TOWN

Small and medium sized towns in their functional territorial context

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This report does not necessarily reflect the opinion of the members of the Monitoring Committee.

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This basic report exists only in an electronic version.

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Chapter 1 – Research Framework

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1. Aim of the chapter

The TOWN project addresses the research questions posed by the ESPON call for tenders "**ESPON Applied Research Project 2013/1/23"**, which asked for a specific focus on small and medium sized towns and their functional role in Europe.

In particular, the terms of reference of the project asked for supporting knowledge and evidence for the following three policy questions:

> "What kind of roles and functions do small and medium sized towns perform in the European territorial structure, e.g. as providers of employment, growth and services of general interest, that contribute to the Europe 2020 Strategy for smart, sustainable and inclusive growth?
>
> What are the potentials and barriers for development of small and medium sized towns in different territorial contexts, and how can policy at different levels unleash the potentials and diminish the barriers in ways that strengthen their functional character?
>
> What types of governance and cooperation arrangements exist at various levels aiming to support the development of small and medium-sized towns and their territorial context, and how can policy further support these types of arrangements in order to strengthen their contribution to a more balanced territorial development of the European regions?"
>
> (ESPON, 2011)

The overall hypothesis developed by the TOWN project to address the questions contained in the call for tenders (or terms of reference of the project) is that: towns in their territorial context have an important role, and can be key factors in supporting EU strategic policies for the achievement of policy aims such as EU 2020 and territorial cohesion. In this sense, the project aims to fill the gap left by more traditional approaches and foci in which the bigger metropolitan areas were situated at the centre of the research (and political) agenda.

There is a growing awareness (McCann, 2004; Bell and Jayne, 2009) about the fact that the role of towns in territorial development and spatial dynamics in the globalised context has been both under researched and underestimated. In recent decades, on the one hand research has focussed on urban hierarchies from the late 1990s onward in which the objective was to define a hierarchy of world cities, based on the presence of corporate headquarters of financial services, legal and accounting firms (Beaverstock, Taylor and Smith, 1999) or on air connections (IGEAT et al., 2006); on the other hand, several projects focused on metropolitan areas, urban regions and their functional regions (IGEAT et al., 2007; Adam, 2006; OECD, 2002; 2012) considered smaller settlements as embedded and functionally dependent on larger spatial aggregations.

The assumption underlying the TOWN project seeks to remedy the "invisibility" of the territorial role of small and medium-sized towns in their regions. It assumes that such towns have their own specific 'urban' capital and related territorial potentials that are embedded in wider global dynamics, albeit in specific spatial contexts in which the economic dynamics are "largely underpinned by a complex interplay of internal and external forces" (Courtney and Moseley, 2008, p. 315). Therefore, it hypothesises that such towns could exhibit different spatial performances compared to their context and specific territorial identity, if a specific combination of local development and territorial governance is in place.

The project shares the perception that a large part of the research on large cities to date does not help in conceptualising the contemporary functions of towns and smaller urban settlements. (Robinson, 2002; Demazière, 2014). Towns may be 'relatively autonomous' actors capable of developing and realising their own potentials either individually or collectively (i.e. through cooperation with other urban areas). If this is the case, towns could offer opportunities to increase the resilience of territories dealing with the impacts of global economic trends, due to the fact that they are rooted in local specificities and have their own territorial capital which they can mobilise to achieve local development strategies.

At the same time, however, there is the clear awareness of the need to avoid an ever bigger conceptual mistake when addressing the role of small and medium-sized towns in the wider territory: the idea that they are 'free agents' with their own autonomous territorial trajectory, unaffected by any wider 'scale-dependency'. Hence, the project has faced the dual challenge of identifying the specificities of towns while at the same time paying due attention to, and acknowledging, the regional embeddedness of these territorial features.

Nevertheless, even before discussing the role of towns in their wider urban and regional context, the project had the complicated task of defining its approach to the concept of 'town'. The object of the research project is far from clear in either the academic or policy literature, and despite being a category that belongs to our common sense (everybody tends to understand what the term refers to), and a growing series of analyses of the topic (Adam, 2006; Van Leeuwen & Rietveld, 2011), it is difficult to identify a clear and shared definition of such 'towns'. The term refers to something small and smaller than a city, but a clear-cut definition and distinguishing characteristics do not exist. This is why we sympathise with Brunet's opinion (1997) about medium-sized town as 'unidentified real object', and we can extend it to the wider term of 'town'. It is unidentified because not there is no widely shared and clear concept, nevertheless it is a 'real' object because of its specific (common-sense) shared cultural meaning that evokes images and an understanding of what it is that characterised such places territorial features.

In a sense we think that it is 'impossible' to define in a clear-cut manner the concept of 'small and medium-sized town', because it refers to a complex social-spatial phenomenon strongly embedded in its context and thus cannot be identified in a simple and easy manner across Europe. To a certain extent, we sympathise with the radical critique of the concept of urbanity developed by political-economy scholars, such as Brenner and Schmid (2013) to refer to just one of the more recent publications on the issue (further elaborations on this issue in the next section).

However, the framework of the project defined by the ESPON applied-research agenda, which is inspired by the aim of producing knowledge to support policy recommendations, leaves limited margins for epistemological reflections on the nature of urban areas and the concept of city and towns. Within this perspective, we have adopted a pragmatic approach and have elaborated our definition of town based on the objectives contained in the tender and accordingly developed our analysis and aims in a manner that is consistent with this approach and the need to analyse and investigate its empirical consequences in a rigorous and systematic fashion. This was done taking into consideration on the one hand the wider debate on towns and urban areas, and on the other hand the specific project aim, the data availability and the feasibility of a plausible method that would integrate different perspectives.

Based on this approach, we have answered the general research tasks of the project, which can be summarised in the following three points:

- The identification and categorisation of SMSTs in Europe;
- The analysis of their territorial performances and problems in terms of socio-economic characteristics and spatial dynamics, taking in consideration their specific contexts and profiles;
- The elaboration of possible policy recommendations in relation to typologies and spatial contexts, having territorial cohesion and EU 2020 strategy as policy framework and final scope of policy actions.

All the work done within the TOWN project is contained in this TOWN Scientific report. Each chapter represents a specific part of the analysis, and it indicates the theoretical approach, the research assumptions, the related method of investigation and the specific findings. An unavoidable dimension of this is that the more we have sought to approach the theme from different perspectives and utilised different data, the greater is the risk of producing contradictory findings. Taking this into account we have therefore shown both convergences and contradictions, in the belief that they both present instructive methodological and analytical – insights.

Within this framework, the present chapter has a two-fold aim. First, it provides our interpretation of 'town' locating it within the wider epistemological debate. Second, and consequently, it illustrates the methodological consequences of this interpretation and the overall construction of the TOWN approach.

Thus, the following section reflects on the epistemology of 'town' and its methodological consequences (section 2). Then, section 3 articulates the research questions that the project has been able to answer and the related analytical challenges. Following on from this it explains how the general structure of the project has led to the structure of this report.

2. Conceptualising small and medium-sized towns in their functional and territorial contexts

2.1. A territorialist approach

The project aims to draw on the analyses and insights of different approaches and definitions, whilst developing specific strands of analysis which were consequences of different conceptual definitions. Nevertheless, TOWN has predominately adopted a specific definition that is based on a geomatic-morphological interpretation, to which a set of thresholds have been applied (as explained further in section 2.4 and more in detail in ch.2).

We can locate the overall approach in the traditional interpretation of the urban phenomena that Brenner and Schmid (2013) address – not without strong critics – as an empirical and territorialist approach (ibid, p.14). It is a relatively traditional interpretation that has characterised most of the twentieth-century social sciences rooted in the concept that the urban phenomena can be interpreted as bounded, coherent and discrete spatial units, albeit a complex one. The association of statistical data with these entities then allows for further analysis and considerations.

The territorialist approach we have adopted is therefore based on two main fundamental empirical and theoretical problems: first, how to determine the appropriate spatial boundaries of the areas whose populations were to be measured; second, the specification of a set of criteria for urban interpretation and type definition. While the first one lies at the core of the geomatic method (Guerois et al., 2012), the latter has been for decades mainly characterised by a demographic approach, based on which the identification of appropriate thresholds of population within a predefined jurisdictional unit would allow for the classification of 'urban' types. Brenner and Schmid (2013) argue that the origin of such a demographic-approach can be found in the 1930s that it has continued to be developed until today (Schnore, 1964; Bloom et al., 2010; Montgomery, 2010).

Critiques of this approach are by no means new. For instance Brenner and Schmid point to Wirth (1969 [1937]) as one of the first critical voices of such an arbitrary population-based definition of the urban condition. His theory of urbanism paid attention to the role of urbanisation in intensifying interspatial interdependencies and reorganising territorial organisation. However, Brenner and Schmid argue that Wirth's theory was still based on the conception of social life taking place in bounded human settlements that can be typologized through more elaborated characteristics, such as population, density, and heterogeneity (Brenner & Schmid, 2013).

Another important critique of this approach identified by Brenner and Schmid (ibid) refers to the univocal distinction between urban and rural areas. The banalization of the territorial complexity in an urban-rural dichotomy tends to leave the rural area as a sort of residual area (or category) without any genuine distinction or connotation. But, as the EDORA project argued, "Urban areas and rural hinterlands are not two discrete spaces, they overlap and interlink in a complex system of economic and social interactions, (commuting, service provision patterns, leisure and recreation linkages etc). In the current, increasingly globalised, context, many rural areas have as many links to distant regions across Europe or the rest of the world as they do to adjacent urban areas." (Copus et al., 2011: 11). This implies that the complex relationships between activities and socio-spatial organisation, the labour structure and economic bonds should be part of the interpretative process so as to contribute to the understanding of territorial complexity.

Nevertheless, the territorialist approach remains the standard way of interpreting the 'urban phenomena' that allows cross-country comparison. The adoption of this method is a pragmatic choice determined by the need to have a first important step in the project a quantitative overview of our object of analysis across Europe, as as required in the tender. At the same time, however, the project does not ignore the political economy critique of the territorialist approach and its attempted definition of urban areas. It uses its arguments as critical contributions to an understanding of the limitations of certain results produced using the territorialist approach. Moreover, it offers important insights that can be used in relation to our qualitative analysis at case study level.

Finally, two issues need to be mentioned concerning the territorialist approach adopted by the TOWN project. First, the project has had the chance to apply a method that has overcome the limitation of data inaccuracy due to different national and regional statistical units and procedures. This draws on the methods elaborated by the joint initiative of OECD and DG Regio, who developed a geomatic interpretation that allows for the morphological articulation of the urban-rural distinction based on the geo-mapping of the territory (DG Regio, 2011; OECD, 2012).

Second, the project has experimented with more sophisticated approaches for the characterisation of urban settlements. On the one hand, in line with Wirth's theory of urbanism, the introduction of criteria as such density, and socio-economic composition; on the other hand the investigation of the functional roles of urban areas interpreted as centres of functions and jobs (see chapter 5), which makes it possible to determine the different positions of cities and towns in urban hierarchies and complex polycentric territorial structures.

2.2. Terminology

The territorialist method, based on criteria and thresholds for the differentiation of urban types can be considered the basis of mainstream approaches to urban interpretation and analyses. It is important to note that the mainstream terminology also derives from this conceptual interpretation. Therefore, the unavoidable arbitrary nature of the method, as pointed out by several critics, is reflected in the use of the terminology, in particular because of the semantic richness of the terms in use.

One of the most problematic is the differentiation between town and city. The term 'town' has clear cultural connotations of smaller-ness, but it has a blurred conceptual demarcation line with the term 'city'. The dictionary refers to the term town as "a built-up area with a name, defined boundaries, and local government that is larger than a village and generally smaller than a city" (Oxford Dictionaries: "town").

However, the distinction in the English language cannot be found in other national and linguistic contexts. If in French language we can find 'cité' and 'ville', the former tends to be used to designate a district of the latter ('cité d'Arles', 'cité ouvrière'…). And in many other European countries, the urban entity has only one general term (stadt, citta', ciudad, πόλη, město, etc).

To make it more complicated from a terminological point of view, in academic and policy documents the term 'town' is often associated with a dimensional connotation (small and medium sized) in a rather un-problematic way. In general, the notion of small-and-medium-size-ness is very commonly associated with cities, enterprises, companies and the like, and it indicates the exclusion of the upper part of the range of a category, i.e. the big size features. 'Small and medium sized town' is a relatively common expression that indicates those urban areas or settlements that are not in the higher part of the ranking table. However, there is a conceptual overlap between the remaining 'big-size' of small-and-medium and the upper category of 'cities'.

The call for tenders of the project "Small and medium sized towns in their functional territorial context" is a clear example of this ambiguity. Small and medium sized towns in Europe are identified as the subject of the analysis, and are specified as those towns having between 5.000 and 50.000 inhabitants. The tender explicitly mentions that these thresholds are compatible with the classification adopted by DG Regio and OECD of cities in Europe, which are interpreted as having 50.000 inhabitants upwards. The tender indicates as small and medium sized towns those settlements with less than 50.000 inhabitants, while it refers to interpretations according to which settlements above that threshold are considered to be urban areas and cities.

Therefore, the term 'small-and-medium-sized' appears to be more a reinforcement of the smallness characteristics than a real specification. Semantically, it seems to lead to a redundancy of the term 'town' that refers to a smaller size. Although the distinction becomes clearer if density is used as an additional criterion for type distinctions (as the project has experimented with in ch.2), nevertheless the ambiguity remains.

Therefore, for the sake of clarification, the project will address the subject of its investigation alternatively with generic terms as small urban areas and/or settlements, or (smaller) towns. However, we will use the acronym SMST that stands for Small and Medium Sized Town – as specified by the tender - when we refer to the core of our analysis based on a specific conceptual and methodological approach - with a consequent experimentation utilising population and density thresholds - adopted in TOWN project[1]. Moreover, the project will use specific terms to indicate the interpretation of towns as functional centres of micro regions (see ch.5).

2.3. Combining three different urban definitions

In order to clarify the ambiguity that surrounds the definition of SMSTs a brief overview of the different conceptualisations and the ways of interpreting the urban dimensions within the territorialist approach (Brenner & Schmid, 2013) is necessary. Drawn on a first overview done by the ESPON 1.4.1 project (ÖIR et al., 2006), three key perspectives and discourses related to the definition and conceptualisation of urban places can be highlighted (summarised in Table 1):

1) Morphological perspective: town is defined as a compact built up area with a certain minimum concentration of population (Urban settlement);
2) Administrative perspective: town is defined as a territorial unit of a local government that contains urban settlement(s) (Urban municipality);
3) Functional perspective: town is defined as an urban settlement (or urban municipality) containing a concentration of jobs, services and other functions that serve other settlements in its hinterland (urban centre); the urban centre acts as an urban core of the urban (functional) region, which is a larger area that contains the

[1] Seemingly, other projects have previously used different acronyms, such as SMESTO used in the ESPON project 1.4.1 (2006a).

urban centre and its hinterland which together form a socio-spatial system integrated by functional inter-relations.

Table 1. Comparison of different conceptualisations and related criteria.

	Term	Definition	Distinctive characteristics	Criteria
Morphological approach	Urban settlement	Built up area (area with urban physical characteristics) of a minimum population size	Concentration of buildings (distinction from open spaces) and population (above minimal threshold)	• Compact build-up area • Distance between settlements and buildings • Population • Density of urbanised area
Administrative approach	Urban municipality	Settlement with urban administrative status	Local government with urban administrative duties and responsibilities and territory / boundary containing urban settlements	• Local government • administrative functions • Historical attribution
Functional approach	Urban centre / urban core	Urban settlement (municipality) with concentration of jobs, services and other urban functions	Role of centre for region due to concentration of jobs and other urban functions attracting commuters and visitors	• Population • Jobs • Other urban functions • Commuting • Centrality
	Urban functional region	Larger area with functional relationship with one or more urban cores	Gravitational area of jobs, services and other functions located in urban core(s)	• Access to jobs and services • Home-work commuting • Home-service commuting

2.3.1. The urban settlement

The first fundamental step in the definition of urban settlement from a physical, **morphological** point of view has is the conceptualisation of the distinction between the built-up and open-space areas. In general, an *urban settlement* is considered to be an area in which buildings are not too sparse and contain a concentration of population that creates the sense of an urban agglomeration. From this perspective, two parameters are most commonly used: first, the distance between buildings must be below a given threshold; second, the total population of the built-up area must exceed a certain minimum level.

While the use of these parameters is commonly accepted in official definitions, there are significant differences between thresholds applied in each country. The United Nations recommends that for the definition of urban areas 200m be used as the maximum distance between houses (Le Gléau et al., 1997), although in some European countries it may range from 50 m (UK and Norway) to 250 m in Belgium (ÖIR et al., 2006: 45). In addition, there may be some different interpretations for areas used for public, commercial and industrial purposes, with the consequence of ’creating’ more or less fragmented and extensive areas among countries (Le Gléau et al., 1997).

For the second parameter, the continuous built-up area can only be considered as “urban” if its aggregated population exceeds a certain threshold that also varies among different countries (e.g. 200 inhabitants in Belgium and the Nordic Countries), but can also have forms of approximation (e.g. 50 occupied dwellings as threshold adopted in Ireland). At the same time, if the built up area is approximated to administrative or statistical boundaries, the criterion adopted for the identification of the urban settlement is the population density (as for instance in the Netherlands with a threshold of 1.000 inhabitants per sq. km).

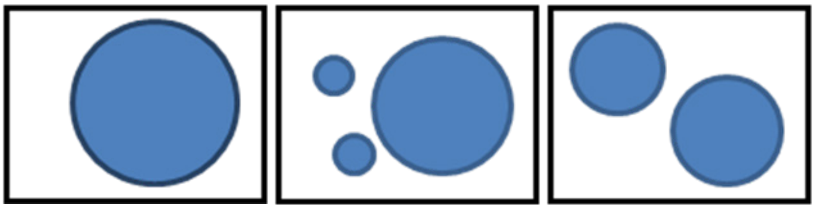
2.3.2. The urban municipality and the relationship with urban settlements

The definition of the urban settlement through its built-up area, and thus using morphological criteria, is different from the **administrative** definition of an *urban municipality* as an administrative entity with (different) functions, rights and duties that can be called town (UK), ville (Fr), stadt (D), město (Czech R.), etc.

Some countries have a specific population threshold for defining urban municipalities. Concerning population thresholds in Europe, ESPON 1.4.1 (ÖIR et al., 2006a) has shown the differences across Europe: the Czech Republic and Luxemburg use 2.000 inhabitants as a bottom line, Slovakia 5.000 inhabitants, Switzerland and Spain 10.000. Moreover, in some countries, the status of an urban municipality, town or other administrative terminology is granted by an upper administrative level (e.g. the State in the Czech Republic, Poland and Ireland, the Länder in Germany) and the designation may be based on an ad hoc decision. For example, in the UK city status has been conferred by the Monarch since 16th century, while in Poland and Germany historical events and political decisions determined the attribution of town rights/status. They all show the rather arbitrary, nationally specific, nature of thresholds based on population size in Europe.

The complexity of territorial arrangement increases when investigating the relationship between the built-up area and urban municipality. Three main empirical categories could be identified (fig. 1.):

Fig.1. Three types of relationships between urban administrative units (the black squares) and urban settlements (blue circles)



The first category indicates those countries that have an administrative unit per each settlement (which may match a defined population threshold). Traditionally, these are the countries that experienced the Napoleonic reform of territorial administration (France, Spain, Italy, Belgium, etc.) and others that were inspired by it.

The second category indicates those countries in which the administrative boundary can contain more settlements, and the administrative function is allocated to the main settlement. Also in this case thresholds for the definition of the minimum size of the area can be attributed. At the same time, though, the status of municipality can be given through a political act (e.g. Poland, Czech Republic, etc).

A third category indicates countries with relatively large administrative units, in which several settlements of a certain dimension are included. This is the case in the UK and Sweden, for instance, in which sub-administrative units exist but do not have important official roles. Also in this case, the attribution of urban administrative functions (and the possibility to elect a mayor, for instance, as in UK) comes through political decision.

Moreover, in terms of spatial matching between urban municipalities and urban settlements several complications may occur in the context of suburbanisation which has taken place in many countries over several decades. At risk of being too schematic, three types of phenomenon may be characterized as indicated in fig. 2.

The settlement expansion (represented in grey) could have crossed the administrative unit boundary (figure on the top), in some cases transforming two discrete settlements belonging to a different administrative unit into a built up continuum (figure at the centre). In other cases, the settlement may have been agglomerated by the expansion of a larger urban/metropolitan area (figure at the bottom).

Fig.2. Settlements dynamics (blue core and grey expansion) and relationship with administrative units / municipalities (black box)

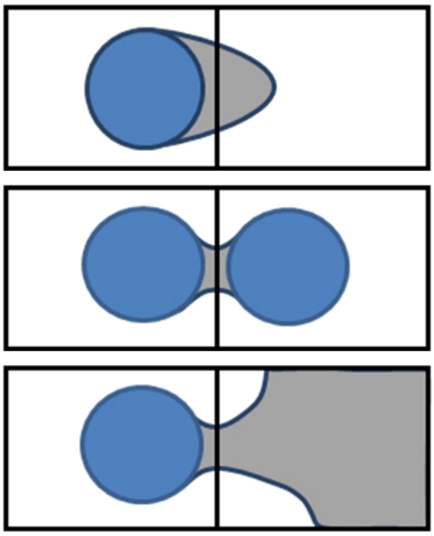


Table 4 in Chapter 3 illustrates the point of morphological settlements coming to extend beyond the original municipal boundaries. Whereas for many small towns (defined by their morphological boundaries) remain contained within a single municipal area, it is also clear that morphological settlements might extend across as many at 17 municipalities (in the case of Belgium). This process of urban expansion lies at the root of reforming processes of administrative units, as in the case of Flanders in Belgium, and of France with the current efforts to merge supra-municipal cooperation bodies (as further discussed in Chapter 4).

2.3.3. The urban centre and its functional region

The **functional** approach aims at understanding the role and function of (*urban) centres* in the wider territory. Many countries indeed complement the identification of urban municipalities (towns and cities) with functional criteria rooted in the theoretical assumptions of Christaller's "Central Place Theory" (1933), in order to provide a better grasp of the complex structure of urbanised areas. Despite the profound transformations in urban systems towards networks forms (Andersen et al. 2011) this concept remains relevant, especially for understanding the role of towns.

The functional urban region refers to a territorial unit that is spatially integrated by the repetitive daily relations between homes and jobs through commuting to work (Hall and

Hay, 1980; Bourne, 1975; van der Laan 1998; OECD, 2002; Antikainen 2005; Karlsson and Olsson, 2006; Sýkora and Mulíček 2009). It is assumed that if the economically active population of one municipality is substantially travelling to another municipality or other municipalities, those entities belong to the same functional area. Functional urban regions consist of two basic functional parts: urban cores and hinterland areas. Usually, municipalities in urban hinterlands, from which a certain percentage of the economically active population travels to the core municipality, are considered to be part of the functional region. The inter-relations of all these municipalities shape an *urban functional region*. Related to this understanding are concepts such as *travel-to-work area* (Coombes et al. 1982; Robson et al. 2006) and the *local labour market area* (van der Laan and Schalke, 2001), both being based on the commuting patterns of the economically active population travelling daily from one municipality to another.

The functional approach generally divides the territory into areas with specific functional characteristics, usually urban cores and related hinterland (van den Berg at al., 1982; Pumain; 2004) that together form functional regions. While the concept of functional (urban) region on general level refers to the socio-economic region tightly organized around urban cores, there are important differences between the various ways the term is used.

As mentioned in Chapter 5, two essential variants can be distinguished. The first variant refers to functional urban regions/areas (e.g. FUA in IGEAT et al., 2006). It represents highly urbanized regions characterized by a high degree of spatial intensity. It leaves less urbanized areas outside functional urban regions (van der Laan, 1998; Pumain, 2004). The second variant refers to urban regions at the micro level. These urban micro-regions cover the whole territory linking each settlement to one of the urban regions even if it is linked to urban cores by weak ties (Hall & Hay, 1980; Sýkora and Mulíček 2009).

In some countries, such as France, Belgium and the Netherlands (Eurostat, 1992), the urban regions have an official definition for functional regions (e.g. *aire urbaine* in France, *région urbaine/Stadsgewest* in Belgium, *agglomération* in Switzerland). While in other countries, the concept of “urban regions” has been developed and applied empirically by research institutes or national agencies without official recognition (for instance Austria, Czech Republic, Germany, Hungary, Ireland, Slovenia, Spain and the United Kingdom).

Moreover, in some cases and research analyses (e.g. in France: Region Centre, 2011; in Wales: Welsh Government, 2008), the functional approach has been enriched with the investigation of the gravitational areas of important services. In particular for smaller units, the presence and the access to services of general interests (e.g. health care, cultural centres, etc.) is important in the definition of specific hierarchies in the territory. Here, the regional or national context matters. Thus, a city of 20,000 inhabitants in Norway or Portugal may have functions that correspond to those typically found in cities of more than 100,000 inhabitants in Germany or France (Carrière 2008). Four decades ago, J. Lajugie pointed out that: "such a small town (...) should be considered as a medium-sized town in a sparsely populated and sparsely urbanized region, while a medium-sized town with two or three times more population, but embedded in an urban system where the population density is higher, does not necessarily play this role of services provider"(Lajugie 1974, p. 18).

Overall, the concept of functional urban region, albeit in most cases limited to the working commuting patterns of population (due to the lack of data on other commuting patterns, e.g. for education or for shopping), is relevant for the division of the territory into entities that have a meaning for the daily life of inhabitants. The exchanges and relations that take place between the different parts of the urban region delimit the zone of influence of one or more central cores and specify the types of towns. The ESPON 141 project (ÖIR et al., 2006) distinguished networked, agglomerated, and autonomous towns, and we will refine and test empirically this typology presented in Chapter 5.

2.4. Harmonised definition of SMST in the TOWN project

Several steps toward a shared morphological identification of urban settlements and the harmonisation of the different interpretations have been made in order to enable comparative studies across Europe. So far these attempts have focussed on the upper part of the list ranking the dimension of the urban settlements, i.e. bigger urban centres. In particular, in 2011 the European Commission (DG Regio) and OECD adopted a new definition of urban settlements based on population size and density ('high-density population grid cells') (DG Regio, 2011; Dijkstra & Poelman, 2012). TOWN project has decided to use the morphological definition of urban settlements as main approach for a pan-European analysis of the smaller category.

According to this method, the EU territory is subdivided into grid cells of 1 km^2, and each of these is associated with the population living in that portion of territory. In this way, the density of population has been used for the basic distinction urban – rural (threshold of 300 inhabitants per km^2). The remaining urban cells have been clustered for the identification of continuous urban settlements. In a second step, the clusters of grid cells with a density of more than 1,500 inhabitants per km^2 and with a minimum population of 50.000 inhabitants are identified as 'urban centres' (then specifically validated as such in relation to the administrative units).

This morphological approach has been able to provide a relatively uniform interpretation of urban settlements for the full EU territory, and to overcome different national interpretative criteria. The new EC-OECD definition (Dijkstra & Poelman, 2012) has identified 828 (greater) cities with an urban centre of at least 50.000 inhabitants in the EU, Switzerland, Croatia, Iceland and Norway, which contain about 40% of the European population. Each city is part of its own commuting zone or of a polycentric commuting zone covering multiple cities. Cities and the commuting zones together (LUZs) account for 60% of the European population, in which several smaller urban centres (below 50.000 inhabitants) are included.

The TOWN project has followed the same analytical and interpretative line of thought (except the approximation of the LUZ) and, as specified in the terms of reference, it has focused on settlements below the threshold of 50.000 inhabitants, including the blurred issue of areas above the threshold but with similar density characteristics.

In this approach, as the first morphological step, TOWN defines Small and Medium Sized Town (SMST) as an urban settlement if it has the following characteristics (tab.2):

- Polygons with a total density (average density of all cells included) between 300 and 1500 inh./kmq and a population between 5.000 and 50.000 inhabitants;
- Polygons with a total density of more than 1,500 inh./kmq but a total population of less than 50.000
- Polygons with a total population of more than 50.000 but a total density of less than 1,500 inh./kmq.

By elimination, also non-SMST urban areas have been defined:

- those settlements that are characterised by a population density superior to 300 inh. per square km but a populating lower than 5.000 and therefore insufficient to be considered SMST, hence classified as "Very Small Towns" (VST);

- those settlements that are too large and dense to be considered SMST and are therefore named, following the EU-OECD methodology (Dijkstra & Poelman, 2012), “High Density Urban Clusters” (HDUC).

Table 2. Basic urban settlements typology

		DENSITY (inh. / kmq)		
		< 300	> 300 and < 1500	> 1500
POPULATION (inh.)	< 5000	OTHER SETTLEMENTS	**VST** (very small town)	**VST** (very small town)
	> 5000 and < 50000	OTHER SETTLEMENTS	SMST	SMST
	> 50000	OTHER SETTLEMENTS	SMST	**HDUC** (high-density urban clusters)

The rest of the territory is defined, by exclusion, as “other settlement types” and includes unpopulated areas, sprawling urbanisations, or settlements that are too sparsely populated to even be considered as Very Small Towns.

The findings of this research activity and the diversification of the different types are presented in chapter 2.

The identification of the morphological units that can be associated with SMST has opened up the possibility of going further in the analysis. As presented in ch.3, the project has succeeded in transforming the traditional statistical administrative-based data-set in a morphological-based data-set (through a complex methodological process and only for a limited portion of the EU territory) which allows comparison of the socio-economic characteristics of settlement forms.

At the same time, mainly through the case study analysis, the project has also investigated to what extent the analysis of these morphological settlements (defined mainly by a population threshold and density) can be enriched through the exploration of functional roles of towns in their wider regional context (ch.5). The identification of micro-regions and urban centres interprets the territory in a different and less simplified way than the approach aiming at defining LUZ around bigger urban areas, though.

Therefore, the project contributes to the DG Regio and OECD morphological harmonisation of the urban areas interpretation, and it uses this interpretation to investigate further the role of SMSTs in the EU territory, while bearing in mind the arbitrary nature of the thresholds and the simplification of some conceptual, spatial and methodological complexities.

3. Research and scientific-report structure

3.1. Answer to the call for tenders

The call for tenders of the project “Small and medium sized towns in their functional territorial context” asked three general policy questions, as already mentioned in the introduction to this chapter. Moreover, the project was requested to answer to the following key themes and research questions, as specified by the terms of reference:

“1. Small and medium-sized towns in the territorial structures of Europe

- How can small and medium sized towns which have an urban centre between 5 000 and 50 000 inhabitants be identified using a methodology that is compatible with the new classification of cities and towns at European scale developed by the European Commission and the OECD?
- How are the small and medium-sized towns distributed throughout the territory of the ESPON space?
- How are small and medium-sized towns distributed in different territorial contexts and the ESPON Territorial Typologies?
- How have small and medium-sized towns performed over time with regards to demographic and economic development? How has their development been comparative to the European and the national situation?

2. The roles and functions of small and medium-sized towns

- What roles and functions do small and medium-sized towns perform in their different territorial contexts? For example, what are the specific functions that can be identified for small and medium-sized towns in rural areas, metropolitan areas or in cross- border areas?
- In which type of territorial contexts do small and medium-sized towns play a particularly important function?

3. Governance and co-operation for development of small-and medium-sized towns

- What type of governance and cooperation arrangements exist at various levels aimed at improving public policies and service delivers in small and medium-sized towns and their surrounding?
- What kind of good practices exist with regard to governance and cooperation arrangements aimed at increasing critical mass through cooperation arrangements or the merging of small local authorities? What practices have not worked well for small and medium-sized towns?"

(ESPON, 2011)

The TOWN project has responded to these research questions through an articulated combination of approaches and analytical phases, as illustrated in Figure 3 (originally presented in TOWN Inception report - Servillo et al., 2012: 4). In the scheme, there are two broad methodological frames: a geomatic and quantitative component complemented with a policy-analysis methodology. They both are integrated in the Case study phase.

As the figure 1 above illustrates, the project has been articulated through a multi-methodological approach: it started with a morphological identification of SMSTs, and it continued triangulating multiple methods of research combining both a quantitative and qualitative investigations.

At the same time, the TOWN project has also adopted a multi-level approach, which has allowed an exploration of the town subject across several scales. Although it should be noted that this latter aspect was 'restricted' by the availability of appropriate data and the logical feasibility of engaging in such research activities.

Fig. 3. Structure of WP2 in Research Activities

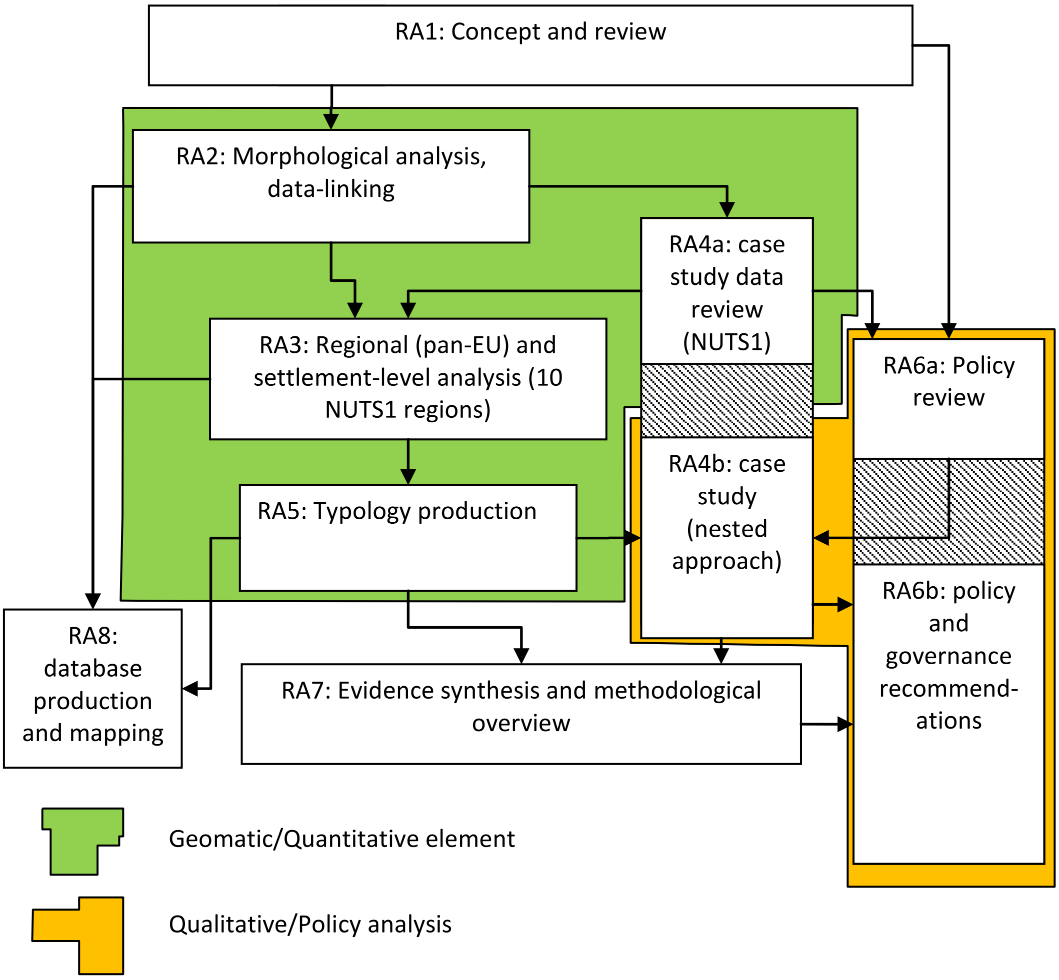


Table 3 (originally included in the TOWN Interim report - Servillo et al., 2013: 19) outlines seven principal analytical activities/data availability against the spatial extent of the work. It shows how the two main levels of analysis (EU and case study) have been further articulated according to specific research tasks included in the various Research activities (RAs). At the crossing of the various lines, the table indicates also in which chapter of the present Scientific Report is presented.

