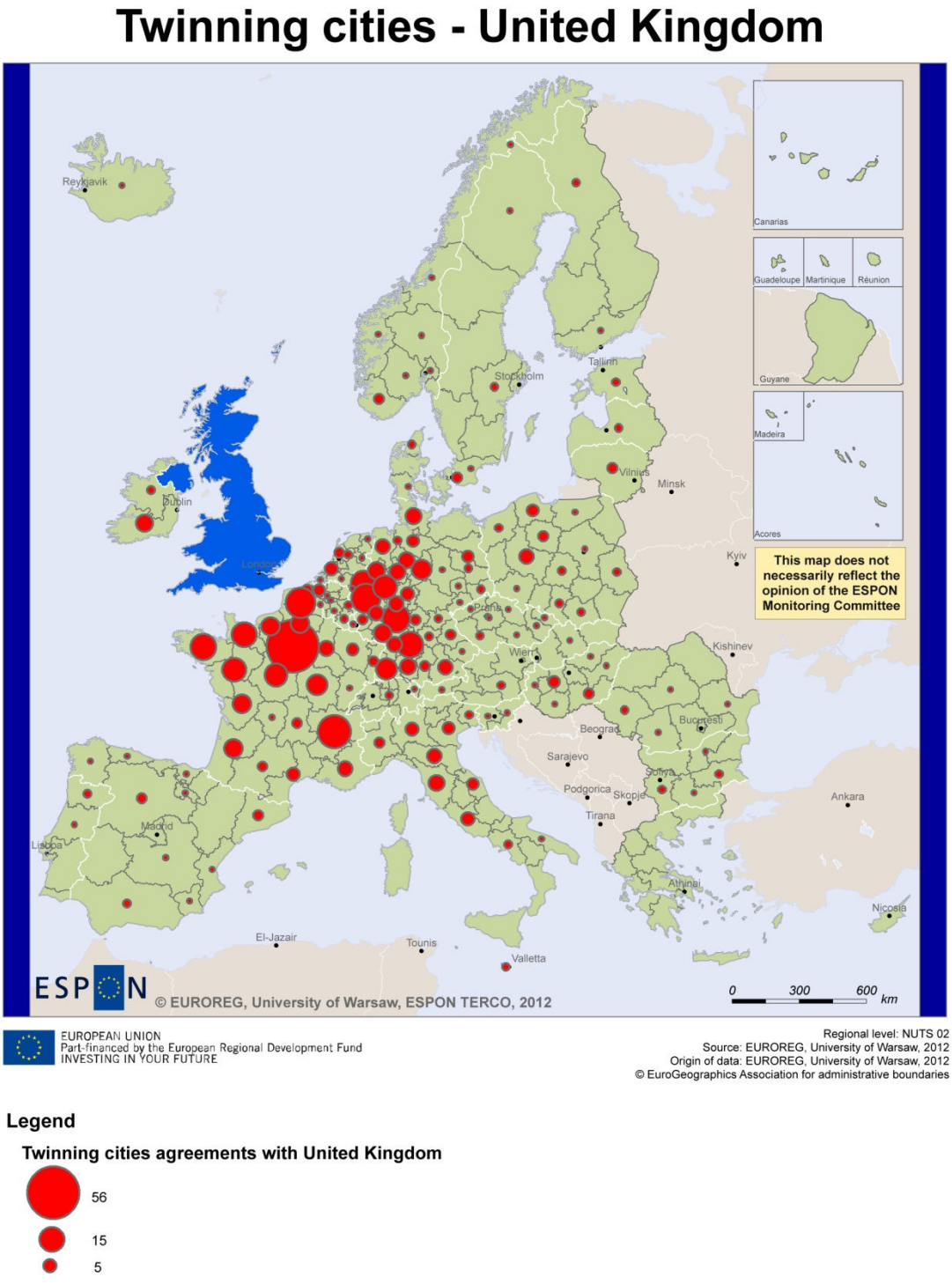
Source: Authors' elaboration

Fig. 38



Source: Authors' elaboration

Fig. 39



Source: Authors' elaboration

3. INTERREG AND TWINNING CITIES – SIMILAR OR DIFFERENT SPATIAL PATTERNS OF COOPERATION

Cooperation within INTERREG B and C programmes and twinning cities is diversified in many respects. This pertains both to the entities undertaking cooperation (in the case of twinning cities these can only be local authorities, in the case of INTERREG the catalogue of eligible entities is much broader), determining the spatial scope of cooperation (predetermined macroregions in the case of INTERREG B vs. total freedom in the case of twinning cities), and finally the topics of cooperation. Bearing those differences in mind one can still, however, compare the spatial patterns of cooperation in both of the forms. Such analysis can primarily serve for analysis of whether macroregions within INTERREG B were well defined: If for particular regions a large part of relations within twinning cities takes place solely within the frames of their respective macroregions, this may confirm proper delimitation of such macroregions.

INTERREG C and twinning cities

Comparison of directions of cooperation within INTERREG C and twinning cities is quite simple, as cooperation within INTERREG C initiative included the whole ESPON space – therefore it is possible to compare exactly the same areas for both forms of cooperation. For the purposes of this analysis for each country of ESPON space there was a comparison made of the pattern of cooperation at the NUTS2 level within INTERREG and twinning cities. More precisely, for each country correlated were two variables: the number of twinning cities agreements and the number of INTERREG IIIC and IVC project partners in all NUTS2 regions in ESPON space that cooperated under these forms with entities from a given country. The results of correlational analysis (Pearson's correlation coefficients) are presented in Figure 40. The values of the resulting correlation coefficients are low and very low. Only for three countries (Iceland, Germany, and Poland) the correlation coefficient is higher than 0.3 (the highest value is that for Iceland – 0.34). For the remaining countries the values are lower or significantly lower. This means that the spatial patterns of cooperation (or the cooperation networks) at regional level in both analysed forms are rather different. This is, to some extent, connected with different character of the analysed forms of cooperation. As shown in earlier chapter, cooperation within twinning cities is largely influenced by spatial closeness. On the other hand in the case of INTERREG C spatial closeness is not important, and quite the contrary: preferred are projects joining partners from different parts of the continent. The discussed results can be interpreted as a manifestation of a positive phenomenon of complementariness of the two modes of cooperation. Within twinning cities the cooperation takes place rather with spatially closer partners, and in the case of INTERREG C the spatial scope of cooperation is significantly broader.

Fig 40. Pearson's correlation coefficients of the spatial pattern of cooperation within INTERREG IIIC and IVC and twinning cities

Country	Pearson's coefficients
IS	0.341**
DE	0.335**
PL	0.312**
ES	0.290**
NO	0.287**
RO	0.287**
BG	0.281**
HU	0.271**
SK	0.256**
GR	0.249**
CY	0.248**
LT	0.243**
AT	0.242**
IT	0.229**
BE	0.228**
EE	0.217**
SE	0.212**
CZ	0.208**
SI	0.200**
PT	0.180**
DK	0.171**
NL	0.150*
FR	0.145*
UK	0.132*
FI	0.126*
MT	0.079
LV	0.073
CH	0.056
IE	0.051
LU	0.039

** significant at the 0.01 level; * significant at the 0.05 level

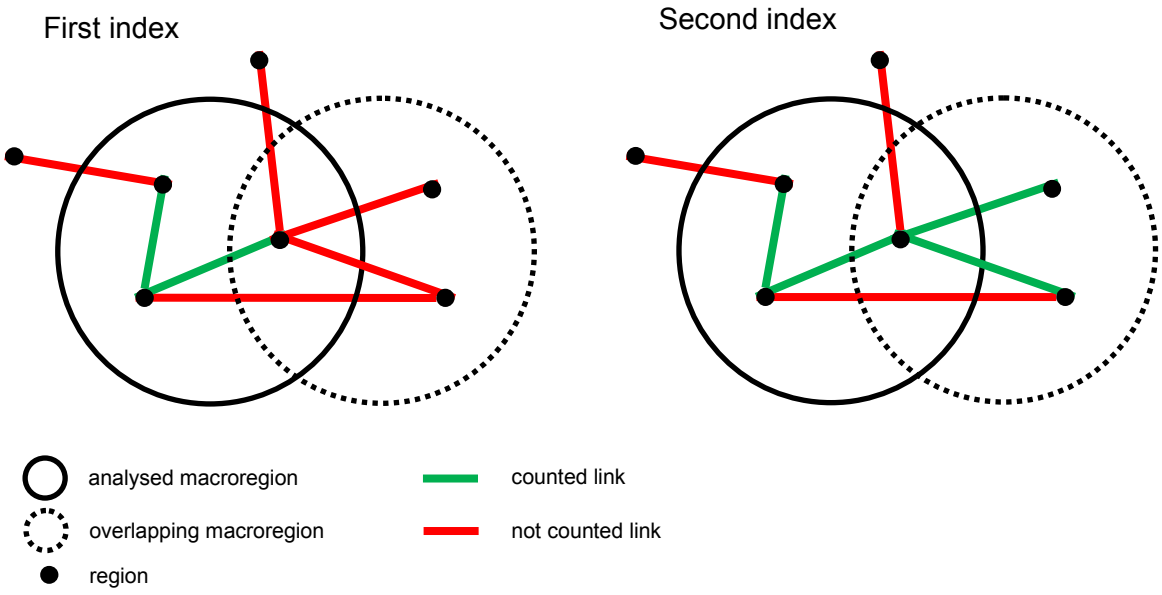
Source: Authors' elaboration

INTERREG IV B and twinning cities

Comparison of the spatial pattern of cooperation within twinning cities and INTERREG IV B must take into account the fact that the cooperation within the latter form could take place within predetermined macroregions. Consequently, a parallel analysis for INTERREG C and twinning cities would be unjustified. Therefore a different approach was used in this case. Firstly, for each of the INTERREG IV B macroregions calculated was the percentage of relations within twinning cities limited to a given macroregion (in the case of this index and the next index as a reference point were used only twinning cities within the limits of the ESPON space). Secondly, for each of the macroregions calculated was the percentage of relations within

twinning cities limited to single INTERREG IV B macroregions pertaining to each of the regions belonging to the analysed macroregion. The first and second index differ in that in the case of the first one analysed is only the area of a given macroregion, while in the case of the second index analysed are all regions included in a macroregion, plus - for each of them - all macroregions to which they were ascribed. The second index takes into account all possibilities of cooperation (in all eligible macroregions) open for regions from a given macroregion (Compare Fig. 41).

Fig. 41 Construction of indexes used in the analysis

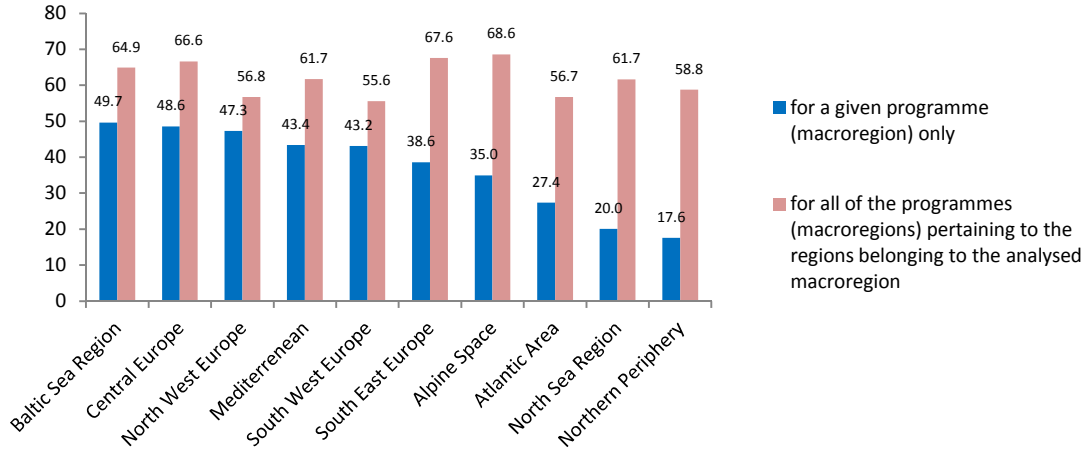


Source: Authors' elaboration

Both indexes are presented in a diagram (see Fig. 42). In the case of the first index we can see a significant diversification of the value. From nearly 16 to 50 per cent of twinning cities agreements limited solely to the macroregion. In this perspective INTERREG IVB macroregions best adjusted to the cooperation network within twinning cities agreements are: the Baltic Sea Region, Central Europe, North West Europe. The weakest in this respect are the Northern macroregions: Northern Periphery and North Sea Region. A completely different picture, however, emerges from the value of the second index, which takes into account the fact that particular regions were frequently ascribed to more than one INTERREG IVB macroregion. In such case the values of the index are not so diversified, and vary between 55 and 69 per cent. What is important, the values of the second index are also high in the case of macroregions with low values obtained from the first perspective. This means that on this basis it can be deducted that, firstly, the delimitation of INTERREG IVB macroregions is appropriate and, secondly, that from the point of view of shaping appropriate cooperation networks for regions a good solution is for the areas of

macroregions to overlap – as this allows regional entities to select cooperation partners appropriate for them.

Fig. 42 Per cent of twinning cities agreements within eligible INTERREG IVB areas

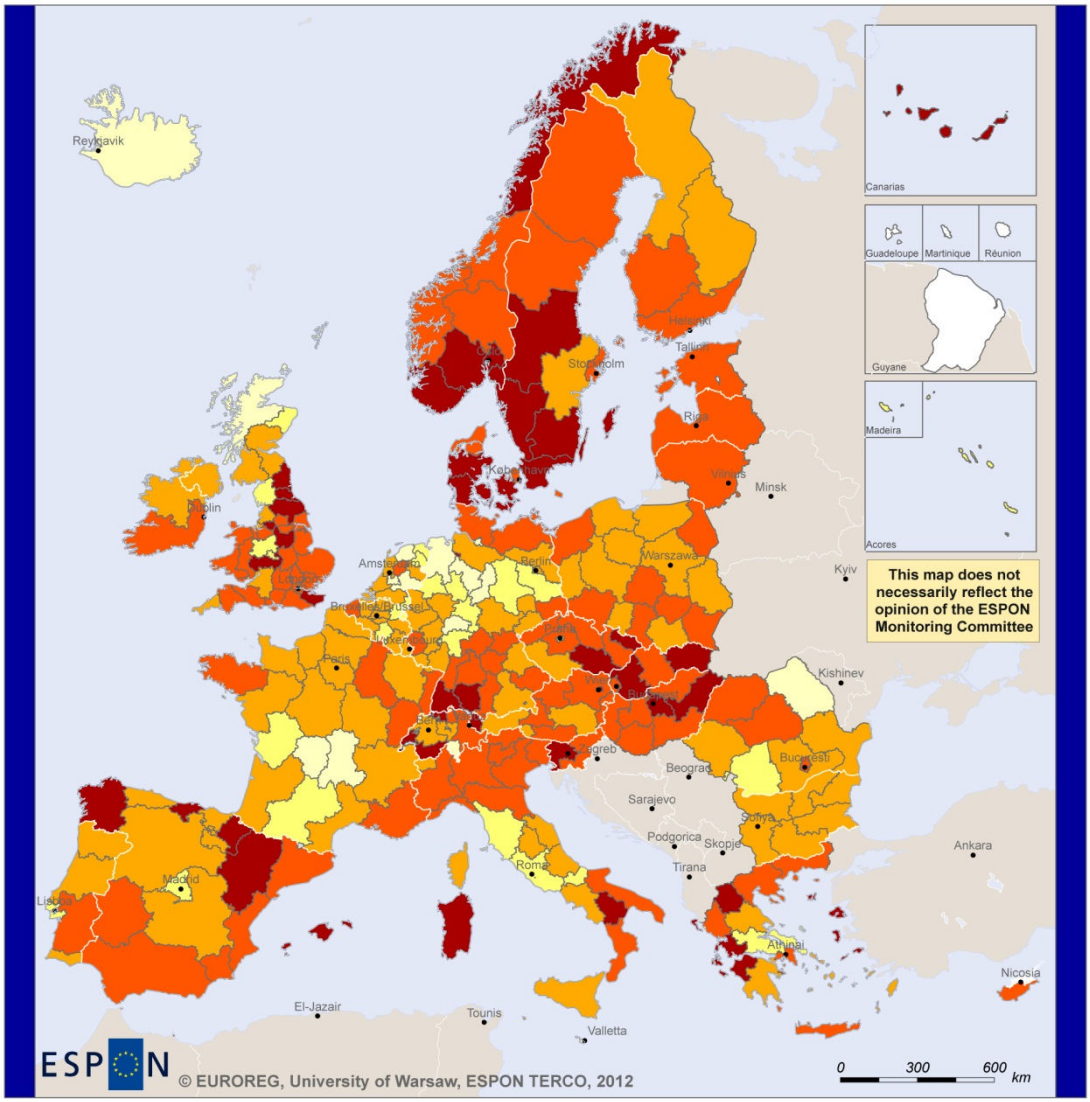


Source: Authors' elaboration

The third perspective on spatial comparison of cooperation pattern of INTERREG IVB and twinning cities is offered by analysis at the regional level. In this case for each of the regions calculated was the percentage of relations within twinning cities limited to INTERREG IV B macroregions to which a given region is ascribed (as reference point were used only twinning cities limited within the ESPON space). The results of the analysis show that in the case of significant majority of regions the cooperation within twinning cities is limited to INTERREG IVB macroregions to which they are ascribed. In the case of some macroregions the discussed index is very high, i.e. it exceeds about 80%. Only for a few regions the index is lower than 40% and 20%. This pertains in particular to the central and north-west regions of Germany, regions of the Massif Central in France, the Romanian North East region, Northern peripheries of Scotland and to Iceland (See Fig. 43). It seems that the presented results can be interpreted as confirming good delimitation of INTERREG IVB macroregions which corresponds to the preferences regarding the directions of cooperations expressed in grassroot relations expressed in the form of twinning cities.

Fig. 43

Twinning cities agreements within eligible INTERREG IVB areas



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Regional level: NUTS 02
Source: EUROREG, University of Warsaw, 2012
Origin of data: EUROREG, University of Warsaw, 2012
© EuroGeographics Association for administrative boundaries

Legend

Per cent of twinning cities agreements within eligible INTERREG IVB areas for a given region

- 0 - 20
- 21 - 40
- 41 - 60
- 61 - 80
- 81 - 100
- no data

Source: Authors' elaboration.

ESPON

5. Typology of regional determinants of territorial co-operation

Territorial Cooperation (TC) and
Its Regional Determinants – A Quantitative Approach

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EUROPEAN UNION
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Table of Contents:

INTRODUCTION

Territorial cooperation is a broad concept which, for the purposes of this paper, has been narrowed to denote *territorial cooperation of the public authorities representing different levels of territorial government*. This part of the report sets out to indicate the determinants of such cooperation at the regional level using quantitative data and methodologies. It is worth mentioning here that other method in the study – TERCO-SEM model – also deals with indicators of TC but at the level of beneficiaries involved in TC and based on primary data, collected by electronic questionnaire CAWI.

First of all, it should be noted that our analyses were made somewhat difficult by the broad topical range of territorial cooperation, which can range from infrastructural investments on the one hand (such as community centres, tourist information centres, road infrastructure) to promotional activities aimed to foster the development of tourism or supporting business networks on the other. Such dissimilar fields of activity necessitate the use of varied financial resources needed in such cooperation, which however may make it difficult to identify its overall underpinnings. In effect, it is necessary to verify the results obtained in quantitative analyses using in-depth, qualitative case studies (see Chapter 2.3 of the Report).

Purpose and coverage of the paper

The aim of the paper is to establish the correlations between territorial cooperation indicators (see Chapter 2.1) and conditions underpinning such cooperation, identified on the basis of a review of the literature of the subject (see Chapter 1.1). The analyses were static in character, and compared the situation of territorial cooperation based on the information on twinning agreements concluded between municipalities (gathered in 2011) and the summary data about projects implemented by territorial governments and NGOs as part of INTERREG B and C in the periods: 2000-2006 and 2007-2013 with the data for the years 2008/2009, illustrating the correlations in question[2].

Due to the availability of statistical data, the spatial extent of the analysis was narrowed to the regions of the EU Member States. Nevertheless, whenever possible, and particularly with regard to the presented typologies of the determinants of cooperation, the situation in all the ESPON countries was discussed (i.e. with the addition of Norway, Switzerland and Iceland).

The data were collected for the NUTS2 level, although some supplementary analyses were conducted for selected large cities for which the Urban Audit data were available. It should be noted at the outset that, in the former approach, the data were analysed indirectly since territorial cooperation typically involved local

[2] Population changes in 2002-2008 and GDP dynamics in 2000-2008 were also taken into account.

governments, whereas the aggregated data at the regional level provided the basis for the analysis proper.

In line with the requirements concerning the triangulation of results, the following research methods were used: correlation analysis, principal component analysis and cluster analysis. This methodology made it possible to show the many dimensions of territorial cooperation, which in turn allowed us to formulate plausible interpretations.

Variables used in quantitative surveys

The variables for the study were selected using a set of factors affecting territorial cooperation based on the review of the literature[3] (see Ch.2) **(Tab. 1).**

Table 1. Selected determinants of territorial cooperation and diagnostic variables

Determinants of cooperation	**Variables and groups of variables**
i) Transport availability	Distance from Brussels Distance from the national capital International airport by category
ii) Level of socio-economic development	Demographic potential Economic potential Economic structure Labour market situation
iii) Role of local governments / financial resources	Average population in municipality Share of territorial governments in total general government revenue Share of expenditure on administration in total expenditure
iv) Language skills	Teaching of foreign languages and their declared knowledge
v) Tourism potential	Tourist traffic (nights spent and share of foreign tourists)

Source: prepared by the author (for details see Annex 1).

[3] Those determinants relate directly to the 7 determinants suggest by literature review as follows: (i) transport accessibility relates to determinant 7. Geographical conditions, (ii) demographics and economics relates to determinant 6. Socio-economic background, (iii) role of local governments / financial resources relate to two determinants suggested in literature review: 2. Regional and local self-government and 3. Funding, (iv) language skills is a proxy for similarity in 1. Culture and 4. History; v) Tourism potential is a proxy for a mix of determinants (economic conditions and geographical conditions), while legal background was not possible to operationalize at any indicator for all regions at NUTS2 level.

First, we took into account the accessibility of a given region in three different approaches, i.e. global, European and national. In a nutshell, the first approach assumed the presence of an international airport in the region, the significance of which was classified in one of five categories based on the number of passengers handled. The second approach looked at the location of a given region in relation to the region which was the "stylized" centre of the ESPON area, that is - Brussels (ranked 5th in terms of multimodal accessibility). In the third approach, accessibility denoted the distance from the capital of a given country. The broadest second group of the applied variables illustrates different aspects of socio-economic development of a given region. These primarily include the region's demographic potential, i.e. population density, population change and its components (natural increase and the and migration balance) and the old age dependency ratio. As a next step, we looked at the economic potential expressed as per capita GDP using different approaches, viz. as an absolute value (in EUR), relativised by the purchasing power parity (PPS) and the national average. In addition, GDP dynamics in 2000-2008 was taken into account, both in real terms (in %) and as a percentage change relative to the EU average. Furthermore, the economic structure was thoroughly analysed (for six sectors), while the analysis of the labour market involved employment figures and unemployment rates. Another aspect of the analysis - looking at the role of local governments and their financial resources - was discussed on the basis of the statistics from the national level. In particular, the average size of municipalities in terms of their population was determined (the regional level), so as their share in the total general government revenue, their financial independence expressed as the percentage of taxes in their revenue and the volume of expenditure on regional and local administration (the national level). The last analysed groups of variables included language competences of the region's inhabitants, understood as teaching of major foreign languages at school and their declared knowledge by adults, as well as the tourism potential expressed by the actual bed occupancy and the percentage of foreign tourists.

Of necessity, a number of significant factors of territorial cooperation were not included directly (like historical, legal and cultural aspect) which above all was due to difficulties in their quantification or the absence of adequate data. These aspects were tackled, however, by Case Studies (ScR Part II).

1. Territorial cooperation indicators vs. other variables at the regional level

As the first step, we decided to rule out from the analysis those regions which were distinctly different from the remaining ones in terms of twinning agreements and the number of partners participating in INTERREG projects. As a result, the following NUTS2 regions were excluded:

- Most of large cities making up administrative regions at the NUTS2 level: Berlin, Bremen, Hamburg, but also Vienna and Prague;
- Regions with very small population (and usually attractive in terms of tourism), i.e. the Åland Islands in Finland and the Aosta Valley in Italy;
- The island regions of Portugal (Madeira, Azores) and Spain (Canary Islands), as well as the overseas departments of France.

This was due to the nature of the administrative system in individual countries and geographical considerations in case of island regions. In consequence, the correlation study included 257 other NUTS2 regions situated in the EU Member States.

1.1. The correlations between territorial cooperation indicators

An analysis of the correlation between groups of territorial cooperation indicators suggests that there exist strong interrelationships both within and between these groups **(Tab. 2)**.

In particular, this applies to the number of INTERREG projects and, to a lesser degree, to twinning agreements per capita and per GDP. This means that the directions in which the demographic and economic potential influences territorial cooperation were convergent. In addition, there existed – albeit weak – linkages between the average number of twining cities per local government and the number of linkages reaching beyond the ESPON area. A larger number of twining cities proved that a given local government was more involved in cooperation reaching beyond the ESPON boundaries. This also coincided with a greater spatial extent of linkages within the ESPON area.

There were visible strong linkages between the number of twining cities per local government and the number of INTERREG per local government. This means that municipalities which were active in one type of cooperation were also active in the other. However, the relationships between the number of twinning agreements and INTERREG projects per capita and GDP were much weaker – although in this case some statistically significant correlation could also be observed.

Table 2. Correlation matrix of territorial cooperation indicators [N=257]

	Twining cities per 100 000 population	Twining cities per MEUR 1 GDP	Twining cities per local government	INTERREG projects per 100 000 population	INTERREG projects per MEUR 1 GDP	INTERREG projects per local government	% of municipalities with twining cities	Average number of twining cities	Share of linkages beyond the ESPON area	Average distance between twining cities within ESPON area
Twining cities per 100 000 population	x	**0.54**	*-0.06*	**0.36**	**0.32**	*-0.11*	*0.15*	0.24	-0.28	**-0.30**
Twining cities per MEUR 1 GDP	**0.54**	X	*-0.03*	*0.01*	**0.32**	*-0.09*	*0.05*	**0.40**	*0.05*	*-0.04*
Twining cities per local government	*-0.06*	*-0.03*	x	*0.02*	*-0.01*	**0.75**	**0.88**	**0.35**	*0.07*	*0.04*
INTERREG projects per 100 000 population	**0.35**	*0.01*	*0.02*	x	**0.83**	*0.09*	*0.16*	*0.01*	*0.12*	0.19
INTERREG projects per MEUR 1 GDP	**0.32**	**0.32**	*-0.01*	**0.83**	x	*0.01*	*0.07*	*0.17*	*0.15*	0.20
INTERREG projects per local government	*-0.11*	*-0.09*	**0.75**	*0.09*	*0.01*	x	**0.61**	*0.14*	0.13	0.12
Share of municipalities with twining cities	*0.15*	0.05	**0.88**	*0.16*	*0.07*	**0.61**	x	*0.02*	*-0.02*	*-0.08*
Average number of twining cities	0.24	**0.40**	**0.35**	*0.01*	*0.17*	*0.14*	*0.02*	x	**0.41**	*0.14*
Share of links beyond the ESPON area	-0.28	*0.05*	*0.07*	*0.12*	*0.15*	*0.13*	*-0.02*	**0.41**	x	**0.43**
Average distance between twining cities within ESPON area	**-0.30**	*-0.04*	*0.04*	0.19	0.20	*0.12*	*-0.08*	*0.14*	**0.43**	x

Source: prepared by the author.

Quite obviously, the percentage of municipalities with twinning agreements was very strongly correlated with the number of twining cities per local government. Weaker correlation could be found in case of an average number of twining cities and the number of twining cities per local government. This could imply that the number of twinning agreements was quite discernibly affected by the presence of municipalities with a large number of linkages. One last pertinent interrelationship was the negative correlation between the number of twining cities per the region's inhabitant and the distance of the twin cities within the ESPON area. This could suggest that cooperation of municipalities with well-developed, intensive cooperation links was mostly focused on the neighbouring regions.

1.2. Determinants of territorial cooperation

An analysis of the correlation between indicators and its determinants shows that the intensity of territorial cooperation depends on a number of factors which, after an examination of their mutual interrelationships, could be reduced to the most pertinent issues presented below **(Tab.3)**.