Table 3. Spatial scale and extent of research activities

Research activity	Territorial extent of research activity				
			Case study work		
	EU-wide	Multi-national (all case study regions)	Macro-regional (NUTS1)	Meso-regional	Settlement/ functional region level
Geomatic identification of morphological towns (RA2)	Ch2		Case study annex		
Cross-tabulation NUTS analysis (RA3)	Ch8				
European policy review (RA6)	Ch7				
Functional analysis (RA4)				Ch5	
SMST audit (RA3/4)				Ch6	Ch6
Policy analysis/ qualitative assessment (RA4)		Ch4	Ch7	Ch7	Ch7
SMST typology and regression work (RA3/5)		Ch3-9		Ch3-9	

3.2. The research questions

This section presents the way the three research questions presented in the terms of reference (ESPON, 2011) and mentioned in section 3.1 have been further developed and made operational.

3.2.1. Methodological definition of town

Section 2 has shown how there are few common understandings of what a town is (over and beyond the sense of a small town not being a city), and there is equally little consensus in either the policy or the academic community. The lack of consensus has not prevented researchers researching smaller settlements, most of the time within a given regional or national context. A pan-EU overview on towns has so far been absent. Therefore, the main methodological aim of the project, in line with the terms of reference, has been to define and organise what is "urban" in the ESPON space – and what, in this context, is a small and medium sized town – using a morphological interpretative approach. It has produced an "objective" geography which has then been used as analytic base from which to address the more relevant questions posed by the TOWN project, that is, the role of such SMSTs in their territorial and functional context. As explained in section 2, the 'objective' geography is composed of polygons based on aggregation of 1kmsq-grid cells as unit of the analysis, in line with OECD-DG Regio approach for larger urban areas.

However, the applied exploration of the meaning of 'town' has relied on two complementary approaches at case study level: a functional interpretation of urban areas, and an analysis of the socio-economic profiles of urban municipalities.

The functional interpretative approach has dealt with the identification of urban areas in terms of functional size and territorial role, based on job location and home-to-work movement flows. First, it investigated the hierarchical organisation of urban areas in their territorial systems based on the distinction between small and medium sized and large centres, each of which supported by a functional micro-region. Second, it classified the types of relationships between centres (agglomerated, networked, autonomous), in order to understand their role in terms of a specific development trajectory and socio-economic performance.

The outcome represents an interpretation of the territory based on centres and related micro-region. The identified centres, which have been determined through data sets based on administrative units, have been confronted with the morphological interpretation of towns for detecting differences and providing further insights on their socio-economic performances.

Finally, in the case study analysis, 31 urban municipalities (with groups of 3 in selected NUTS2 regions of Belgium, Cyprus, Czech Republic, France, Italy, Poland, Slovenia, Spain, United Kingdom, and 4 in Sweden) have been investigated in terms of their socio economic profiles, combining their statistical data and qualitative analysis. The typological attributions given by the functional analysis has been part of the variables for the socio-economic analysis.

3.2.2. Spatial and socio-economic analysis of towns in their territorial context

The morphological interpretation of urban areas contributes to the generation of a geo-database at the finest spatial scale beyond the limitations of unevenness in scale, nomenclature, and political status, which affects spatial analysis carried out at the “traditional” administrative levels of NUTS2/3 or even LAU2. It has enabled to produce a general overview of the morphological distribution of SMST in the EU territory. Furthermore, it has provided the basis for multi-scalar analysis of socio-economic characteristics.

Concerning the former, the morphological outcome provided a first impression of different territorial structures of urbanisation throughout Europe, at different scales: the pan-European – how different is the European space in terms of the prevailing settlement types and their territorial distribution; the regional, especially in relation to urban and metropolitan systems, their compactness and nuclear form; and the local, revealing the inner structure of small and medium sized towns.

Concerning the latter, the core part of the TOWN contribution concerns the multi-scalar analysis of spatial dynamics.

Pan-EU scale analysis

At pan-EU scale, the analysis was possible due to the characterisation of NUTS3 administrative units based on prevalent settlements. Despite the fact that the identification of regions that are predominantly characterised by smaller settlements cannot reveal the precise role of an individual SMST, it has been possible to investigate the general performance (measured in the time-span of the first decade of 2000s) of regional contexts characterised by smaller urban settlements areas as the predominating type (as opposed to regions that are characterised for instance by a higher degree of urbanisation).

This analysis has been able to address the following research questions:

- How are NUTS3 regions characterized according to the dominating type of population settlements? What is their general distribution over the ESPON space?
- What are the main territorial trends related to regions characterised by SMSTs as prevailing settlements?
- What are the main performances in relation to NUTS3 ESPON typologies?

(Multi-national) case-study-regions analysis

In terms of the wider case-study area, the construction of a polygon-based data set has provided the possibility of carrying out a socio-economic analysis of SMSTs among them, compared to their territorial context, and compared to HUDC.

The research questions have been the following:

- Are SMSTs (small to medium-sized towns as defined within the TOWN database) different from HDUCs (high density urban clusters)? If so, how are they different?
- Are differences between types of settlement (such as SMSTs and HDUCs) more important than the differences between SMSTs in different countries?
- What is the range of characteristics exhibited by SMSTs?
- Finally, to what degree are changes in SMSTs over the first decade of the 21st century explicable in terms of the characteristics of those SMSTs or are they mainly explicable in terms of the regional contexts in which those SMSTs are located?

Case study analysis

The Case study analysis of urban municipalities has been characterised by a three-fold structure:

a. Institutional analysis

b. Spatial-Functional types of towns (agglomerated, networked and autonomous)

c. Socio-economic profiles and characteristics

First, the analysis of institutional characteristics has focused on the question about whether local government has competences and resources to address the challenges faced by towns.

Local government is the level of territorial governance and public service delivery that is 'closest' to being able to take in the territory of a single town. This refers not only to direct policy steered by the local government, but also to voluntary supra-municipal institutions and inter-municipal cooperation that constitute increasingly important elements of governance processes. Also their extent (accessibility to services of general interest, urban/rural cooperation, transport, tourism or territorial marketing purposes) has more or less chance of being developed according to the general context in which territories try to activate multi-level and horizontal governance dynamics.

The aim of the cross-national analysis has been to consider the degree of political and fiscal decentralization of each country and to analyse how this works in practice. The objective has been to make explicit the link between the current state of development of 'towns' and broader issues of decentralisation through the following questions:

- Where have decentralisation processes been developed, and what is the scope of them? What are the institutional frameworks presents in Europe, and how can governance dynamics be better tailored according to the EU institutional differences?
- Wherever bottom-up approaches to integrated territorial development exist, can they be sustained, or are they hindered by the exercise of power of other layers of government?
- How do regions and provinces consider the role of semi-dense territories such as SMSTs in their own planning and development strategy?

Second, the analysis of spatial-functional types of towns has had the key objectives of identifying those SMSTs which play the role of urban micro-regional centres and to identify the territorial arrangements of these SMSTs/micro-regional centres, i.e. whether they are autonomous, networked, or agglomerated. While the identification of SMSTs that play the role of micro-regional centres contributed to the more nuanced definition of the object of analysis, i.e. SMSTs, the identified functional settlement context of SMSTs served as one of the key sources of information in the explanation and interpretation of differences in town's development dynamics and performance.

Third, the socio-economic analysis focused on the composition of the economic profiles of SMSTs, arguing that their size and their morphology do not necessarily determine town performance within the territory. The assumption is that socio-economic development is rather related to innovative and network strategies and building on local comparative advantages, resources and distinctiveness (Knox and Mayer, 2009).

In that respect, the question concerned the differentiation of SMSTs local economy capacity, and the capacity of SMSTs to function as resilient socio-economic spaces that resist the negative effects of global changes and new competitive pressures.

In order to reflect on these issues, the analysis adopted three economic profiles (i.e. residential, productive, creative-knowledge based) and investigated to what extent the local economy in SMSTs are different from those of large cities or from wider regions in which SMSTs are located, and to what degree such socio-economic profiles change over time and under which conditions. Moreover, this analysis has investigated whether specific profiles of local economy lead to higher performances, and if activity-diversified profiles are performing better than more activity-specialized ones.

3.2.3. Policy & governance recommendations

The policy reflections and recommendations are expressed through three general questions, which correspond to highly problematic answers:

- the understanding of SMST role and limits in supporting territorial cohesion
- The potentiality and the limits of SMSTs in helping achieve the EU2020 strategy
- The institutional constrains and the governance opportunities to steer territorial dynamics toward the two above mentioned policy aims.

The policy considerations have been built upon the outputs of the multi-level analysis of SMST in their territorial context and on the results of the case studies, bringing together the various reflections and policy messages to provide a more general overview of the policy implications for SMSTs across Europe. Therefore, the aim of the policy approach has focused on the following items:

- Identification of any appropriate EU, national and regional policies/approaches that support SMSTs
- Identification of the extent to which SMSTs have developed appropriate policy responses independently and/or by cooperating with other SMSTs (territorial governance) and other levels of governance (the vertical dimension)
- Analysis of how, if at all, SMSTs can mobilise and enhance their existing assets and/or develop new ones as part of a development strategy
- Possibility to identify particular ‘policy bundles’ appropriate for use in relation to SMSTs with similar socio-economic profiles and regional contexts
- Identification of the spatial planning approaches (if any) that can be developed to support policy development

These policy investigations offer more general insights into the possible types of policy approach that can be developed and are potentially generalised to other similar SMSTs. However, these considerations need to take into consideration the different contexts and the institutional and socio-economic (macro) regional profile, although without assuming that these factors inevitably pre-determine the fate of SMSTs.

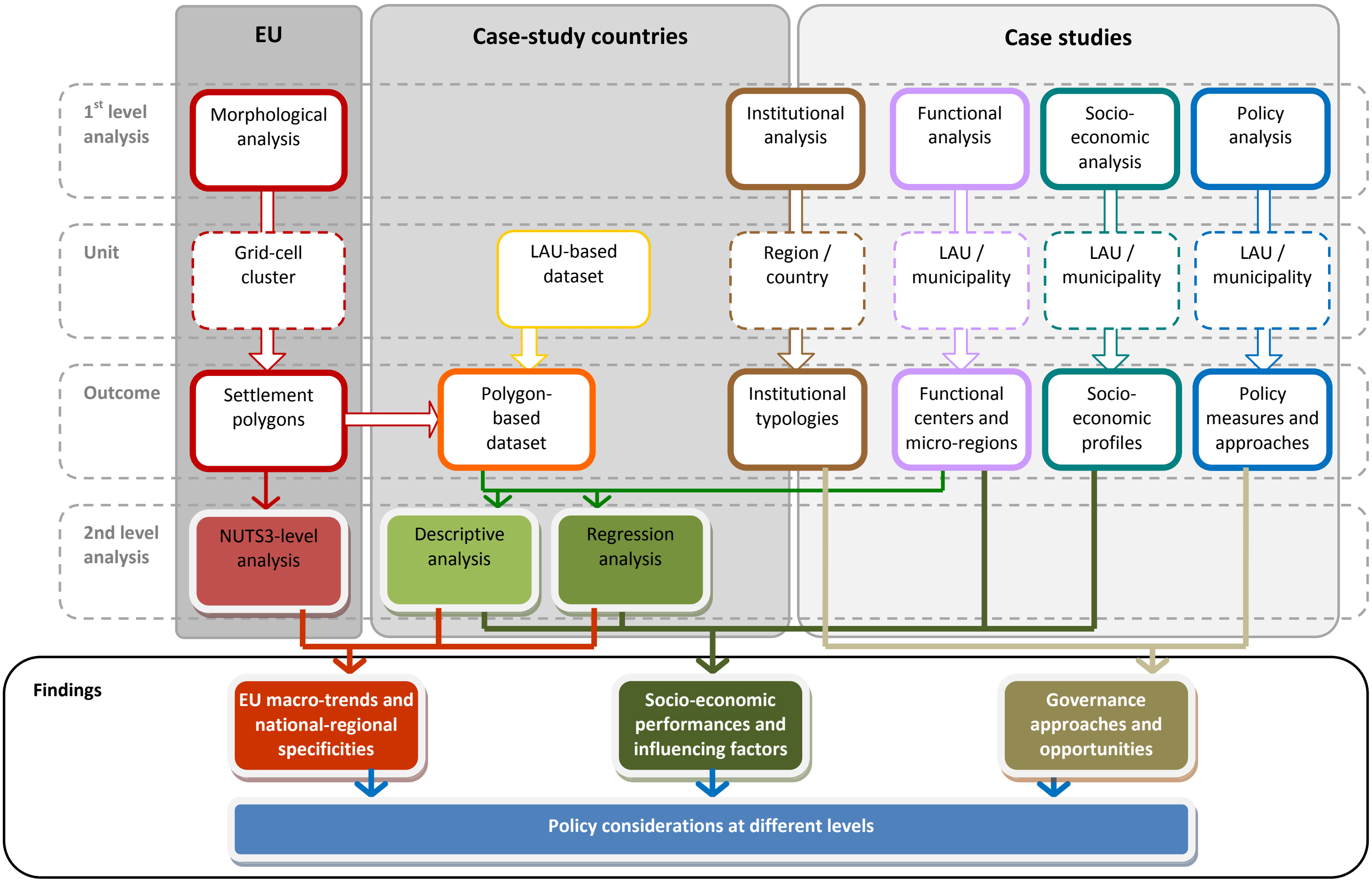
3.3. The structure of the project

The TOWN project has been implemented according to the fig. 4, which combines different scales of analysis with the various analytical phases and the unit of data sets.

As the figure shows, three main levels have been addressed: the pan-EU level, the case study and an intermediate geography which represents the extended case-study territory for which it has been possible to associate the administrative-based data set to morphological polygons (further details on the adopted method in Ch3).

The main difference is that on the one hand the analysis conducted at EU level is based on the morphological interpretation of the urban settlements and the definition of SMST polygons, and on the other hand the case study analysis has been based on dataset gathered at LAU level. In the latter case, the functional, socio-economic and policy analyses have had the urban municipalities as reference for their investigations.

Fig. 4. Structure of the TOWN project



The first phase of the project followed two main lines of research: the morphological interpretation of urban settlement and the definition of SMSTs polygons; and the framing of the case study analysis, which combined institutional, functional socio-economic and policy analyses, as largely presented in the Interim report (Servillo et al., 2013).

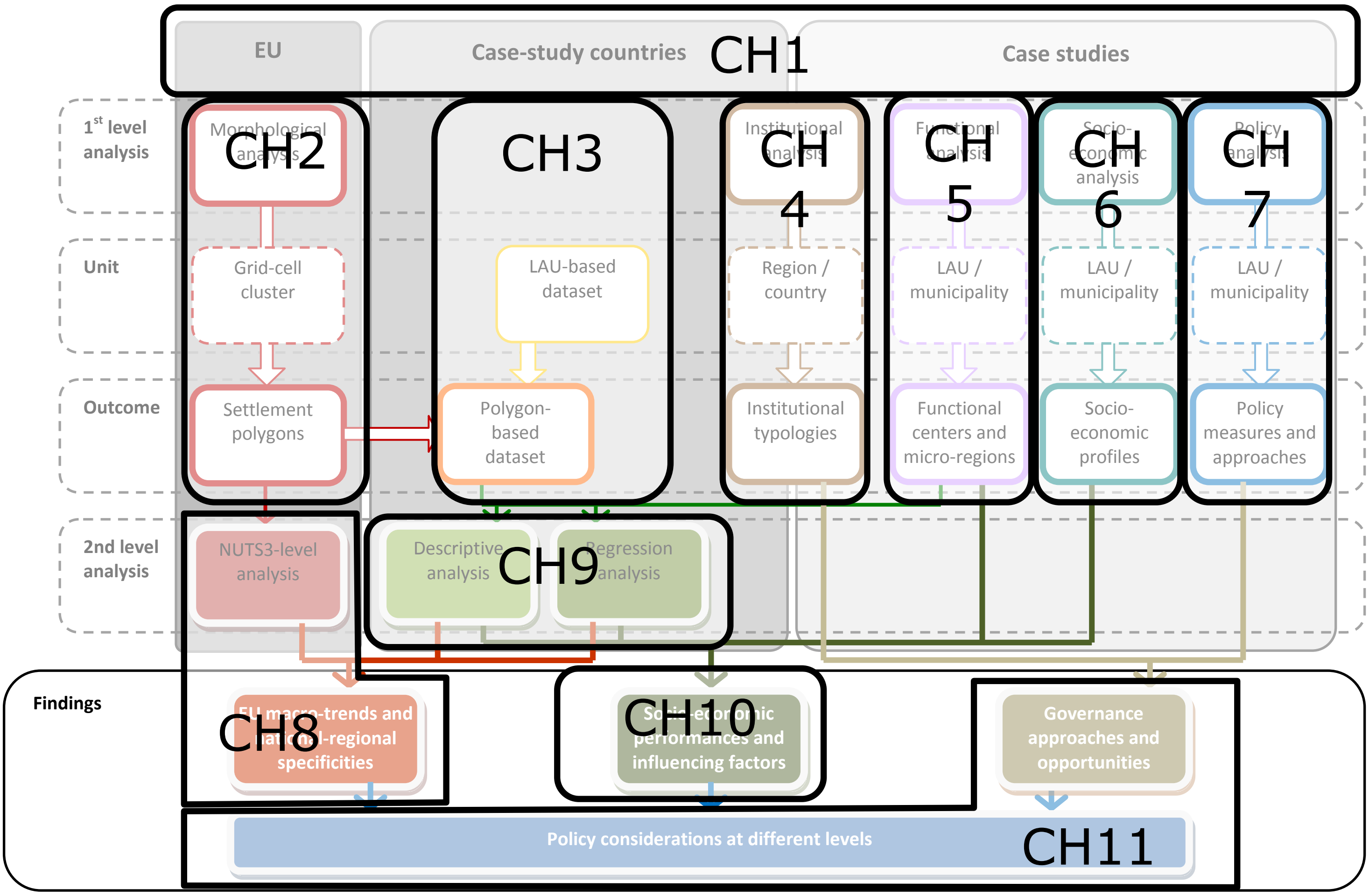
Once the polygons had been revised in the 10 case study regions, it was possible to associate the administrative-based dataset to the polygons. This allowed a second round of analysis focused on two tasks: at EU level, the definition of regional typologies according to the prevalent type of settlements and the cross-analysis with ESPON regional typologies; at case-study country level, the descriptive and regression analysis of socio-spatial characteristics of SMSTs in their regional context and their evolution in the last decade (approximately within the period 2000-2010).

Finally, the project has summarised the different findings in three main blocs: the main EU trends, the socio-economic characteristics and performances of SMSTs, and the policy considerations based on Case study findings and institutional differences. As a conclusion, all these three streams have been used for the elaboration of policy thoughts and recommendations for different audiences and at different scales.

3.4. The structure of TOWN scientific report

The scheme below (fig.5) presents the match between research activities and chapters of the scientific report.

Fig. 5. Structure of the TOWN Scientific report



Therefore, Chapter 2 provides scientific and methodological details on the development of the basic “throughput” of the TOWN project, the identification of urban settlements in the ESPON space according to a “morphological” approach and the delimitation and classification, among them, of those that have been defined “small and medium-sized towns” (SMST). It then sets on to explore several dimensions of the geo-base so obtained, and organises this information according to a spatial database structure in three dimensions (grid-based, polygon-based, NUTS3-based).

The Chapter 3 outlines the process by which the research team linked areal (small area) data derived from various census and administrative sources to the morphological settlements identified in Chapter 2.

Chapter 4 explores the institutional framework of each of the case study context, and it argues that the institutional situation can form an important explanation of why and how urban territories – and specifically SMSTs – are debated and promoted, or ignored and consequently challenged by demographic, social and economic dynamics. It accounts for the decentralization process, the distribution of power and of resources between the State and several layers of sub-national authorities in the ten case study countries and their role in delineating the 'degrees of freedom' of individual townsand their capacity to conduct a sound development strategy.

Chapter 5 reflects on towns as micro-regional employment centres in their functional micro-region. Of the employment centres it explores the territorial arrangements, i.e. whether they are autonomous, networked, or agglomerated. The identification of towns that play the role of micro-regional centres and their functional-territorial arrangement contribute to enhance territorial understanding and provide key information in the explanation and interpretation of differences in town's development dynamics and performance.

Chapter 6 identifies three major socio-economic profiles of local economy of SMSTs and investigate their combination in the 31 case study towns. In particular, it reflects on the shifting between predominant profiles, their socio-economic dynamics and possible categorization of SMST performances. Moreover, it cross-references the outcomes of the analysis with the functional typologies identified in the previous chapter.

Chapter 7 builds upon the outputs of the earlier chapters and more specifically consider the results of the case studies in terms of their more general policy implications for SMSTs across Europe. It investigates the extent to which SMSTs have developed appropriate policy responses independently and/or by cooperating with other SMSTs (territorial governance) and other levels of governance (the vertical dimension), and how, if at all, SMSTs have sought to mobilise and enhance their existing assets and/or develop new ones as part of a development strategy .

Chapter 8 analyses how the grid-based geography of polygons of urban settlements maps over the established NUTS3 geography and how they performed in time. First, it characterises the different NUTS3 according to their typology of settlements, using different factors and thresholds, highlighting their inner distribution of population between different urban settlement types as defined in Chapter 2 of this Scientific Report. Second, it cross-tabulates the regions characterised by smaller settlements with other ESPON typologies. In this way, it captures general territorial trends in Europe and within national contexts, and highlights the role of macro regional and/or national-context factors.

Chapter 9 poses the question of to what degree are towns alike or dissimilar across national boundaries and to what degree are small towns different from cities (either at the scale of Europe or within national settlement systems), capturing general territorial trends for an extensive part of Europe (national case-study areas).

Chapter 10 brings together the findings from the four different evidence streams: the insights from the functional analysis of Chapter 5, the narrative insights from the case studies of towns in Chapter 6; the analysis of regional performance taking the structure of SMSTs into consideration from Chapter 8; and the statistical analysis of the SMST database set out in Chapter 9. Each chapter has offered a different insight into the state of health of European towns but chapter 10 brings these findings together.

Ch.11 provides final policy thoughts and remarks based on the different findings and overall reflections about SMST role in EU territory, and their potential role (and existing barriers) in supporting EU policy aims such as territorial cohesion and EU 2020 strategy.

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Chapter 2 – Geomatic identification of “morphological’ urban settlements in the ESPON space

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1. Aim and research question(s)

This second chapter provides scientific and methodological details on the development of the basic “throughput” of the TOWN project, that is the identification of urban settlements in the ESPON space according to a “morphological” approach, and the delimitation and classification of those among them that are considered “small and medium-sized towns” (SMST) in coherence with the terms of reference for this project. It then sets on to explore several dimensions of the geo-base so obtained.

In a nutshell, these tasks are meant to define and organise what is “urban” in the ESPON space – and what, in this context, is a small and medium sized town –, producing an “objective” geography which is then used as analytic base to address the more relevant questions posed by the TOWN project, that is, the role of such SMST in their territorial and functional context. The requirement of producing a geo-database that can be easily linked to other geographical scales considered in this project and in general to other outputs generated by ESPON 2013 applied research is given great care throughout this approach.

However functional to subsequent tasks, this geomatic exercise is per se a relevant legacy of this project: from a methodological point of view, because it contributes towards the generation of a geo-database at the finest spatial scale beyond the limitations of unevenness in scale, nomenclature, and political status, which is known to affect spatial analysis carried out at the “traditional” administrative levels of NUTS2/3 or even LAU2. From a scientific point of view, because it provides a first impression of territorial structures of urbanisation throughout Europe, at different scales: the pan-European, illustrating the diversity of the European space in terms of the prevailing settlement types and their territorial distribution; the regional, especially in relation to urban and metropolitan systems, their compactness and nuclear form; and the local, which looks at the inner structure of urban settlements.

This material is so organised. Section 2 informs about the process and criteria followed to obtain a geo-base of urban settlements through aggregation of spatial grids of 1 sq.km. into polygons, covering the whole ESPON space, and illustrate the resulting classification in three classes of polygons characterised by different population size and density levels. Section 3 introduces two advanced typologies of urban settlements and classifies the urban polygons accordingly. It then provides details of the geographical structures so obtained. Section 4 explores the inner structure of SMST polygons to identify spatial patterns at the local level also in relation with results obtained by other ESPON projects.

Section 5 illustrates a database structure that connects the information developed in this chapter at the different geographies of reference. Finally, Section 6 concludes, recalling the main insights from this chapter and commenting on open issues left to further research.

The material presented here represents a revision and further development of materials introduced before as Sections 2.1.1. and 3. of the Interim Report, also addressing some of the comments received by reviewers.

2. Points of entry and delimitation procedure of SMST

The method used to build a geo-database of small and medium towns as well as other urban settlements properties in the TOWN project has, of necessity, been constrained by data availability and harmonisation. It thus followed the procedure implemented by the EC Directorate for urban and Regional Policy in the document 'The New Degree of Urbanisation' (DEGURBA) (Dijkstra and Poelman, 2014), which uses as a spatial base unit a database of more than 2,000,000 grid cells of 1 km2 produced by GEOSTAT and the associated population data in year 2006. This methodology allows a greater accuracy of population estimation than others also employed by European Union agencies (Gallego and Peedell, 2001), and minimises the problem related to the pycnophylactic interpolation (Tobler, 1979), common in dasymetric mapping.

Elaborating data on population size and density in contiguous cells according to a method approved by the Eurostat Labour Market Working Group in 2011, the DEGURBA document has identified a number of urban settlement structures classified into three "degrees of urbanization", in a similar way that OECD (using the same geodatabase) has classified urban areas in its recent "Redefining urban areas in OECD countries" report (OECD 2012):

- High-density urban clusters: settlements formed by a continuous agglomeration of grid cells of 1 km^2 with a population density of at least 1,500 inhabitants per km^2 and a minimum population of 50,000.
- Urban clusters: clusters of contiguous grid cells of 1 km^2 with a density of at least 300 inhabitants per km^2 and a minimum population of 5,000.
- Rural grid cells: grid cells outside urban clusters

On the basis of this classification, the DEGURBA document generated a three-way classification of LAU2s as follows:

(1) Densely populated area: (alternate name: cities or large urban area): At least 50% lives in high-density clusters.

(2) Intermediate density area (alternate name: towns and suburbs or small urban area): Less than 50% of the population lives in rural grid cells and Less than 50% lives in a high-density cluster.

(3) Thinly populated area (alternate name: rural area): More than 50% of the population lives in rural grid cells.

DEGURBA also looked into the inner structure of urban settlements, distinguishing 'cores' from 'peripheries' and sprawling urbanised areas around the cores within municipal delimitations. The approach of DEGURBA, as well as its validation procedures (p.8 and following), has been mainly focusing on the structure of urbanisation for the larger European urban areas identified by cores that are 'High Density Urban Clusters'. It did not develop the same methodology at the lower urban scale in terms of less dense urban clusters, which is the focus that has been explicitly required in this project.

Thus, in the TOWN project, Small and Medium Towns are identified according to a differential approach with respect to the DEGURBA document: hence, SMST are defined as urban settlements which are neither "High-density urban clusters", nor "Rural grid cells" according to DG Regio's definitions. The following procedure has therefore been implemented in order to classify urban clusters and SMST within them:

a) Selection of contiguous cells of at least 300 inh./km^2;

b) Creation of polygons by their aggregation. [2]

c) From the resulting polygons, High-Density Urban Clusters (i.e., polygons having at least 1,500 inh./km^2 and a population size of more than 50,000) and other urban settlements (thus with a density of less than 300 inh/km^2 and a population of less than 5,000) have been separated out.

d) **the remaining polygons**, fitting the condition of a population size between 1,500 and 50,000 inhabitants (whatever their population density, provided it is greater than 300 inh./km^2) OR a density between 300 and 1,500 km^2 (whatever their population size provided it is greater than 1,500) **are identified as SMST**.

Thus, our first basic morphological classification defines Small and Medium-Sized Towns (SMST) as continuous urban clusters with a population above 5,000 and a density above 300 inh. per square kilometre that are not "High Density Urban Clusters" (HDUC) as according to the DEGURBA definition; therefore, these include:

a. Polygons with a total density (average density of all cells included) between 300 and 1,500 inh./kmq and a population between 5,000 and 50,000 inhabitants;

b. Polygons with a total density of more than 1,500 inh./kmq but a total population of less than 50,000

c. Polygons with a total population of more than 50,000 but a total density of less than 1,500 inh./kmq.

By elimination, we can then identify another class of urban areas that are smaller than SMST. We thus include in our basic classification of urban settlements or **TOWN Typology 1**, in addition to HDUC and SMST, also those settlements that are characterised by a population density superior to 300 inh. per square km but a population lower than 5,000 and therefore insufficient to be considered SMST, hence classified as "Very Small Towns" (VST).

The rest of the territory is defined, by exclusion, as "other settlement types" and includes unpopulated areas, sprawling urbanisations, or settlements that are too sparsely populated to be even considered Very Small Towns. Figure 1 illustrates this typology, with nomenclatures and colours corresponding to the maps that will be introduced below.

A first simple run of this procedure of geomatic manipulation of the grid-based dataset provided by Geostat and the classification of the resulting polygons, yielded the following structure:

- 8,350 urban settlements classified as SMST;

---

[2] The procedure might have included the following additional geomatic manipulations carried out in the DEGURBA document:

- contiguity at diagonal level could be considered; in this case, a larger number of grid cells could fall within urban areas and so larger polygons could be created
- empty gaps inside the polygons could be filled; they may identify empty spaces which nevertheless represents element of urban continuity (a lake, a large park, etc.), and including them in the polygons that surround them would seem appropriate, but from a merely geo-statistical point of view it is better at this stage to leave them out.

The TOWN project did not eventually carry out these manipulations, having considered that they would extend the dimension and complicate the morphology of urban area units beyond the analytic needs of this project; besides, it has been considered that at the relatively smaller scale of SMST settlements, including 'gaps' could lead to a misrepresentation of their morphology.

- 846 urban settlements classified as HDUC;
- 70,480 urban settlements classified as VST.

However, other intermediate steps have been necessary in order to obtain a sufficiently accurate representation of the morphological settlement structures in the European space.

Figure 1. Basic urban settlements typology

<table>
<tr><th></th><th></th><th colspan="3">DENSITY (inh. / kmq)</th></tr>
<tr><th></th><th></th><th>≤ 300</th><th>> 300 and ≤ 1500</th><th>> 1500</th></tr>
<tr><td rowspan="3">POPULATION (inh.)</td><td>≤ 5000</td><td rowspan="3">OTHER SETTLEMENTS</td><td colspan="2">VST (Very Small Towns)</td></tr>
<tr><td>> 5000 and ≤ 50000</td><td colspan="2" rowspan="2">SMST (Small and Medium-Sized Towns)</td></tr>
<tr><td>> 50000</td></tr>
</table>

> 50000, > 1500	HDUC (High-density Urban Clusters)

The first issue has been the revision of the geomatic procedure, which inevitably was likely to lead to a number of "errors" in the coherent delimitation of urban areas. Such errors depended to the ill capacity of grid surfaces, albeit at the 1km^2 scale, to capture every type of continuity or gaps of the urban fabric, and are inherent to any grid by grid analysis (De Mers, 2009). So, areas that appear separated, which is normally a criterion to consider them as two different spatial units from a morphological point of view in the approach of this project, may be separated "by accident" mostly because of the imperfect superimposition of the grid geography with natural features; or, conversely, elements that the mere geomatic procedure has bundled together in one urban settlement, are in fact different "entities" – for example, if separated by a watercourse, a national border, or other elements of discontinuity not captured at the 1km^2 scale – that should be kept separated for analytic purposes . A number of other "accidents" of this type may occur, and systematic detection and revision – which could have been carried out, for instance, in the DEGURBA project because of the relatively limited number of high density urban clusters involved – becomes problematic in this project that deals with more than 8,300 SMST units.

Thus, this project team asked the ten case study teams to revise the results of the geomatic procedure on a case by case basis in case study areas alone, on the basis of local knowledge. The idea was that the revision at least at the level of case study was necessary to the correct development of the further research tasks of linking the morphological database with the results of the functional analysis carried out in RA4 and the socioeconomic data feeding the regression model of RA3. Thus, at least in areas where the precision of this geography was critical to the accuracy of the analysis and thus the soundness of the scientific results from this project, the morphological structure has been carefully and systematically revised; obviously, this approach could hardly have been extended to the rest of the European space in the context of this project.

Each case study team has been provided with a "revision guideline" of the geomatic work and has proposed accordingly a number of changes to the basic geomatic aggregations, which have been successively evaluated, given conformity, and executed by the team in charge of RA2. The errors to be reported were classified in five different types:

- Error type 1: The polygon should include other contiguous grid cells.
- Error type 2: The polygon should not include some grid cells.
- Error type 3: The polygon should be joined with other polygon(s) of the same or different class.
- Error type 4: The polygon should be split in different polygons.
- Error type 5: Wrong classification of polygon(s).
- Error type 6: other corrections.

The following Table 1 illustrates the corrections proposed by the 10 case study teams, the corrections taken into consideration by the revision team and the corrections that were considered not to be relevant or necessary.