Table 3. Selected significant correlations between territorial cooperation indicators and its potential determinants*

Indicators of TC: / **Determinants of TC:**	Twining cities per 100 000 population	Twining cities per MEUR 1 GDP	Twining cities per local government	INTERREG projects per 100 000 population	INTERREG projects per MEUR 1 GDP	INTERREG projects per local government	% of municipalities with twining cities	Average number of twining cities	Share of linkages beyond the ESPON area	Average distance between twining cities within ESPON area
a) Share of taxes in LG revenues	**0.35**	*0.14*	*0.07*	*0.07*	*0.02*	*0.13*	*0.12*	*0.06*	*-0.15*	**-0.33**
b) GDP per capita 2008	*-0.08*	**-0.57**	*0.08*	*0.08*	-0.29	*0.22*	*0.22*	*-0.13*	*-0.05*	*-0.07*
c) Inhabitants per municipality	-0.20	*-0.03*	**0.79**	*0.04*	*0.01*	**0.62**	**0.76**	0.32	0.25	*0.11*
d) Distance to the ESPON centre	*0.02*	0.32	*0.04*	**0.43**	**0.55**	0.22	*-0.09*	0.24	**0.34**	**0.42**

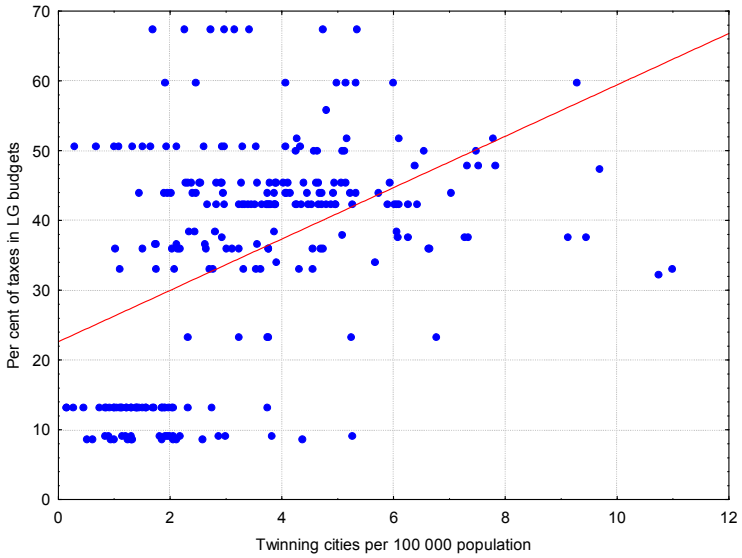
* significant correlation in bold and underlined are described in details bellow

Source: prepared by the author.

a) **Number of twining cities per region's inhabitant and financial independence of territorial governments**

To some extent, the number of the twining cities of local governments per the region's inhabitant is a function of the local governments' financial independence (share of taxes in the territorial governments revenues) [r = 0.35 (r = 0.45 without Romania)]. This means that the greater the financial independence of the territorial government (mostly at local level) , the stronger the cooperation with the twining cities, expressed by the number of twinning agreements per 100 000 population of a given region. Interestingly enough, such correlation was not observed in case of INTERREG projects. This fact is rather difficult to interpret and can indicate that this is a function of the sources of funding for such cooperation, which in the former case involves the local government's own funds, and in the latter – external funding.

Figure 1. Intensity of territorial cooperation and financial independence of local governments*



* excluding regions of Romania

Source: prepared by the author.

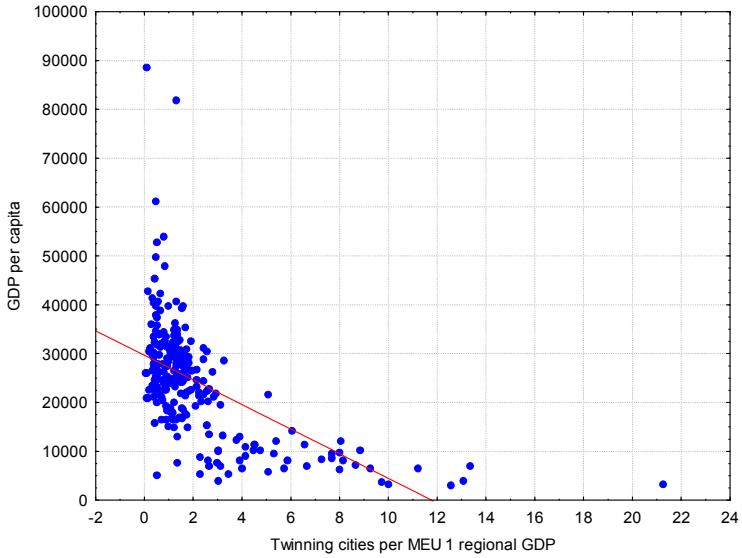
It should also be noted that such correlation is also rather weak in case of twining cities. On top of that, the statistics concerning the financial independence of municipalities are available for individual countries, and not regions. Moreover, marked disparities can be found between regions across countries in terms of the number of twinning agreements per 100 000 population **(Fig. 1)**. This weak correlation is also due to the fact that the regions in the countries where territorial governments enjoy the greatest financial independence (over 60% share of taxes) i.e. Romania, Sweden and Austria, do not manifest any particular interest in twin city cooperation.

b) Number of twining cities per MEUR 1 regional GDP and the region's development level

There was also an visibly strong negative correlation between the number of twin cities per MEUR 1 regional GDP and the level of economic development (GDP per capita). Potentially, this could mean that less-developed regions show a greater propensity to engage in territorial cooperation. However, an analysis of the scatter plot **(Fig. 2)** indicates that there exist two categories of territorial governments – the poorer ones, where GDP per capita is lower than approximately EUR 14 000, and the wealthier ones, where GDP per capita is above that threshold. This boundary has a spatial dimension as it separates the better-off EU-15 Member States from the new Member States, located primarily in Central and Eastern Europe. On the other hand, within the two groups analysed separately, this correlation is not statistically significant (r=-0.18 and r=0.08, respectively).

Furthermore, only a very weak correlation could be observed between the number of twinning agreements and the level of economic development relativised by the national average (r=-0.24). This was probably due to the fact that the less-developed regions had a peripheral location along the state borders, a factor which could indeed foster the development of cross-border cooperation.

Figure 2. Territorial cooperation and the level of economic development



Source: prepared by the author.

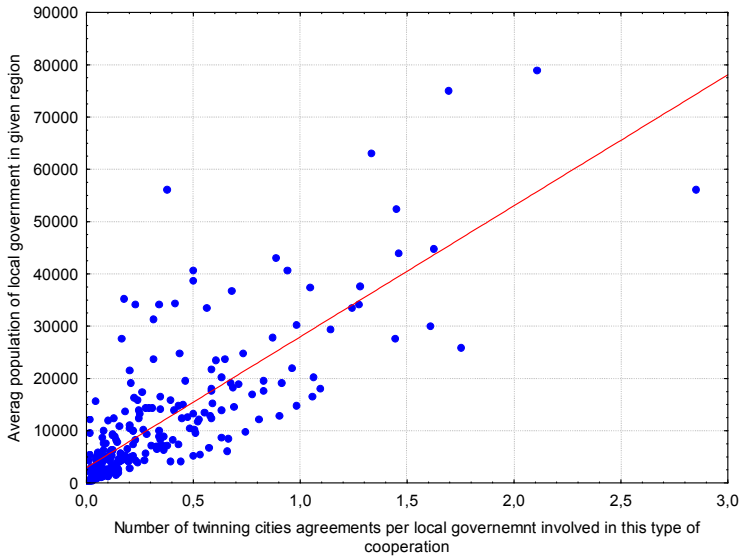
c) Twining cities per local government and the size of municipalities

Another strong correlation which could be observed was the relationship between the number of twining cities per one municipality of a given region and the average size of the municipality in given region measured by the number of the population (Fig. 3). This means that the more populous the municipalities in a given region the more twinning agreements they would sign. This is due to the fact that twining city cooperation was mostly pursued by large cities, whereas scattered municipalities stood less chance to engage in territorial cooperation. This suggests that the administrative systems in place in individual countries can potentially strongly affect the scale of territorial cooperation.

This correlation is also corroborated by comparing the number of twinning agreements with the population of cities, taking into account 325 largest European cities (the Urban Audit data). This analysis showed that the larger the city the more twinning agreements it had signed (r=0.56), particularly with respect to agreements reaching beyond the ESPON area (r=0.65). Interestingly enough, this correlation is very weak in case of such agreements being concluded within the ESPON area (r=0.27). In addition to that, when the number of the agreements is transposed into 100 000 population, smaller cities turn out to be relatively more engaged in territorial cooperation (r=-0.37). This can indicate that, on the one hand, bigger cities have

adequate resources to get involved in broader cooperation of a transcontinental nature and, on the other hand, cooperation within the ESPON area is limited by the number of potential partners of a comparable size. Secondly, this means that the number of partners is not a simple function of the size of a given city, but rather that there are certain thresholds dependent on the category of the size of a given city.

Figure 3. Intensity of territorial cooperation and the average size of municipalities in terms of population



Source: prepared by the author.

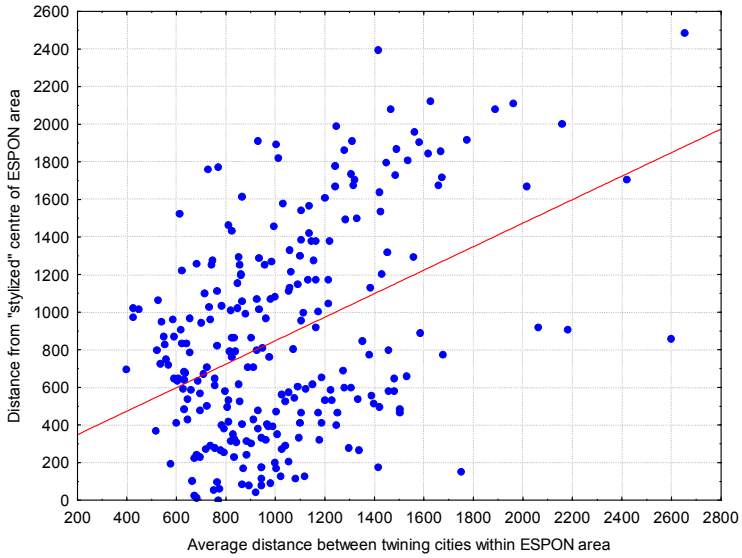
d) Average distance of twining cities cooperation within the ESPON area or the role of linkages with cities situated beyond the ESPON area vs. the distance from the centre of the ESPON area

There was also an observable correlation between the "peripheral location" within the ESPON area and the distance of cooperation pursued under ESPON and the percentage of twinning agreements reaching beyond the ESPON area **(Fig. 4)**. In particular, municipalities located in the peripheral regions were, of necessity, forced to establish cooperation with twining cities located further away within the ESPON area **(Fig. 4a)**. Quite interestingly, this correlation was not very strong. In addition, two groups of regions could be observed: one, which pursued cooperation over a much longer distance, and one – over a considerably shorter distance than the one which could be anticipated on the basis of the distance from the centre of the ESPON area **(Fig.5)**. The former group primarily included regions from Ireland, Scotland, Wales, northern England, Bretagne, but also Finland, Portugal, Greece and some regions of Poland, Bulgaria and Romania as well as the Dutch regions. At the other end of the spectrum, there were some Central European regions: from the Czech Republic, Slovakia, Hungary, former GDR, Austria and – to some extent – northern Italy and also some regions of Greece and Spain.

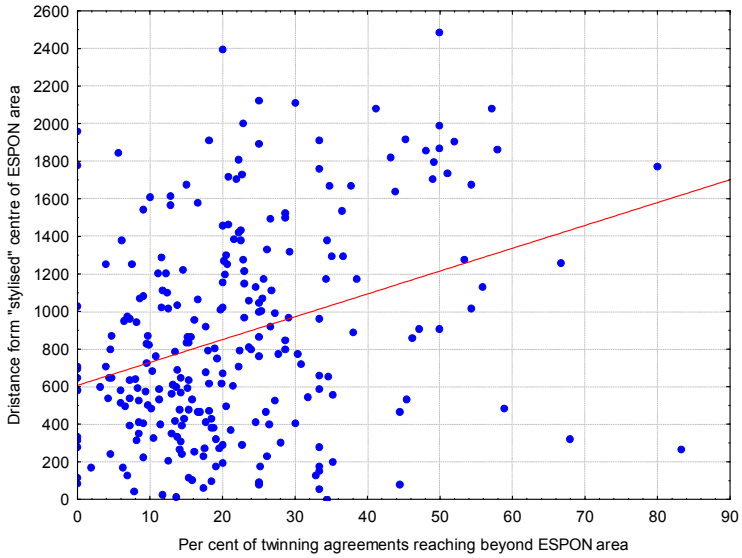
On the other hand, there was a statistical correlation between the distance from the centre of the ESPON area and the percentage of twining cities located beyond this area **(Fig. 4b)**. This could be explained above all by cooperation with the neighbouring countries not being a part of the ESPON area (land or sea borders), pursued mostly by the regions of the border countries (r=0.37). However, being located within the ESPON area did not affect in any way the percentage of twinning agreements of a transcontinental nature which, as noted above, were in most cases concluded by big cities.

Figure 4. Extent of territorial cooperation and distance from the centre of the ESPON area

a) Average distance between twining cities within ESPON area

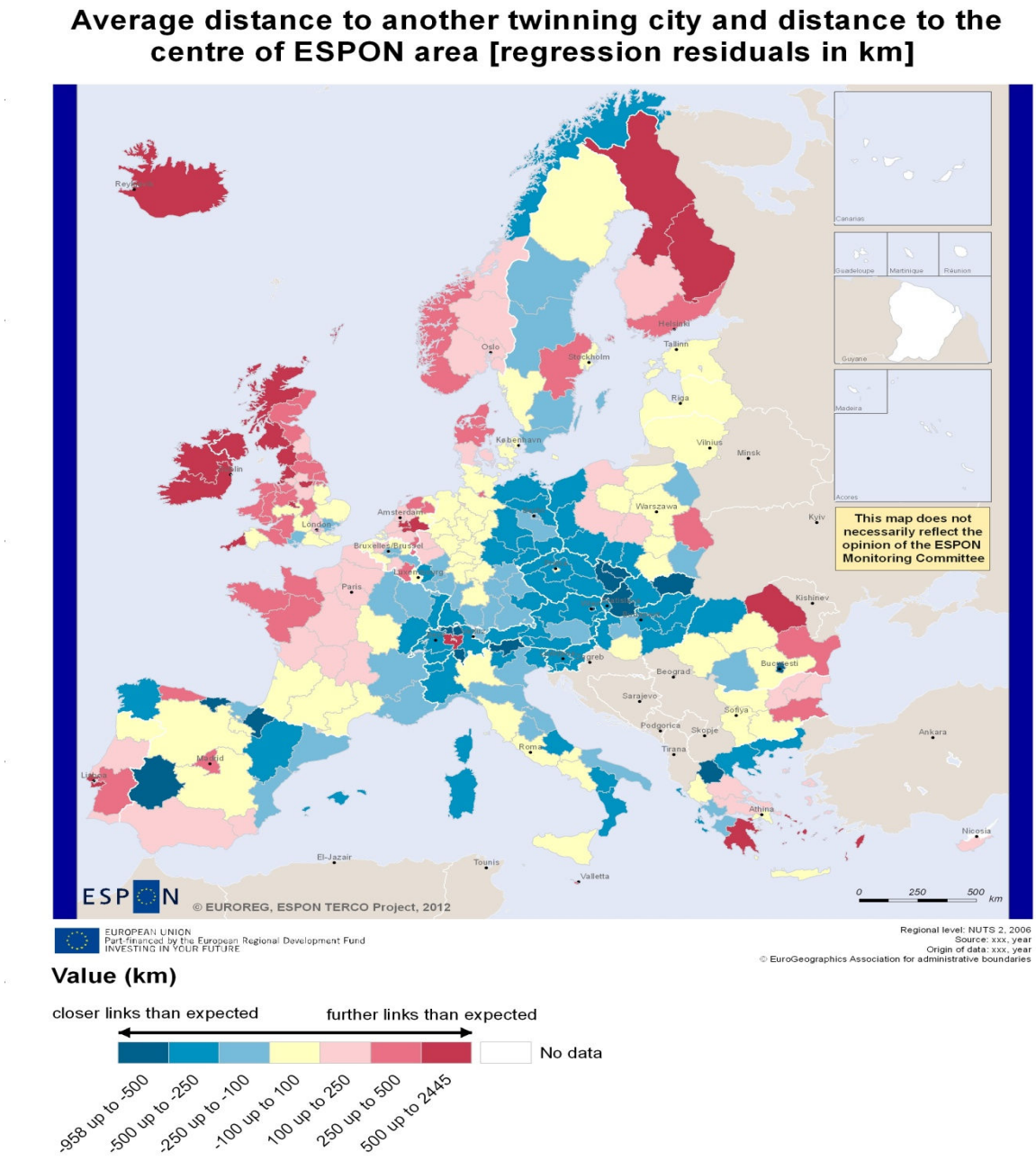


b) Percentage of linkages with twining cities located outside the ESPON area



Source: prepared by the author.

Figure 5. Average distance to twining city within ESPON area in relation to the distance expected on the basis of the distance from the centre of the ESPON area [regression residuals in km]



* red colour means distance further than expected; blue colour means distance shorter than expected
Source: prepared by the author.

1.3. Typology of the determinants of territorial cooperation

Based on these relationships, a simplified typology of the determinants of cooperation (having the form of inter-municipal twinning agreements) can be proposed. On the one hand, it takes into account the average size of municipalities in a given region, which could show the intensity of cooperation measured by the number of twinning agreements, and on the other hand – it includes the distance from the centre of the ESPON area, which can have a bearing on the range of such cooperation, measured by the distance to the twin city both within the ESPON area, and also the share of agreements with the cities situated in countries outside the ESPON area.

Table 4. Potential determinants of territorial cooperation at the regional level

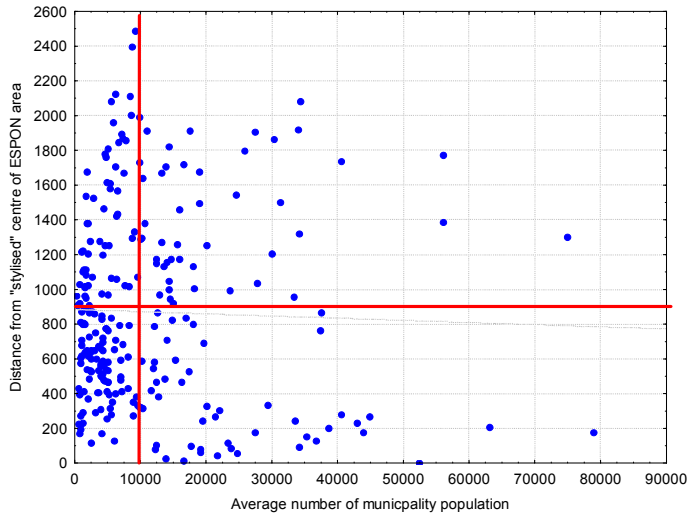
	Core areas	**Periphery areas**
Large municipalities	Well-developed local cooperation networks (1)	Cooperation beyond the ESPON area (2)
Small municipalities	Small range of cooperation (3)	Low intensity of cooperation (4)

Source: prepared by the author.

On this basis, four potential model situations can be distinguished **(Tab. 4)**:

a) Regions made up of large municipalities situated in the centre of the ESPON area, which should be characterised by strongly developed local cooperation networks;
b) Regions made up of large municipalities with a peripheral location, which should act as the main centres of territorial cooperation reaching beyond the ESPON area, in particular in its cross-border dimension;
c) Regions made up of small municipalities situated in the centre of the ESPON area, which should be characterised by a relatively small spatial extent of cooperation;
d) Regions made up of small municipalities with a peripheral location, which should be characterised by a relatively low intensity of cooperation.

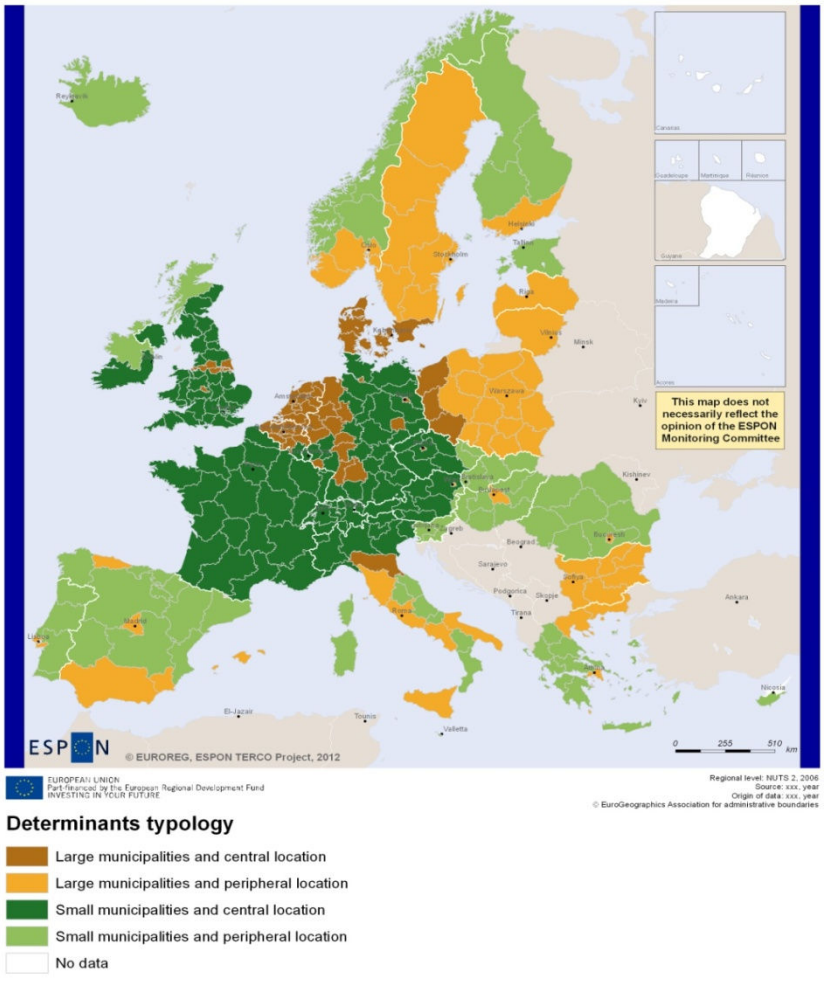
Figure 5. Size of municipalities in NUTS2 regions and the distance from the "agreed" centre of the ESPON area



Source: prepared by the author.

The division was made, taking into account the weighted average size of municipalities measured by the number of the population (rounded up to the nearest 1 000 i.e. 10000) and the average distance from the centre of the ESPON area (rounded up to the nearest 100 km i.e. 900), which in effect produced the following population sizes for the regions representing the distinguished models, viz.: a) 54; b) 46; c) 98; and d) 63 **(Figs. 5 and 6)**.

Figure 6. Types of determinants of territorial cooperation



Source: prepared by the author

The former type includes regions from the Benelux countries and those from the north-western part of Germany on the one hand, and on the other – regions of large English cities and regions situated at the periphery of the 900 km distance from the centre, i.e. regions of Denmark, southern Sweden and southern Norway, western Poland and northern Italy. Municipalities in the remaining part of this area were relatively small, which categorises them as type 3; in addition to the countries listed above, they included regions in France, Czech Republic and Austria. Type 2 was notably represented by the Baltic countries (with the exception of Estonia and the Finnish regions not situated on the southern coast), Bulgaria and northern Greece, some regions of Italy and Spain, as well as the metropolitan regions of Budapest, Bucharest and Vienna. Type 4 included mostly the regions of Portugal, Slovakia, Hungary, Romania, as well as Spain, Finland and Greece.

The values of the indicators for the individual types to some extent at least corroborated the typology of cooperation described above **(Tab. 5)**

Table 5. Characteristics of territorial cooperation by type of regions

	Twining cities per 100 000 population	Twining cities per MEUR 1 GDP	Twining cities per local government	% of municipalities with twining cities	Average number of twining cities	Share of linkages beyond the ESPON area	Average distance between twining cities within ESPON area
Well-developed local cooperation networks (1)	2.8	1.2	2.18	28.3	4.3	25.4	1 044.8
Poles of cooperation beyond the ESPON area (2)	3.0	3.3	0.99	20.3	4.1	32.5	1 180.4
Small range of cooperation (3)	3.7	1.5	0.13	5.5	2.4	16.0	930.3
Low intensity of cooperation (4)	4.2	3.1	0.17	6.2	3.0	23.7	1 135.3

Source: prepared by the author.

In particular, both the first and second types of reasons were characterised by the most intensive cooperation: respectively, 28% and 20% of municipalities in their regions were engaged in cooperation, and each of them had over four partners on average. Furthermore, in case of type 2, there was a significant share of linkages (more than 32%) reaching beyond the ESPON area, as compared to merely 24% in type 4. It should be noted, however, that, other than the selected examples, type 2 was not polar in character but rather zonal, and included entire countries.

As expected, type 3 was characterised by a small spatial range of cooperation, which was expressed on the one hand by the small distance between the twining cities within the ESPON area, and on the other – by a low percentage of agreements going beyond this area. On the other hand, also the intensity of cooperation was relatively low as only 5.5% of the territorial governments in each region had two partners on

average; this intensity was also low in relation to the economic potential although not as bad when compares with the demographic potential. At the same time, type 4 did not have a particularly poorly developed cooperation network, especially in respect of the demographic and economic potential, although only 6.2% of territorial governments were involved in cooperation which did indeed have quite a broad spatial range.

2. Territorial cooperation indicators vs. meta-dimensions of European space differences and the typology of regions

2.1. Principal components of European space differentiation from the perspective of territorial cooperation

The above analyses did not fully acknowledge the many dimensions of the relationships between the examined variables. For this reason, based on the compiled data, an attempt was made to identify the meta-dimensions of differences in the European space in respect of the determinants of territorial cooperation. To this end, a factor analysis was carried out using the principal component (PCA) method. In effect, the number of the analysed variables was reduced and they were replaced by mutually uncorrelated principal components. As a result, the number of variables was lessened without any losses to the key stock of information.

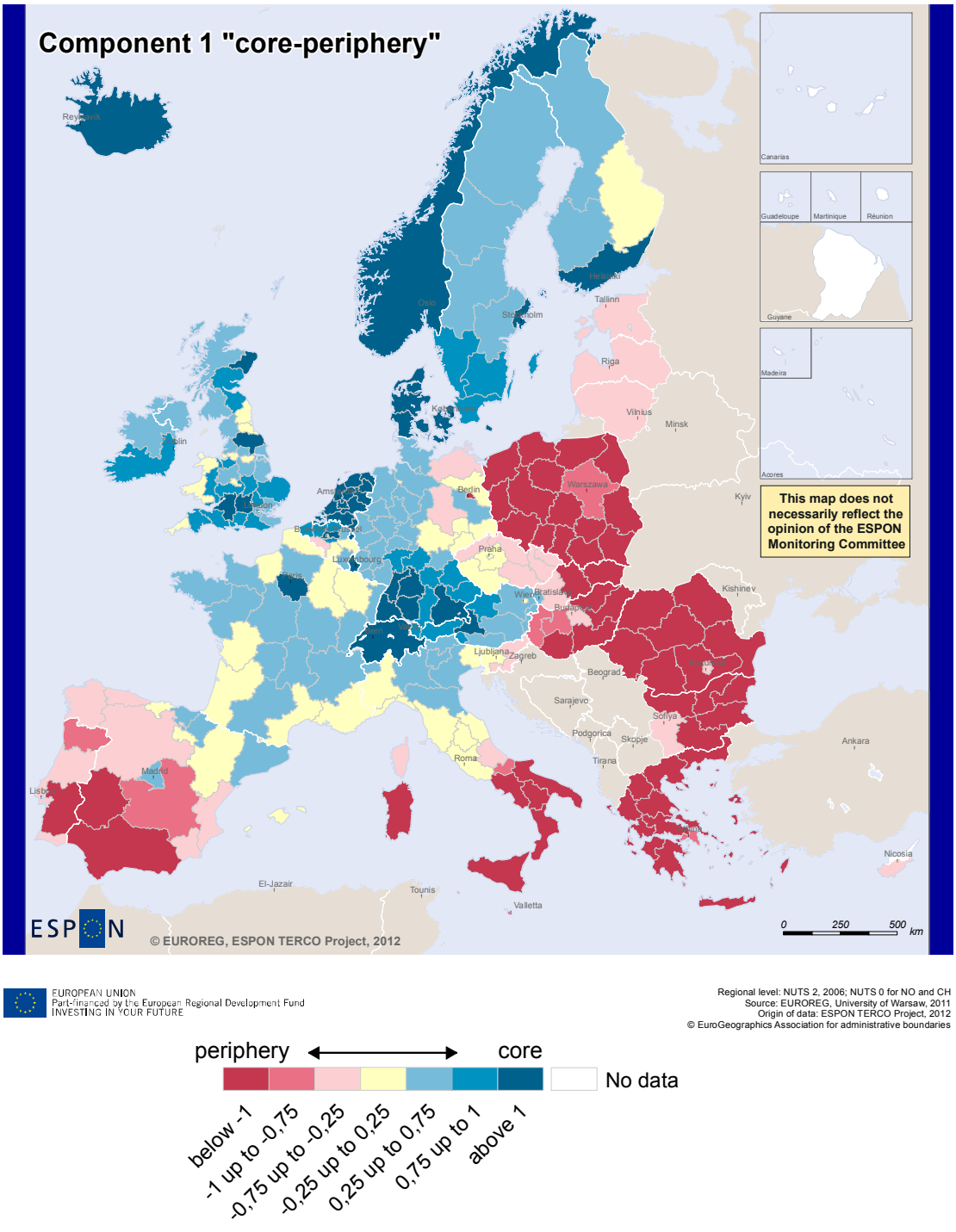
All the variables were used to identify the principal components, while applying the following boundary conditions relating to: minimum coefficient of variance (0.1) and maximum correlation (0.7), as well as minimum correlation with the principal component (0.4). Then, based on the analysis of the plot, four principal components were identified; these components, following the Varimax rotation, explained 60% of the total variance of the analysed regions. They were the following components (Fig. 8 in Annex 2 to this chapter):