Table 1 - Polygons' revision procedure

	Proposed corrections	Corrections made	Unnecessary corrections
Type 1	232	101	131
Type 2	173	141	32
Type 3	99	47	52
Type 4	28	11	17
Type 5	56	3	53
Type 6	65	0	65
TOTAL	**653**	**303**	**350**
TOTAL (%)	***100,0%***	***46,4%***	***53,6%***

The high number of corrections that have not been considered (a total of 350, representing the 53.6% of total) is due to several reasons:

- In most cases, revision proposals were motivated by disconformities encountered from the point of view of the functional role of urban polygons (for instance, the classification of an urban cluster as a SMST when in the analytic work carried out by the case study teams it was classified as a "Large Employment Centre" from a functional point of view, or vice versa); however the criteria established by this team at this stage of the project were exclusively based on size and population density criteria and the ensuing morphological classes, so these have not been taken into account.
- Secondly, due to the large number of proposed revisions referring to VST and HDUC polygons, these have been assigned lower priority in relation to the need to enhance the correctness of the SMST base;
- Thirdly, face to a considerable number of revision proposals related to type 5 corrections (polygon conversion), only some very specific cases have been taken into consideration when there was an evident inconsistency between the population data associated to the grid base and the available data at LAU2 level and no ambiguities involved in the matching between these two geographies;
- Fourthly, some revision proposals have been attributed to errors in the visualisation steps followed when opening the kmz layers: depending on which kmz layer was opened in the

first place in Google Earth (VST or SMT), they appeared above or below the other one, so it could seem that some VST were not part of a SMT (see image below). That has led to many suggested corrections that were not really necessary.

Left: *SMT layer opened before the VST layer in Google Earth.* ***Right****: VST layer opened before the SMT layer in Google Earth.*

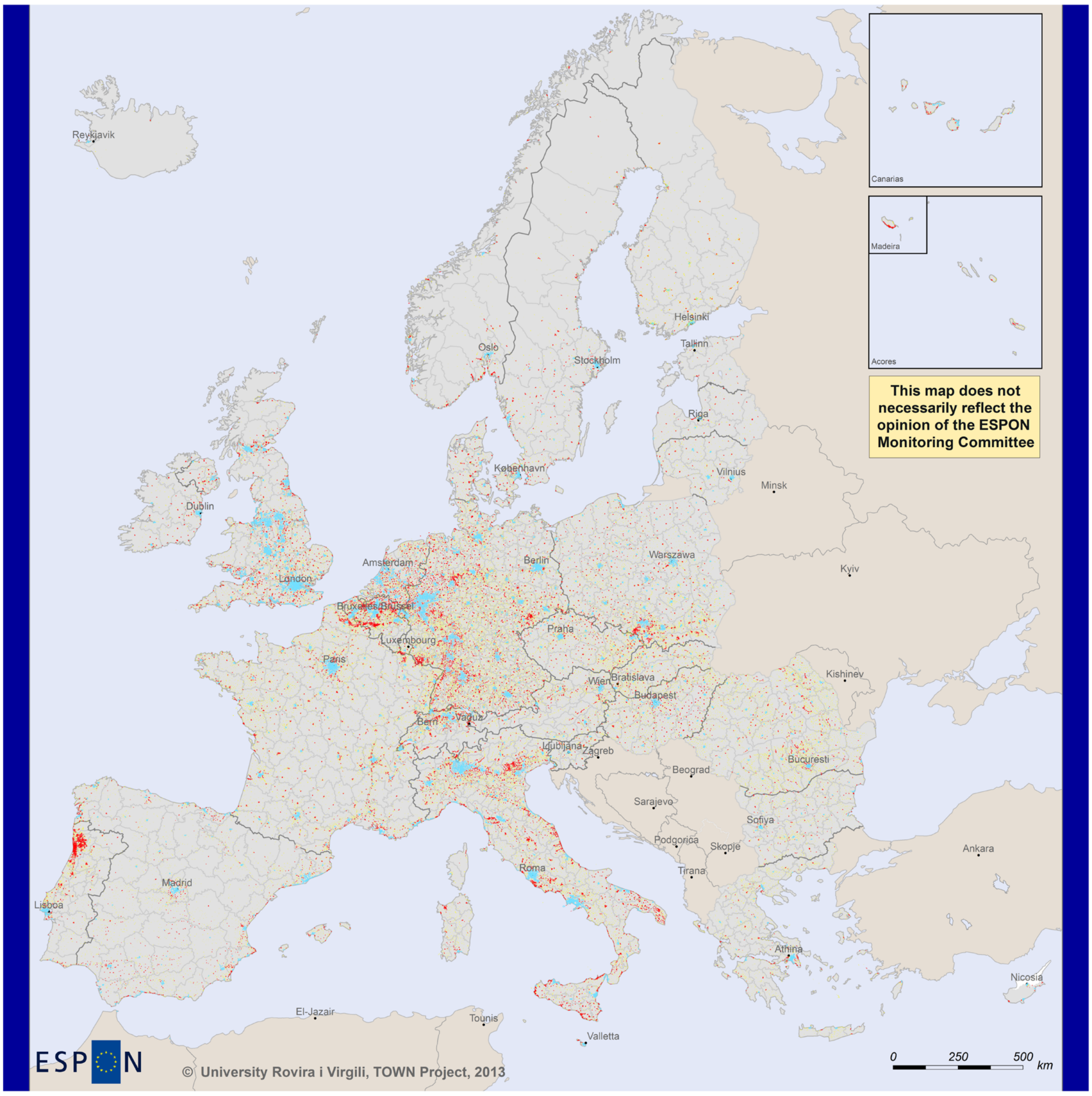
- Finally, many 'type 6' corrections were suggested. Many of these referred to the existence of SMT polygons outside the specific case study. These have not been considered because the revision process was constrained to the boundaries of each case study.

The second problem had to do with the fact that the source geodata did not include population data on Cyprus. In order to include the Cyprus ESPON space in our analysis, some further operations needed to be carried out, combining data from the CORINE land-cover map (version 16 [04/2012], including data from 2006) and the Cyprus demographic census (2011) at zip code level.

In order to establish a 1km^2 grid base containing population information, the first step was to prepare a dasymetric population map, following the methodology developed by Mennis (2003), Langford (2007), and Tapp (2010). For that purpose a search by attributes was made on the CORINE landcover map, selecting continuous and discontinuous urban fabric types which, among the 34 landcover types present in Cyprus, are the most suitable to be inhabited. The second step homogenised the population database, in order to eliminate non useful information fields and grouping population data by zip code. Zip population and zip delimitation were linked through a linkage operation; 850 post codes were finally used, covering the entire Cyprus ESPON space. After that, an intersection was made between the previously inhabited uses and the zip delimitation, in order to know how much inhabited patches were in each zip code; a calculation was made in order to assign the whole zipcode area population to each inhabited use patches contained by the zipcode, using surface as a reference value. This operation allowed calculating the inferred population, which is the closest value to the real population that it was possible to achieve. During this process different overlaying operations were made, which produced several slivers, or false polygons, without information or with non-significant information. A geometrical purification of the data was done, in order to get spatial delimitations with topologic correctness. Next, a 1km^2 grid was produced, covering the entire Cyprus island and maritime areas, in a 197*168 rectangle formed by 33,320 cells. An intersection operation was done, in order to obtain the inhabited 1km^2 grid polygons in Cyprus' ESPON space. Finally, 1,253 1km^2 inhabited polygons were detected. Again a calculation was done, to infer population by 1km^2 from inhabited patches. As in previous analyses, the surface was selected as reference value. The final step consisted in calculate VST, SMST and HDUC polygons, following the methodology previously indicated.

This methodology yielded the geomatic identification of 3 HDUC, 2 SMST and 6 VST in the Cyprus ESPON territory. In order to verify the goodness of this approach, an expert opinion was asked to the subcontracted Cyprus case study team. Following their advice, some arrangements on the number and shape of final delimitations were made, establishing 3 HDUC, 10 SMST and 1 VST.

Map 1. Basic TOWN typology of urban settlements



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Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
© EuroGeographics Association for administrative boundaries

Overseas territories not shown on map because of missing cover in GEOSTAT grid database

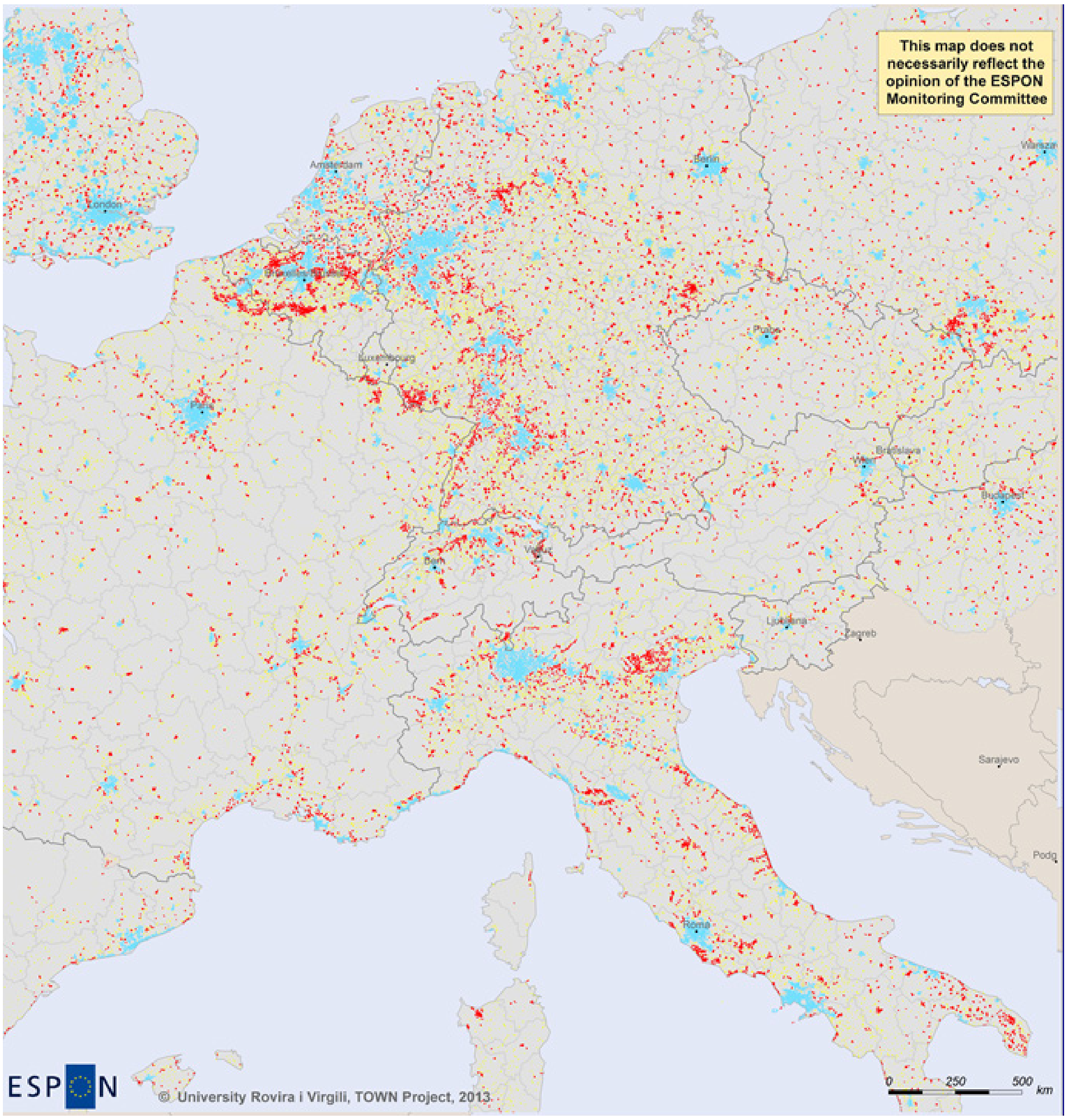
		DENSITY (inh. / kmq)		
		≤ 300	> 300 and ≤ 1500	> 1500
POPULATION (inh.)	≤ 5000	OTHER SETTLEMENTS	VST (Very Small Towns)	
	> 5000 and ≤ 50000		SMST (Small and Medium-Sized Towns)	
	> 50000			HDUC (High-density Urban Clusters)

NO DATA

After implementing the “acceptable” revisions as illustrated above and integrated the database with the spatial information in Cyprus, the procedure of classification of urban settlement polygons was repeated, yielding the following results:

- **8,414** urban settlements classified as **SMST**;
- **850** urban settlements classified as **HDUC**;
- **69,043** urban settlements classified as **VST**.

Figure 2. Basic TOWN typology or urban settlements, pentagon-area zoom-in



In Map 1, SMST are mapped out as red polygons, together with the HDUC in light blue and VST in yellow. At a first glance, SMST can barely be distinguished within the wider scale of the ESPON space. In order to achieve a better visualisation of macro-trends, Figure 2 “zooms in” on the pentagon area, which is the one that presents a higher complexity of morphological urban clusters. This map reveals a richness of SMST on a sector that goes from the south of England throughout the Benelux and the West of Germany to Italy, with other “clusters” in the industrial belt of South-Eastern Germany and Poland, and along the whole Western Mediterranean arc from Spain to Italy; moreover it illustrates the relative sparseness of SMST in the interior of France, north-eastern Spain, the Alpine arc, and the eastern side of the pentagon area.

This classification includes among SMST urban areas which would not normally be considered ‘medium-sized’ towns, as is the case of large sprawling conurbations in north-eastern Italy, Belgium, and the German-French border which can be easily spotted in the map of Figure 3. In part, this is the result of the method deployed, which does not allow for “separations” within continuously built-up settlements, and it is problematic due to the fact that in most of the subsequent streams of analysis carried out in the TOWN project very large urban areas are pooled together with smaller and compacter settlements (and particularly so where the morphology of such areas is complex, as in the ribbon-shaped configuration of many Belgian and German settlements). Yet it does make some sense from the point of view of the ‘morphological’ interpretation, because this continuity also produces a certain commonness of urban issues and performances throughout these areas. This problem anyway has been dealt with through classifications of SMST (see next section), which single out specific ‘dimensions’ of SMST, and in subsequent analytic stages of the TOWN project as the functional classification of urban centres.

Table 2 – Typology 1 polygons: key statistics

Classes	Delimitation criteria	Count	Av. Pop	Av. Sq.km	Av. Density
High-density Urban Clusters (HDUC)	Pop. > 50,000, AND Pop. Density > 1,500 inh/km2	850	275,476.1	92.3	2,927.1
Small and Medium-sized Towns (SMST)	Pop. > 5,000 AND Pop. Density > 300 inh/km2	8,414	14,553.7	10.1	1,535.9
Very Small Towns (VST)	Pop. < 5,000 AND Pop. Density > 300 inh./km2	69,043	1,193.1	1.7	699.3

In terms of the characteristics and distribution of urban settlements, Table 2 offers some key statistics on the size of polygon classes in Typology 1. In Annex 2 we provide the Typology 1 stats at country level. We can distinguish three main types of national urban settlement structures:

- Countries with a neat prevalence of urbanised population, clustered in high-density urban centres, as Belgium, Switzerland, Greece, the Netherlands, Spain, the UK, as well as smaller island states as Iceland and Malta;
- Countries with an overrepresentation of population living in smaller settlements, like Finland, France, Ireland, Lithuania, Luxembourg, Norway and Slovakia.
- All other countries (Austria, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Latvia, Poland, Portugal, Romania, Sweden and Slovenia) show a more balanced repartition of population, with non-significant differences in the repartition of population between the three urban settlement types.

Figure 3. Populations of SMST polygons by population classes

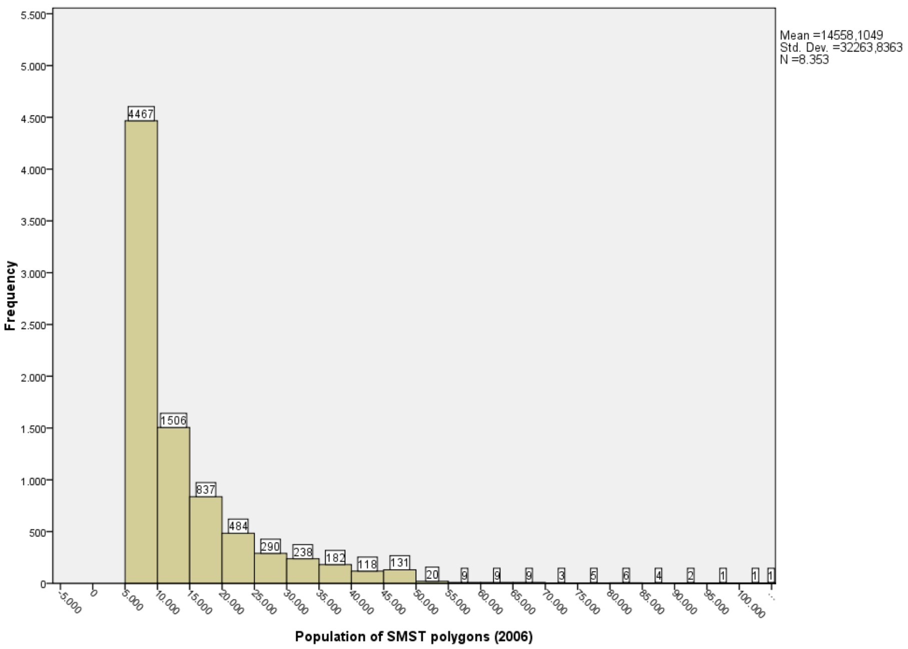


Figure 3 illustrates the distribution of the population of polygons of the SMST type. The distribution is highly skewed towards small population sizes (with a median value of 9,395.5 inhabitants); the first half of SMST ordered by increasing size only has the 23.2% of the total population living in SMST, while the top 5% have the 22.4% of the population. Having "cut" population size minimums at 5,000 inhabitants, we note that there exist SMST of more than 50,000 inhabitants, thus the size of a large city, though not having a sufficient population density to be considered such.

Figure 4. Population densities of SMST polygons by density classes

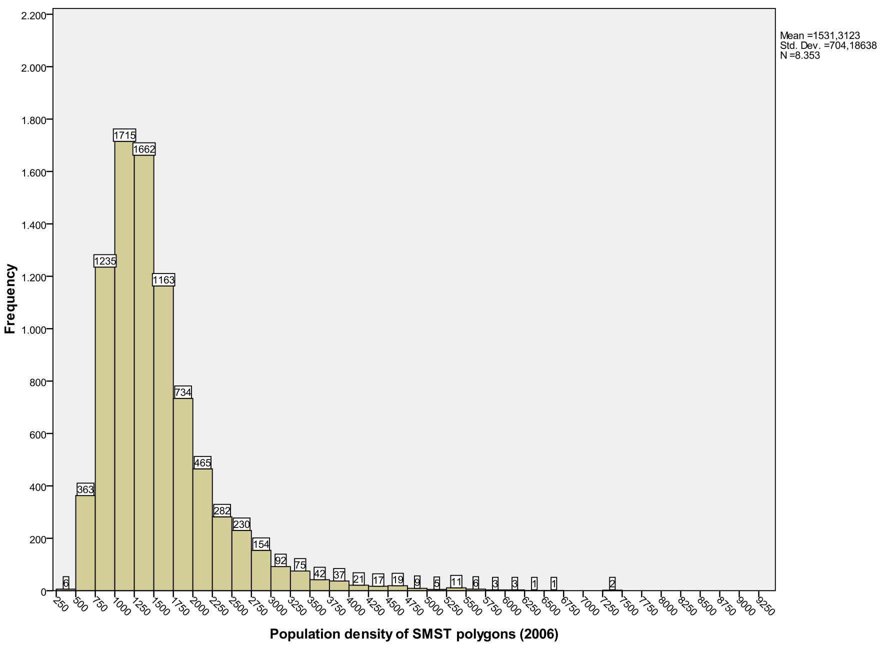


Figure 4 illustrates the distribution of SMST by density classes. This distribution is slightly less skewed than that of population. We note that in spite of having a minimum of 300 inh./kmq as a defining factor for SMST, none of our polygons has a density value less than 405.4 inh./kmq (see below a discussion of this result), while the maximum value is 7,468.33 inh./kmq, a "metropolitan" class of urban density (though population size is not the binding constraint for SMST). Overall, the top 5% SMST in order of density have densities that are superior to 2,872 inh./kmq.

To conclude this section, we stress that the method of obtaining a delimitation and classification of urban settlements, involving a sequence of elaborations on the original grid-based database and further manipulations as illustrated above, is not without limitations. We can point to three orders of problems:

1) The method employed to create SMST polygons by aggregation of contiguous grid cells that are *all* superior to 300 inh./kmq, produces aggregate SMST densities that are in general well above the 300 inh./kmq threshold (as illustrated by Figure 4). A more sophisticated method that generates clusters of contiguous grid cells whose *aggregate* density is superior to the 300 inh./kmq threshold would return different results, specifically it would extend the number and morphology of urban settlements to include lower density grid cells generally at the fringes of urban areas. However, its application would be technically complex and subject to a certain degree of discretion in the delimitation of the resulting polygons. Moreover, it would be inconsistent with the method adopted by DG Regio and OECD, making our respective approaches incomparable.

2) An opposite problem comes up with the construction of HDUC polygons "by elimination" from the set of polygons created that are to be considered SMST; that is, after generating polygons by aggregation of contiguous grid cells whose density is superior to the 300 inh./kmq threshold, we have "taken out" and named HDUC those polygons whose density is superior to 1500 ing./kmq and whose population is superior to 50,000. The method used is substantially different from the one that identifies SMST: in fact, if HDUC were build by aggregation of contiguous cells that were *all* superior to 1,500 inh./kmq, as in the DEGURBA document, some "fringe" areas whose overall density is likely to be lower than 1,500 inh./kmq would have been left out (maybe resulting as SMST or VST "attached" to HDUC). This means that our approach "over-represents" HDUC – there are parts of HDUC polygons which have the characteristics of SMST in terms of their density and population dimensions. From the functional point of view (that we are privileging in our approach, because the main focus of this project is on the "role" of SMST, which is addressed primarily through a functional analysis at urban system level – and not on the shape or role of HDUC, as in the DEGURBA study) separating these areas would make little sense because they indicate a sort of "functional continuity" that should be taken into account. Yet from a purely morphological one it does create problems in specific contexts of high urban sprawl and dense urbanisations according to a "ribbon development", problems which have only been dealt with in the stages of verification and revision of the geo-database in case study regions. This issue will be picked up again later in Section 4.

3) The 1x1 km dimension for the original raster database on which the construction of this geo-database is based is relatively "rough" – small discontinuities in the urban fabric could be significant in the process of "isolating" urban settlements for the analysis also at distances that are far inferior to 1 km. In fact, our polygons could be compared to the work recently conducted by the M4D project in the creation of a geodatabase of Urban Morphological Zones or UMZ which elaborated Corine based urban cover grids at a much finer definition of 200m grid cells (Guerois at al. 2012).

3. Typologies of SMST

Basic SMST polygons have been further classified, considering different values of population and density of inhabitants, always within the values indicated for urban clusters. In fact, it should be noted that the basic typology includes among SMST also urban area that have more than 50,000 inhabitants. As the specs for this project explicitly mention a population range for urban areas between 5,000 and 50,000 inhabitants as identifier of small and medium towns, a first enhancement oriented at a better understanding of population settlements introduces the subcategory of “large SMST” as those SMST that have more than 50,000 inhabitants, though having a total population density below the 1,500 inh./kmq threshold of large urban areas (see Table 2).

This typology (**TOWN Typology 2**) subdivides SMST into a class of 8,253 “normal” and 100 “large” SMST polygons across Europe. The latter correspond to a number of sprawling medium-density regions across Europe. The most evident cases in our geo-database refers to the metropolitan region of Porto (a ribbon shaped metropolitan area of 2.5 million inhabitants, with an overall population density of 1,330 inh./km^2), the Saar region and the region of Gent, both above half million inhabitants, and other 29 urban areas of more than a 100,000 inhabitants.

A more sophisticated refinement of this SMST typology subdivides them further also including “small SMST” as SMST with a population below 25,000 (**TOWN Typology 3**). As a result (See Figure 5), we now include among SMST:

a) **7,348 small SMST**, with a population density of more than 300 inh./kmq and a population of less than 25,000;

b) **966 medium SMST**, with a population density of more than 300 inh./kmq and a population between 25,000 and 50,000,

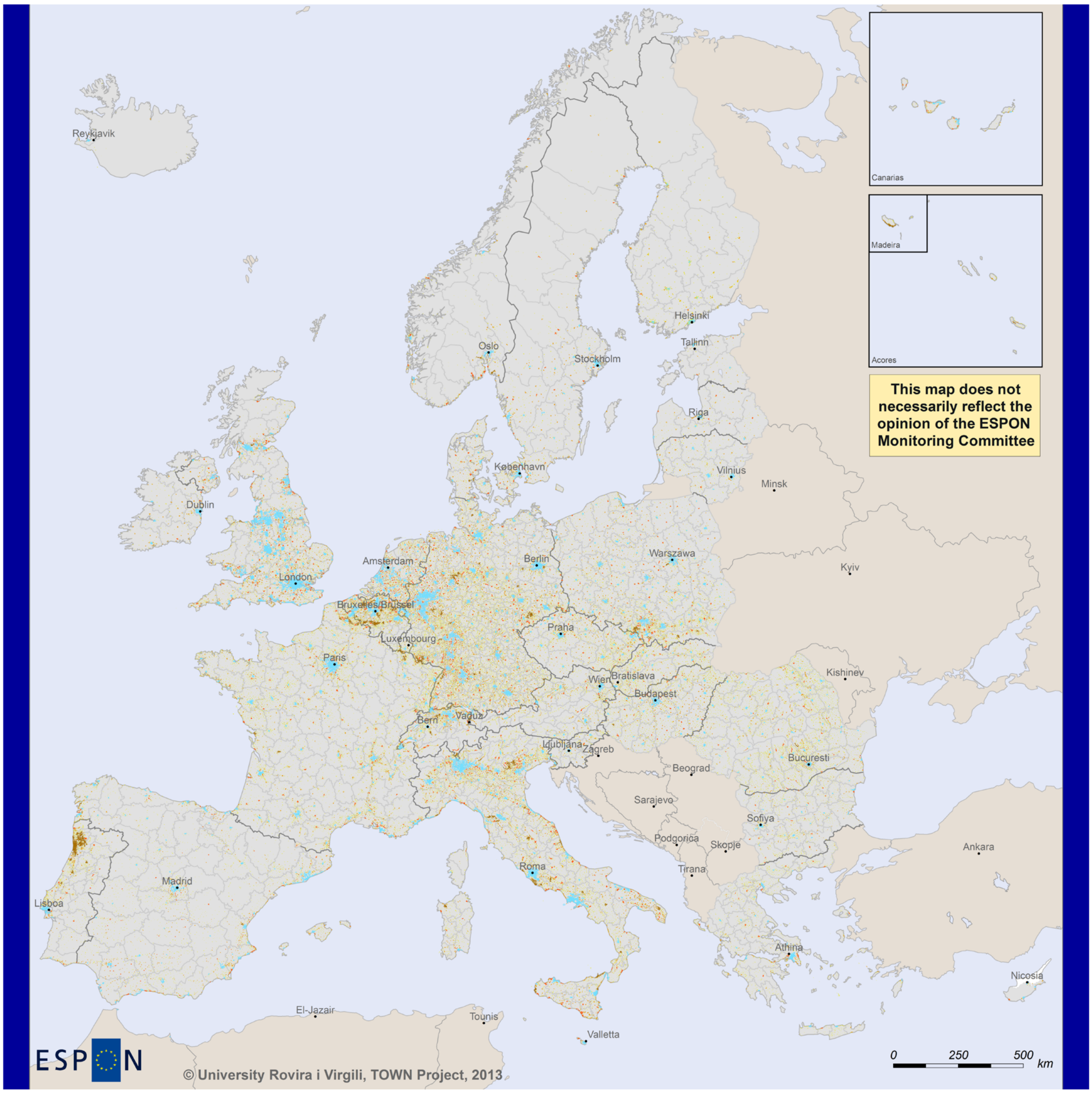
c) **100 large SMST**, with a population density of more than 300 inh./kmq (but smaller than 1,500 inh./kmq) and a population of more than 50,000.

Figure 5. TOWN typology 3 with three SMST classes by population size

<table>
<tr><td></td><td></td><td colspan="3">DENSITY (inh. / kmq)</td></tr>
<tr><td></td><td></td><td>≤ 300</td><td>> 300 and ≤ 1500</td><td>> 1500</td></tr>
<tr><td rowspan="4">POPULATION (inh.)</td><td>≤ 5000</td><td rowspan="4">OTHER SETTLEMENTS</td><td colspan="2">VST (Very Small Towns)</td></tr>
<tr><td>> 5000 and ≤ 25000</td><td colspan="2">Small SMT</td></tr>
<tr><td>> 25000 ≤ 50000</td><td colspan="2">Medium SMT</td></tr>
<tr><td>> 50000</td><td>Large SMT</td><td>HDUC (High-density Urban Clusters)</td></tr>
</table>

The corresponding classification is mapped out in Map 2, while Figure 6 again zooms in to the pentagon area and Table 3 provides the key stats of this typology.

Map 2. TOWN Typology of urban settlements based on three population classes (TOWN typology 3)



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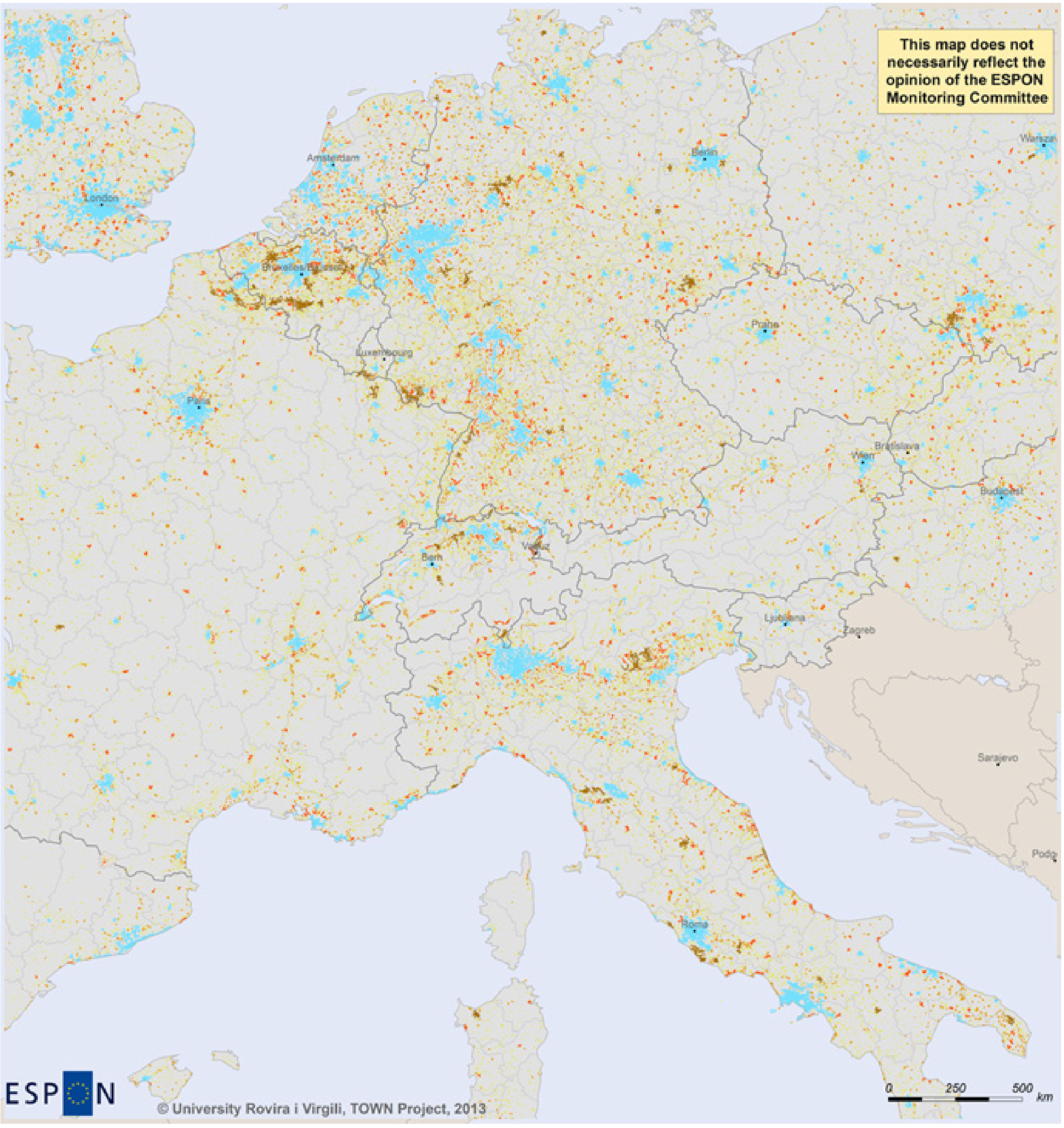
Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
© EuroGeographics Association for administrative boundaries

Overseas territories not shown on map because of missing cover in GEOSTAT grid database

POPULATION (inh.)	DENSITY (inh. / kmq) ≤ 300	DENSITY > 300 and ≤ 1500	DENSITY > 1500
≤ 5000	OTHER SETTLEMENTS	VST (Very Small Towns)	VST (Very Small Towns)
> 5000 and ≤ 25000	OTHER SETTLEMENTS	Small SMT	Small SMT
> 25000 ≤ 50000	OTHER SETTLEMENTS	Medium SMT	Medium SMT
> 50000	OTHER SETTLEMENTS	Large SMT	HDUC (High-density Urban Clusters)

NO DATA

Figure 6. TOWN Typology 3, pentagon-area zoom-in

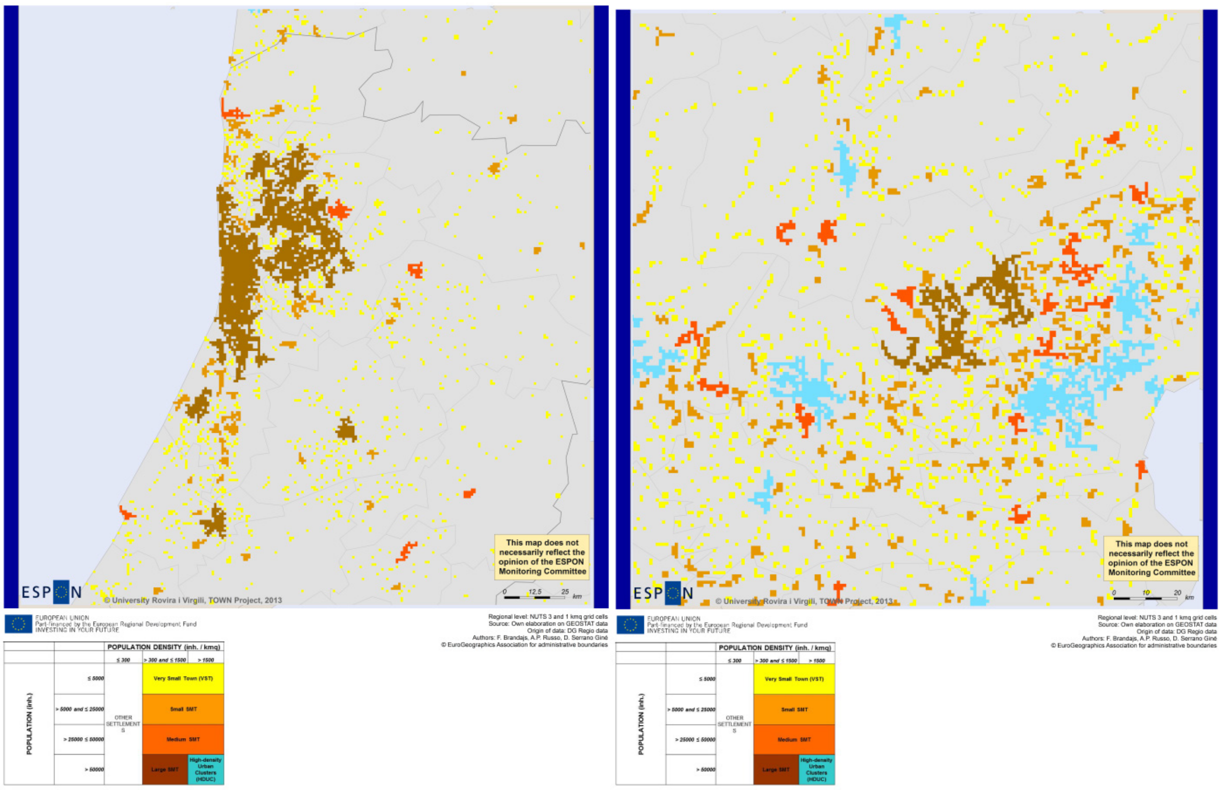


Large SMSTs are generally sprawling conurbations which, aside from a medium-sized compact city centre or a constellation of smaller centres, do not achieve globally sufficient density to be considered HDUC in the terms of our classification. Among them, the most surprising examples are provided by the Porto metropolitan area in Northern Portugal (2.5 M inhabitants), and setting around a population of half million, the Saar area in Western Germany, many ribbon-shaped intermediate systems at the edge of the Brussels metropolitan region in Flanders and Wallonia, and multi-polar small towns' system in the western Veneto region. 'Zoom-in maps' of Northern Portugal and Western Veneto regions are provided in Figure 7 (a) and (b).

Table 3 – Typology 3 polygons: key statistics

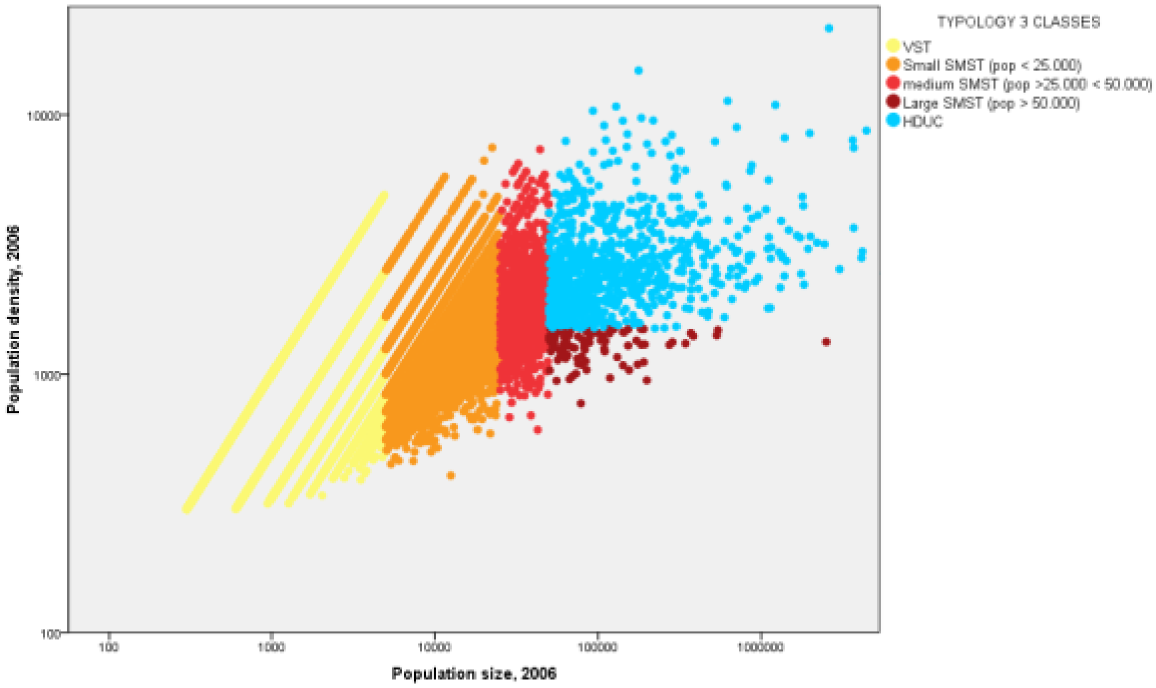
Classes	Delimitation criteria	Count	Av. Pop	Av. Sq.km	Av. Density
High-density Urban Clusters (HDUC)	Pop. > 50,000, AND Pop. Density > 1,500 inh/km2	850	275,476.10	92.3	2,927.10
Small SMST	Pop > 5,000 < 25,000, AND Pop. Density > 300 inh/km2	7348	10,241.50	7.6	1,470.09
Medium SMST	Pop > 25,000 < 50,000, AND Pop. Density > 300 inh/km2	966	35,162.90	19.7	2,060.59
Large SMST	Pop > 50,000, AND Pop. Density > 300 < 1,500 inh/km2	100	132,331.42	101.8	1,299.64
Very Small Towns (VST)	Pop. < 5,000 AND Pop. Density > 300 inh./km2	69,043	1,193.10	1.7	699.3

Figure 7 – Zoom-in maps of Typology 3 urban settlements in (a – left side) Northern Portugal (Porto metropolitan region) and (b –right side) Western Veneto (Vicenza and Verona provinces)



The distribution of the three classes is captured by Figure 8, which cross-plots the various classes in this typology in terms of their population size and density (in logarithmic scales). The ribbon-shaped configuration is due to the discrete nature of surface values which produce discontinue values of density figures. This figure shows the relative dimensions and distributions of the various urban settlement classes in this typology along the two defining dimensions. It highlights the relatively large number of small-sized towns (below 25,000 inh.), compared to medium-sized towns above 25,000, and, within which, the ‘anomaly’ of large SMST with a population of more than 50,000 but a density lower than 1,500 inh./km^2.

Figure 8. Cross-plot of populations and densities of SMST in TOWN typology 3



A second advanced typology of urban settlements, or **TOWN Typology 4** (see Figure 9) introduces an intermediate density threshold of 1,000 inh./kmq and identifies:

a) **1,606 low-density SMST**, with a population of more than 5,000 and a population density between 300 and 1,000 inh./kmq;

b) **3,382 medium-density SMST,** with a population of more than 5,000 and a population density between 1,000 and 1,500 inh./kmq;

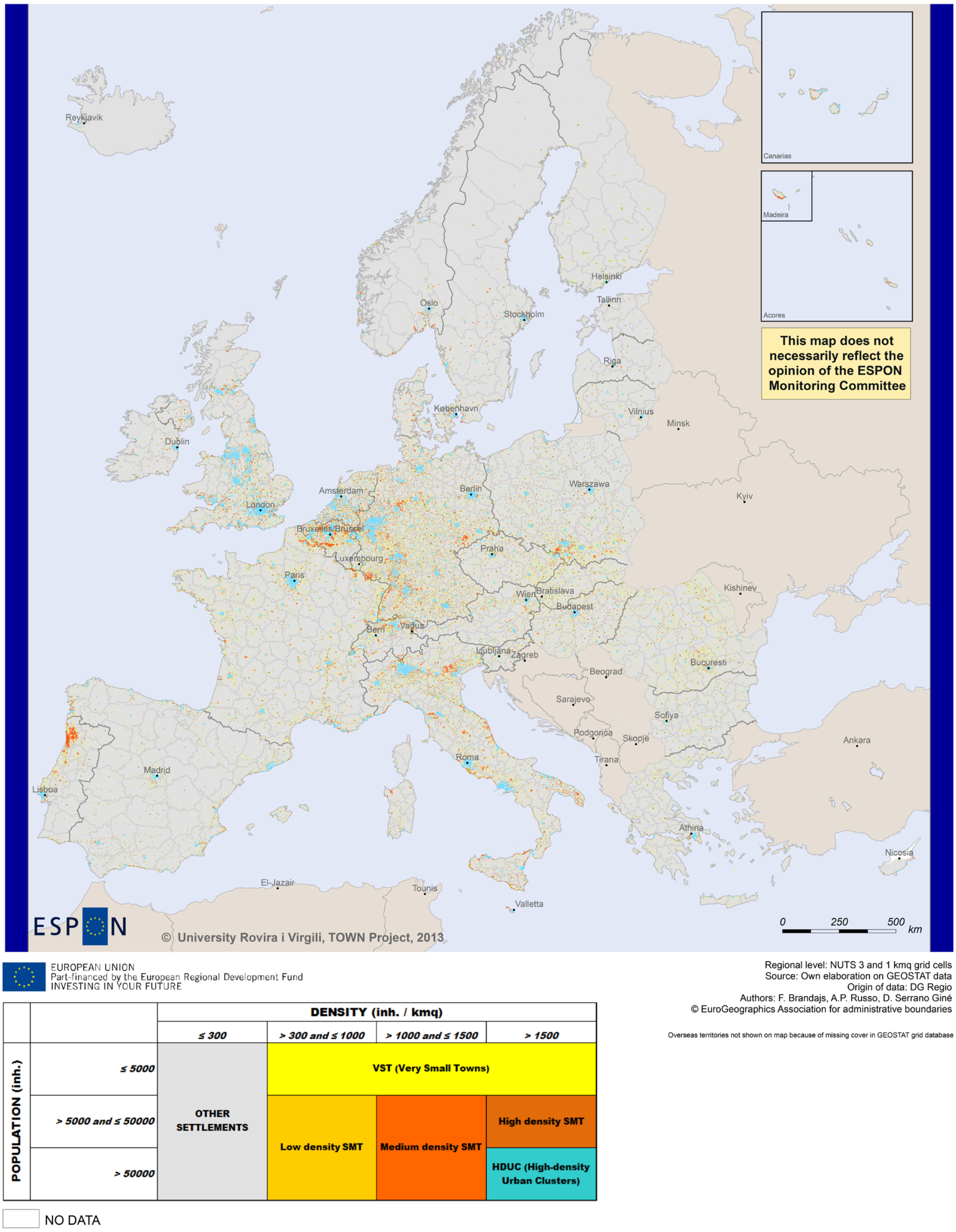
c) **3,426 high-density SMST**, with a population of more than 5,000 (and less than 50,000) and a population density of more than 1,500 inh./kmq.

Figure 9. TOWN typology 4 with three SMST classes by population density.

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="4">DENSITY (inh. / kmq)</td></tr>
<tr><td>≤ 300</td><td>> 300 and ≤ 1000</td><td>> 1000 and ≤ 1500</td><td>> 1500</td></tr>
<tr><td rowspan="3">POPULATION (inh.)</td><td>≤ 5000</td><td rowspan="3">OTHER SETTLEMENTS</td><td colspan="3">VST (Very Small Towns)</td></tr>
<tr><td>> 5000 and ≤ 50000</td><td rowspan="2">Low density SMT</td><td rowspan="2">Medium density SMT</td><td>High density SMT</td></tr>
<tr><td>> 50000</td><td>HDUC (High-density Urban Clusters)</td></tr>
</table>

The correspondent classification is mapped out in Map 3, and a zoom-in of the pentagon area is provided in Figure 10 and the key stats of this typology in Table 4.

Map 3. TOWN Typology of urban settlements based on three population density classes (TOWN typology 4)



In these maps, the majority of SMST in most countries belong to the higher density class, identifying traditional market towns and secondary poles in metropolitan regions. However we can also devise the presence of low-density SMST clusters around large metropolitan areas like Paris, Athens or Rome, and more diffused medium-density SMST networks in industrial areas in the Flanders, Northeast Italy, and Southern Poland, as well as on Italian coasts and along the main communication arteries in the European core.

Figure 10. TOWN Typology 4, pentagon area zoom-in

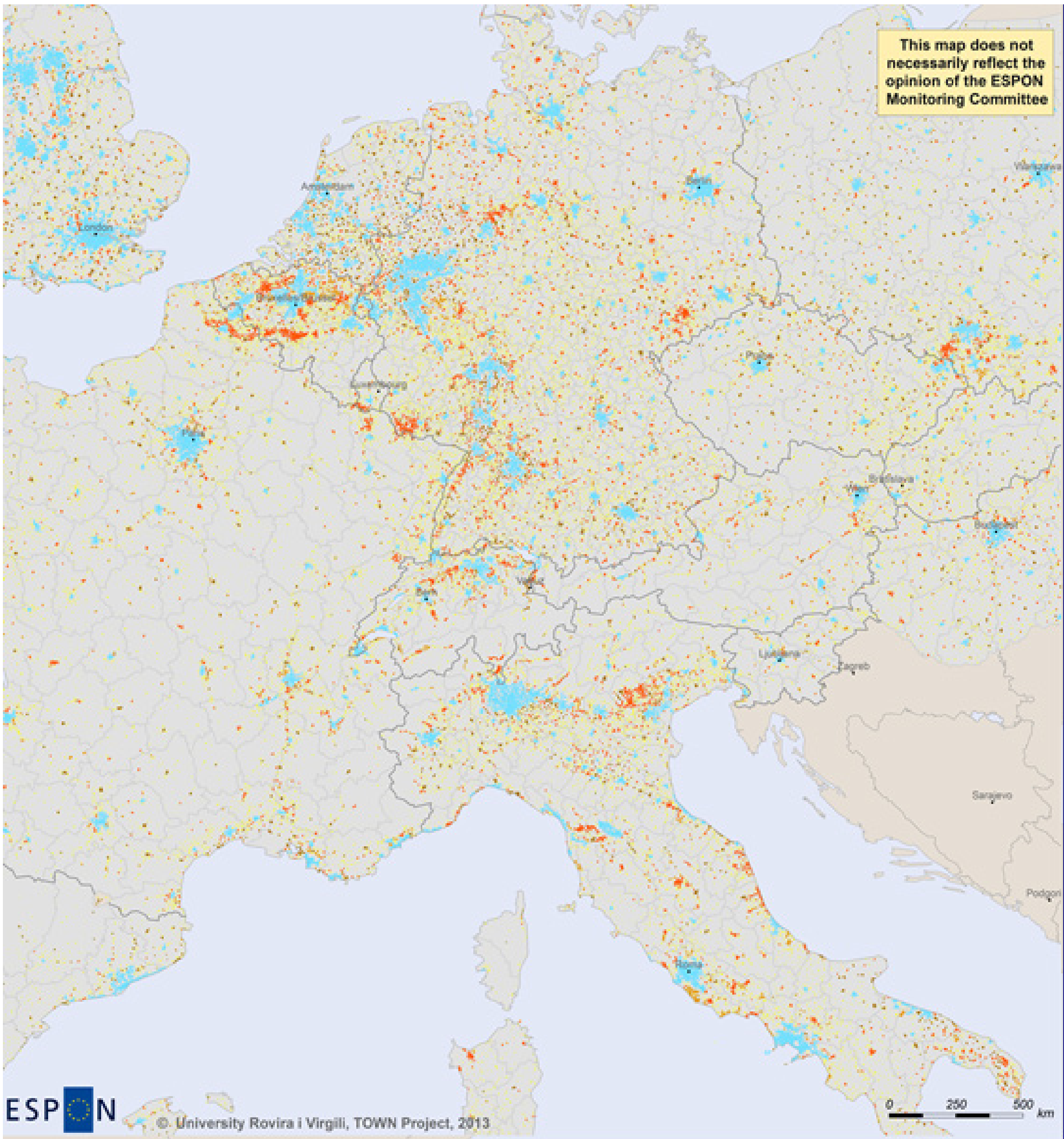
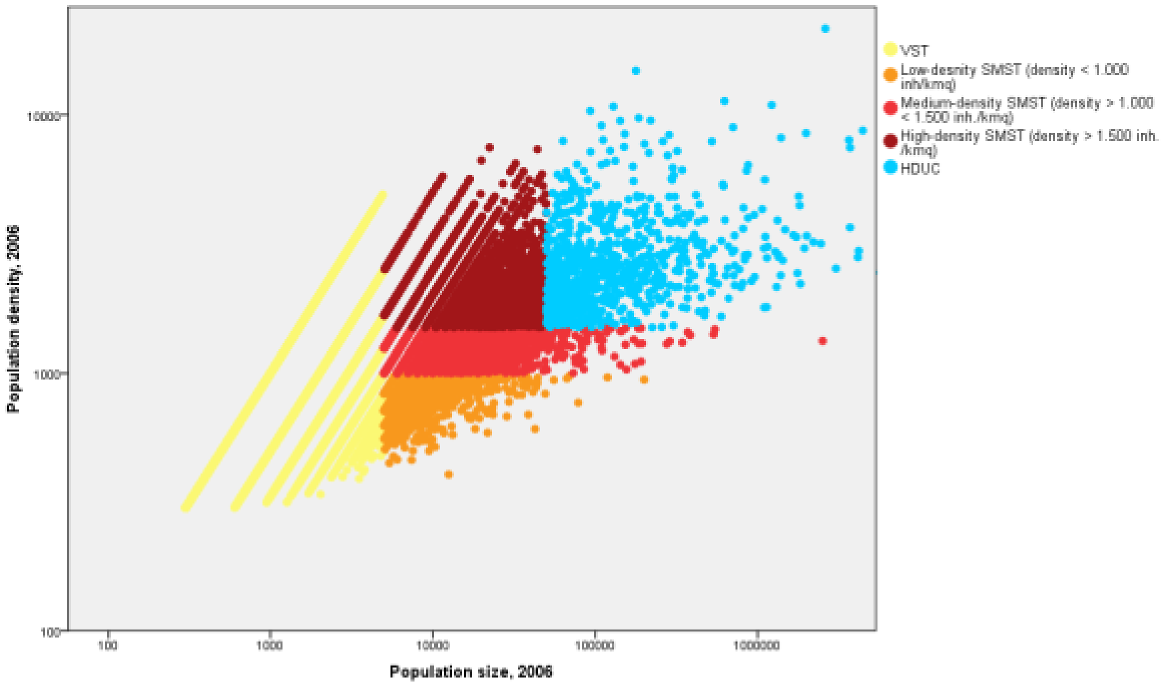


Figure 11 cross-plots the values of population and density of the three SMST classes so obtained. Differently from Figure 8, this plot returns an image of a more balanced membership of the three classes of SMST, distinguishing neatly low density urban settlements (in orange), arguably identifying sprawling sectors at the fringe of metropolitan areas and other higher density nuclei, with the ‘core’ groups of average density SMST (in darker orange) and high-density SMST, having a comparable urban fabric but a lower population size than larger cities.

Table 4 – Typology 4 polygons: key statistics

Classes	Delimitation criteria	Count	Av. Pop	Av. Sq.km	Av. Density
High-density Urban Clusters (HDUC)	Pop. > 50,000, AND Pop. Density > 1,500 inh/km2	850	275,476.10	92.3	2,927.10
Low-density SMST	Pop > 5,000, AND Pop. Density > 300 < 1,000 inh/km2	1606	8,947.97	10.7	837.43
Medium-density SMST	Pop > 5,000, AND Pop. Density > 1,000 < 1,500 inh/km2	3382	14,994.13	11.9	1,242.96
High-density SMST	Pop > 5,000 < 50,000, AND Pop. Density > 1,500 inh/km2	3,426	16,746.76	8.1	2,152.39
Very Small Towns (VST)	Pop. < 5,000 AND Pop. Density > 300 inh./km2	69,043	1,193.10	1.7	699.3

Figure 11. Cross-plot of populations and densities of SMST in TOWN Typology 4

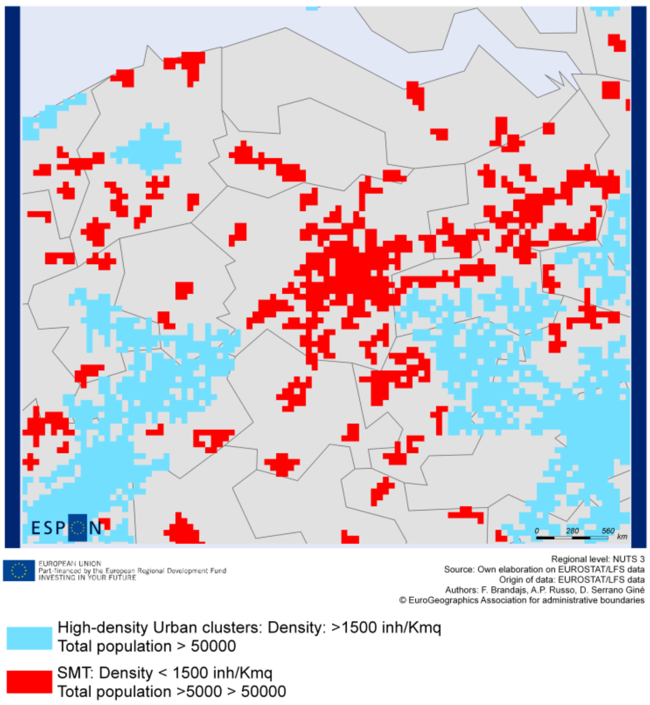


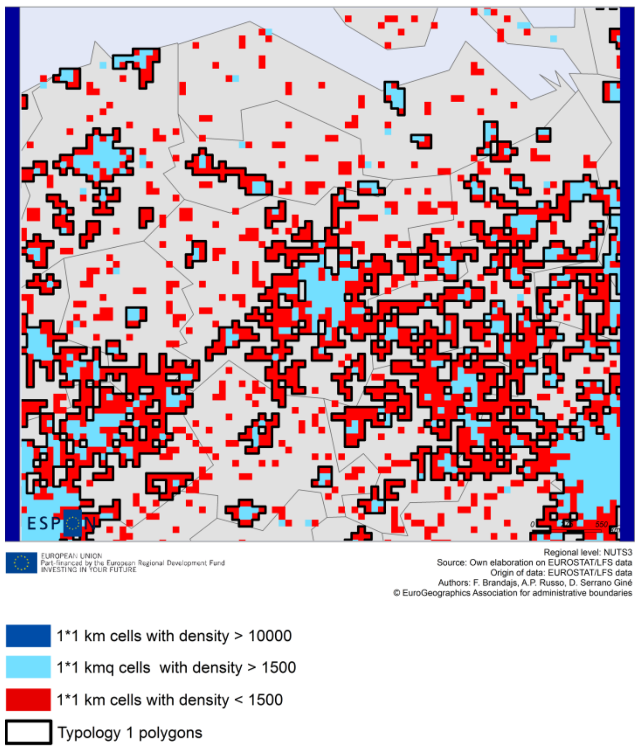
4. Inner structure of urban settlement polygons

In order to further fine-tune the morphological identification and representation of SMST to the one carried out in the DEGURBA document (also at the petition of the reviewers), in this Section we proceed to investigate the inner structure of SMST polygons as identified through the procedure described in Section 2. This task is necessary in order to nuance with a certain precision the "status", from a morphological point of view, of the SMST polygons and thus better link with the "functional" identification of SMST carried out in Chapter 5 of this Scientific Report. In fact, the "differential" definition we adopted for the delimitation of SMST with respect to the DEGURBA document has left space for a wide range of SMST structures as made evident in Section 3, ranging from "traditional" small and medium towns to larger urban conurbations which have the size but not the density and the core characteristics of High-Density Urban Clusters. In the latter case, it is an useful exercise to look at the inner structure of these units in order to identify what is properly "town" and what is sprawling fringe and "inter-urban connection tissue".

Thus, we have gone back at the grid level to pick those 1km² cells within SMST polygons and classify them by their individual density. In this way we have a grasp of the "underlying" structure of urban polygons. This method allows distinguishing, within one polygon, the existence of a "core" and a "fringe", and even, possibly, of high-density urban nuclei within the core. Clearly, this method does not lend itself to visualisation and representation at the global EU scale; for this reason it is more useful to show a number of examples of the underlying urban settlement structure in the case of "exemplary" SMST polygons. In any case, the data on "core" grids within SMST are recorded in our grid-based geo-database. The result is shown in a demonstrative way in two cases that we picked from our analysis of "problematic" SMST structures in the previous section.

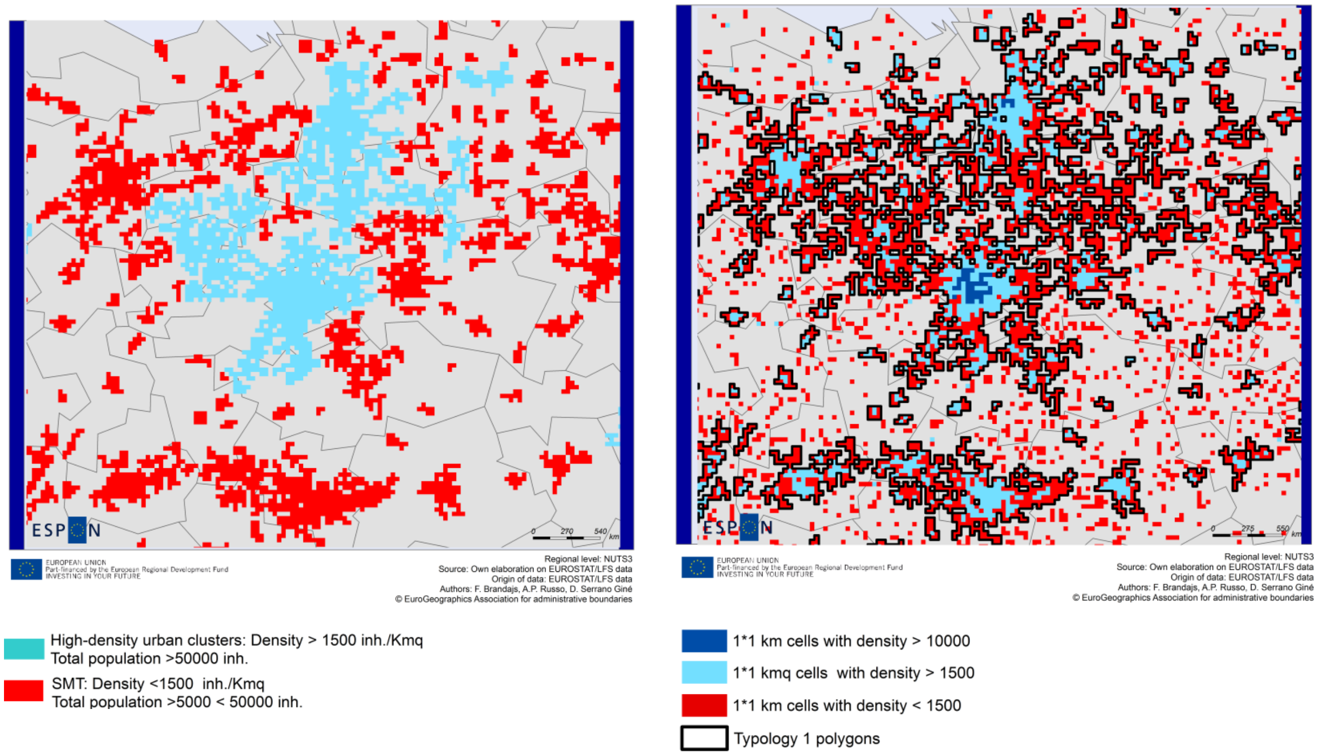
Figure 12. Urban agglomeration of Gent, Belgium. (left): SMST and HDUC polygons; **(right):** grid cells of 1 km², classified in three density ranges





In Figure 12 we have mapped the resulting settlement structure in the urban area of Gent, a municipality of approx. 240,000 inhabitants and a density of 1,550 inh./kmq, which would therefore classify it as a HDUC; yet, because of the sprawling morphological structure at its edges, and of the aggregation method employed, the polygon that includes it sprawls counts 382,425 inhabitants and a density of 1,400 inh./kmq, thus qualifying as a "large SMST" in Typology 3 (map on the left side) in spite of the existence of a higher density "core" – as can be seen from the map on the right side.

Figure 13. Urban agglomeration of Brussels, Belgium. (left): SMST and HDUC polygons; **(right):** grid cells of 1 km2, classified in three density ranges



Conversely, the maps in Figure 13 illustrate the situation of the HDUC polygon of Brussels, a HDUC of 1,84 M inhabitants with a global density of 2,225 inh./kmq characterised by a sprawling lower-density “ribbon development” into surrounding areas, especially to the Flanders territory in the north-west (left side); in the map on the right we can again see that the “high density core” would exclude the larger parts of these ribbons.

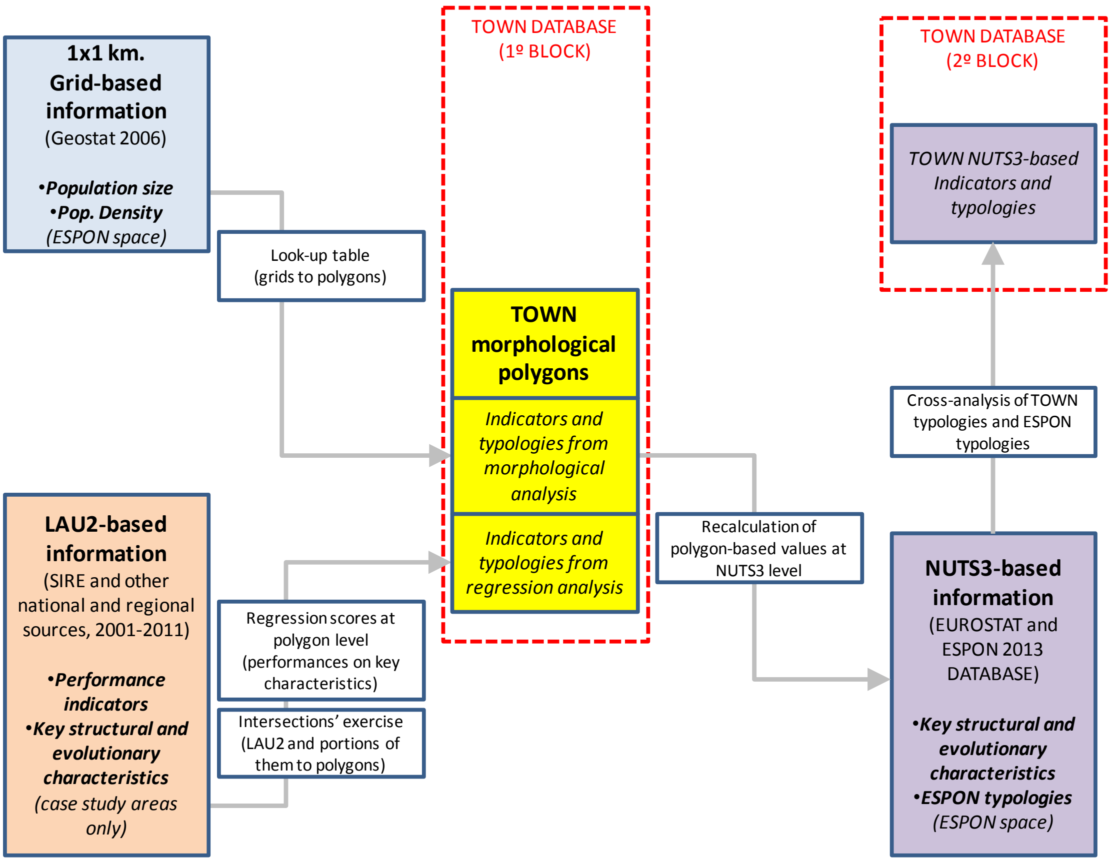
These maps make evident that the focus of this study on SMST produces a delimitation of urban settlements which may differ from that of DEGURBA, as argued in the previous section. In order to pick systematically such internal structures, we have used a common threshold of 1,500 inh./km2 to characterise high-density grids within urban settlement polygons and produced a mapping of the overall ESPON space. In Annex A we show the result at the scale of some of the most important urban system involved in our case study analysis of Chapter 4 and following chapters, and namely: the Flemish Brussels-Ghent conurbations in Fig. A.1; the Prague region in the Czech Republic in Fig. A.2; the urban coastal system in Central Catalonia including the Barcelona and Tarragona metropolitan areas in Fig. A.3; the Milan, Turin and Genoa conurbations in North Western Italy in Fig. A.4; and the Ljubljana region in Slovenia in Fig. A.5. The high-density grid class within urban settlement polygons are systematically recorded by class of polygon of which they are part within the final project database.

5. The TOWN database

One of the key outputs of the TOWN project is the production of information on urban settlements in the ESPON space in the form of a complete geo-data base integrating various spatial dimensions from this project and including results from the analytic operations of this project as well as "throughput" information that has been used to progress toward such results, such as variables and typologies.

The main challenge of this project has been to operate at different spatial scales, ensuring their 'connectedness' (De Mers, 2009). This is reflected in the structure of the database, which includes and connects information available at 1km^2 grid level (integrated in urban polygons as illustrated in this Chapter), at LAU2 level (integrated in 'Microregions' according to the Functional Analysis displayed in Ch. 5) and at NUTS3 level (as in Ch. 10). This structure of connections is illustrated in Figure 14, which shows how the basic data sources available at the administrative spatial scales of NUTS3 and LAU2 delimitation have been mapped onto the grid-based geography (and the morphological urban settlement polygons derived from them) to provide grids with values and typology memberships in addition to the 'original' information on 2006 population.

Figure 14. TOWN Database: logical framework



The TOWN database has therefore the structure in 'blocks' illustrated in Figure 14. The first block is in the grid-derived polygon geography (and the associated mapping kit including a lookup table which identifies the relation of Geostat-coded grids to polygons) and includes information on polygons as from the aggregation of grid attributes, as well as their classification into three typologies as illustrated in Section 3 of this chapter, with a ESPON-space cover. Furthermore it includes for regions which were covered by the regression exercise, the other indicators of performance and typologies derived from the performance analysis illustrated in Ch. 10, which used LAU2 data reaggregated by estimation at the geography of polygons (the procedure is explained in Chapter 3 of this Scientific Report).

The second block of the database is organised around the NUTS3 geography covering the whole ESPON space, and includes indicators which map polygon-based information onto the NUTS3 geography (as illustrated in Ch.8), the related classifications, as well as further typologies which cross-classify NUTS3 regions also looking at some of the established NUTS3 ESPON typologies.