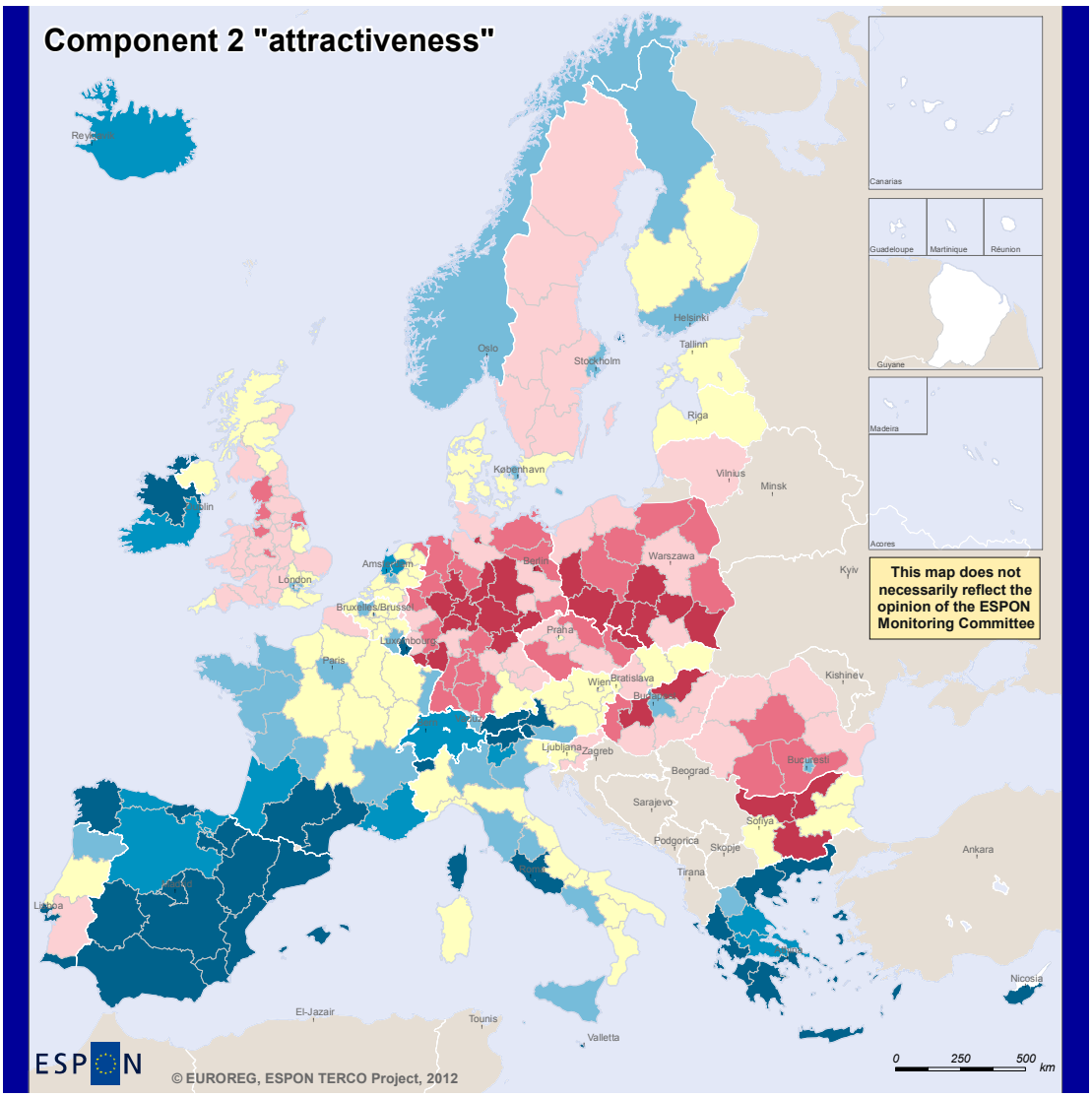
- **Component 1:** core **-** periphery regions ("core character")
- **Component 2:** high-low attractiveness ("attractiveness")
- **Component 3:** low – high economically dependency within countries ("problem character")
- **Component 4:** metropolitan – rural regions ("metropolitan character")

The first illustrated the classical bipolar dimension of the disparities of European space, associated mainly with the level of economic development measured by GDP per capita, which was typically accompanied by: modern economic structure (low share of GVA generated by agriculture), high level of economic activity (employment rate) and high-quality human capital (education, foreign language skills). Regions with high values of these components were located in the European core, made up

of the "blue banana" regions plus the core areas of the Nordic countries and Paris as well as the urban regions of Scotland and Ireland. On the other hand, regions with the lowest values of this component were located in Central and Eastern European countries, Greece, Portugal, southern Italy and Spain.

Figure 8. Principal components of disparities in European space from the perspective of territorial co-operation*





EUROPEAN UNION
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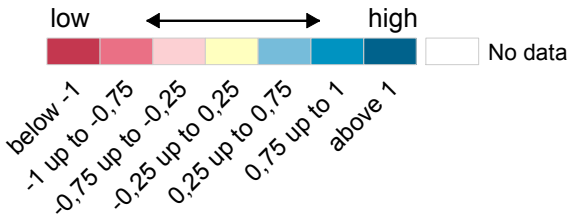
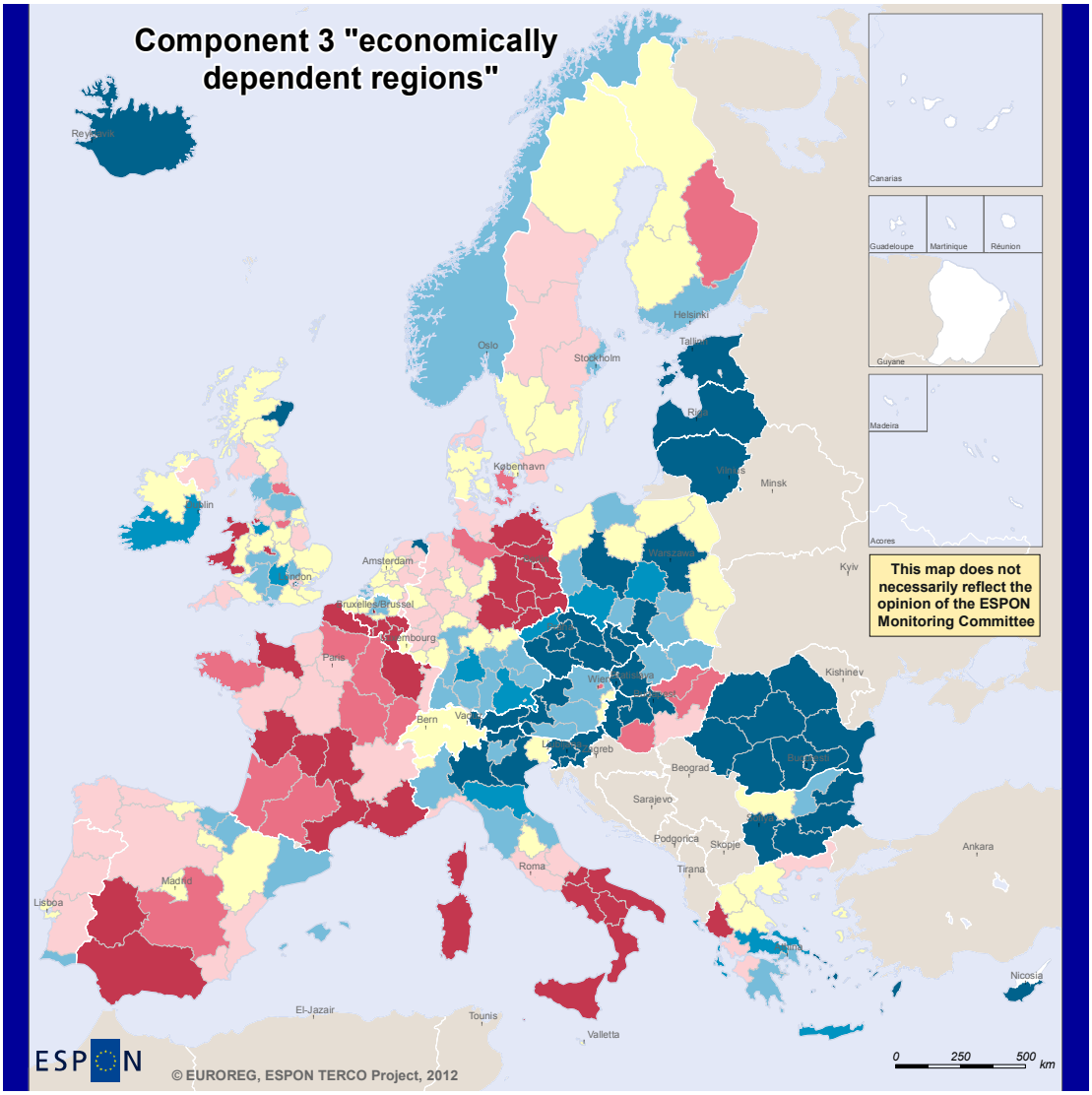
Regional level: NUTS 2, 2006; NUTS 0 for NO and CH
Source: EUROREG, University of Warsaw, 2011
Origin of data: ESPON TERCO Project, 2012
© EuroGeographics Association for administrative boundaries




Component 3 "economically dependent regions"
This map does not necessarily reflect the opinion of the ESPON Monitoring Committee
ESPON
© EUROREG, ESPON TERCO Project, 2012
0 250 500 km
EUROPEAN UNION
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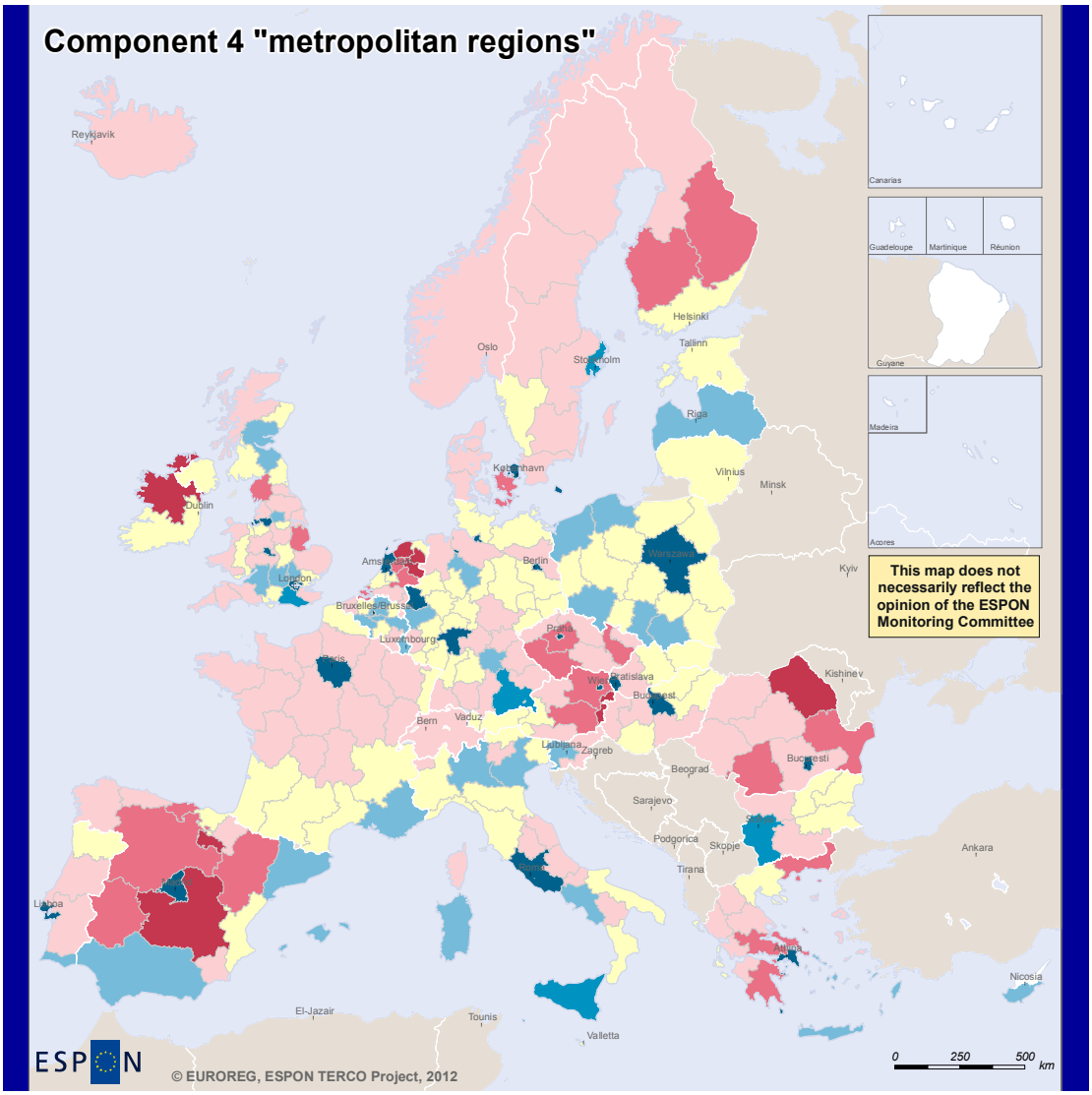
INVESTING IN YOUR FUTURE
Regional level: NUTS 2, 2006; NUTS 0 for NO and CH
Source: EUROREG, University of Warsaw, 2011
Origin of data: ESPON TERCO Project, 2012
© EuroGeographics Association for administrative boundaries
low
high
No data
below -1
-1 up to -0,75
-0,75 up to -0,25
-0,25 up to 0,25
0,25 up to 0,75
0,75 up to 1
above 1



* Iceland, Norway and Switzerland analysed at the national level

Source: prepared by the author.