The cartographic production of TOWN has therefore followed this logical structure, producing 'morphological' maps which represent the spatial categories of urban settlements elaborated through the geomatic operations described in this chapter, maps that elaborate 'administrative' aerial unit information into functional classifications and socioeconomic profiles (as in Ch. 5 and 6), maps that map the grid-based morphologies onto aerial units (as in Ch.8), and, vice versa, aerial unit information onto the grid-based morphologies (as in Ch. 9 and 10).

From a practical point of view, the database delivery includes two sections with different spatial units. The first is the polygon-based indicators and metadata info, including a look-up table that allows to refer each TOWN polygon to the coded Geostat grid cells which are included in them. This section includes indicators and typologies of TOWN polygons and their metadata information as well as the indicators recalculated at polygon level from LAU2 that were used in the performance analysis carried out in Ch. 10 (only for the regions that were covered by the regression analysis).

The second is the NUTS3-based database including indicators and typologies of NUTS3 regions obtained through the calculation of polygon-based data within NUTS3 regions and cross-analysing them with other NUTS3 typologies as we do in Ch.8.

6. Conclusions

This chapter has to be seen both as the key 'epistemological' input for the rest of the project, delivering a spatial representation of small and medium towns and other urban settlements units (to which these must be compared and related) free from the restrictions of administrative area-based statistics, and the first step in content production which can be used to analyse general patterns of distribution of small and medium towns of different categories across Europe, ideally plugging in the work produced by DG Regio and OECD in relation to metropolitan areas in works cited here, and complementing it with a special focus on smaller settlements.

In relation to the former, a great effort has been dedicated to highlighting the advantages but also the pitfalls of using this methodology. In relation to the latter, we have been showing as 'small town Europe' seem to follow peculiar spatial patterns (which will be the object of more detailed analysis in Ch.8). In any case, by no means should this chapter be seen as self-referential; its full meaning and value is to be gauged in connection with the findings flowing from the ensuing work to be gathered in the subsequent chapters of this Scientific Report.

There are a number of issues which have been left out of this chapter and need to be taken into consideration in further work following from it.

First, it has been made evident in this chapter – and specifically in Section 4 – that the geomatic method of clustering of 1 square kilometre grid cells with specific population thresholds to identify urban settlements, which has produced 'strong' and verifiable results in DG Regio's and OECD's work with high density urban clusters, is less strong and subject to a higher degree of subjective 'decisions' for other urban categories, regarding issues such as the continuity of settlements, the status of low-density sprawling areas, the treatment of 'urban voids', the inner structure of urban settlements, etc. In a number of cases (especially in Flanders, the Ruhr region, North-eastern Italy, some coastal urban areas, Northern Portugal, etc.) this has led to delimitations of 'Small and Medium Sized Towns' in Typology 1 that in fact are all but 'small towns' and should be revised on a case to case basis. Advances in this sense are represented by the identification of high-density nuclei as in Section 4, which are reproduced into our database structure, and by the proposition of advanced urban settlement typologies (TOWN typologies 3 and 4) which indeed allow making some important distinctions in this sense.

In this respect, it should be mentioned that the validation exercise illustrate in Section 2 which led us to revise the initial purely geomatic method of construction of morphological urban settlement polygons has been very useful to avoid mistakes and traps which only direct inspection and knowledge of the concerned areas could permit. In this sense, if this validation could be extended to the whole ESPON space (and not just to the 10 case study areas) the resulting morphological base could gain in accuracy for further developments based on it. This activity could be 'built in' further scientific activity of the future ESPON 2020 programme dealing with data and spatial base management.

Second, the construction of 'morphological' urban areas could not take into full consideration and integrate the more fine-grained terrain data produced by the M4D group (see Guerois et al. 2012). This is both due to a matter of timing (this output has been made available after the start of the TOWN project, once the morphological base construction was already advanced and needed in other analytical tasks), and to the express requirement of consistency with the methodology developed by DG Regio and OECD. However, at a certain point, if not in the lifecycle of this project, it would be convenient to use the same spatial base (Corine-based, and using 200 square meter cells) to define and classify urban clusters also bridging towards ‘functional’ classifications related to land uses. In this sense, some of the problems mentioned in the first point could be overcome, allowing for more precision in the clustering of parcels of built-up terrain into urban polygons, and improving the delimitation of what is genuinely ‘urban’ in them.

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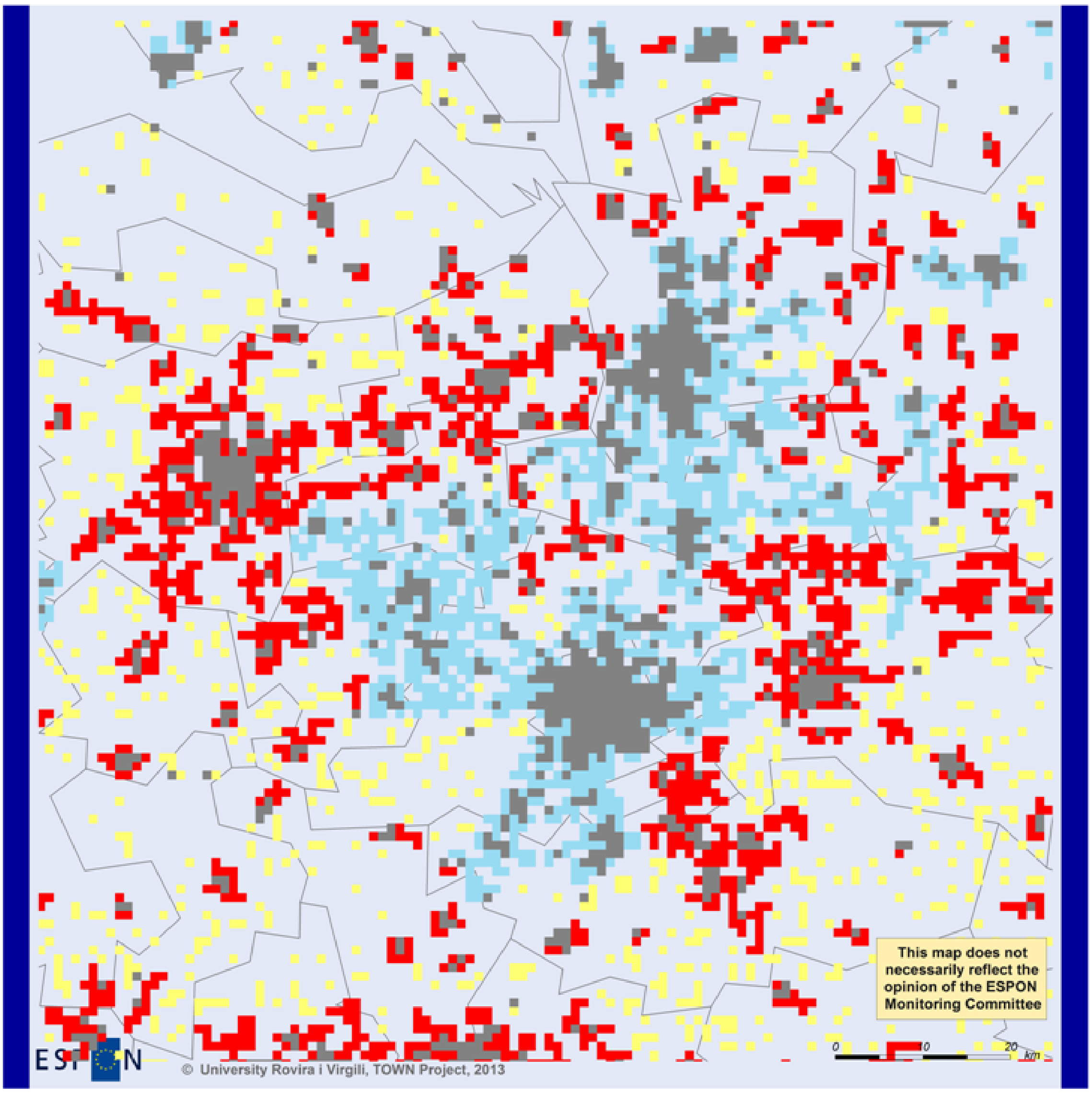
ANNEX 1.

Grid-based maps of a selection of case study areas using TOWN morphological categories

Fig. A.1 – Flanders: the Brussels-Ghent conurbations



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Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio data
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
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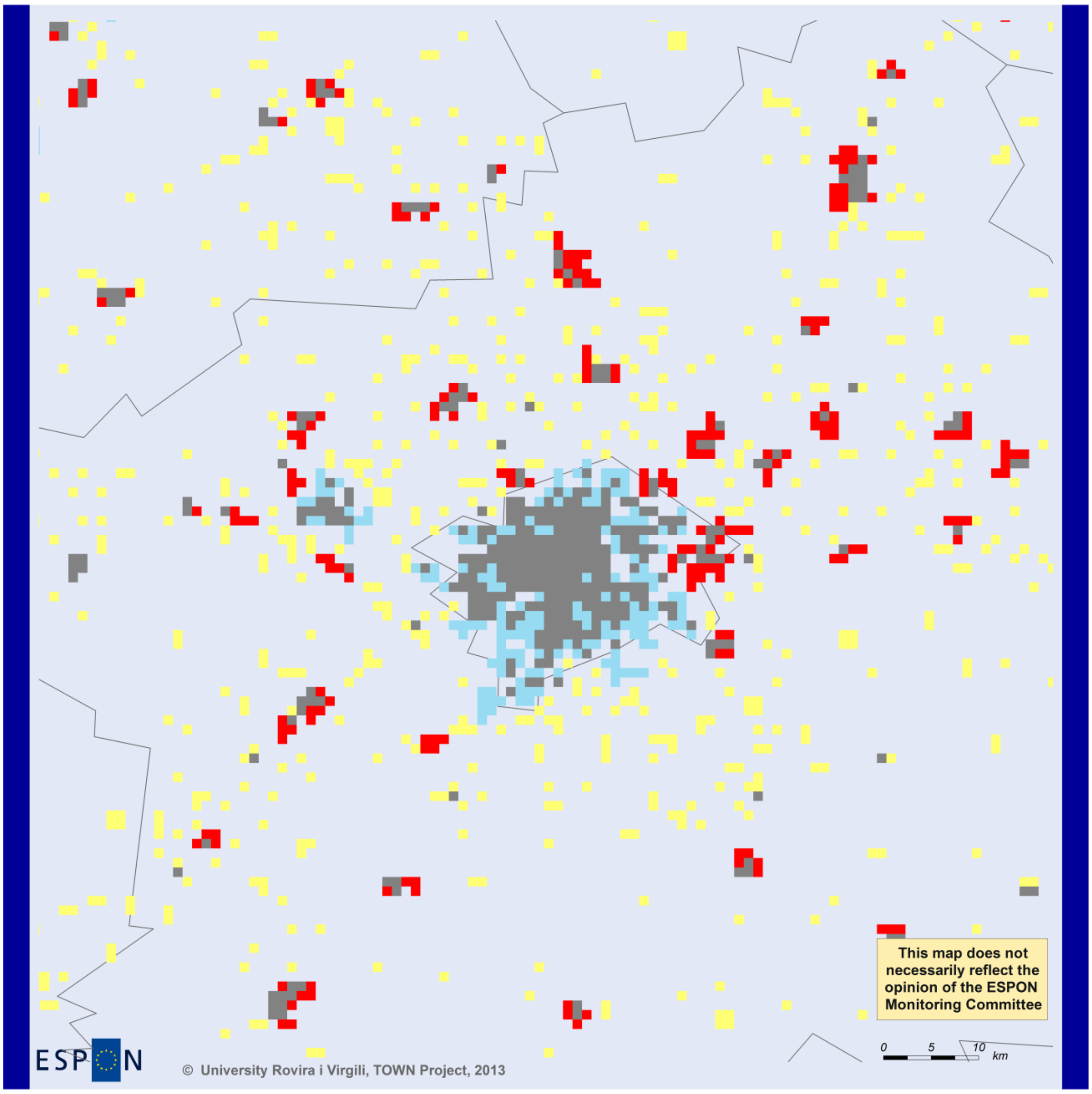
- High-density urban clusters: Density > 1500 inh./Kmq Total population >50000 inh.
- SMT: Density <1500 inh./Kmq Total population >5000 < 50000 inh.
- Very Small Towns: Density > 300 inh./Kmq Total population < 5000
- High density grids (1kmq cells within polygons with density >1500 inh./kmq)

Fig. A.2 – Czech Republic: the Prague region



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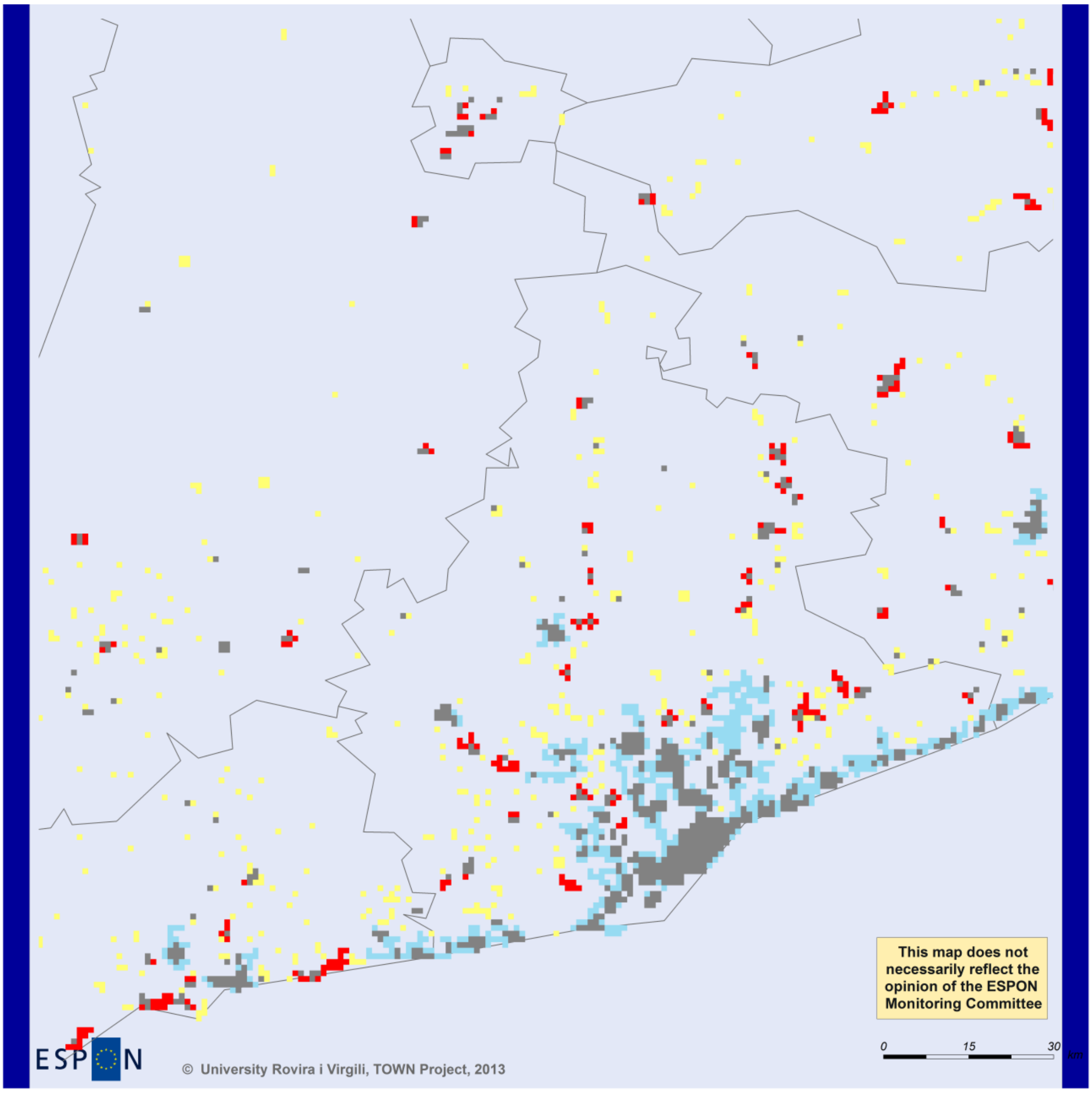
High-density urban clusters: Density > 1500 inh./Kmq
Total population >50000 inh.

SMT: Density <1500 inh./Kmq
Total population >5000 < 50000 inh.

Very Small Towns: Density > 300 inh./Kmq
Total population < 5000

High density grids (1kmq cells within polygons
with density >1500 inh./kmq)

Fig. A.3 – Eastern Spain: the Barcelona and Tarragona metropolitan areas



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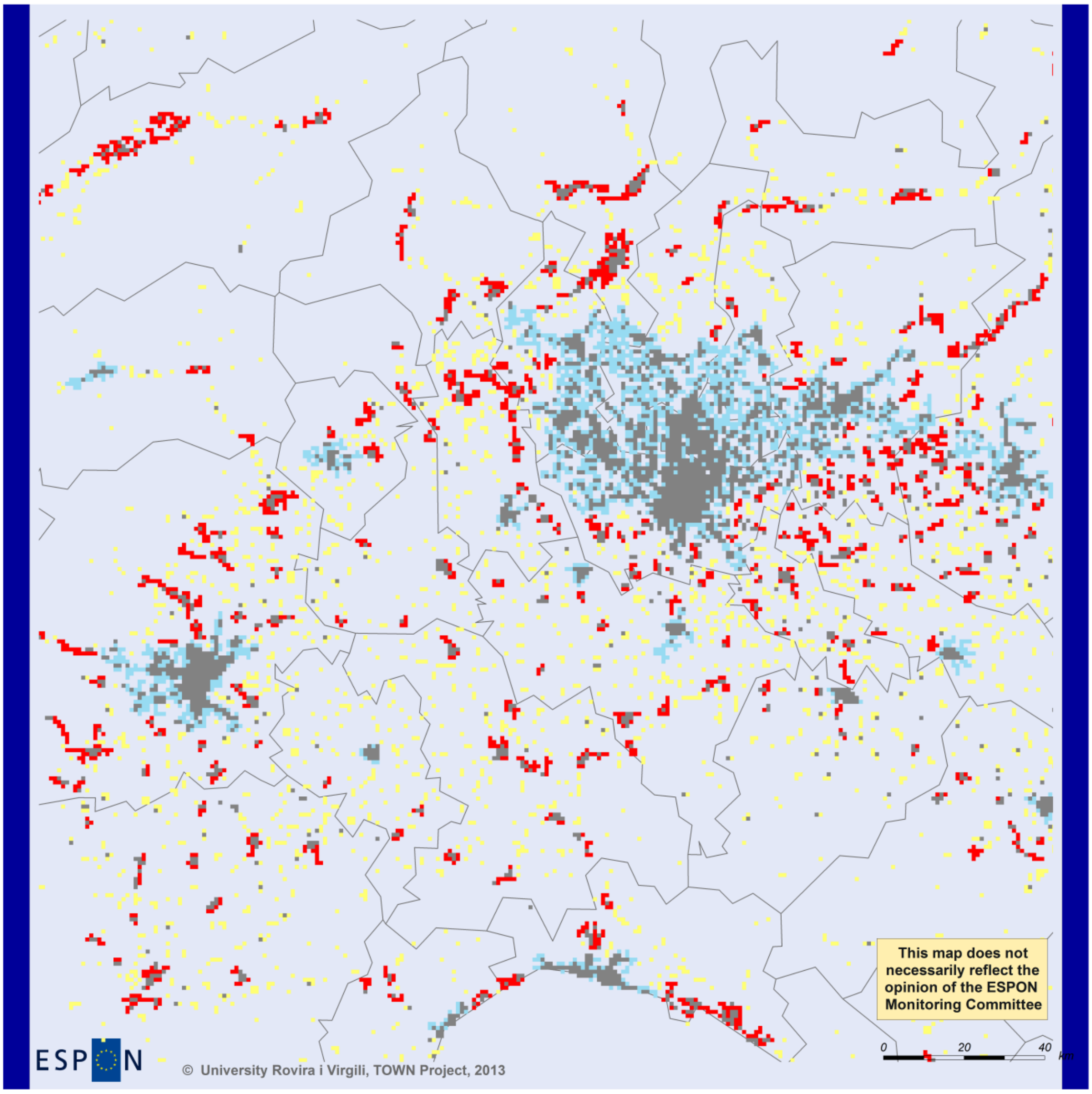
- Very Small Towns: Density > 300 inh./Kmq Total population < 5000
- High density grids (1kmq cells within polygons with density >1500 inh./kmq)

Fig. A.4 – North Western Italy: the Milan, Turin and Genoa conurbations



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Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
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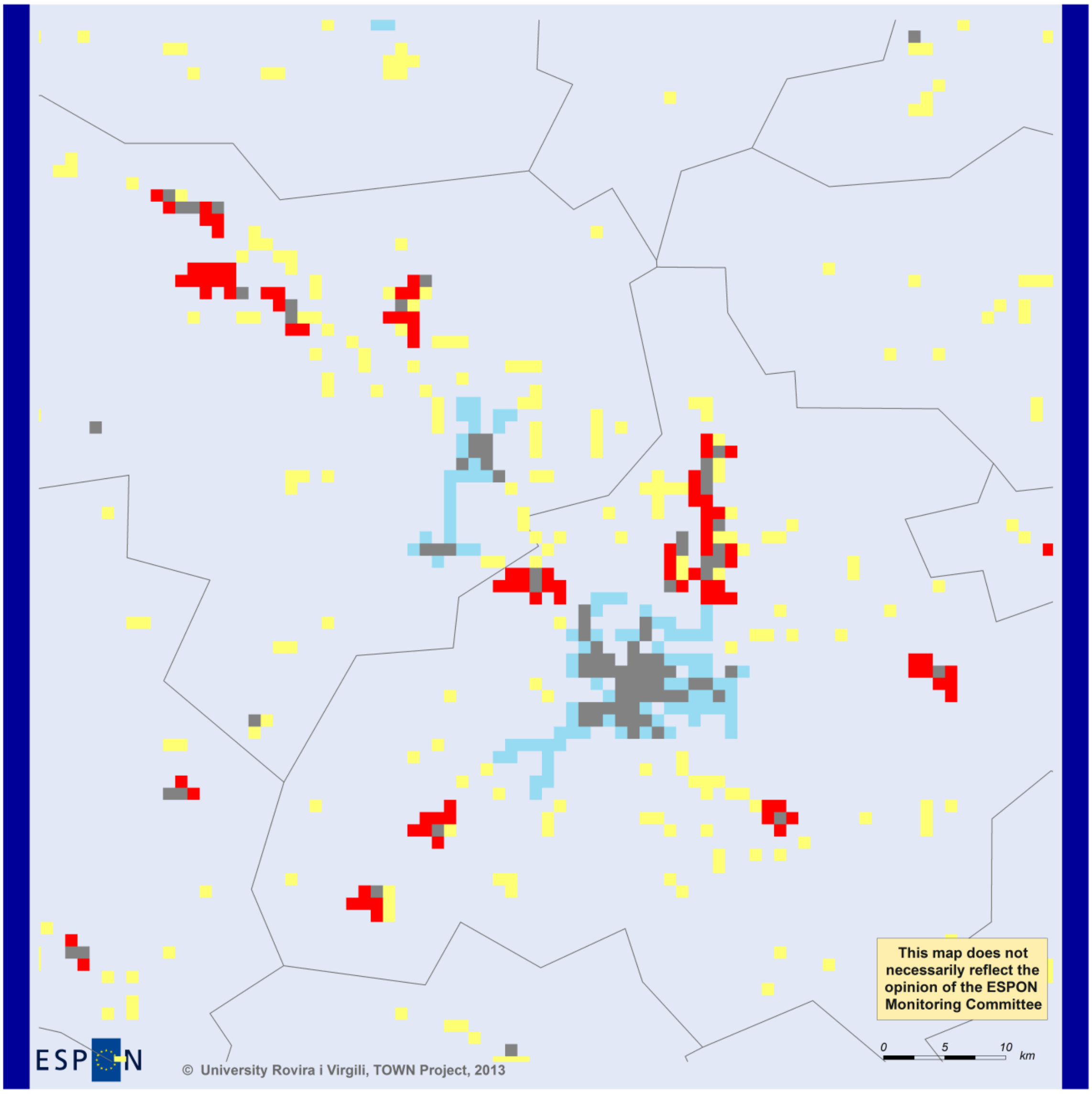
  Total population >50000 inh.
- SMT: Density <1500 inh./Kmq
  Total population >5000 < 50000 inh.
- Very Small Towns: Density > 300 inh./Kmq
  Total population < 5000
- High density grids (1kmq cells within polygons
  with density >1500 inh./kmq)

Fig. A.5 – Slovenia: the Ljubljana region



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Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio data
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
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High-density urban clusters: Density > 1500 inh./Kmq
Total population >50000 inh.

SMT: Density <1500 inh./Kmq
Total population >5000 < 50000 inh.

Very Small Towns: Density > 300 inh./Kmq
Total population < 5000

High density grids (1kmq cells within polygons
with density >1500 inh./kmq)

ANNEX 2.

TOWN Typology 1 statistics at country level

		Count	% on country total	Pop_2006 Sum	% on country total	Mean	Area Mean	Density Mean
AT	HDUC	10	0.6%	3183887	38.6%	318388.70	109	2272.39
	SMST	141	8.4%	1719528	20.8%	12195.23	11	1147.46
	VST	1535	91.0%	1625420	19.7%	1058.91	2	616.05
BE	HDUC	9	0.7%	6096913	58.0%	677434.78	337	1948.14
	SMST	176	13.9%	4234399	40.3%	24059.09	21	1119.32
	VST	1065	85.2%	1323800	12.6%	1243.00	2	674.37
BG	HDUC	21	1.2%	3110650	40.3%	148126.19	32	4376.59
	SMST	129	7.5%	1796907	23.3%	13929.51	7	1929.99
	VST	1569	91.3%	1622589	21.0%	1034.15	2	619.15
CH	HDUC	15	1.4%	9268814	*124.3%*	617920.93	276	1963.94
	SMST	140	13.5%	2278566	30.5%	16275.47	13	1191.19
	VST	899	85.3%	1114045	14.9%	1239.20	2	733.34
CY	HDUC	3	16,7%	123368	75,9%	123,368.00	54	2190,33
	SMST	10	55,6%	11380	23,3%	11,379.90	8	1445,94
	VST	5	27,8%	718	,7%	718.00	4	200,47
CZ	HDUC	21	0.8%	3452012	33.8%	164381.52	68	2234.55
	SMST	222	8.6%	3261352	31.9%	14690.77	10	1555.58
	VST	2257	90.3%	2416838	23.6%	1070.82	2	661.73
DE	HDUC	112	0.8%	36017456	43.7%	321584.43	128	2133.67
	SMST	1729	12.5%	24095718	29.2%	13936.22	10	1392.40
	VST	12046	86.7%	15965197	19.4%	1325.35	2	766.22
DK	HDUC	7	0.8%	1982022	36.5%	283146.00	116	1957.23
	SMST	98	11.1%	1406956	25.9%	14356.69	12	1168.62
	VST	783	88.2%	907085	16.7%	1158.47	2	638.96
EE	HDUC	3	1.6%	552109	40.9%	184036.33	53	4052.18
	SMST	26	9.3%	319675	23.7%	12295.19	8	1659.12
	VST	153	84.1%	144051	10.7%	941.51	2	565.58
ES	HDUC	100	2.0%	25767613	58.5%	257676.13	51	4896.88
	SMST	717	14.7%	9782791	22.2%	13644.06	6	2374.49
	VST	4155	83.6%	5017834	11.4%	1207.66	2	751.63
FI	HDUC	7	0.6%	1335927	34.7%	190847.71	71.4	2485.70
	SMST	87	8.0%	1027435	26.7%	11809.60	7.5	1733.67
	VST	995	91.4%	1490008	38.7%	1497.50	2.0	798.34
FR	HDUC	74	0.7%	23335153	36.9%	315339.91	91	2675.59
	SMST	857	8.1%	11204919	17.7%	13074.58	10	1393.44
	VST	9753	91.3%	10579179	16.7%	1084.71	2	634.82
GR	HDUC	16	0.7%	5778644	51.9%	361165.25	68	3151.43
	SMST	121	5.1%	1708326	15.4%	14118.40	9	1585.25
	VST	2249	94.3%	2345425	21.1%	1042.87	1	687.64

				Pop_2006			Area	Density
		Count	% on country total	Sum	% on country total	Mean	Mean	Mean
HR	HDUC	0	0.0%	.	:	.	.	.
	SMST	0	0.0%	.	:	.	.	.
	VST	3	100.0%	3452	:	1150.67	2	512.33
HU	HDUC	17	0.8%	3505229	34.8%	206189.94	76	2208.98
	SMST	233	10.9%	3049455	30.3%	13087.79	9	1354.46
	VST	1904	88.4%	2477871	24.6%	1301.40	2	656.15
IE	HDUC	6	1.5%	1560737	37.1%	260122.83	101	2066.49
	SMST	66	16.8%	823710	19.6%	12480.45	10	1158.86
	VST	326	81.9%	347609	8.3%	1066.29	2	586.78
IS	HDUC	1	1.9%	184620	61.6%	184620.00	97	1903.30
	SMST	3	2.3%	31874	10.6%	10624.67	10	1024.00
	VST	48	92.3%	54143	18.1%	1127.98	2	724.64
IT	HDUC	77	0.9%	21675618	36.9%	281501.53	111	2410.30
	SMST	1151	14.3%	16939374	28.8%	14717.09	11	1438.95
	VST	6878	84.9%	9620857	16.4%	1398.79	2	795.16
LI	HDUC	0	0.0%	.	:	.	.	.
	SMST	0	0.0%	.	:	.	.	.
	VST	2	100.0%	2362	:	1181.00	2	518.00
LT	HDUC	6	0.8%	1402030	41.2%	233671.67	98	2612.59
	SMST	39	5.3%	477876	14.0%	12253.23	11	1124.92
	VST	696	93.9%	600063	17.6%	862.16	2	531.92
LU	HDUC	1	1.0%	121836	26.0%	121836	73	1668.99
	SMST	6	6.1%	53319	11.4%	8886.50	8	1114.43
	VST	89	92.7%	90201	19.2%	1013.49438	2	647.72
LV	HDUC	4	1.0%	969747	42.3%	242436.75	79	2657.44
	SMST	37	9.1%	510864	22.3%	13807.14	10	1395.36
	VST	369	90.0%	343874	15.0%	931.91	1	603.29
MT	HDUC	1	8.3%	326574	80.6%	326574.00	108	3023.83
	SMST	3	5.3%	57676	14.2%	19225.33	15	1638.67
	VST	8	66.7%	10877	2.7%	1359.63	2	870.06
NL	HDUC	46	3.3%	8832077	54.1%	192001.67	60	2878.31
	SMST	305	22.9%	4334300	26.5%	14210.82	8	1815.35
	VST	1025	74.5%	1553155	9.5%	1515.27	2	863.27
NO	HDUC	4	0.5%	1301107	28.0%	325276.75	166	1794.53
	SMST	79	9.9%	1236488	26.6%	15651.75	15	1006.27
	VST	650	88.7%	793292	17.1%	1220.45	2	667.25
PL	HDUC	69	1.1%	14224333	37.3%	206149.75	65	3215.70
	SMST	520	8.7%	8086526	21.2%	15551.01	9	1742.05
	VST	5479	90.3%	5237790	13.7%	955.98	2	603.20

				Pop_2006			Area	Density
		Count	% on country total	Sum	% on country total	Mean	Mean	Mean
PT	HDUC	7	0.4%	2522169	24.0%	360309.857	91	3245.35857
	SMST	126	7.8%	4586063	43.6%	36397.33	28	1324.75
	VST	1437	91.5%	1396977	13.3%	972.15	2	623.54
RO	HDUC	44	0.7%	8019211	37.1%	182254.80	39	4198.21
	SMST	330	5.4%	4206733	19.5%	12747.68	9	1513.65
	VST	5756	93.9%	6884201	31.9%	1196.00	2	680.57
SE	HDUC	19	1.6%	3442335	38.0%	181175.53	74	2280.92
	SMST	188	16.3%	2403476	26.6%	12784.45	10	1216.23
	VST	960	82.3%	1227322	13.6%	1278.46	2	641.36
SI	HDUC	4	0.9%	471078	23.5%	117769.5	59	1900.5525
	SMST	39	8.7%	439629	21.9%	11272.5385	9	1308.0459
	VST	396	90.2%	418254	20.9%	1056.20	2	661.30
SK	HDUC	11	0.6%	1204404	22.4%	109491.27	36	2839.59
	SMST	122	6.6%	1709144	31.8%	14009.38	8	1733.74
	VST	1586	92.3%	1878130	35.0%	1184.19	2	699.49
UK	HDUC	133	2.8%	41276528	68.1%	310349.83	113	2325.47
	SMST	694	15.1%	10287981	17.0%	14824.18	9	1582.72
	VST	3885	82.4%	4775626	7.9%	1229.25	2	756.09
Unclassified	HDUC	5	4.5%	3233837		646767.40	80	6073.59
	SMST	29	27.4%	348927		12031.97	10	1498.03
	VST	77	69.4%	102557		1331.91	2	691.72

Notes:
data not available for Croatia, Lichtenstein.

Polygons' populations attributed to NUTS0 areas on the basis of centroids' location. In a few cases of cross-border polygons, the population is wrongly attributed to NUTS0 (as in the case of Switzerland's HDUC-based population).

Chapter 3 – Building a database of morphological towns

Ian Smith and Antonio Paolo Russo

1. Aim and research question(s)

Chapter 2 outlines how the TOWN team derived morphological polygons across the 27 member-states of the European Union (prior to 2013). The aim of this short chapter is to set out how attribute values derived from secondary small area data (mainly but not exclusively derived from the various national censuses) were estimated at the level of the morphological settlement. This process of 'linkage' and estimation was a crucial step in the building of the database that is subsequently used in Chapter 9 to gain some insight into the state and trajectory of SMSTs in our case study countries and regions.
In the last part of our preliminary morphological analysis we introduce the problem of complementing the identification and classification of SMST polygons with information coming from the territorial units of analysis in ESPON, NUTS3 and LAU2. This is a central part of our research, in that in order to analyse the role and performance of small and medium-sized towns in their territorial context it is necessary to attribute to our urban settlement polygons, identified through the geomatic procedure illustrated and classified as according to Chapter 2 of this Scientific Report, the values from the socioeconomic variables which are normally registered at the level of administrative units; the only variable which until this stage is originally attributed to grid cells, in fact, is the population data of 2006 from Geostat, which, to be correct, is in itself an approximation (by rasterisation) of administrative data available at the lowest administrative scale manipulated through the consideration of Corine land-cover information.

The attribution of data that are available at administrative levels to morphological units is one of the most problematic tasks in cartographic methods. This research team was faced with this issue at various stages of the ESPON TOWN project, from the preliminary task of constructing a grid cell-based cartographic representation of urban areas in Europe, to the attribution of values to morphological units and classes, which will eventually allow the development of analytic tasks concerned with the understanding of the patterns, functional roles and differential evolution of SMSTs throughout Europe and as part of larger urban systems. To achieve that aim, various approaches have been deployed (geomatic grids, administrative polygons and national boundary definition projects).

Obviously because of the different geographies involved by grid-based morphologies and "political" NUTS3 frontiers, this exercise faced two main problems:

- Infer urban settlement polygons' attributes from NUTS3/LAU2 attributes, which are generally available from traditional statistical sources. Here there are two orders of problems in the way. First, the attributes of one NUTS3/LAU2 delimitation (for instance, its unemployment rate) not necessarily holds in the smaller part of the region that is occupied by a SMST: considering that socio-economic indicators are generally different in metropolitan, mid-size urban and rural areas, it is very likely that some NUTS3/LAU2, especially the larger ones, will have a sizeable internal variation of these values which makes it difficult to even estimate the values for its portions delimited as SMST. Secondly, the fact that SMST spread over more NUTS3/LAU2 delimitations, which may be characterised by different socioeconomic indicators, make it technically cumbersome to "reconstruct" the values of such indicators at SMST level.

- Transfer information available at SMST level to the NUTS3/LAU2 level. We have this problem, for instance, when we try to estimate how much of the area of a NUTS3 (known) is occupied by SMST (possibly many different polygons, and spreading over different NUTS3) or the share of the NUTS3 population which lives in SMST. The problem is essentially of technical nature: SMST have been built by aggregation of square grid cells, while NUTS3/LAU2 polygons have “exactly” shaped frontiers (political or geographical, such as coastlines), which generates a certain level of inaccuracy in the values generated overlapping these two geographies.

Thus, inevitably, there is a certain margin of inaccuracy when grid-based settlement polygons values (population size and density) are mapped onto the level of territorial administrative units of analysis (NUTS3 or LAU2) and vice versa, when their attributes are inferred from the values of indicators calculated at the overlapping administrative geography. Having acknowledged this, we had to realistically take into account that most socioeconomic indicators that need to be considered for a comprehensive analysis of the territorial systems of SMST are only available at the level of territorial administrative units, and so difficulties of the first type indicated above have arisen, and in some cases have required a case-by-case analytical approach to be solved.

2. Intersecting geographies between grid-based polygons and territorial LAUs: the geomatic method

This section will outline the basic method for linking the grid-based geographies used to identify contiguous areas of settlement to small area data. On one hand the method involves the geomatic exercise of intersecting different shapefiles. However once this exercise is done, it is a matter of experimentation to see how to estimate the attribute values for the morphological settlements. The basic parameters that determine the relative appropriateness of these choices relate to:

- The patterns of settlement (especially relating to the complexity and density of settlement); and,
- The range and granularity of the areal units for which we have attribute values

Whereas for the derivation of the settlement polygons we start with an equally sized areal unit (the 1000 square metre grid) to which an estimate of resident population has been made, for our other attribute values we rely on small area data from the National Statistics Institutes (NSIs). These small areal units are for the most part (in the member-states included in this project) for the lowest level of local government (municipalities). The exception to this is the case of Wales where the small areal unit is the lower super output area (the LSOA). The Welsh LSOA is an areal unit that has been developed for the purposes of spatial areal statistical analysis and is not a unit of local government.
Table 1 outlines the very different spatial and demographic characteristics of the small areal units for our case study regions. Thus the table gives the characteristics of the municipal areal units for all case study regions (with the exception of Cyprus) and in the case of Wales the table outlines the characteristics of the lowest tier of local government (municipalities) but also of the statistical small areas for which data is released. In terms of the basic number of small areal units, the number of units varies from 85 municipalities in Northern Sweden to 6,200 municipalities in the Czech Republic. The Table then compares the median population of these areal units where the Czech Republic has the smallest median population whilst Belgium has the largest median population size. The key statistic is however the coefficient of variance (COV) which gives a measure of how much the areal units vary by population

size. The smaller the COV, the narrower the distribution of population size across the areal units. Under this measure it is clear that the Czech Republic has a set of small areal units that exhibit the widest variation in population size in comparison to the LSOAs in Wales where the coefficient of variance is very small indicating that the areal units for Welsh statistics are more equal in population size. The practical issue is that greater variation in population size is likely to induce greater potential errors in the case of grid polygons intersecting with the 'wrong' areal units. With the exception of the LSOAs in Wales, municipalities spatial units are derived in order to cover a territory with units of local government (the coefficient of variation on area is closer to 1 in all cases with the exception of Wales) of approximately equal area and not of approximately equal population. This becomes problematic when using these areal units of convenience for representing the spatial distribution of the population.

Table 1: small areal units for case study regions

case region	areal unit type	number of small areal units	median population of small areal unit	Coefficient of variance (COV)	Total population
Flanders (BE2)	municipalities	308	13896	1.60	6,161,600
Czech Republic (CZ0)	municipalities	6249	412	10.49	10,467,542
Catalonia (ES51)	municipalities	946	974	7.10	7,475,420
Central Region (FR24)	municipalities	1842	462	3.98	2,439,704
North West Italy (ITC1)	municipalities	2751	1463	6.68	13,312,254
Mazovia (PL12)	municipalities	314	6527	5.87	5,204,495
Northern Sweden (SE3)	municipalities	85	11000	1.13	1,703,581
Slovenia (SI0)	municipalities	210	4708	2.23	2,032,362
Wales (UKL)	municipalities	22	122823	0.45	2,903,085
Wales (UKL)	statistical LSOA	1896	1500	0.17	2,903,085

Intersecting the grid-based settlement polygons (from Chapter 2) and these geographies of areal units is a pragmatic approach given that attribute data is available for these units. Table 2 outlines the outcomes of intersecting grid-based polygons and the small areal unit geographies. As before for each of the case study regions the table gives the total number of small areal units in each case. The second column gives the number of intersections between small areal units and the grid-based polygons once we have eliminated polygon fragments that only account for 1% of the areal unit area. It is possible that any given areal unit may intersect with more than one grid-based settlement polygon hence the number in the second column can be larger than the total number of areal units for a region. In the case of Belgium where the settlement structure is complicated and tight, there are clearly numerous cases of a single municipality intersecting with more than one grid-based polygon. However the third column eliminates all the doubles leaving us with the total number of areal units that are associated with at least one grid-based polygons (a SMST, a HDUC or a VST in selected cases). The final column gives the proportion of small areal units implicated in the estimation of attribute characteristics of our morphological polygons. Thus in the case of Flanders and Wales, over 80% of the small areal units are associated with at least one settlement. At the other end of the scale under 10% of small areal units are associated with an urban settlement in the case of the Czech Republic, the Centre Region of France and in

North West Italy. In these regions, clearly many municipalities might be considered to be very rural.

Table 2: Results of the interaction between morphological polygons and the small area geographies associated with the data attributes

Region	NUTS	number of LAU in case study region	number of LAU-polygon interactions	number of LAUs associated with 'urban' polygon	Percentage of small areal units intersecting with grid 'settlements'
Flanders	BE2	308	525	271	88%
Czechia	CZ0	6249	644	572	9%
Catalonia	ES51	946	252	241	25%
Central Region	FR24	1842	132	125	7%
Piedmonte	ITC1	2751	262	250	9%
Mazovia	PL12	314	90	84	27%
Northern Sweden	SE3	85	60	53	62%
Slovenia	SI0	210	82	72	34%
Wales	UKL	1896	1658	1571	83%

The problem of intersecting these geographies of areal units and the grid-based polygons is illustrated in Figure 1 for Flanders and Figure 2 for the Czech Republic. Figure 1 shows the three case study towns for Flanders: Aarschot, Dendermonde and Iepers. The grey lines in the three case study maps show the municipal boundaries. The yellow boundaries are the micro-regional boundaries (municipality-based) that are discussed in Chapter 5 (functional analysis). The blue polygons are the grid-based settlements. In the case of Flanders multiple grid-based settlements intersect with the municipalities of Aarschot and Dendermonde in such a way to make a simple one to one association between settlement and municipality problematic.

Figure 2 illustrates the case of the Czech Republic. As outlined above the geomatic context here is one where there is likely to be a higher degree of correlation between individual municipalities and our morphological polygons. Table 2 however suggests that only 9% of municipalities intersect with the morphological (grid-based) polygons. The implication is that there are 91% of municipalities that are not associated with urban settlements. Figure 2 bears this out as within each case study town the central municipality is associated with only a single municipality but the hinterland of the micro-region is populated by many 'non-urban' municipalities.

Finally Figure 3 illustrates the case of Wales where the areal unit has been derived to even out variation in the number of people living in it. In this case 83% of LSOAs are associated with either a SMST or HDUC (or a handful of selected VSTs). This is an issue of aggregating many areal units to each morphological polygon. Figure 3 illustrates this in relation to electoral wards (a unit for electing local councillors to their municipalities) rather than for LSOAs (because electoral wards have been nominated as the LAU to EUROSTAT rather than LSOAs). However the basic point remains the same, wards are also a territorial unit derived both in relation to electing local government but also in terms of population size. In the three cases in Wales, it is clear that multiple wards contribute to the morphological settlements.

Figure 1: Case study towns in Flanders

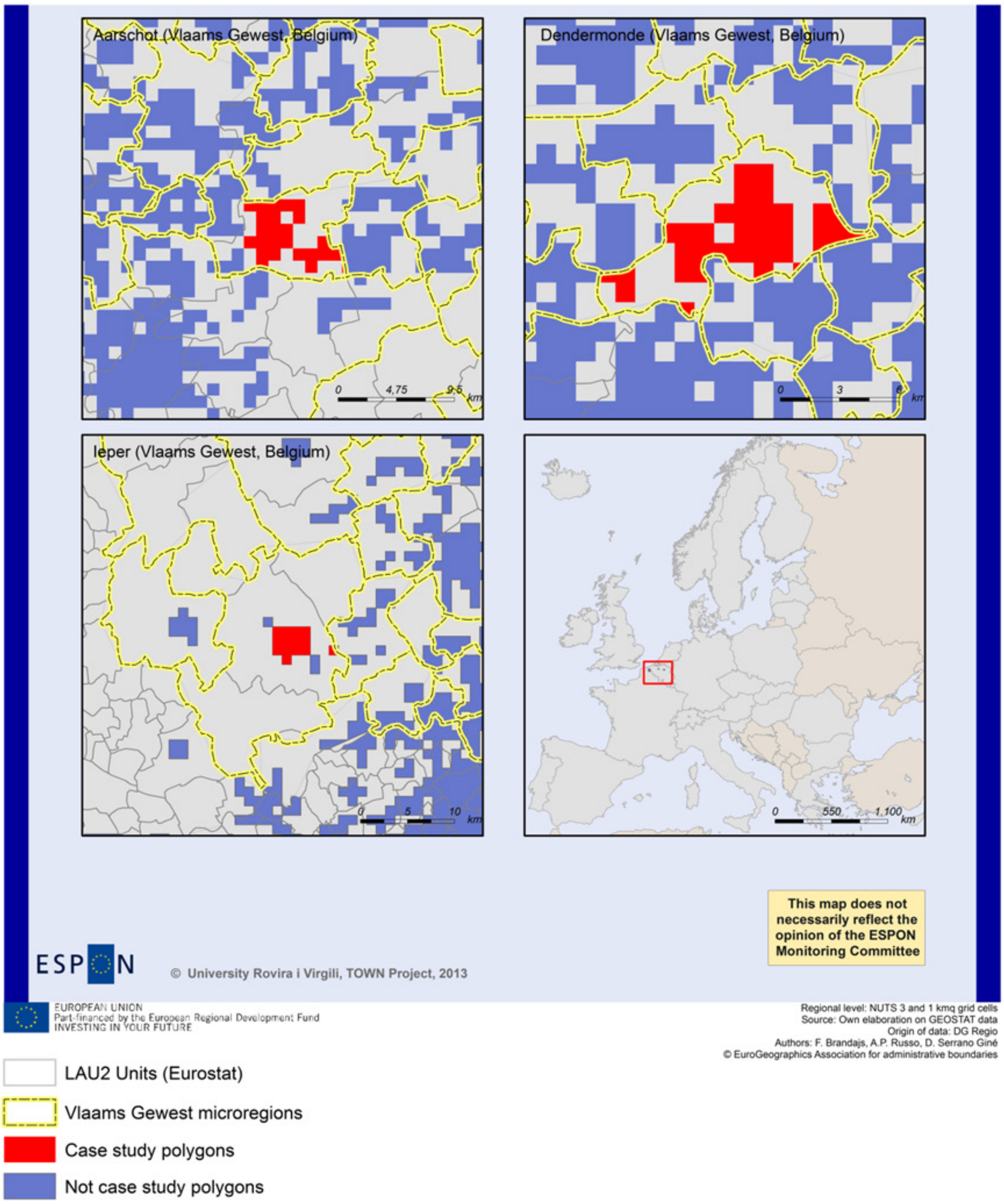


Figure 2: Case study towns in the Czech Republic

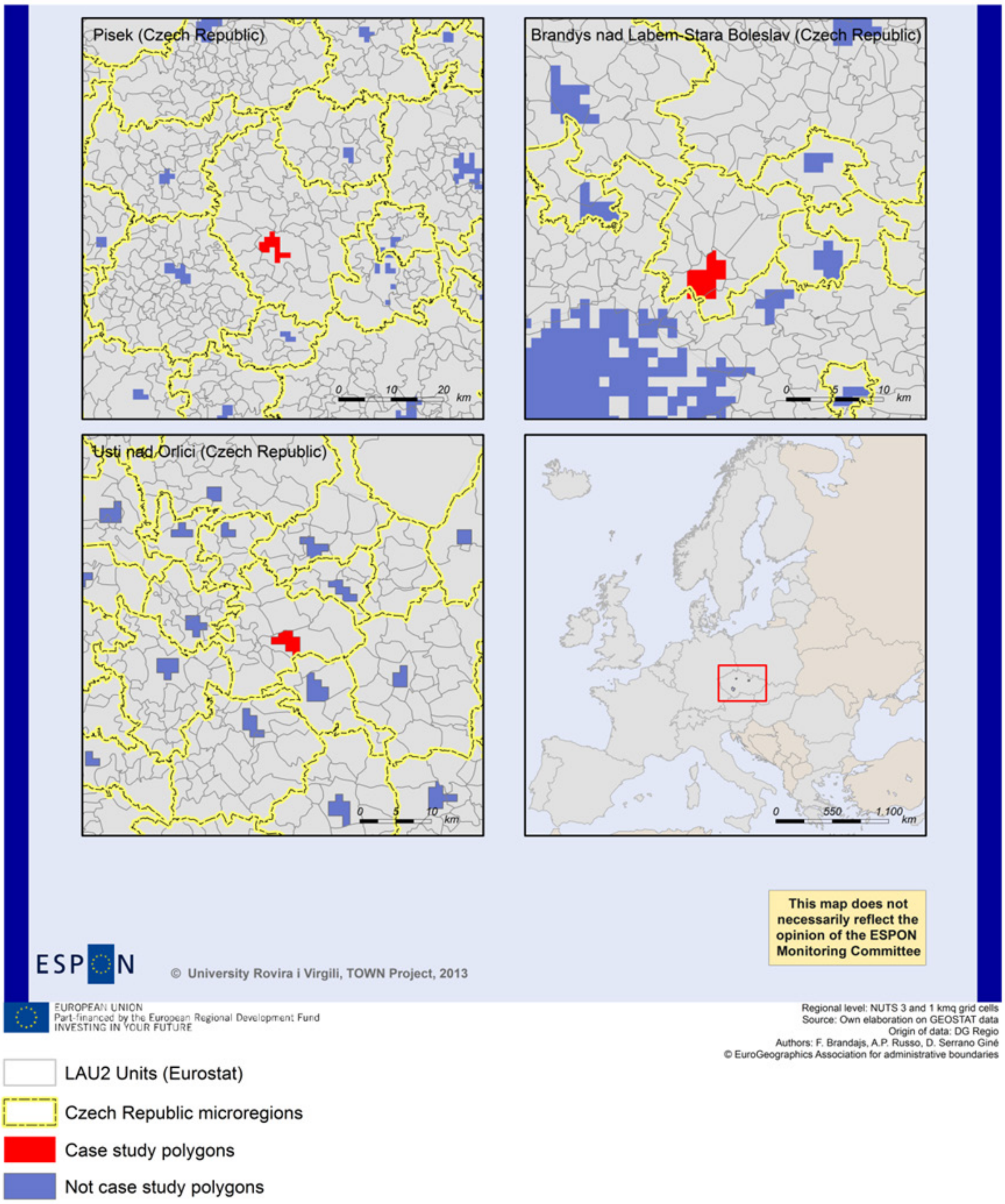


Figure 3: Case study towns in Wales

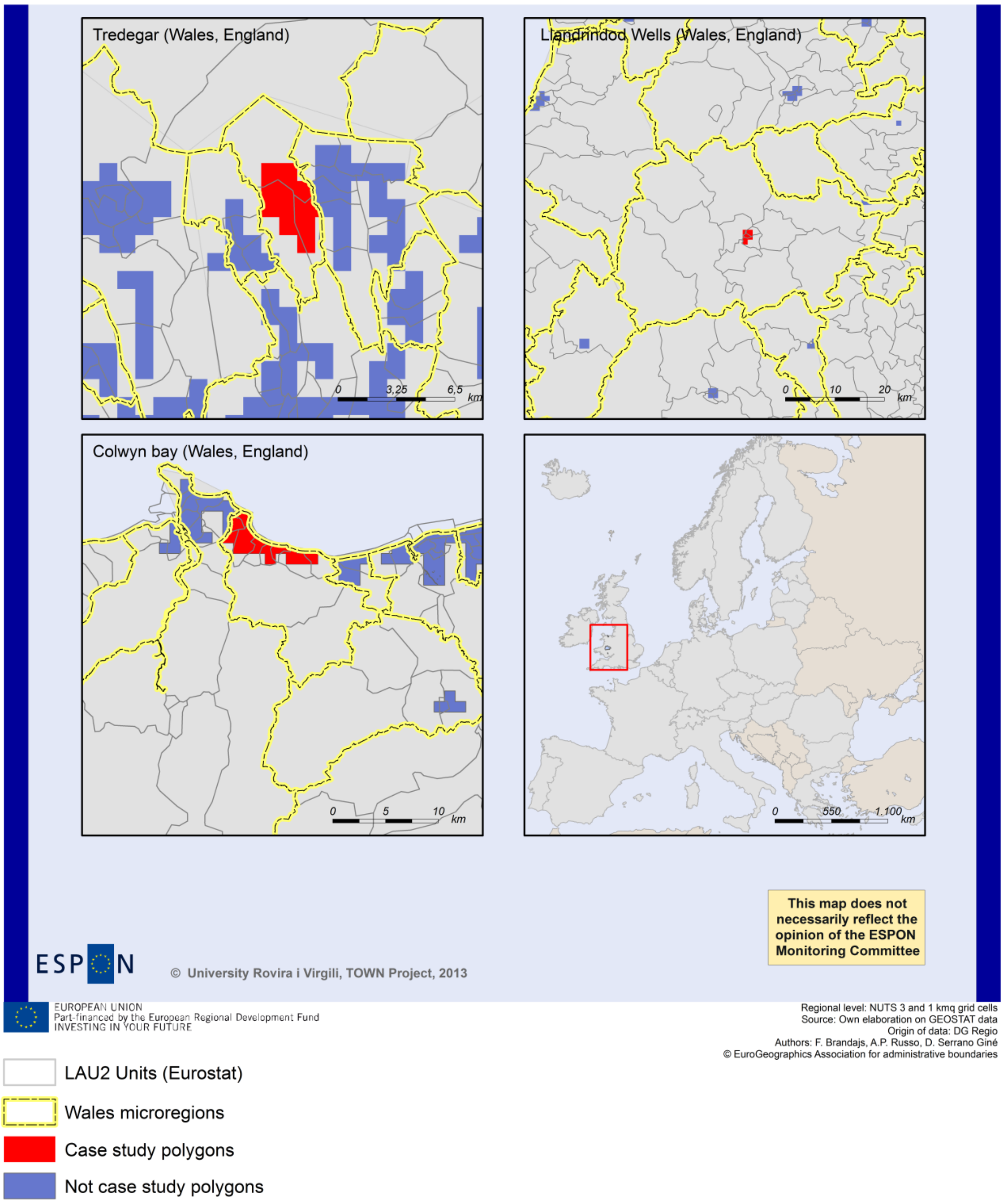
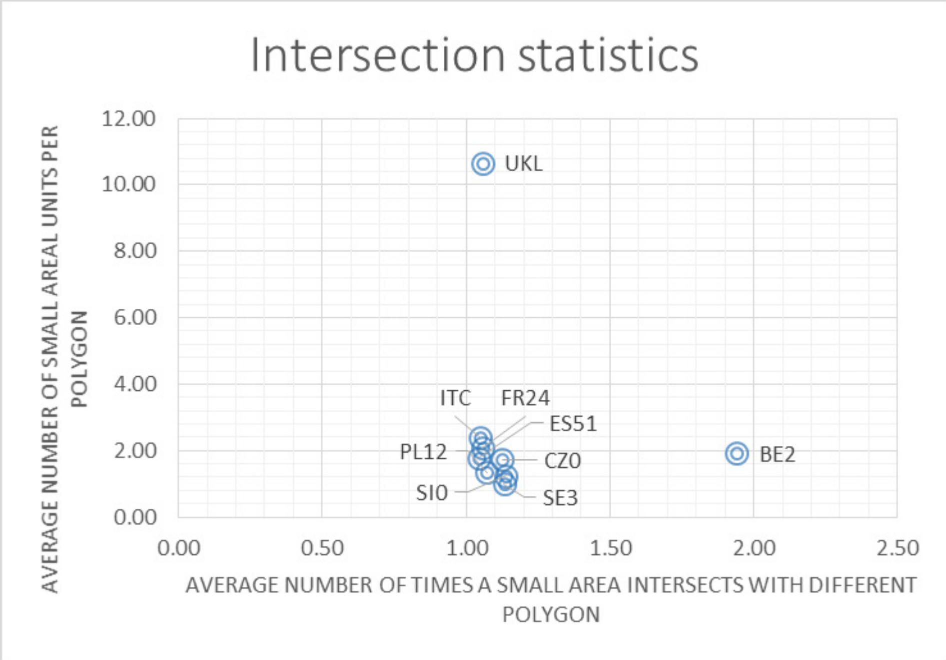


Figure 4: Intersection statistics plotted by case study region



The different situations sketched out in Figures 1 to 3 can be summarised in Figure 4. For each case study region the average (median) number of small areal units intersecting onto the SMST and HDUC polygons is plotted on the y-axis whereas the x-axis is the aggregate number of times a single areal unit is associated with different SMST/HDUC polygons. Seven out of ten of our case study regions are clustered together indicating that on average each areal unit is only associated with one morphological polygons and on average around two areal units are associated with each polygon. This group offers an approximate one to one relationship between morphological polygons and areal units (LAUs) and this is illustrated by the Czech case in Figure 2. However there are two clear outliers: Flanders where any individual municipality may be associated with nearly two morphological polygons (illustrated in Figure 1 for Aarschot and Dendermonde); and in Wales where on average ten small data units associate with each morphological polygons (all the case study towns to varying degrees in Figure 3). In the case of Flanders the data association process must contend with the issue of dis-aggregating municipal attributes to multiple polygons whereas in the case of Wales the data association process has to deal with the extreme issue of aggregating areal units up to the value at the settlement level.

The research team experimented with three algorithms for associating areal data (based on 'real' small areas) and the grid-based settlement polygons. The first method summed all the attribute values of the areal units that intersected with a polygon to give the attribute value of the polygon. The second method added a proportion of the small areal unit value to the settlement polygon based on the proportion of the area of the areal unit that intersected with the settlement polygon. The third method estimated the proportion of the small areal unit's population that lived within the intersection and then summed the value of these population weighted fragments to give the value for the settlement as a whole. This process assumed that there was an even distribution of population density across the morphological polygon and that if the estimated population of the polygon fragment exceeded 100% of the LAU population, the LAU population would only be added at 100%.

These are all simplified solutions to the problem of generating population surface models (that can be aggregated together as grid-based polygons). As such it has to be recognised that there is a degree of error in such processes is inevitable (Openshaw 1989 cited in Martin and Bracken 1991).

Table 3 outlines the results of these three processes in the case study regions by comparing the estimates of total population for these three methods of aggregation with the grid-based estimation of the settlement population (the derivation of which is covered in Chapter 2). Where the method of aggregation comes to the same estimation of total population as the grid polygon estimate, the value of the ratio will be 100. Considering three methods of estimation based on areal data, it is clear that the population weighted sum of total population (Method C) performed best in all case study regions with the exception of Wales and the area-based weighting performed the least well in all cases. In the case of Wales the method of simple aggregation of all LSOAs that intersect with the grid-based polygon was the most effective method of aggregation. Using Method A with LSOAs in Wale, the median estimate of population for the settlement was 13% higher than the grid-based estimate of population whereas using Method C with LSOAs in Wales produced an estimate of population that was only 82% of that estimated by grids. Whereas in the case of the Czech Republic method A produced a median 11% overestimation of population in contrast to a median 97% estimate of population using Method C. These differences arise because of the very different distribution of areal characteristics of local government units (municipalities) as opposed to small area statistical units (the LSOAs) in Wales.

Table 3: Comparison of total population estimates by aggregation using three methods for SMSTs in the case study regions.

case region	number of SMST	median ratio of total population estimations			coefficient of variance on the ratio of estimates		
		Method A	Method B	Method C	Method A	Method B	Method C
Flanders (BE2)	127	200.9	33.9	99.5	0.97	0.45	0.06
Czech Republic (CZ0)	222	111.7	23.7	97.5	3.18	0.97	0.17
Catalonia (ES51)	65	102.8	17.2	92.2	0.67	0.79	0.14
Central Region (FR24)	39	125.4	28.9	99.1	0.59	0.51	0.09
Piedmonte (ITC1)	87	112.1	20.4	97.3	1.31	0.49	0.09
Mazovia (PL12)	42	160.9	16.5	99.6	0.70	1.16	0.02
Northern Sweden (SE3)	41	199.3	1.2	99.4	1.24	0.95	0.13
Slovenia (SI0)	43	205.2	11.2	99.7	0.63	0.64	0.19
Wales (UKL)	54	113.8	56.0	82.8	0.16	0.29	0.15

Thus in eight out of ten cases, Method C produces closer estimates of population size to the grid-based estimate. However Method C has a second benefit in that it reduces the variability of estimates. The final three columns give the coefficient of variance on total population estimates for the three methods (in comparison to the grid-based estimate). Thus in the case of Catalonia where the estimate of population by method C is 92% of the grid-based estimate in comparison to a median estimate of 103% by method A the coefficient of variance in these estimates has decreased from 0.67 for method A to 0.14 for method C. One of the problems of intersecting grid-based to 'real' areal geographies is the case when small towns are close to large municipalities. In these cases the spatial error in boundaries induced by using the 1km grid sometimes means that SMST boundaries clip very large central city municipalities. This problem is illustrated in Figure x where the small town of St Orens-de-Gameville becomes associated with the very populous municipality of Toulouse. Figure x illustrates a second kind of problem where the HDUC on the borders of Flanders and the Netherlands becomes dissociated by the border in the estimation process. The process outlined in Chapter 2 constructs a HDUC associating Maastricht (the

Netherlands) with Maasmechelen (Belgium) but our estimation process has only taken into account the small area data from Belgium (and not the Netherlands). Consequently the population estimate of the Belgian HDUC settlement of Maasmechelen is only 43% of the total HDUC that includes Maastricht.

Figure 5: Over-estimation of population size by Method A because of proximity to populous municipality: example of St Orens de Gameville

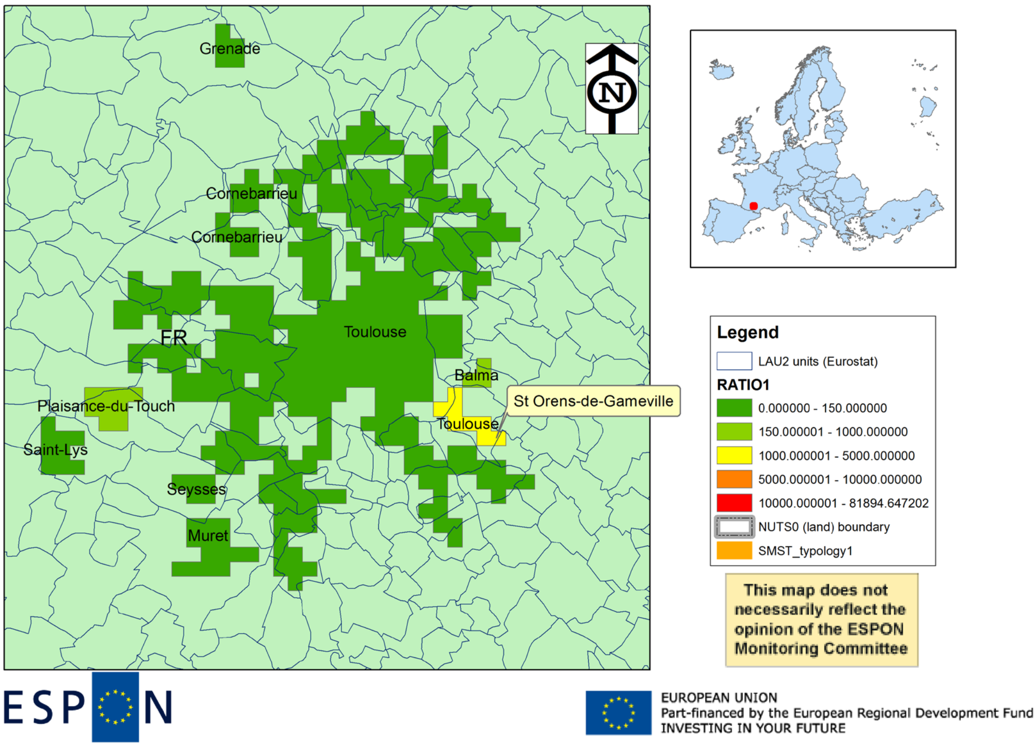
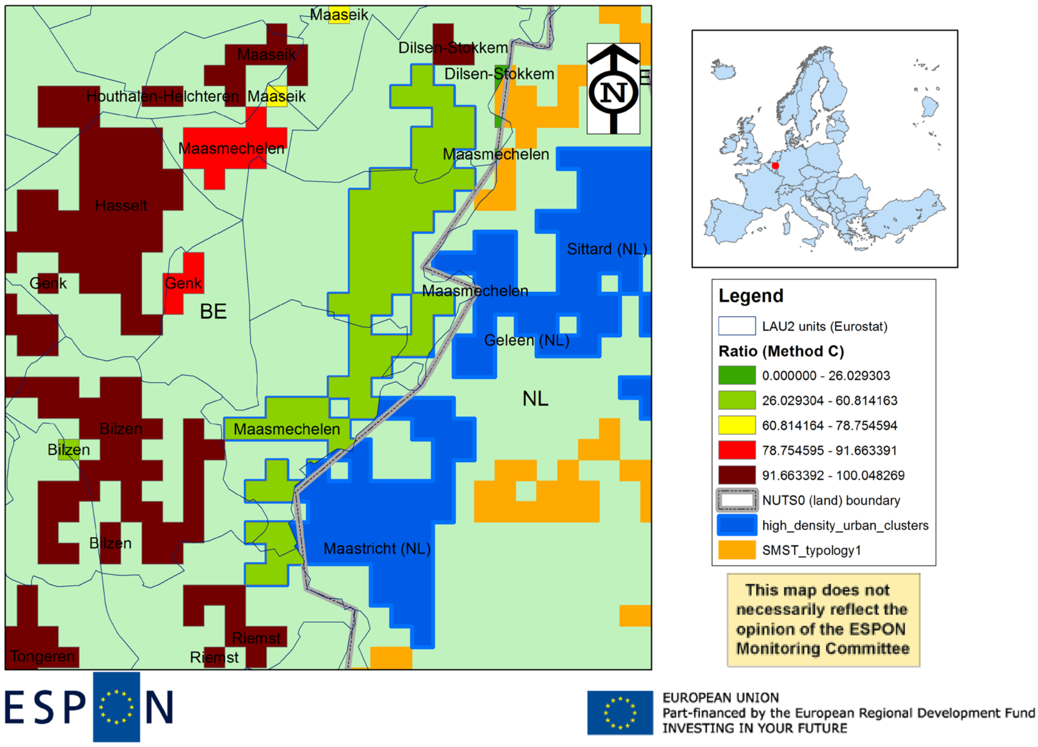


Figure 6: Estimation problems (all methods) because of cross-boundary morphological polygons: example of Maastricht-Maasmechelen



Thus we arrive at the means of creating attribute values based on areal units for grid-based polygons. For each intersected fragment of an areal unit we have estimated the proportion of the total population that lives within the urban polygon part of the areal unit. We use this proportion against all socio-economic statistics for that polygon. We then sum the values for all the fragments to get to the value for the polygon as a whole. Thus we can derive a database of attribute values for the morphological polygons (that can be further broken down by functional units).

3. Overlapping geographies: what do they tell us?

In order to illustrate the complexity and the diversity of this problem in the context of our research, Table 5 illustrates the number of "intersections" between SMSTs and a range of administrative and functional geographies for our case study regions including: the small area units (mainly municipalities except for England and Wales); functional micro-regions (derived in Chapter 5); and, the NUTS3 regions. For each of these three geographies Table 5 indicates how many units of each geography intersect with the SMSTs first in terms of the median number of intersections and secondly in terms of the maximum number of intersections (all SMSTs will intersect at least once with the geographical units in each geography).

As we have seen above for most of our case study regions there is an approximation of a one to one geography between municipalities and SMSTs. With the exception of Catalonia, France, Italy and Wales, over 50% of SMSTs intersect with a single municipality although even in these cases a SMST might intersect with a maximum of 17 municipalities (in

Flanders). In the case of Catalonia, Piedmonte and France the median number of intersections with municipalities is two and this is reflected in the higher mean number of intersections noted in Figure 4. In the case of Wales, the median number of areal units linked to a SMST is 9 increasing to a maximum of 43. Again this reflects the characteristics of the areal units rather than a particular characteristic of the settlement pattern.