The second component highlighted the "attractiveness" of regions, understood, on the one hand, as an increase of the population owing to a positive balance of migration and natural increase, and on the other as their being attractive to tourists, including those from abroad. This was coupled by a boom in residential housing development, with a parallel weakness of other economic sectors, particularly

industry. In addition, local government expenditure in these regions included significant outlays on administration. This type of regions was the most commonly encountered in the Mediterranean countries, particularly in Spain, Greece, southern France, and to a lesser extent in Italy. Furthermore, this type of regions was typical of the Alpine countries: western Austria and northern Italy.

The third component identified the "problem character" of regions, understood as a high share of public services in gross value added, coupled with a low rate of economic development, high rate of unemployment and in many cases low development level in comparison with the national average. In the period in question, this was notably visible in the regions of southern Italy, eastern Germany, southern Spain and most of the regions in France. In the remaining countries, high values of this particular component were observable in only a few regions. On the other hand, a swift pace of economic growth could be observed in the majority of countries of Central and Eastern European countries, southern Germany, northern Italy and Austria.

The last distinguished component indicated the metropolitan character of a given region, particularly in the national context. It was associated with a high development level as compared with the rest of the country, location of a major international airport, high population density and a large number of the population per one territorial government. All this suggested the existence of big cities in the region, notably the capital city, which would additionally attract foreign tourists. High values of this component typified regions where the European metropolitan growth areas (MEGAs), defined in ESPON 1.1.1., were located. At the other end of the spectrum, there were usually regions which were their direct neighbours, probably due to the so-called "shadow of the metropolis" effect.

Altogether, the adopted components explained approximately 60% of the variance of European regions, which points to the existence of other reasons determining the specific character of individual countries and macroregions of the European continent which were not taken into account in our analyses.

The distinguished meta-dimensions of European space were rather weakly correlated with the analysed indicators of territorial cooperation **(Tab. 7)**. The strongest negative correlation could be observed between the first component, i.e. the "core character", and the number of twin cities per MEUR 1 GDP of the regional income. The origin of this correlation, generated by the division into the old and new Member States, was discussed above, as it in fact repeated the interdependency between the GDP per capita and this particular indicator. The same (although on a smaller scale) could be observed in case of INTERREG projects. In addition, it was visible that more peripheral regions, i.e. those situated near the boundaries of the ESPON area, which had a lower level of development, would more frequently become involved in cooperation with countries from outside this area and that municipalities engaged in territorial cooperation had signed more twinning agreements.

There were also observable links between the regions' "attractiveness" and the number of INTERREG projects per capita and also in relation (though not as marked) to the regional product. On the other hand the "attractive" regions were less interested in pursuing cooperation as part of twining cities cooperation. This could mean that tourist regions show more interest in territorial cooperation funded from external sources, a situation which could be explained e.g. by their wish to transfer knowledge and experiences via INTERREG B and C programmes. At the same time, in case of those regions, twining cities' cooperation is effected over larger distances within the ESPON area, with a discernibly higher share of linkages reaching beyond this area.

Table 7. Correlation between territorial cooperation indicators and principal components of the disparities in European space

Component	Twining cities per 100 000 population	Twining cities per MEUR 1 GDP	Twining cities per local government	INTERREG projects per 100 000 population	INTERREG projects per MEUR 1 GDP	INTERREG projects per local government	% of municipalities with twining cities	Average number of twining cities	Share of linkages beyond the ESPON area	Average distance between twining cities within ESPON area
"core character"	*-0.09*	**-0.55**	*0.03*	*-0.02*	**-0.35**	*0.13*	*0.14*	**-0.20**	**-0.19**	*-0.14*
"attractiveness"	**-0.20**	**-0.33**	**-0.19**	**0.36**	**0.22**	*0.13*	*-0.15*	*-0.10*	**0.23**	**0.18**
"problem character"	*-0.04*	**-0.20**	*-0.13*	*-0.05*	*-0.15*	*-0.08*	*-0.01*	**-0.31**	*-0.15*	*0.02*
"metropolitan character"	*-0.16*	*-0.11*	**0.20**	*-0.07*	*-0.07*	*0.13*	**0.24**	**0.21**	**0.20**	*-0.02*

* significant correlation in bold and shadowed boxes are described in details bellow

Source: prepared by the author.

On the other hand, in case of "problem" regions there existed a weak, though statistically significant, negative correlation between the degree of their "problem character" and the number of twining cities per one territorial government involved in such cooperation. This also applied (though not as strongly) to the number of twining cities per regional income, which suggests in turn that the main obstacle hindering such cooperation was the poor financial standing of the local governments or that they gave preference to other types of expenditure, associated for example with specific social problems .

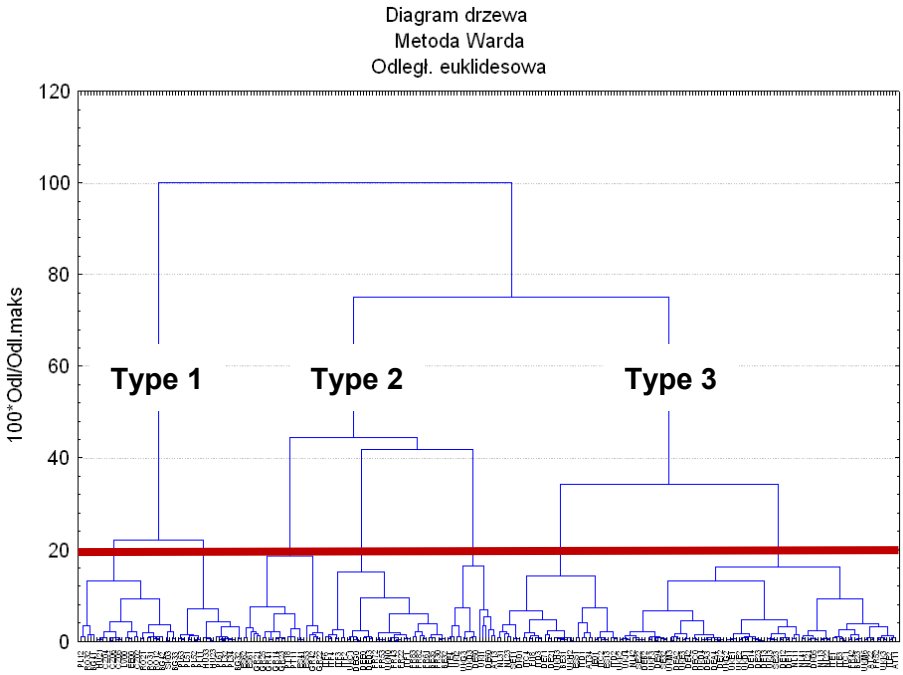
The last component of the spatial differences was the least (i.e. on the verge of being statistically significant) correlated with the intensity of territorial cooperation

understood as the percentage of municipalities maintaining partner relations, and with the total number of such relations per one unit of territorial government. This could mean that the relatively high development level provided sufficient funding for such cooperation, with the facilitating factor in the form of good accessibility by air transport.

2.2. Types of regions from the perspective of TC determinants

*As the next step, the identified principal components of the differences of European space were used for the classification of regions. To do this, a hierarchical cluster analysis using Ward's method was carried out. In effect, a classification tree was produced **(Fig. 9)**, which shows several distinct clusters of components having a similar structure in relation to the analysed indicators.*

Figure 9. Classification tree of regions based on the principal components of differences in European space in terms of transnational territorial cooperation



*Based on the analysis of the average indicator values **(Tab. 8),** these clusters were named accordingly. As a result, three main types consisting altogether of seven subtypes were identified.*

Table 8. *Principal components values by identified types of regions*

Type	"core character"	"attractiveness"	"problem character"	"metropolitan character"
Economic periphery & low attractiveness (Type1)	-1,2	-0,7	-1,0	0,0
– more favourable situation	-1,0	-0,5	-1,5	-0,1
– more problems observed	-1,7	-1,0	-0,2	0,1
Mixed types (Type2)	-0,4	0,5	0,8	0,4
economic periphery – high attractiveness	-1,1	1,8	0,2	-0,3
economically dependent regions	-0,2	0,0	1,4	-0,2
city-regions	0,0	-0,1	0,4	2,9
Economic core (Type3)	0,8	-0,1	-0,1	-0,2
Higher attractiveness	0,9	0,7	-0,5	0,1
Lower attractiveness	0,7	-0,4	0,1	-0,4

Source: prepared by the author.

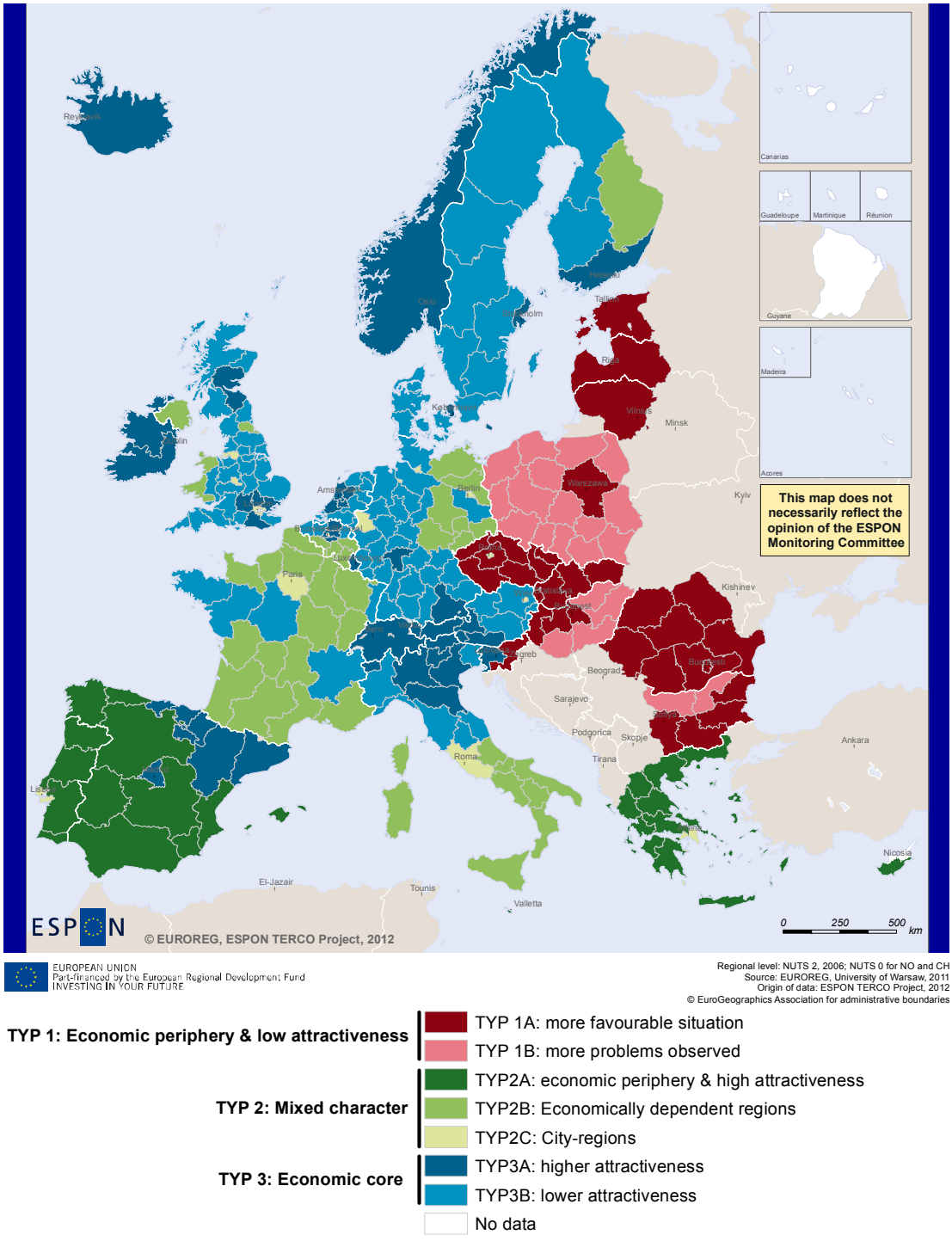
*The first type could be denoted as "**economic periphery & low attractiveness**" regions and included practically all of the Central and Eastern European regions (with the exception of western Slovenia and the city of Prague) **(Fig. 10)**. However, the subtypes which were identified for this type did not easily yield to interpretation, but could be differentiated anyhow in the following way type 1A – more favourable situation and type 1b – more problems observed .*

*The second type was strongly differentiated internally, and for this reason the analysis for the entire type could be misleading. Nevertheless, some conclusions can be drawn for the specific subtypes. The first such subtype could be named "**economic periphery – high attractiveness**" as includes regions of the following countries: Greece, Portugal and the majority of the Spanish regions excluding Madrid, Catalonia, Navarra and the Basque Country. Another subtype, "**economically dependent regions**", comprised eastern Germany and southern Italy on the one hand, and on the other – the majority of the French and Walloon regions of Belgium and certain regions in the United Kingdom. The third subtype, which could be termed "**city-regions**" as it mainly comprised regions which, due to the respective administrative divisions, were encapsulated within the boundaries of large cities, quite distinctly differed from the former two.*

The third type could be summarised as "**economic core**". It included, one the one hand, a subtype of the "direct core" regions, comprising the metropolitan regions of Germany, capital city regions of the Nordic countries, northern Italy, western Austria, Spanish regions not included in the "peripheral" subtype referred to above, Ireland, south-eastern England and the metropolitan regions of Scotland. The second subtype

was made up of the remaining regions of the best-developed countries, with the exception of regions classified as "economically dependent" regions.

Figure 10. Types of EU regions in terms of the determinants of territorial cooperation*



* Iceland, Norway and Switzerland analysed at the national level

Source: prepared by the author.

Based on the characteristic of each subtype from the perspective of territorial cooperation indicators (average values) the following general types of territories ***(Tab. 9)*** *could be distinguished* ***(Fig. 11)***[4]*:*

- ***Twinning city oriented territorial co-operation.*** *In this type, twining city cooperation per the number of the population, the regional income and number of municipalities was the strongest.*
- ***INTERREG oriented with high cooperation beyond the ESPON area****. This type was characterised by the largest average distance between the twinning cities within the ESPON area and a very high share of linkages reaching beyond this area. On the other hand, however, cooperation per inhabitant, regional income or the number of territorial governments was rather poorly developed.*
- **Relatively low range and intensity of territorial cooperation**. In regions comprised this type territorial cooperation was well-developed in terms of the demographic and economic potential, but remained one of the weakest if compared to the number of municipalities. Likewise, the spatial extent of this cooperation was rather modest both within and beyond the ESPON area.
- ***Hubs of territorial cooperation*** *(resulting from administrative divisions). Territorial cooperation per territorial government in this particular type was the most extensively developed. This was a result of the specific administrative divisions in selected countries, because these regions were encapsulated within the boundaries of large cities.*
- ***Medium range and intensity of territorial co-operation*** *(constituting ESPON average). In regions belonging to this type both the intensity and the range of territorial cooperation was quite similar to the ESPON area average.*

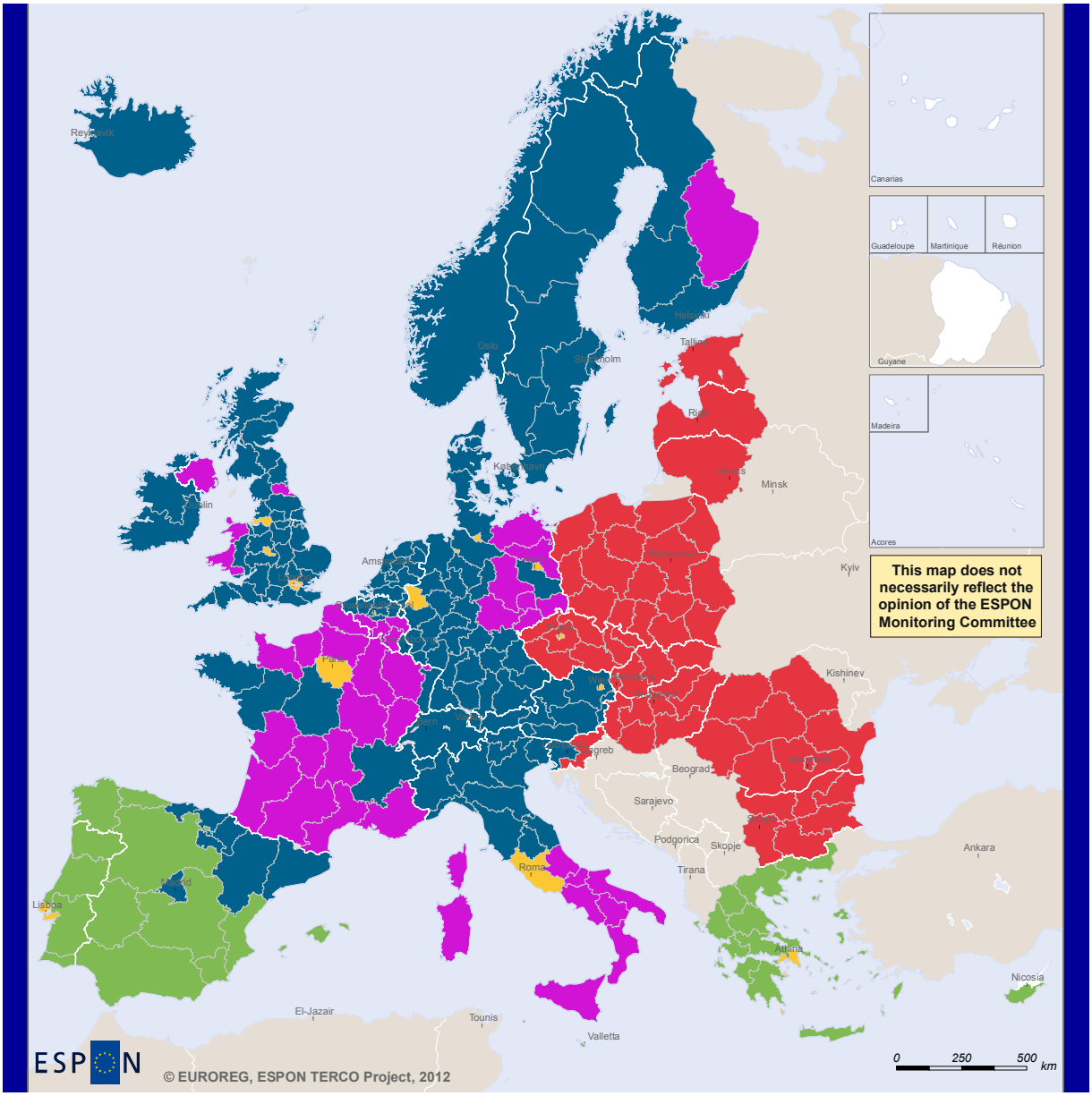
Table 9. Territorial cooperation indicators (average values) by types of regions

Type	Twin cities per 100 000 population	Twin cities per MEUR 1 GDP	Twin cities per local government	INTERREG projects per 100 000 population	INTERREG projects per MEUR 1 GDP	INTERREG projects per local government	% of municipalities with twin cities	Average number of twin cities	Share of linkages beyond the ESPON area	Average distance between twin cities
"Twinning city oriented"	4.4	5.7	4.6	3.5	3.7	0.5	11.1	4.1	23.9	993.5
"INTERREG oriented"	2.3	1.2	1.5	9.5	5.1	0.7	5.9	2.8	31.8	1308.0
"Low range and intensity"	4.0	1.7	1.8	3.9	1.8	0.2	7.2	2.4	17.2	978.0
"Hubs of cooperation"	1.6	0.5	79.6	4.5	1.3	37.9	43.3	10.2	36.4	1160.2
"Medium range and intensity"	3.5	1.1	3.6	5.6	1.8	0.7	13.6	2.6	19.3	992.8

Source: prepared by the author.

[4] The subtypes of Type 1 and Type 3 regions were omitted as they were very similar in terms of territorial cooperation indicators.

Figure 11. Territorial cooperation in different types of regions



Source: Author's own elaboration

CONCLUSIONS

It should be noted in the first place that the conclusions drawn from the quantitative research were, for the most part, based on relatively weak albeit statistically significant correlations. Qualitative case studies (see ScR Part II) seem to confirm those findings or at least no contradictory findings were tracked. For example we could see that indeed the range of territorial co-operation depends on the location of the regions, and definitely more active in beyond ESPON co-operation were actors in Case Studies at the outside borders of EU (Spain with South America and North Africa or Finland with Russia) rather than those within EU borders (Belgium, Czech Republic, Slovakia). However, one have to keep in mind that our Case Studies were chosen to fulfil other objectives than verifying findings of those analyses so they have only limited ability to do so ex post.

It should also be emphasised that the regional level of analysis was somewhat artificial in certain aspects since it was local governments which were the key players in territorial cooperation, whilst the intensity of such cooperation relied above all on the size of a given municipality measured by the number of the population.

Irrespective of these reservations, an approximate picture of the situation can be formulated regarding territorial cooperation pursued by territorial governments in the countries situated within the ESPON area.

The intensity of territorial cooperation was largely dependent on the potential of local governments in a given country. This potential was on the one hand determined by the population of a given municipality (and with its average size at the regional level), and on the other – by the financial independence of local governments, understood as a high share of income from taxes in their revenue.

In contrast, the range of territorial cooperation depends considerably on their location within the ESPON area. A more peripheral location as a rule facilitated establishing cooperation with partners from outside the ESPON area, particularly those located in the direct vicinity; it also made the spatial range of cooperation within the ESPON area potentially the largest.

It should also be pointed out that a low level of economic development is not a factor that discourages local governments from becoming involved in territorial cooperation. This paradox, caused by the enormous development gap between the EU-15 regions and those of the new Member States, can probably be explained by a greater interest on part of the latter in the transfer of experience from the more affluent cities and regions. It also shows that the affluence of territorial governments is not the main driver of territorial cooperation.

The major dimensions of differences in European space relating to the determinants of territorial cooperation were associated with the specific aspects of this cooperation. Firstly, in view of the modest economic potential, territorial cooperation

was well developed in the "peripheral" regions, particularly in Central and Eastern European countries but also in the regions of southern Europe, which could be explained by the willingness to transfer knowledge from the core regions. Secondly, the "attractive" regions were more engaged in cooperation as part of the INTERREG programme, as this could be manifested in the tourism sector, an important element of their economic base. Thirdly, the "economically dependent" regions were less engaged in cooperation, which could suggest their potential lack of funds or point to other priorities being chosen by the local governments. Fourthly, in the case of the "metropolitan" regions, a high percentage of municipalities forming these regions was involved in cooperation, which could be facilitated by their good transport accessibility owing to the presence of a major international airport.

At the same time, the regions situated in the main types/macroregions of European space assumed different forms of territorial cooperation. The regions classified as "economic core" ones largely determined the average and did not deviate from it in any significant way. On the other hand, the Central and Eastern European regions were more deeply involved in twining city cooperation, given particularly their relatively small economic potential. Conversely, the regions of the peripheral countries of southern Europe were more involved in cooperation reaching beyond the ESPON area and in cooperation funded as part of the INTERREG programme, whereas the economically dependent regions were not significantly involved in such cooperation, which was not pursued on any intensive scale and had relatively the smallest spatial extent.

Annex 1

Main research tools: CAWI and IDI

TERCO TEAM

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CAWI

TERCO Project "European Territorial Co-operation as a Factor of Growth, Jobs and Quality of Life"
ESPON applied-research project under Priority 1 (2013/1/9)

QUESTIONNAIRE

IMPORTANT! The information you provide is strictly confidential and will be used for research purposes only.

Please indicate whether you would you like to receive information about the results of this survey.
- (•) Yes
- ( ) No

Please provide your email address [ ]

Glossary of terms: Types of International Territorial Co-operation

Twinning Cities: Co-operation between two cities that have signed a twinning agreement.

INTERREG A: Cross-border co-operation among local/regional authorities/actors (from neighbouring regions) on both sides of a common national border (also European Territorial Co-operation 2007-2013: cross-border co-operation projects and similar projects like TACIS).

INTERREG B: Transnational co-operation among local and regional authorities located in a coherent geographic area, sharing common assets and constraints (also European Territorial Co-operation 2007-2013 projects: transnational co-operation).

INTERREG C: Co-operation among regional authorities on exchange of experience and good practices within one of four different zones (North, South, East, West) (also European Territorial Co-operation 2007-2013 projects: interregional co-operation).

Transcontinental: Co-operation among regional authorities located in different continents, e.g. Canelones in Uruguay with Canary Islands in Spain, European Neighborhood Policy Instrument (ENPI), the cooperation of regional/local authorities with developing countries, etc.

General Information about Co-operation

Does your organisation have any experience in International Territorial Co-operation projects? Answer to this question is compulsory
- (•) Yes (e.g. Interreg A, B, C, Twinning Cities, Transcontinental co-operation, EGTC, TACIS, ENPI, etc.)
- ( ) No

Please indicate the types of co-operation with which your organisation/authority has been involved. Please also specify the number of projects or agreements.

International Territorial Co-operation Type			Number of projects since 2007		
INTERREG A	(•) Yes	( ) No	( ) 1	( ) 2-5	( ) >5
INTERREG B	(•) Yes	( ) No	( ) 1	( ) 2-5	( ) >5
INTERREG C	(•) Yes	( ) No	( ) 1	( ) 2-5	( ) >5
			Number of current agreements with foreign partners (cities)		
Transcontinental (any agreements with partners located on other continents)	(•) Yes	( ) No	( ) 1	( ) 2-5	( ) >5
Twinning Cities	(•) Yes	( ) No	( ) 1	( ) 2-5	( ) >5
Other (please specify) [ ]					

Next ->>

TERCO Project "European Territorial Co-operation as a Factor of Growth, Jobs and Quality of Life"
ESPON applied-research project under Priority 1 (2013/1/9)

QUESTIONNAIRE

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- (•) Yes
- ( ) No

Please provide your email address _____

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Transcontinental: Co-operation among regional authorities located in different continents, e.g. Canelones in Uruguay with Canary Islands in Spain, European Neighborhood Policy Instrument (ENPI), the cooperation of regional/local authorities with developing countries, etc.

General Information about Co-operation

Does your organisation have any experience in International Territorial Co-operation projects? Answer to this question is compulsory

- ( ) Yes (e.g. Interreg A, B, C, Twinning Cities, Transcontinental co-operation, EGTC, TACIS, ENPI, etc.)
- (•) No

Please indicate to what extent each of the following factors hindered your organisation/authority from participating in International Territorial Co-operation (ITC).

Lack of interest and low expectations from ITC	
Lack of knowledge about the possibilities of ITC	
Lack of knowledge of potential partners	
Lack of knowledge about the administrative procedures	
Complicated and highly demanding EU regulations	
Cultural/ linguistic/religious difficulties	
Physical barriers	
Lack of political will	
Lack of funds for co-financing	
Other reasons (please specify) _____	

Future Prospects

For each type of International Territorial Co-operation (each column) please indicate 3 domains which are the most important for the future development of your area

Domains	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Economy	☐	☐	☐	☐	☐
Natural environment	☐	☐	☐	☐	☐
Social infrastructure (e.g. schools, hospitals, retirement/ care homes)	☐	☐	☐	☐	☐
Cultural events	☐	☐	☐	☐	☐
Educational exchange (pupils, students)	☐	☐	☐	☐	☐
Physical infrastructure (e.g. roads, sanitation)	☐	☐	☐	☐	☐
Risk prevention	☐	☐	☐	☐	☐
Tourism	☐	☐	☐	☐	☐
Joint spatial (physical) planning	☐	☐	☐	☐	☐
Other, which? _____	☐	☐	☐	☐	☐

Submit

TERCO Project "European Territorial Co-operation as a Factor of Growth, Jobs and Quality of Life"
ESPON applied-research project under Priority 1 (2013/1/9)

QUESTIONNAIRE Part 2 of 2

When did your organisation/authority first become involved in International Territorial Co-operation?

	Before 1994	1994-1999	2000-2006	Since 2007
Twinning Cities	○	○	○	○
INTERREG A	○	○	○	○
INTERREG B	○	○	○	○
INTERREG C	○	○	○	○
Transcontinental	○	○	○	○

Please indicate to what extent your co-operating partners have changed since 2000.