Table 4: intersections between SMSTs and other administrative and functional geographies

case region	No. of SMSTs	number of intersections with areal units		number of intersections with micro-regions		number of intersections with NUTS3 regions	
		median	maxm	median	maxm	median	maxm
Flanders (BE2)	127	1.0	17.0	:	:	1.0	3.0
rest of Belgium (not BE2)	50	1.0	22.0	:	:	1.0	3.0
Czech Republic (CZ0)	222	1.0	6.0	1.0	2.0	1.0	2.0
Catalonia (ES51)	65	2.0	4.0	1.0	2.0	1.0	1.0
Central Region (FR24)	39	2.0	6.0	1.0	2.0	1.0	1.0
rest of France (not FR24)	843	2.0	42.0	:	:	1.0	2.0
Piedmonte (ITC1)	87	2.0	11.0	1.0	2.0	1.0	2.0
Mazovia (PL12)	42	1.0	4.0	1.0	1.0	1.0	1.0
Northern Sweden (SE3)	41	1.0	1.0	1.0	1.0	1.0	1.0
Slovenia (SI0)	43	1.0	4.0	1.0	2.0	1.0	1.0
Wales (UKL)	54	9.0	43.0	1.0	3.0	1.0	2.0
England (not UKL, UKM, UKN)	520	9.0	38.0	:	:	1.0	2.0

When considering the "higher order" geographies of functional micro-regions (see Chapter 5) and NUTS3 regions (as statistical units), there is a clearer one to one relationship between SMSTs and these geographic units across all case study areas (and beyond). However it is possible for SMSTs to cross the boundaries of these wider territorial units. Only in the case of Sweden and Mazovia (Poland) was a consistent one to one relationship maintained between functional micro-regions and SMSTs. All other case study regions included at least one case of a SMST crossing a micro-regional boundary and sometimes up to three in the case of Wales.

NUTS3 units are a statistical unit that reflects administrative boundaries within the member states (although they may not be administrative boundaries in and of themselves). Again it was possible for SMSTs to straddle NUTS boundaries in the UK, the Czech Republic, France, Belgium and within Piemonte (Italy). This indicates a sense that NUTS3 units may not be ideal units for the consideration of functional regions for SMSTs. In the case of NUTS3 regions, attributing socioeconomic indicators available at NUTS3 level to SMSTs is clearly problematic not only because some SMSTs may straddle NUTS3 boundaries but also because of the scale differential between SMSTs and NUTS3 regions.

4. Concluding thoughts

We have outlined the method by which we have arrived at attributing attribute values derived from small area data onto our morphological grid polygons. It has to be accepted that such procedures will induce an element of error in the attribute estimates. This error is likely to be most problematic in relation to the geography of employment (given that our geomatic assumptions and models are based on residential population). However the approach allows the research team to analyse the database and this will be outlined in Chapter 9.

Chapter 4 – Institutional aspects in different EU contexts

Christophe Demazière

1. Aim and research questions

Within the TOWN project, we describe 'towns' as settlements with a contiguous urban population of between 5,000 and 50,000 inhabitants. The 'small' size of our object of study leads us to consider local government as the level of territorial governance and public service delivery that is 'closest' to being able to take in the territory of a single town. The question then is whether local government has competences and resources to address the challenges met by towns. In that respect, we have to consider the degree of devolution of policy-making in each of the ten case study countries.

Besides the administrative organisation, we also observe that the space covered by a local government shows sharp differences between countries. Some countries (e.g. France or the Czech Republic) have a very territorial fragmented local government system, where municipalities that are towns cover usually only the core settlement of the town itself and are surrounded by legally independent urban municipalities and/or rural villages. In this context, voluntary supra-municipal institutions may be an option for providing mutualized services (for instance services of general interest) at the town level. Other cooperation organisations may also exist in view of urban/rural cooperation at the scale of a microregion, for transport, tourism or territorial marketing purposes. In which countries do such organisations exist? Are they devoted to rendering basic services, or can they be considered as bodies conducting territorial development strategies? What are the resources of such organisations and of local governements? Do they convey a notion of territorial cohesion?

Other countries (e.g. Sweden) have large municipalities that amalgamate core town with many rural settlements around them, so the municipality/local government jurisdiction and its decision-making power cover a wider area than a single town, possibly a whole town micro-region. In Wales, for instance, many local authorities typically incorporate more than one small town. This is also the case in Belgium, due to dense urbanization patterns and to the merging of municipalities in the 1970s. In some of these countries, municipalities have large competences and resources. But it would be wrong to assume that this allows them to solve efficiently the current challenges faced by towns (and first of all the performance challenge, which is often linked to the position of a local economy in a much wider division of labour). We should consider the relationships between the municipal level and the other layers of subnational government and with the state itself. Are the local competences oriented towards regional development issues, or towards other domains (health system, social affairs, infrastructures)? Do the municipalities have the capacity to raise taxes so as to fund their development strategies? Or are they financially dependent on the state or on a subnational level of government?

Whatever the specific context in which SMSTs evolve, we argue in this chapter that the institutional situation in each country can form an important explanation of why and how urban territories – and specifically SMSTs – are debated and promoted, or ignored and consequently challenged by demographic, social and economic dynamics. To put it another way, the performance of towns is significantly affected by the degree of devolution and by national government policies – implicit or explicit, direct and indirect. The SGPTD ESPON project showed that few countries have an explicit policy stimulating the development of their secondary cities (ESPON, 2012)[3]. In the current globalization phase and with the effects of the current economic downturn being felt in most of the EU member states, there is a risk that territorial cohesion is not on top of the agenda as compared to issues of economic competitiveness, or of public debt. We know that throughout the 2000s the attention of national governments in several countries (the UK, Germany, France…) was focused on metropolitan city-regions as a key lever for future economic growth (Herrschel and Newman 2002; Demazière and Farthing, 2010), not on medium-sized towns which became more and more marginal in territorial policy-making (Taulelle and Barthe, 2013). This invisibility in public debates is consistent with the fact that, as we shall see, a national definition of small towns and/or of medium-sized towns does not exist in most EU countries.

In this chapter, we shall account for the decentralization process in the ten case study countries, which in our view contribute to delineate the 'degrees of freedom' of individual towns, in addition to their connectivity to other settlements (see chapter 5) or to the strength of the local economy (see chapter 6). We shall consider the distribution of power and of resources between the State and several layers of subnational authorities, as a key variable for the possible emergence (or reinforcement) of the small or medium-sized town as an entity capable of devising and conducting a sound development strategy. Wherever bottom-up approaches to integrated territorial development exist, can they be sustained, or are they hindered by the exercise of power of other layers of government? How do regions and provinces consider the role of semi-dense territories such as SMSTs in their own planning and development strategy?

The aim of our cross-national analysis is to qualify the degree of political and fiscal decentralization of each country and to analyse how this works in practice. The objective is to make explicit the link between the current state of development of 'towns' and broader issues of decentralisation. To do this, we will proceed in four steps. First, we will review how small and medium-sized towns are defined in national context, taking the existence and the content of such definition as an indicator of a national awareness of the need to act in and for towns (section 2). Then we shall analyse the trend redistribution of competences from central towards subnational levels of government experienced by most of our case study countries over the last decades (section 3). In order to situate the institutional system of each country *vis-à-vis* the others, we will group countries into a typology established in previous works. We shall see that the process of devolution may be recent or deeply rooted in the national culture. And different layers of government have different competences. In section 4, we shall provide some quantitative elements on the expenditure and revenue of subnational government. The issue here is to find out to what extent the fiscal competences follow devolution. What is the "weight" of local revenues and expenditures as compared to the regional or national ones? In section 5, we will try to analyse how the various levels of government interact. In the case of small and medium-sized towns, this is a matter of vertical coordination. According to the countries examined, the state and/or the first layer of subnational government plays a key role. In large countries like France, the "regional" government level may play an important role to acknowledge and enhance the function of the SMSTs in terms of regional development. In a smaller country like Slovenia, the existence of a national spatial strategy is a key asset for the possible acknowledgement of the role

[3] The SGPTD project defined second tier cities as those cities outside the capital city whose economic and social characteristics are sufficiently important to affect the performance of the national economy. So the concept has more to do with large cities than with SMSTs.

plaid by ‘towns’. Small and medium-sized towns also question the possibilities for municipalities to coordinate to policies and to cooperate. Once again, this horizontal coordination is often necessary due to the small size of municipalities, or to bridge the rural/urban divide in the decision-makers’ minds.

2. Official and practical definitions of towns in the case study countries

In this section, we will review how small and medium-sized towns are defined in national context. We take the existence and the content of such definitions as an indicator of a national awareness (of all levels of government) of the need to act in and for small and medium-sized towns. Obviously, the existence or absence of an official definition of towns has to be put in its historical, institutional and geographical context (2.1). As official definition of towns are absent or in discordance with the definition of towns in this project, we will explore how this gap may be filled in policy-making.

2.1. No official definition of small and medium-sized towns

Whatever the country considered (Belgium, Cyprus, Czech Republic, France, Italy, Poland, Slovenia, Spain, Sweden, United Kingdom), there is no official definition of small and/or medium sized town. To our knowledge, Northern Ireland is the only European country where an official definition of a small town, exists. The national statistical agency for Northern Ireland defines a small town as a settlement with a population greater than 4,500 inhabitants (up to 10,000 inhabitants – see NISRA 2005).

In absence of any official definition of small and medium-sized town, we can elaborate on national definitions of the urban fact, which intersects with our notion of towns. Here, three observations can be made.

Firstly, in some countries, the official status of ‘city’ as opposed to ‘village’ exists. It can lay on a quite sophisticated definition. In Poland, the ‘city’ is defined as "a settlement unit, predominantly built-up and serving non-agricultural functions, that has been granted civic rights (through a special municipal law) or city status by specific regulations" (Central Statistical Office, CSO). Among the conditions governing the granting of city status are, *inter alia*: functional and spatial characteristics of a settlement, the appropriate technical infrastructure, a sufficient number of supra-local institutions that perform the functions of a town, a sufficient number of people, among whom 2/3 should work in sectors other than agriculture (Bański et al. 2013). However, there are no real quantitative criteria to support decision-making in granting city status. In such definition, the size of a unit (area and population) does not determine its status as a ‘village’ or a ‘city’.

In Poland and in several other countries, being a ‘city’ is a status which corresponds to an ancient administrative function (e.g. capital of a province) or which is awarded by the government. In the Czech Republic, a “město” (city/town) is a municipality which historically obtained the status of town (Sýkora and Mulíček, 2013). At present, after the consent of the Government of the Czech Republic, the president Chamber of Deputies of the Parliament can provide a status of town to a municipality with a population of at least 3000 inhabitants. Currently (2013) there are 602 “město” in the Czech Republic from which 270 have population 5000 and more. In Poland, in numerous cases, medium-sized towns are the centre of second-tier administrative units – counties (pl: *powiat*) – and some of them are defined as growth poles.

There are limits to an administrative definition of the ‘urban fact’. For instance, in 2010, the smallest town in Poland, Wyśmierzyce (Mazovia Voivodeship), had a population of 911 inhabitants, while the largest village (in terms of population), Kozy (Silesian Voivodeship), had 12,194 inhabitants. In the Czech Republic, some municipalities with the administrative statut of ‘town’ are extremely small. The two smallest ones are Přebuz with 87 and Loučná pod Klínovcem with 93 inhabitants. We can say that the administrative status of town makes possible for some urban settlements to be distinguished from the ‘mass’ of municipalities corresponding to villages, but this status does not guarantee that the official town performs as a town, as we defined it within this project, in terms of functions, of centrality, but also in terms of size of population. As the latter criterion is a basic one when identifying towns, we can conclude that any survey or any national policy to support statutory towns would need to reshuffle the category, even though some towns within this category deserve their status.

Second, in most countries, the official efforts are focused on separating urban settlements from rural areas, cities from villages. In France, the rural places are those which are not urban, i.e. which gather less than 2000 residents agglomerated (although the distinction between urban and rural areas differs according to the scale of analysis, e.g a rural municipality is the one that does not belong to an ‘Aire urbaine’). The Czech language does not distinguish between town and city; for both the term “město” is used. The basic distinction is between město (city/town) and vesnice (village). In Cyprus, the local language (Greek) describes the city «πόλη» and the village «χωριό» (Mesaritis et al., 2013). The word «πόλη» is used for the main urban areas of the island, which are the capitals of a district. Urbanisation may lead to using new words, or to changing the meaning of others. For instance, whereas the term big villages «κεφαλοχώρια» was used for several settlements in Cyprus, nowadays it is mainly used for mountainous villages. Most of the mainland and coastal big villages had a significant increase in population and are now regarded as towns «κωμόπολη». Obviously, in most countries, urban sprawl weakens the old distinction between urban and rural areas. In this movement, there is little opportunity for small or medium-sized towns to gain an official recognition, as some of them also experience urban sprawl.

The rural/urban distinction may be present in administrative definitions and ‘town’, as an intermediary category (in size, but also in functional and territorial terms), has difficulty to gain any official recognition. In Slovenia there are 212 municipalities in 2012, among which 11 are urban municipalities, i.e. according to the *Local Self-government Act* (1994) “densily populated settlement(s) of a unique territory inter-linked with daily migrations of population”. An urban municipality has at least 20.000 inhabitants and 15.000 jobs of which more than half are in the service sectors and represent geographic, economic and cultural centre of the wider (functional) urban area. Among the 11 urban municipalities we can find the two largest cities in Slovenia, Ljubljana and Maribor. For the Slovenian research team, none of the 11 urban municipalities correspond to a ‘town’ and, the chosen case-studies (Postojna, Radovljica, Domžale) correspond to more ‘ordinary’ settlements (Pichler-Milanovič et al., 2013).

Third, the rural/urban distinction is sometimes in intersection with the status and competences of Local Authorities (LAU2). In Cyprus, Communities are the local structure for rural settlements of less than 5,000 inhabitants, while Municipalities cover towns and larger settlements, mostly in urban and tourist areas. There is some flexibility, as settlements of less than 5,000 inhabitants but with strong local economic base are also accounted as municipalities (Mesaritis et al., 2013). With these definitions it would be possible to distinguish the villages from the towns or large cities. But the definitions of Communities and Municipalities corresponds to LAU2 and can be quite different from settlements based on morphological or functional terms, as we analyse them in chapter 2 of this report.

In spite of this, in most countries, towns are defined as LAU2 within some population thresholds. For instance, in Spain, the National Statistical Institute (INE) defines as "cities" or "urban municipalities" the municipalities with more than 10,000 inhabitants. The municipalities with less than 2,000 inhabitants are defined as "rural municipalities", and municipalities with a population comprised between 2,000 and 9,999 are considered "intermediate municipalities". The restrictions of this definition are obvious: it is associated only with the municipal boundaries, not to urban/functional areas; it does not consider any functional or territorial context for this categorisation, neither their administrative or political functions (Guttierez and Russo, 2013). At the same time, statistical definitions have the great advantage of making possible to isolate 'town' within an urban hierarchy. We will explore more their consistency in the following section.

2.2. From statistical definitions to functional typologies

Statistical attempts to define small towns refer to population criteria in the majority of cases. They are used in a large majority of scientific studies. The thresholds used vary across nations (OIR, 2006), but also within nations, reflecting an endless debate. In Poland, settlement units with less than 20,000 or less than 10,000 inhabitants are usually classified as small towns. However, there are examples to be found in Polish scientific literature, where the population threshold for small towns is 5,000 inhabitants (Szymańska 1992), 10,000 (Jażdżewska 2007), 20,000 (Kwiatek-Sołtys 2004) or even 50,000 (Bagiński 1998). Such debates also exist in the French context (Demazière et al., 2013).

Many systems to classify and define small, medium or large towns use as prevailing criterion the size of population and apply it to the lowest level of administrative structure, the municipality. This is the case for instance in Italy (Cabodi et al., 2013). This definition is both simple and politically meaningful: according to the art. 14 of the Italian Constitution, the Municipality is one of the autonomous institutional bodies (together with Provinces, Regions, and Metropolitan Cities), with an individual status, authoritative power, and self-governing functions. In France, the municipalities also have their autonomy granted by the Constitution. However, they cannot be taken seriously as a starting point for a sound approach of the small or medium-sized town, due to the very large number of 'communes' (36,682) and hence to the fragmentation of population (3 municipalities out of 4 have less than 1000 residents). Many French studies use a morphological approach, by referring to urban centres (fr. *unités urbaines*) which amalgamate municipalities and are defined by the National Institute for Statistics (INSEE). On this basis a distinction is made between small towns and medium-sized towns. Urban centres from 5,000 to 20,000 inhabitants represent nearly 2,000 towns and 6.6 million inhabitants (11% of the French population). Likewise, urban centres of 20,000 to 100,000 inhabitants are 1 300 the medium-sized towns and more than 8 million inhabitants (13% of the population). Looking at these population figures (one quarter of the population living in France), we can see that considering 'towns' in territorial policy-making is a real issue. Obviously, beyond the morphological approach, the role and functions of such 'urban centres' have to be taken into account.

As in France, the small- and medium-sized towns are usually separated in Poland, even though there is no official definition of either of these settlement units. 'Small towns' are often analysed together with the surrounding rural areas and considered to be centres of local development. J. Bański (2006) argues that certain small towns with no more than 10,000 inhabitants perform economic functions (e.g. in terms of structure of employment) which are more characteristic for villages than for towns. The challenge here is to distinguish towns which constitute an integral part of rural areas and others which have a more urban profile. In any case, we can find here a justification of why medium-sized towns are conceived as a different entity from small towns: the former provides more functions and carries more an ‘urban atmosphere’ than the latter, which is less distinct, in some cases, from the rural areas around. But the medium-sized town itself has diverse definitions. In Poland, it is generally accepted that these entities have less than 100,000 residents. In France, significantly different definitions of the medium-sized town are in circulation. The *Fédération des Maires des Villes Moyennes* (a lobby of mayors) admits among its members municipalities having between 20,000 to 100,000 inhabitants, or intermunicipal cooperation bodies (*communautés de communes, communautés d’agglomération*) grouping urban and suburban municipalities, with a total number of residents within the same thresholds. The French State, in its *Programme Villes moyennes* (2005-09), rather focused on functional urban regions of 30,000 to 200,000 inhabitants. Behind these three geographical visions of the medium-sized town (municipality, voluntary municipal cooperation body, functional urban region), we perceive the political and institutional challenge of organising cooperation at a relevant scale. In the French context, *communautés* are an interesting level, but the State still considers that it is necessary to organise a broader interterritorial dialogue. The ‘*pays’* are sometimes used for this purpose. In general terms, new territorial organisations can appear to deal with the town issues, or with the urban/rural interdependency. But there is seldom a general movement, orchestrated by the State, as in France. For instance, in Cyprus, the four main cities of the island (Nicosia, Larnaca, Limassol and Paphos) gradually evolve towards multi-nodal urban conurbations. But the local administration remains divided into individual municipalities/ communities, without the presence of a metropolitan borough (Mesaritis et al., 2013). If it is difficult to create metropolitan organisations in a given country, we can infer that designing cooperative bodies for small or medium-sized towns is probably even more difficult, because the stakes are less obvious, and also because towns are a quite heterogenous category within a single country.

This remark introduces to the necessity of analyses of the functions performed by ‘towns’ in demographic or economic terms, within their hinterland. Such works exist in the academic literature (e.g. Bolay and Rabinovitch, 2004; Hildreth, 2006), but they rarely have an official equivalent, either in a national context, or at the EU-scale (in the form of the Urban Audit, for instance). Sweden, where municipalities are quite large in size, offers a rare case of a quite sophisticated classification of Swedish towns/municipalities (Johansson et al., 2013). This typology has been made by the Swedish Association of Local Authorities and Regions (Sveriges Kommuner och Landsting, SKL). It comprises 10 items, which reflect to a certain extent the north-south divide in the Swedish urban system. The classification identifies ‘metropolitan municipalities’, ‘suburban municipalities’, small ‘municipalities in densely populated regions’. It also defines - being closer to ‘towns’ as we defined them - ‘sparsely populated municipalities’ and ‘small municipalities in sparsely populated regions’. Interestingly, the Swedish Association of Local Authorities and Regions considers the economic function of towns, as it identifies ‘manufacturing municipalities’, as well as ‘tourism and travel industry municipalities’. These two categories echoe the distinctions we make between productive, residential and creative profiles, in Chapter 6. Besides, and more importantly, such classification is far more relevant in policy terms than pure statistical definitions.

We can find a good example of combination of different criteria to approach ‘towns’ in Great Britain (England, Wales and Scotland). There is no official definition of a ‘small town’, but interest in ‘small towns’ at national and sub-national level has led to focus on specific types of settlement with associated functional roles such as market and coastal towns that, according to the local research team, are made up for the most part of SMSTs (Atkinson and Smith, 2013). The principal identification of market towns in England arose through the 2000 Rural White Paper (DETR 2000) where ‘market towns’ were associated with a number of roles in rural areas and a nominal ‘size’ threshold was given as 2,000-20,000 inhabitants. It was recognised that such settlements may be playing a functional role in excess of their basic 'size' because of their role within their wider rural area. Currently no specific agency has an explicit responsibility for SMSTs in England although there is a campaigning organisation 'Action for Market Towns' that seeks to focus attention on the situation of such places in England as well as elsewhere in the UK. As in the Swedish or French case, where there exist associations of municipalities putting 'towns' in public debate and lobbying to national governments, we can see the importance of networking.

To conclude this section, we can say that the absence of an official definition of small or of medium-sized towns probably reveals the lack of visibility of such settlements in the national debates. The national definitions are often focused on rural/urban delimitations. Administrative categories of city or town, where they exist, have obvious limits, as the course of history sees changing urbanisation patterns. In the few countries where municipalities are large in size (like Sweden), the LAU2 level includes several settlements that we can call 'towns'. So the municipality cannot be considered as a good approximation of the 'town'. We shall see in Chapter 5 whether Swedish municipalities better correspond to microregions. In a majority of countries (France, Czech Republic…) or in regions such as Northern Spain or Flanders, the municipalities are too small and, to approach the town, we shall need to account for the various cooperation schemes between local governments (see Chapter 7). We can also note that uniform statistical approaches also have their limits and that taking into account the functional role of towns is a necessity to say more about towns (see Chapter 5).

3. Main features of the decentralisation process in the case study countries

Generally speaking, nearly all European countries have experienced an increase in competences of the sub-central level of government in recent decades (Ismeri Applica, 2010). The redistribution of competences was reinforced by the implementation of the Cohesion Policy, but other factors played an important part, such as globalization and, in some countries in Central Europe, the crisis of the welfare state. Using previous works, we shall first provide an overview of the ten TOWN countries, as regards the dynamics of decentralization (section 3.1). Then, by referring to the case studies, we shall account in more detail for the relationships between the various levels of government (section 3.2).

3.1. Four types of institutional systems

Many studies of the institutional system have been conducted so as to compare the administrative and political traditions and recent trends across nations, especially in the European context. Such works are reviewed, for instance, in the ESPON TANGO project (Nordregio, 2013). A study for DG REGIO on the distribution of competences in relation to regional development policies in the Member States is also worth mentioning here (Ismeri Applica, 2010). Building on previous works, it distinguishes between federal and unitary Member States with the latter divided into three giving the following typology (table 1). This typology is adopted by many studies of decentralisation in Europe.

Table 1 Typology of institutional systems in EU member states

Name of the institutional system	**Main features**	**Countries** (in bold, the countries where case-studies were carried out for the TOWN project)
Federalized states	Central government and regional authorities both with own legislative and administrative competences that are exercised independently and recognized by the Constitution	Austria, **Belgium** and Germany
Unitary 'regionalized' states	An intermediate level of government with a wide set of competences	**Italy** and **Spain**
Unitary 'Northern' states	Local governments have a wide range of responsibilities in relation to territorial development	Denmark, Finland and **Sweden**
Unitary States	A predominant central government. The degree of decentralization is relatively high in some countries such as the Slovenia and Lithuania and very limited in others like Ireland, Greece, Bulgaria and Romania	In the EU15: **France**, Portugal, the **UK**, Greece, Ireland, The Netherlands and Luxembourg In the EU12: **Czech Republic**, Hungary, **Poland**, Bulgaria, **Cyprus**, Estonia, Latvia, Lithuania, Malta, Romania, Slovakia and **Slovenia**

Source: After Ismeri Applica (2010)

The TOWN case studies span across the four types. There is a majority of them (6) in the category of unitary states, which also has the greatest number of EU member states (19). Unitary States, where the central government is predominant, can be found among both the EU15 (France, United Kingdom…) and the EU12 (Czech Republic, Poland, Cyprus, Slovenia…). Obviously, these countries are heterogeneous in terms of size, level of development and so on.

Generally speaking, all the groups have experienced an increase in competences of the sub-central level of government in recent decades (Ismeri Applica, 2010). The redistribution of competences was reinforced by the implementation of the Cohesion Policy, but other factors played an important part, such as globalization and, in some countries in Central Europe, the crisis of the welfare state. Using the Ismeri Applica study, we can provide an overview of the ten TOWN countries, as regards the dynamics of decentralization. Then, by referring to the case studies, we shall account in more detail for the relationships between the various levels of governement.

This section describes the current state of decentralisation and the main legislative and historical features of the underlying process in the 10 Member States studied within the TOWN project.

Table 2. Main features of decentralization in the case study countries

Country (country type)	Characteristics of the institutional system	Main features of decentralisation
Belgium (“federal state”)	federal state; three tiers sub-national government structure	The federalisation process begun in 1970 and went through several successive stages in the 1980s, 1990s and 2000s. The Special Act of 13 July 2001 gives regions the responsibility for the composition, organisation and operation of the provincial and municipal institutions in their area as long as local autonomy guaranties are respected.
Italy (“regionalised state”)	Unitary state, three tiers of sub-national government structure	The Constitution which went into force in 1948 established a major decentralisation process, giving significant prerogatives to the regions while recognising them as political bodies with legislative and administrative powers. However, the measures were only immediately effective for five regions with special status, and the other 15 regions had to wait until 1970. In the 1990s, strong political pressure towards federalism emerged and a significant decentralisation of administrative functions occurred, with around 40% transferred to the regions, provinces and municipalities. The regions received new competences and the transfer was combined with a profound restructuring of the sub-national government resources in order to increase their autonomy. The 2001 constitutional reform changed the administrative architecture of the country by placing the state, regions, provinces, metropolitan cities and municipalities on the same level and implied new competences and more financial autonomy for sub-national governments.
Spain (“regionalised state”)	Unitary state, three tiers of sub-national government structure	The notion of local self-government was included in the Constitution in 1978 and the devolution of competences to the regions has proceeded steadily since then. In 2000 and 2002, political responsibilities and functions were transferred from central state to the regions, which today have extensive legislative and executive autonomy. The process was carried out via a “two-speed” system with seven fast track (Catalonia, the Basque Country, Navarre, Galicia, Andalusia, Valencia and the Balearic Islands) and ten slow track regions. The fast track regions were given a broad range of devolved responsibilities immediately, while the slow track regions had to wait five years and hold referenda to demonstrate popular support for “autonomous” regional status.
Sweden (“Northern state”)	Unitary state; two tier sub-national government structure	From 1952 to 1974, the number of municipalities was reduced by a factor of nine. In parallel, they were given more financial autonomy. The number of country councils was reduced to 20 in 1999 as a result of amalgamations which created the county councils of Skåne and Västra Götaland, established as a part of a pilot regionalisation programme, giving them temporary regional status and their own elected regional councils.
France (“other unitary state)	Unitary; three tiers of sub-national self government structure	The 1982 and 1983 Decentralisation Acts replaced the oversight of the State representative on local governments with the principle of free administration. These Acts set up a transfer of state responsibility to municipalities, departments and regions, accompanied by a transfer of executive powers and financial compensation in the form of transfer of state taxes and the so called “general decentralisation grant”. The second stage of decentralisation was implemented from 2003 onwards with the revision of the Constitution, the 2003 Act on the decentralised organisation of the Republic and the 2004 Act on local public freedoms and responsibilities. Financial compensation is in the form of sharing of fiscal receipts between the state and local governments. Current discussion is focused on the functioning of the process of decentralisation such as the merging of inter-municipal cooperation structures, the simplification and clarification of the breakdown of responsibilities between the different tiers and the re-organisation of state services at territorial level.
United	**A** unitary state,	Until recently, the United Kingdom was one the most centralised

Kingdom (“other unitary state)	with four constituent countries (England, Wales, Scotland and Northern Ireland) with different sub-national government organisations	European countries. Only in recent years has there been a move towards devolution and regional government. From the 1970s onwards, the state’s control over spending and income grew, while the competences of local authorities were reduced to be replaced by both semi-public, non-elected bodies, and private companies following privatisation. The devolution process initiated in 1998 transferred significant powers and autonomy to Scotland, Wales and Northern Ireland. These three constituent countries are responsible for all local matters within their territory. In England it was also planned to establish elected regional governments but this has been suspended indefinitely following the failure to approve the Regional Assembly of the North-East of England in 2004.
Cyprus (“other unitary state)	Unitary state; one level of sub-national government structure	The decentralisation process is based on two laws: the Municipal Act (1985) and the Rural Communities Act (1999). Local government systems are still highly centralised. Local government responsibilities are not very extensive and mostly concern the management of community services, excluding education. Municipalities are slightly more autonomous than rural communities, given their more extensive tax and fee revenue and their annual general grant from the central government.
Czech Republic (“other unitary state)	Unitary state; two tiers of sub-national self government structure	Decentralisation began in 1990 with the adoption of the Municipal Act conferring legal statute to municipalities, re-establishing local autonomy, defining municipal responsibilities and setting up municipal funding. The second stage of decentralisation took place in 2000, with the creation of a regional self-government tier and the adoption of different acts on regions, municipalities and local finances.
Poland (“other unitary state)	Unitary state; three levels of sub-national government structure	Decentralisation was launched in 1990 with the re-establishment of local autonomy at municipal level (Act on Municipalities) followed by the first municipal elections. It continued in 1999 with the rearrangement of the administrative map of the country and the transformation of the regions and counties into local governments in their own right. This reform established a three-level administrative system of local and regional authorities. The financial aspects of the decentralisation process were defined in the 1998 Act on Local Government Revenue which has since been regularly updated.
Slovenia (“other unitary state)	Unitary state, one level of sub-national government structure	Slovenia gained independence in 1991. The existence and the autonomy of local authorities was guaranteed in the Constitution of December 1991. Decentralisation was undertaken as of 1993 with the adoption of a series of laws on municipalities. This process was characterized by a territorial re-organisation of the country. In 1994, the 62 former municipalities were replaced by 147 new municipalities which in 2005 increased to 193 and in 2006 to 210.

Source: After Ismeri Applica (2010)

In brief, it appears that only in Sweden (“Northern state”) is the process of decentralisation rooted in history, in the sense that the increase in local competences has gone hand in hand with reorganizing the number and the layers of subnational governments. This is a rare case of institutional flexibility, where the boundaries and competences of local governments are reshuffled in view of addressing identified territorial challenges. This is also an anticipatory move, as compared to policies trying to address territorial problems without changing the institutional structures.

In other countries like Belgium (federalized state), Italy and Spain (regionalized state) and France (unitary state), devolution has been seen as a solution to a uniform and administrative treatment of places. Top-down approaches have been heavily criticized in the academic literature on territorial development (Friedmann, and Weaver, 1979; Stöhr and Tödtling, 1978; Stöhr, 1981). The key idea is that, by taking more decisions locally, they will be more accountable to the population and more fine-tuned to the development of territories. In contrast with Nordic countries or federalized nations like Germany or Austrian, the process of devolution in several of our case study countries (Belgium, Italy, Spain, France) is only three or four decades-long and has been the subject of intense political debate. There is evidence that the autonomy is not totally digested: the relationships of subnational governments with the state are not totally fixed, for financial matters or because the identity issues gain vigour once again. In most of the other unitary states, the process of decentralization is quite recent and is sometimes linked to an external factor: the Cohesion Policy.

Table 3. Kinetic of the decentralization process in the case study countries

Time span of the decentralization process	Country	Other characteristics of the process
Rooted in history	Sweden	Recent merging of county councils, some of them becoming regions
Decades-long	Belgium	Tensions over claims to give more power to the regions (and less to the federal state)
	Italy	Quite slow
	Spain	Several speed process
	France	No organized relationships between the layers of subnational government
Recent	UK	Significant devolution to nations, effects to be seen
	Czech republic	Recent regionalisation
	Poland	Recent regionalisation
	Slovenia	More municipalities are created
	Cyprus	Better resources for urban municipalities than for rural communities

Source: Author

There seems to be a correlation between the anteriority of the process and the level of devolution. Decentralisation must be seen as a several speed trend across nations. In relatively small countries like Cyprus or Slovenia, the level of devolution is objectively limited. In other unitary countries, structural reforms are decisions taken by political majorities at the government and parliament level, and thus may have various motivations and diverse effects. Decentralisation may be also a several speed phenomenon within nations. On the one hand, and especially at the regional level, some constituencies may have more autonomy than others. The case can be documented in Spain or in Italy. On the other hand, research show that subnational government show uneven capacities to absorb new competences (Hooghe and Marks, 2010). This is evident when we speak of smart and inclusive growth, which requires much effort in the conception of new policies, as compared to just politizing, at the subnational level, policies which used to be delivered by a so-called "neutral" state.

3.2. The depth of the decentralization process: competences of the subnational levels of government

3.2.1. Federal states

Belgium is a federal state divided in three regions and three communities. Flanders was chosen as a case study region for this project (Lievois, 2013). Officially there are two Flemish entities, namely the Flemish Region and the Flemish Community. Both entities were joined as far as legislative power and executive are concerned, which are embodied in the Flemish Parliament and the Flemish Government. The region is further divided into 5 provinces (Nuts2), 23 administrative districts (Nuts 3, called "arrondissementen" in Dutch) (including 1 Brussels) and 327 municipalities (of which 308 in Flanders and 19 in Brussels).

On the eve of the industrial revolution, the land was divided in relatively small parcels and densely dotted with farmsteads and hamlets, towns and cities. Shortly after the Belgian independence, the introduction of the municipal law (1836) placed all settlements of any size in terms of governance on an equal footing by granting them the statute of municipality. The municipal autonomy became a basic principle of the Belgian government and defined the administrative interests of the entire territory, this to the detriment of the city on a moment that it just gained economic importance.

In the 1960s and 1970s, the Sate observed that scale mergers were necessary so that municipal goverments can raise sufficient resources to support a full local policy. In 1977, the number of Belgian municipalities was reduced from 2 359 to 596. The merger was imposed in a relatively short time and went against the wishes of many municipalities.