	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
All the same partners	◉	○	○	○	○
Mostly the same partners	○	○	○	○	○
Similar number of previous and new partners	○	○	○	○	○
Mostly new partners	○	○	○	○	○
All new partners	○	○	○	○	○

Domains

If a given domain is important (i.e. really contributes to the development of your area) please assess to what extent:
(1= to very low extent, 2= to low extent, 3= to medium extent, 4= to high extent, 5= to very high extent)

Domains	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Economy	very low	low	medium	high	very high
Natural environment					
Cultural events					
Educational exchange (pupils, students)					
Social infrastructure (e.g. schools, hospitals, pension houses)					
Roads					
Other physical Infrastructure					
Risk prevention					
Tourism					
Joint spatial (physical) planning					
Other (please specify)					

Co-operation Scope and Intensity

If a particular type of co-operation prevailed in relations with your foreign partners, please assess the approximate number of partners you worked with in that way.

Scopes	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Exchanging experience (e.g. exchange of information on technology, culture, etc. but not undertaking common actions)	1 partner	2-5 partners	>5 partners		
Advising each other on how to solve similar problems, even if the solutions are different (e.g. solving a particular problem with the help of the expertise of other partners, or testing foreign approaches in your region)					
Sharing tools to tackle a common problem (e.g. the partners have similar problems in their countries that they solve the same way)					
Jointly implementing **common actions or investments to solve local problems** (e.g. joint organisation of a cultural festival or building a wastewater treatment plant for border river protection)					
Jointly implementing a spatial strategy (e.g. developing long-term solutions and implementing them in parallel in the involved countries)					
Solving cross-border (transnational or transcontinental) problems which require cooperation (e.g. cross-border health care; developing a missing cross-border transport link, retaining water in upstream regions to avoid floods in downstream regions, etc.)					

Please indicate the types of joint international infrastructure investments in which your organisation was involved:

Types	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Roads	☐	☐	☐	☐	☐
Railways	☐	☐	☐	☐	☐
Wastewater management	☐	☐	☐	☐	☐
Water supply	☐	☐	☐	☐	☐
Schools	☐	☐	☐	☐	☐
Hospitals and medical facilities	☐	☐	☐	☐	☐
Cultural facilities (theatres, concert halls etc.)	☐	☐	☐	☐	☐
Other (please specify)	☐	☐	☐	☐	☐

Please indicate the types of joint international infrastructure investments in which your organisation was involved:

Types	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Roads	☐	☐	☐	☐	☐
Railways	☐	☐	☐	☐	☐
Wastewater management	☐	☐	☐	☐	☐
Water supply	☐	☐	☐	☐	☐
Schools	☐	☐	☐	☐	☐
Hospitals and medical facilities	☐	☐	☐	☐	☐
Cultural facilities (theatres, concert halls etc.)	☐	☐	☐	☐	☐
Other (please specify)	☐	☐	☐	☐	☐

In your opinion, should infrastructure investment be a theme of International Territorial Co-operation?

- ◉ Yes
- ○ No

Within which type of International Territorial Co-operation should it occur?

- ☐ Twinning Cities
- ☐ INTERREG A
- ☐ INTERREG B
- ☐ INTERREG C
- ☐ Transcontinental

International Territorial Co-operation Factors

Please assess whether the following factors facilitated or hindered your region's cross-border co-operation with regions in neighbouring country/countries. Name the country you describe. No assessment means that the factors had no influence.

	Country:	Country: remove country
Level of growth (development) in your region	substantially hinders	
Presence of minority groups (in your region or neighbouring region)	somewhat hinders	
Physical geography between the regions	somewhat facilitates	
Level of infrastructure (in your region or neighbouring region)	somewhat facilitates	
Historical relations (between your region and neighbouring region)		
Religion		
Language		
Cultural background		
Previous involvement in International Territorial Co-operation projects (of your region or neighbouring region)		
Availability of funding		
Geopolitical position of the regions		
Institutional background		
Civil society		
Shared environmental concerns		
Business community		
EU membership		
Political will		
Other (please specify)		

Resources

Please assess the extent to which the following resources are available in your organisation/institution for participation in International Territorial Co-operation projects. (1= minimum resources, 2=little, 3=about enough, 4=just enough, 5=substantial resources)

Resource	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Funds	minimum	little	about enough	just enough	substantial
Staff	-- availability --	-- availability --	-- availability --	-- availability --	-- availability --

In recent years, which of the following sources have funded your International Territorial Co-operation? Please indicate the level of their significance in your total funds devoted to the International Territorial Co-operation:

Sources	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Own (your institution)	very low	low	medium	high	very high
Public-Private Partnership					
Foreign partners					
European Union funds					
National (public other than own)					
Other (please specify)					

Involvement of Stakeholders in Co-operation

If any of the following actors/stakeholders are involved in International Territorial Co-operation in your area, please assess their level of involvement:

Actors	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Local authorities	very low	low	medium	high	very high
Regional authorities					
Local residents					
NGOs					
Business					

Governance

Please indicate 3 key stakeholders initiating International Territorial Co-operation in your area:

Organisation	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Local government	☐	☐	☐	☐	☐
Regional government	☐	☐	☐	☐	☐
National government	☐	☐	☐	☐	☐
EU bodies	☐	☐	☐	☐	☐
Development agencies	☐	☐	☐	☐	☐
Chambers of commerce	☐	☐	☐	☐	☐
NGOs	☐	☐	☐	☐	☐
Euroregions and other cross-border institutions	☐	☐	☐	☐	☐
Consultants, external experts, etc.	☐	☐	☐	☐	☐
Other (please specify)	☐	☐	☐	☐	☐

Impact

If there is an impact of International Territorial Co-operation on your area, please indicate in which theme and at what level:
(1=minimal impact, 2=small impact 3=moderate impact, 4=large impact, 5=very substantial impact)

Themes	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Economic growth	minimal	small	moderate	large	very substantial
Job creation					
Quality of life					
Quality of natural environment					
Service provision					

In relation to the following flows/exchanges, please indicate how you perceive the impact of International Territorial Co-operation on your area: (1=minimal impact, 2=small impact 3=moderate impact, 4=large impact, 5=very substantial impact)

Flows/Exchanges	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
International trade	minimal	small	moderate	large	very substantial
Foreign direct investment (FDI)					
Commuting for work					
Tourism					
Social commuting (e.g. visits to friends, shopping, etc)					
Migration					
Educational exchange (students, pupils)					
Other (please specify)					

If International Territorial Co-operation had an impact on the following activities in your area, please tick them and indicate the strength of the impact: (1=minimal impact, 2=small impact 3=moderate impact, 4=large impact, 5=very substantial impact)

Activity	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
International networking co-operation among firms	minimal	small	moderate	large	very substantial
Networking among NGOs					
Building mutual trust (between people/organisations)					
Joint project preparation					
Joint spatial planning					
Other (please specify)					

Value-Added from International Territorial Co-operation

If International Territorial Co-operation project funds were unavailable, would you undertake similar activities/investments anyway?

	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Yes, similar to those types of co-operation	◉	○	○	○
Not similar to those types of co-operation	○	◉	○	○

I would undertake activities/investments similar to those financed within International Territorial Co-operation projects, and

they would be:	
In terms of time	
In terms of scale	
they would have:	
Budget	
Domains	

Future Prospects

For each type of International Territorial Co-operation (each column) please indicate 3 domains which are the most important for the future development of your area

Domains	Twinning Cities	INTERREG A	INTERREG B	INTERREG C	Transcontinental
Economy	☐	☐	☐	☐	☐
Natural environment	☐	☐	☐	☐	☐
Social infrastructure (e.g. schools, hospitals, retirement/care homes)	☐	☐	☐	☐	☐
Cultural events	☐	☐	☐	☐	☐
Educational exchange (pupils, students)	☐	☐	☐	☐	☐
Physical infrastructure (e.g. roads, sanitation)	☐	☐	☐	☐	☐
Risk prevention	☐	☐	☐	☐	☐
Tourism	☐	☐	☐	☐	☐
Joint spatial (physical) planning	☐	☐	☐	☐	☐
Other, which?	☐	☐	☐	☐	☐

Submit

TERCO

European Territorial Cooperation as Factor of Growth, Jobs and Quality of Life

IN-DEPTH INTERVIEW

INFORMATION FOR THE INTERVIEWER:

1. Please fill in the interviewer and interviewee information below prior to the interview.

2. Before commencing the questions, please introduce yourself and explain that the interview is part of the project named TERCO, which is designed to assess how international territorial cooperation influences socio-economic development in various countries. The research is being carried out in 19 countries by 6 academic institutions (N.B. translate the names, so that they are meaningful to your interviewee): Warsaw University (Poland), University of Strathclyde (Scotland), Free University of Brussels (Belgium), University of Eastern Finland (Finland), University of Thessaly (Greece), and the Autonomous University of Madrid (Spain). The project is financed within ESPON (European Observation Network for Territorial Development – N.B. say the name in the language of the interviewee). The project will be

finalised by the end of 2012. The information provided in this interview is strictly confidential and will be used for research purposes only. Give the interviewer the printed link to the national TERCO website.

3. After the introduction, please ask:

Would you like to be informed of the results of this survey?

Yes ☐ **No** ☐

If 'YES', please provide an email address: _____

4. N.B. Please constantly emphasise the difference between TC - Territorial Co-operation and the name of INTERREG B (Transnational co-operation), which may sound very similar.

5. You do not need to read out the questions word for word – you may ask them in your own way (adjusted to the respondent), and you do not need to keep the questions in the existing order; if your interviewee is jumping to other areas, you can follow him with relevant questions. It would be ideal if all interviewees were to answer all questions, but you may find that some individuals cannot answer certain parts, and then you must find others who can help.

6. Please record the interview if possible. At the beginning of the interview, please ask if it is possible to record it. Please also make notes, as a backup measure.

7. Please prepare a sheet of paper with a glossary, including the terms presented below (make it look colourful, friendly, and in large letters). Familiarise the interviewee with it briefly, and then keep it visible during the interview. Of course you should talk about other TCs as well!

Glossary of Terms:

Types of Territorial Co-operation

Twinning Cities = Co-operation between two cities that have signed a twinning agreement.

INTERREG A = Cross-border co-operation among local/regional authorities/actors (from neighbouring regions) on both sides of a common national border (also European Territorial Co-operation 2007-2013: cross-border co-operation projects).

INTERREG B = Transnational co-operation among local and regional authorities located in a coherent geographic area, sharing common assets and constraints (also European Territorial Co-operation 2007-2013 projects: transnational co-operation).

INTERREG C = Co-operation among regional authorities on exchange of experience and good practices within one of four different zones (North, South, East, West) (also European Territorial Co-operation 2007-2013 projects: interregional co-operation).

Transcontinental Co-operation = Co-operation among regional authorities located in different continents, e.g. Canelones in Uruguay with Canary Islands in Spain, but also Technical Assistance for the Commonwealth of Independent States (TACIS), amongst others.

Interviewer Information*

Name:	e.g. Anastazy Field
Date/Place:	20 June 2011/ Warsaw
Code of interview: Number of interview/ Partner/Country of interview/border	e.g. 1/EUROREG/PL/PL-CZ, 2/EUROREG/CZ/PL-CZ, etc.

* The Interviewer fills in.

Respondent Information*

Name:	
Organisation/Institution:	
Function:	
City:	
Region NUTS II/III:	
Country:	

* The Interviewer fills in.

1. Physical areas of territorial co-operaiton

1.1 In what types of **Territorial Co-operation** is your organisation involved? If this includes more than one type of **Territorial Co-operation**, which one has the greatest impact on your municipality/region? Please explain how and why.

1.2 Based on your experience, which type of joint actions best increase the competitiveness of the co-operating regions/areas? Why is this so?

1.3 Does **Territorial Co-operation** improve or intensify working relations between actors and organisations within the area (e.g. between regional/local and central government, NGOs and the public, etc.)?

1.4 [If applicable]: How could physical barriers such as coastal/maritime borders, mountains, rivers etc. be overcome to enable co-operation?

1.5 Do you see the need for **Territorial Co-operation** to expand geographically in your area? If so, please elaborate.

1.6 Do you see the need for **Territorial Co-operation** to involve new partners in your area? If so, please elaborate.

2. Driving forces and Romains of co-operation

2.1 Why is your organisation involved in **Territorial Co-operation** (what was your motivation to start it)?

2.2 In your opinion, in which domains are the co-operation efforts most developed in this region?

2.3 Which types (as specified in the Glossary) of co-operation are better for specific domains (e.g. economic, social, cultural) or for addressing specific issues/problems?

2.4 How can synergies be created among the domains or actors by **Territorial Co-operation** projects (In other words, how can one project strengthen the results of another project)? Please give an example.

2.5 Should support for infrastructure be increased in future within **Territorial Co-operation** programmes (not only INTERREGs)? If so, why, and in which particular type of investments?

2.6 What kind of activities would be most beneficially supported by **Territorial Co-operation** in your municipality/region?

3. Territorial structures and specific border co-operation

3.1 What territorial structures (e.g. river and maritime basins, Euro-corridors, urban areas) in your area should be supported by **Territorial Co-operation**? Please give examples.

3.2 Do you see any benefits from expanding territorial co-operation to include non-EU countries? If so, what kinds of benefits in particular?

3.3 Has **Territorial Co-operation** improved 'external' relations with your neighbour regions/countries? Please explain how for each region/country separately.

3.4 Is it possible that **Territorial Co-operation** can improve the competitiveness of your region? If so, under which conditions (political, legal, social, administrative, etc.)?

3.5 What kind of investments in human or physical capital (e.g. training, ICT, buildings, etc.) might be needed to facilitate **Territorial Co-operation**? Please give examples.

3.6 Based on your experience, what are the main facilitators and obstacles for **Territorial Co-operation** (including institutional facilitators and obstacles)?

4. Governance structures and implementation of co-operation

4.1 Which organisations and actors would you identify as being the key partners in organising and mobilising **Territorial Co-operation** in your municipality and region? How regularly do key partners meet?

4.2 Which factor plays the more important role in co-operation: national laws and regulations or the usual (formal and informal) everyday practices?

4.3 Please indicate which approaches in **Territorial Co-operation** governance work better and comment briefly why:

a) bottom-up ☐ vs top down, ☐

b) centralised ☐ vs locally driven ☐

c) highly institutionalised ☐ vs loosely organized ☐

d) closely regulated/managed ☐ vs open/flexible ☐

e) narrow stakeholder involvement ☐ vs broad partnership, etc ☐

4.4 Can you give any examples of 'good practice' (project or practice that was a role model) in **Territorial Co-operation** (not necessarily in your country or region)?

4.5 If you could change anything in EU **Territorial Co-operation** programmes, what would you change?

Thank you very much for your participation!

Specific observations by the interviewer

(if relevant for quality of the interview)

e.g. the conversation was interrupted by many phone calls, so the interviewee was not focused and was answering only very briefly.

www.espon.eu

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