3.2.2. Regionalised states

In **Italy** a series of reforms within the institutional framework took place in the 1990's (Cabodi et al., 2013). They converged into the constitutional amendment of 2001. These transformations redefined the framework of responsibilities between the State and the local authorities. The Central Government and Regions share competences in all areas relevant to economic development such as infrastructures, human resources, productive environment etc. In most sectors, the Central Government sets the basic legislation to guide the Regions. The Local Authorities Act (Legislative Decree 267/2000) identifies and regulates the following institutional administrative entities: Regions, Provinces, Municipalities, Metropolitan Cities, Mountain Communities, and Unions of Municipalities. The central government deals with education, environment and culture, social services. Regional governments deal with legislative development and, together with sub-regional levels (Provinces and Municipalities), implement initiatives of local interest. In particular, Regions take care of education, arts and environment, transport, energy, and complementary social protection. Provinces focus on water and energy resources, protection of the territory and disaster prevention and schools. Municipalities deal with services for the community, waste collection, nurseries, commercial and industrial planning and housing.

This framework set up some significant innovations in the territorial governing issues. In 2001, the reform of Title V of the Constitution introduced the broad concept of 'territorial governing' instead of 'planning' as a matter of concurrent legislative powers between State and Regions (Governa, 2008). Regions adopt their own territorial planning law and Territorial Regional Plan (*Piano Territoriale Regionale,* PTR). In order to implement the plan, Regions set objectives and strategies, in accordance with the principles of subsidiarity. Provinces elaborate the Provincial Territorial Coordination Plan (*Piano Territoriale di Coordinamento,* PTCP) that determines the general disposals of land use and, in particular, indicates: the permitted uses of land; the major infrastructures' and major lines of communication's location; and the lines of action for the water, hydrogeological, hydraulic-forestry and land conservation systems. Municipalities have responsibilities in planning and construction matters though in a very opaque context, as specified by the legislative framework defined by the Planning national law still dated 1942 (Servillo and Lingua, 2012). Accordingly, until the early '90s, the only provided instrument was the Municipal Master Plan (*Piano Regolatore Generale*, PRG). With the new regional territorial planning laws, many disposals were set up within a complex scenario constantly evolving. Over the last decade it has been gradually asserting a new model of municipal planning on two levels: the Structural Plan (*Piano Strutturale)* that is not executive and the Operational Plan (*Piano Esecutivo)* i.e. the executive tool operating for a five year period.

Spain is a decentralised State where the Autonomous Communities (AACC) are the administrative level that concentrates the main government capacities (Guttierez and Russo, 2013). With the Constitution introduced in 1978, all of them have an autonomous parliament (constituted by regional elections) with legislative capacities. The regional government, designed by the parliament, has capacities on key areas of public policy as education, culture, health, social policies and (not in all Communities) security, in addition to shared responsibilities with the State in all relevant economic sectors such as tourism, commerce, agriculture, industry or research. In brief, the regional government have a high level of autonomy in governance in key public policy. However, regional governments do not have own tax income management capacity: this issue and the regional solidarity funds are directed by the State.

AACC have competences on regional planning, infrastructures (shared with the State) or rural/local development (also shared). AACC are also responsible for the application of programmes co-financed in the framework of EU Structural Funds.

Provinces are the basic level of territorial division of central government administration, but they have no relevant competences or self-government attributions in comparison with AACC. The origins of actual provincial division date to 1833, when a provincial administration was implemented with a similar territorial delimitation to the current one. The political definition of provincial governments derives from the results of the elections at local (municipal) level. As such, provinces are not visualised as an autonomous representative government and are hardly involved in ordinary policies. Nevertheless, they have a key role for inter-municipal cooperation, mainly in the provision of services for municipalities with insufficient economic capacity. In addition of a cooperation platform, provinces usually lead strategic plans for regional development. In this context, they generally support initiatives for local and regional development, as, for instance, tourism, entrepreneurship, environmental protection, transport and mobility, etc.

Regarding the local level, the Regulating Law of Local Regime 7/1985 defined municipalities as basic local entity for the territorial organisation of the State. The Law also assigned to the municipalities juridical capacity to act as key public actor at local level. Municipalities have shared competences (with the State or AACC) on important areas of local development, economic and social policies. The local level often acts as main player of local development strategies. Its level of leadership is also related to its budgetary capacity. In a context where some competences are shared with other levels, but the local level has a lack of resources for develop its potential capacities, there are clear differences between municipalities with a larger size and the smaller rural municipalities. The latter thus strongly depend on supra-municipal cooperation for the implementation of public services and policies. Finally, a key capacity of municipalities is urban planning, for which they have full competences. The ultimate supervision of these strategies is the regional level, which is responsible of regional planning. Yet, in fact, in recent decades urban planning has been clearly directed by local governments.

3.2.3. States with 'Northern systems'

Sweden is a strongly decentralized country (Johansson et al., 2013). It has three levels of domestic government: (i) the national level with the government and the parliament (Riksdagen) ; (ii) the regional level with the counties, the County Administrate Board (Länsstyrelsen) and the County Council (Landstinget); and (iii) the local level with the Municipal/City Executive Board (Kommunstyrelsen) and Municipal/City Council (Kommunfullmäktige) as most important governmental actors. Sweden consists of three

NUTS1 regions, seven NUTS2 regions and 21 NUTS3 regions. The Swedish central government has general responsibility for roads and transport, secondary and post-secondary education and public safety. Moreover it shares responsibility with subnational authorities for social services, territorial planning and education. At a regional level, the pilot regions and the county councils define regional development strategies and deal with regional public transport, health and culture. At a local level, municipalities have general administrative competences in relation to culture and leisure, local roads, parks and energy supply.

At the regional level, Sweden is today divided into 21 counties from earlier 25 in the end of the 1960s. In the end of the 1960s (1968), the office of the governor of Stockholm (A-"county", Överståthållarämbetet) and Stockholm's County (B-county) were joined to one county – Stockholm's county (AB-county). After 28 years, three counties in the western part of Sweden were put together in one larger county in 1996 – Västergötland's County with Gothenburg as capital. One year later, a next step was taken when the two counties in Scania (Skåne) were united into one big county, Skåne County (1997). These administrative reforms can be seen as a response of the changing times and increasing networking between the towns and municipalities but also as a consequences of the regional enlargement process where the functional local labour market were increasing in size and with a more intensive commuting. Many of the municipalities in the local labour markets were also localized in different counties with different administrative borders and internal rules.

Political tasks at the regional level are undertaken by the county councils. The county councils are responsible for overseeing tasks that cannot be handled at the local level by municipalities but which rather require coordination across a larger region, mostly health care. During the past decades and in the larger counties, infrastructure and traffic investments increasingly became a matter of action for county councils. The county councils are entitled to collect income taxes to cover their costs.

At the local level, Sweden is today divided into 290 municipalities, each with an elected assembly or council. The municipal reform 1971 reduced the number of towns and municipalities drastically. In 1930 there were 2 532 country municipalities and urban districts. This was reduced to a minimum level of 277 municipalities in the late 1970s. "Town" as an official term was abolished and substituted by the term "municipality" (*kommun*). Today 14 municipalities have taken back the earlier name "town", meaning that Sweden nowadays officially consists of 14 towns and 276 municipalities.

Even if Sweden is sparsely populated, the smallest municipalities are relatively large from a European point of view and they yield a lot of responsibilities with regard to governance and active participation. The small and medium sized towns/municipalities are responsible for a wide range of facilities and services including housing, roads, water supply and wastewater processing, schools, public welfare, elderly care and childcare. The municipalities are entitled to collect income taxes on individuals in order to finance the municipal activities. They also charge for various services. As a result, municipalities have significant room to manoeuvre in deciding what services they should offer and which ones to omit. They are however legally obliged to provide certain basic services such as child care, elderly care as well as primary and secondary education.

As a consequence of the huge gap in size but also in economic resources, the Swedish municipal structure is characterized by large differences in preconditions with regard to economic development and transformation. The Swedish regional policy that earlier was focused on equalizing these differences is nowadays downgraded in the sense that it is more focused on the regions' and municipalities' own preconditions for endogenous growth. This has also resulted in a regional policy away from more transfers and towards supporting new employment opportunities with public means to mobilizing internal resources for growth and development – today called regional development policy or regional growth policy. The population goal – constant regional population shares – that earlier was a cornerstone in the Swedish regional policy is now more or less only a prestige word that is used at special occasions.

3.2.4. Unitary States

Even though in recent decades there was a process of increasing devolution, unitary states like France, UK, Czech Republic, Poland or Slovenia remain centralized. Sectoral competences in relation to infrastructure for development, human resources and business support schemes are fully in the hands of national governments or the administration alone has been transferred to sub-national levels while legislation remains a prerogative of the centre.

France is divided into 26 administrative regions (NUTS 2), of which 22 are in the mainland and four are overseas regions (Demazière et al., 2013). The regions are further subdivided into 100 departments (NUTS 3) and 36,682 municipalities (LAU 2). Out of 65.4 million of inhabitants, 63.5 million live in the mainland and 1.9 million live in the overseas territories (INSEE, 2012). In France, competences have been always held by the central government and its territorial prefectures. However, there has been an increase in the autonomy of local authorities since the 1980s. The decentralization Acts in 1982 and 1983 created regions, transferred competences to sub-central levels and introduced the principle of free administration. With the Constitutional reform in 2003 and the legislation following this, a further step was taken in terms of sharing revenue-raising powers between state and local governments. Energy, telecommunications and public safety are mostly in the hands of the central government.

A first step towards decentralisation was the delimitation of NUTS2 regions in the 1950s. The French State designed regional administrative bodies (fr. *Circonscriptions d'action régionale*), which organized regional development. The geographical limits of these administrative regions were kept when, in the early 1980s, French regions were created as elected bodies and awarded real powers and competences. The region has competences in economic development (management of direct and indirect subsidies to businesses), transport (management of railroads network), education **(**construction, maintenance and operation of second level high schools) and vocational training. New competences were transferred by law in 2004 (development of seaports and airports, implementation of a regional plan for air quality and classification of regional nature reserves…).

Departments were created in 1790, after the French Revolution. With its prefect (nominated by the State), the department became an essential level for State administration at the local level. However, since the decentralisation laws, the executive function of the prefect was substantially downsized in favour of the elected president of a Department assembly. Main competences of departments are social action, education (construction, maintenance and equipment for first level secondary schools), transport (extension and maintenance of all roads that do not fall into the national public domain)

Municipalities were created by law in 1790 when at the tile of the French Revolution all parishes, villages, towns and cities were converted to municipalities. This explains their large number. Since the Municipal Act in 1884, municipalities have their own administrative organization, regardless of their size. Since 1982 their main competences are planning, healthcare and social sector, education (creation and financing of pre-elementary and elementary schools), and culture.

Despite this trend towards more devolution, the central government exerts a strong influence through national regulations and contractual arrangements (fr. *Contrats de projet Etat-Région*) in many areas where competence is not exclusively in the hands of the centre (local infrastructure, transport, education…). Public investment is marked by interaction between the responsibilities of different administrative level. Also, many competences are shared. As regards urban planning, the centre supervises and municipalities deal with planning. In the case of development support, national initiatives are complemented, in agreement with the centre, by regional, departmental and municipal initiatives. For education, responsibilities are divided as follows: the state deals with universities and research, regions build high schools, departments deal with secondary schools while and municipalities take in charge nursery and primary schools.

The **United Kingdom** is clearly a unitary state but with significant elements of devolution and decentralisation to its constituent nations (Scotland and Wales) since the 1990s. These constituent nations have either their own parliament (Scotland) or assembly (Wales) with varying degrees of law making (and tax-raising) powers. The Welsh Assembly, established in 1999, became responsible for spatial planning in Wales and the Wales Spatial Plan represents a form of "…high level strategic guidance…" (Harris and Hooper, 2006, p142) for the Welsh counties and other parts of the Welsh governance system. The Welsh Assembly, unlike the Scottish Parliament, has no tax-raising powers but since the Government of Wales Act, 2006, it has been able to pass legislation on matters such as health, education, social services and local government (Atkinson and Smith, 2013).

In essence local government in the United Kingdom is structured in two different ways. In Scotland, Wales and parts of England there are Unitary, Metropolitan and London Borough Councils, these are single tier, all-purpose councils responsible for all local authority functions. While the remainder of the UK has a two-tier system in which two separate councils divide responsibility, these are the District and County Councils. Since the 1980s the local government system in the United Kingdom has also been affected by an increase in forms of privatisation, the development of contracting out and quasi-markets as well as an increasing role for the voluntary sector in the provision/delivery of services. Associated with this has been a growth in the development of partnerships between local government and other relevant stakeholders to provide a range of services and/or deliver projects. Thus the local governmental landscape has become more complex and fragmented, with an increased need for the coordination and integration of all these activities.

In terms of its formal local government structure, Wales currently has 22 unitary authorities; in addition there are 735 community and town councils in Wales that cover 70 per cent of the population and 94 per cent of the land area of Wales. Local authorities typically cover population areas in of the order of 100,000 residents whilst community councils (including self-nominated town councils) cover areas with fewer than 5000 residents. Welsh unitary authorities are local government bodies with extensive powers and resources whereas Community or Town Councils have relatively few powers and few resources. However in the case of Wales 100% of the population is covered by an area with a Community Council in contrast to England where only 35% of the population lives in an area with a parish (or town) council. Thus the main thrust of local government competence and resources in Wales is managed at a territorial level that is somewhat more extensive than the scale of small towns in Wales, making small towns sub-areas of a larger local planning authority (unitary or district). However in many cases the morphological core of smaller towns may be represented by a parish or community council (some of which will have retained or acquired the nominal title of 'town council') albeit that this level of local government has few powers and resources.

The **Czech Republic** is a unitary state with three tiers of elected governments at national, regional and municipal levels (Sýkora and Mulíček, 2013). There are 14 regions and 6,252 municipalities (1.1.2013), all with elected representative assemblies. The capital city of Prague and 25 statutory cities have specific status and can be further subdivided into boroughs, with elected local governments. Territorial administration reflects the historically formed settlement pattern. The settlement structure of the county is very fragmented with cities surrounded by large number of small settlements with administratively independent municipal governments.

The current structure of local and regional government is an outcome of the reform of public administration in 1990s which, among others aimed at (1) the separation of the local and regional self-government from the state administration functions and (2) the decentralization from state to local and regional self-governments and to lower tiers of state administration. In 2000 the Regions (krajs – NUTS3) were established. This step in particular led to a transfer of competence for development to regions and municipalities with the central government slowly moving towards a general coordination/stimulation role. The main areas where subnational responsibilities have increased are education (primary and secondary), health, environmental protection (e.g. water and waste management), social services, housing and tourism, culture, transport and communications.

The Municipal Act of 1990 allowed for disintegration of municipalities amalgamated during the Communism. Consequently, the number of municipalities increased from 4,100 in 1990 to about 6,258 in 2001. This process led to an emergence of a large number of very small municipalities with financially and professionally weak self-government.

The Czech municipality is an independent self-governing legal and economic body, which takes decisions and bears responsibilities on its own behalf. A municipality has its own means and financial resources and manages them independently according to the conditions laid down by law. Municipalities have the right to acquire, dispose of, and manage municipal property, adopt a municipal budget, establish legal entities, adopt a municipal development program, approve a local physical plan, and issue municipal decrees that are valid on its own territory.

Poland is divided into 16 voivodeships (województwa), 380 counties, of which 66 are urban and 314 are rural, and 2479 communes, of which 306 are urban, 602 urban-rural, and 1571 rural. Devolution started in 1990 with the law on local autonomy and municipalities (Bański et al., 2013). Further steps were the Act on local government revenue (1998) and the creation in 1999 of regions and districts. Administrative authority at the provincial level is shared between a government-appointed governor (*wojewoda*), an elected regional assembly (*sejmik wojewódzki*), and an executive (*zarząd województwa*) chosen by that assembly. The central government has legislative control over subnational administrations and is also fully responsible for public safety and R&D. Regions deal with health (hospitals), social policy, regional transport and communications, the environment and territorial planning, while secondary education and employment are assigned to poviats. They are also responsible for managing operational programmes of EU Cohesion Policy. Local authorities (districts and municipalities) have shared responsibility for education, transport, the environment, social services, housing and energy supply.

The county (LAU1) is a unit of administrative division and a constituent part of the province. Competence and power at the county level is vested in an elected council (*rada powiatu*), while local executive power is vested in the *starosta*, an official elected by that council. However, in city counties these institutions do not exist separately – their powers and functions are exercised by the city council (*rada miasta*), the directly-elected mayor (*burmistrz* or *prezydent*), and the town hall (*urząd miasta*). The county authorities have decision-making powers and competences in certain areas such as: education at the high-school level, health care, public transport, land surveying, issuing work permits to foreigners, and vehicle registration.

Each county encompasses between several and more than ten neighbouring communes (pl. *gmina*). There are also separate urban units, which are treated as counties and called urban counties. Thus, an urban county is a town treated as a county itself. This status, after the new, three-level territorial breakdown of the country was introduced in 1999, was assigned to: (i) towns with more than 100,000 inhabitants; (ii) most of the former seats of provinces (before the administrative reform of 1999 there had been 49 voivodeships in Poland); and (iii) some towns in large urban agglomerations.

The municipality (LAU2) constitutes the basic unit of territorial self-government. The scope of a commune's jurisdiction includes all public matters of local significance. The respective tasks are classified into self-commissioned (resulting from the law), and contracted (assigned by the state authorities). The municipalities dispose their own budget based on three main sources: their own revenues, general subsidies, and targeted allocations from the state budget (for the implementation of commissioned tasks from the national government and other tasks derived from laws).

In **Slovenia** there are no administrative regions (provinces) as yet, due to long-going professional and political debate about the number and size of provinces (Pichler-Milanović et al., 2013). Since the 1990s, 12 "statistical" NUTS 3 regions have been used for data collection and analytical purposes. From year 2002 these NUTS 3 (statistical) regions are also used in regional policy and programming documents known as *"development"* NUTS 3 regions. There has been intensive power put into the transformation of the NUTS 3 (*statistical* or *development*) regions into *pokrajine* (provinces), as the second level of the local self-government. In year 2007 the Government of the Republic of Slovenia proposed 14 new administrative regions (provinces). This proposal was a result of intensive scientific efforts taking place already in 1990s, public discussions and political bargaining process. The referendum organised in June 2008 was successful in most parts of Slovenia, except in Obalno-kraška statistical region and in Central Slovenian statistical (Ljubljana) region. On the basis of the referendum results and additional scientific and public evaluation, the government prepared new proposal. Unfortunately, there was no political will at the time to complete the process of regionalisation. Therefore Slovenia has not introduced the administrative NUTS 3 regions (provinces) as the second level of self-government (Pichler-Milanović, Kreitmayer McKenzie, 2008).

Regarding municipalities, after the *Local Self-government Act* (1994), their number has been constantly increasing from 62 communes to 147 municipalities in year 1994. In 2012 there are 212 municipalities in Slovenia.

Cyprus is the third largest island in the Mediterranean after Sicily and Sardinia, but the largest island state with an area of 9.251 sq.kms. Cyprus is an independent republic with a presidential system of government, divided into six administrative Districts, named after the island's principal towns: Nicosia, Limassol, Larnaca, Paphos, Famagusta and Kyrenia. Each District Office is essentially the central government's representation, acting as chief coordinating body for the activities of all Ministries in that District (Mesaritis et al., 2013).

The local administrative structure of Cyprus operates through a system of Municipalities and Community Councils. These are elected and administratively independent bodies responsible for strictly local affairs. Municipalities constitute the form of local government in the six main cities (each district's capital city) and in a number of smaller towns mostly around the main towns and in coastal tourist areas. Municipalities have in charge street construction, maintenance and lighting, waste collection, disposal and treatment, the provision of public open spaces, the protection and improvement of the environment and public health, along with additional activities in social services, education, the arts and sport. The resources of Municipalities are limited to revenues from local property taxes (set on low rates) and fees from building licenses, which typically fall short of their increasing payroll, and Government grants (amounting to 1% of total Government revenue) allocated to all the Municipalities according to their respective population.

Moreover, larger municipalities have been delegated as competent Planning Authorities, responsible for granting planning permissions, ensuring the sustainable distribution of land uses, prohibiting the implementation of projects detrimental to public welfare and quality of life, monitoring conformance to planning system standards and conditions laid in granted permissions, and enforcing their implementation in cases of non-compliance.

4. Expenditure and revenue of local and regional governements

This section examines the distribution of resources of subnational governements from a quantitative perspective. In this respect the investigations carried out by Ismeri Applica (2010) form a strong basis. Using for each Member State harmonised data available at the EU level, this study covered both the expenditure and the revenue side of subnational governments. Unfortunately, the Ismeri Applica study was not able to distinguish between the various levels of subnational government: regions, provinces or counties, municipalities. Since the focus of this project is on 'towns', we shall have to be cautious with the interpretation of the results. Still, figures on the levels of revenue and of expenditures of subnational governments confirm that the devolution trend in the EU countries is a several speed process. Creating new levels of government may imply or not to devolve competences which relate to local or regional development issues. And providing competences is also different from enabling local authorities to raise taxes significantly. In their capacity to act, towns are caught within these possibly contradictory tendencies.

4.1. Expenditure

According to Ismeri Applica (2010), the share of sub-national government spending in GDP has been quite stable over the past 15 years. The slight tendency for government expenditure to become more decentralized is reflected in the share of local government spending in general government expenditure (GGE). Between 1990 and 2007 local and state government expenditure across the EU as a whole rose from 31% to 34% of GGE and from 15% to 16% of GDP.

Table 4.4 Sub-national government expenditure in the case study countries (as % of general government expenditure)

	1990-1992	1995-1997	2000-2002	2005-2007
Spain	NA	38	47	54
Sweden	NA	39	44	45
Belgium	35	38	41	42
Italy	27	26	31	32
Poland	NA	26	32	31
UK	28	27	29	29
Czech Republic	NA	23	23	27
France	18	18	19	21
Slovenia	NA	17	18	20
Cyprus	NA	NA	4	5

Source: Ismeri Applica (2010) after Eurostat

In most of the countries investigated in the TOWN project, expenditure by subnational governements increased, but at various rythm. Sweden has a high share of sub-national government expenditure, where around 45% of GGE is accounted for by local government, equivalent to 25% of GDP. In general, according to Ismeri Applica (2010), the share of sub-national government expenditure is also high in the countries with a "Northern system" of governance. The case is similar in federal countries (Belgium representing 42% of GGE and 21% of GDP) and in the "regionalised" country of Spain (54% of GGE and 21% of GDP), where local and regional expenditure increased steadily throughout the 1990s and 2000s. This first group of countries has high levels of decentralised government spending and a tendency towards even greater financial decentralisation.

A second group of countries is composed of countries with a lower than average share of sub-national government expenditure in 2005-2007 relative to GGE but in which the share increased over the period under consideration. Here we find most of the new Member States (Czech Republic, Poland…) but also the "traditional" centralised state of France. Among the new Member States, Poland has the largest share of expenditure at local and regional level (31% of GGE and 13% of GDP).

Finally, Cyprus shows a case of low sub-national government spending. Among the countries studied, it has the smallest share of sub-national government spending (5% of GGE). As we said earlier, the local resources of municipalities in Cyprus are limited to revenues from local property taxes (set on low rates) and fees from building licenses, which typically fall short of their increasing payroll (Mesaritis et al., 2013). Government grants (amounting approximately 1% of total Government revenue) are allocated to the municipalities according to their population.

4.2. Revenue

According to Ismeri Applica (2010), revenue raised at the sub-national level in EU countries represents on average 34% of total general government revenue (GGR) and 15% of GDP. These figures correspond very closely to the respective figures for sub-national government expenditure.

There is a similarity between the figures for sub-national government revenue and expenditure in individual countries. The share of sub-national revenue in GGR is high in Nordic countries (44% of GGR in Sweden in the mid 2000s), closely followed by the federal states (43% of GGR in the case of Belgium). On the other hand, shares are lower in most unitary states (26% of GGR and 11% of GDP, on average). Shares are particularly low in Cyprus which also has low levels of government expenditure at the sub-national level.

Sub-national government revenue since the early 1990s has changed little in relation to GGR or GDP. In the EU on average, it remained at around 34% of GGR. Whereas in federal states a slight decline can be noticed, the opposite is the case in the regionalised states of Spain and Italy.

Table 5 Sub-national government revenue as a % of General Government Revenue by periods

	as % general government revenue			
	Average 2005-2007	Average 2000-2002	Average 1995-1997	Average 1990-1992
Spain	51	46	41	NA
Sweden	44	43	41	NA
Belgium	43	41	40	39
Italy	33	32	28	32
Poland	33	34	26	NA
UK	31	29	29	31
Czech republic	28	25	29	NA
France	22	20	20	19
Slovenia	20	20	19	NA
Cyprus	5	4	NA	NA

Source: Ismeri Applica (2010)

A comparison of the change since the early 1990s in sub-national expenditure relative to GDP and in sub-national revenue reveals several interesting points. In around half the EU countries, both sub-national government revenue and sub-national government expenditure have increased relative to GDP. In some of them, the increase in revenue has exceeded the increase of expenditure, so that there has been a potential expansion of financial means available at the subnational level. This is the case in Poland as well as in Belgium, Sweden, France and to a lesser extent, Spain and Italy.
In other countries, the increase in sub-national expenditure exceeded the increase in sub-national revenue so that financial constraints at the subnational level might have tightened. This is the case in the UK as well as in the Czech Republic, and Slovenia. In the other EU countries, sub-national government revenue in relation to GDP has declined.

Table 6 Sub-national government revenue by type as a % of the total (average over the 2005-2007 period)

	Fiscal receipts	Other direct revenues	Transfers	Total
UK	14	16	70	100
Belgium	22	15	63	100
Poland	33	14	53	100
Cyprus	25	24	51	100
Slovenia	36	15	49	100
Italy	44	9	47	100
Spain	54	6	40	100
France	45	16	39	100
Czech Republic	45	16	39	100
Sweden	63	15	22	100

Source: Ismeri Applica (2010)

Regarding sub-national government revenue, it generally falls into one of three main categories: 1) tax revenue from business and households; 2) revenue from the sale of goods and services; 3) grants or transfers from the central state, the European Union or other levels of sub-national government. The first two can be labelled direct revenue, the third, indirect revenue.

On average across the EU, 56% of sub-national government revenue is direct revenue and 44% transfers. These average values, however, conceal significant differences between countries. Among our case study countries, only four countries have transfers below the European average. In Sweden, the predominant part of sub-national government revenue is direct, accounting for more than 70% of the total. The proportion is, respectively, 61% in the Czech Republic and in France, and 60% in Spain. In these cases, fiscal receipts are the main source of revenue for local or regional governments. The proportions of direct and indirect revenues are the opposite of this in the UK, where revenue at the sub-national level come predominantly from transfers, which account for 70% of the total. In Belgium, the transfers come for a significant part from the regional level. The finance coming from direct and indirect sources is relatively similar in Italy, Slovenia, Cyprus and Poland. In Cyprus, since there are no level of subnational government apart from municipalities, we can consider that about half of the municipal budget comes from grants and subsidies and the other half from taxation, user charges and fees.

Table 4.6 also shows that fiscal receipts are in most countries the main source of direct revenue at sub-national level, accounting on average for around two-thirds of this. In some countries (Spain, Italy, Belgium and, to a lesser extent, the UK) there seem to have been a tendency since the mid-1990s for direct revenues to increase. This has been achieved by higher fiscal receipts in Spain and Italy while in all other countries, it was due partly to higher revenues from sales of goods and services (Ismeri Applica, 2010). By contrast, in Sweden and France, transfers gained in importance.

But the concept of financial autonomy is wider than own tax revenue and covers several other aspects that have an influence on the level of financial autonomy (Ismeri Applica, 2010):

- taxation: the ability to create new own-source taxes, the possibility of adapting the tax base through reductions or exemptions; the possibility of setting the tax rate etc.
- grants: the ability to negotiate grant levels, to influence the mechanisms guiding their development and to allocate them freely
- revenues generated from goods and services: the ability to use tariffs and fees and to set their level
- expenditure: the ability to decide on the allocation of spending.

This list of criteria leads to the idea that there is a variety of situation for towns regarding their level of fiscal resources and their financial autonomy *vis-à-vis* the State. For instance, according their fiscal size and their sensibility to the current economic downturn, municipalities are placed in different positions in their level of spending. For instance, among the three case study towns studied in Wales, one has a markedly higher proportion of lower rated properties than the average of other towns, while the two others have a greater proportion of higher value properties, leading to a greater fiscal base for the council tax (Atkinson and Smith, 2013). In the Czech Republic, an extreme case is Ústí nad Orlicí, where, after the collapse of textile production, people migrate or commute to larger cities providing job opportunities (Sýkora and Mulíček, 2013). The town is heavily indebted and the municipality has reduced investments and systematically cut the operating costs of the city. In sum, the allocation of less resource goes primarily to the satisfaction of the core competences. In other cases the local authorities of towns are able to orientate public spending towards actions which prepare future growth. The case studies that were made show diverse situations or towns within a single country and even a single region. A town agglomerated to a large city may benefit from an increase in taxes generated by the arrival of new residents, whereas a more isolated one has to rely on other taxes or fees, for instance those generated by tourism. But there are also strong differences across nations, due to the degree of financial autonomy. For instance, in Cyprus, the municipal taxes are defined by national legislation and they are are limited to revenues from local property taxes (Mesaritis et al., 2013). In Poland, local taxes cover a wider band: they are raised on real estate, agriculture, forestry, transportation, business activities of individual persons, paid in the form of the tax card, on inheritances and donations (Bański et al., 2013). In Sweden, the municipalities and the counties are entitled to collect income taxes on individuals in order to finance the municipal activities. They also charge for various services. As a result, Swedish municipalities have significant room to manoeuvre in deciding what services they should offer, even though they are legally obliged to provide certain basic services such as child care, elderly care as well as primary and secondary education (Johansson et al., 2013).

In quantitative terms, we can only estimate the financial autonomy of sub-national governments across the EU on the basis of their own-source tax (Dexia Research Department, 2008). This gives the following picture, which may have significantly changed in the current economic and fiscal crisis (Table 7).

The degree of financial autonomy has various effects on small or medium sized towns. In countries with a low or medium low autonomy (Czech Republic, Slovenia, Poland, the UK), we can expect that municipalities cannot really develop local development strategies. Towns may be prosperous or in decay, performing or not (see Chapter 6), but in both cases the local authorities cannot do much. Regarding public action, much rests on the national state and on the EU structural funds. Even in a country with medium high financial autonomy, Spain, the local researcher team stress clear differences in the capacity to act (to spend) between municipalities with a larger size and the smaller rural municipalities. The latter strongly depend on supra-municipal cooperation for the implementation of public services and policies.

Table 7 Financial autonomy (own source tax revenue) in the case study countries

		Own-source tax revenue as % of total sub-national revenue
High financial autonomy	Sweden France	69 49
Medium high financial autonomy	Italy Belgium Spain	34 27 25
Medium low financial autonomy	Slovenia Poland UK	17 15 15
Low financial autonomy	Czech Republic	6

Source: Dexia Research Department, 2008

Note: Cyprus not included due to the fact that no distinction is made between taxation and revenue from the operation of services

However, a high degree of financial autonomy is not automatically good news for towns. On one hand, much depends on the congruence between the area covered by a municipality and the morphological and functional reality of a town. On the other hand, the regulation by the state of the fiscal autonomy is important. On both aspects, Sweden and France tell two different stories. Sweden's total area (450,000 sq.km) is covered by 290 municipalities whereas France's area (550,000 sq.km) is split into 36,000 municipalities. Swedish municipalities enjoy the large fiscal autonomy among our sample of EU countries but they correspond to large territories. As the capacity to attract and retain households and firms varies according to the territory, the taxes are different in various parts of Sweden and in various municipalities. To avoid sharp differences in incomes from taxes, there are compensatory transfer grants between the municipalities (Johansson et al., 2013).

In general, money is transferred from the metropolitan cities and municipalities to the small ones and from the southern communes to the northern ones with the purpose to avoid too large gaps in tax incomes. In France, the financial autonomy used to lead to sharp differences in the level of taxes of municipalities. There was especially a fiscal competition between municipalities at the centre of conurbations (whatever their size) and first ring or second ring municipalities. This is why the state fostered in the 1990s the creation of voluntary cooperation bodies (fr. *communautés*), raising a tax paid by economic activities. But in large city-regions, the competition between central and suburban *communautés* has increased, to attract new residents as well as economic activities (Demazière, 2012). And regarding small and medium-sized towns, the French case studies show territorial incoherence of the communautés that were formed (Demazière et al., 2013). In that respect, the reform of the business tax (since 2011 it is fixed by the state, not the *communautés*) and the recent merging of *communautés* in 2013 and early 2014 may be good news for towns. Towns can be more systematically covered by a single *communauté*, and fiscal competition may be less intense with the rural areas. But a mechanism of transfer of tax income from metropolitan cities to rural areas, or from booming suburbs to central *communautés* is still absent in France.

5. Forms of intergovernmental relationships in the context of towns: dependence, separation, cooperation, competition

Besides documenting the different degrees and forms of decentralization in our case study countries, it is also important to examine how the various levels of government interact. Here we should refer to the recent ESPON project which was devoted to territorial governance (Nordregio, 2013). This project concludes that “coordinating actions of actors and institutions and integrating policy sectors can be considered as being at the heart of (regular) governance or even multi-level governance” (Nordregio, 2013, p. 146). Within this project, we will restrict the discussion to the different ways to conceive the forms of intergovernmental relationships. L. Bobbio (2002) has distinguished four main forms - dependence, separation, cooperation and competition -, adding that these forms of relationships can operate at different administrative levels, as well as in different institutional models. In the context of small and medium-sized towns, we will first focus on the situation of dependence which can be experienced by local governements *vis-à-vis* the State (section 5.1). Then, we will reflect on the possibilities for cooperation vs. competition between local or regional government (section 5.2).

5.1. Vertical relationships

Dependence means that the lower levels of government depend on their upper levels (usually the national level, but it can be also the regional one). Schematically, lower level governments have lower autonomies, competences and powers than upper levels. In section 4, we put in evidence financial dependence in several countries (except Sweden and France), where the central state controls the financial resources, holds the tax rising and transfer power. We can also talk of legal dependence, when the central government can decide to assign or to remove competences at the sub-national level. In our case study countries, this takes place typically in unitary states, especially Cyprus, Czech Republic, Poland, or Slovenia, where devolution is a recent process. We have a good example here with Slovenia, where the creation of provinces has been the subject of intense political (and scientific) debate; but provinces as local governments are yet to be created. To a certain extent, in Central European countries, granting local autonomy to municipalities has been the main institutional effort after the end of Communism. In the Czech Republic or in Slovenia, we can see a movement of creating more municipalities[4] and the creation of levels of government that would be intermediary between the municipalities and the central state is not a priority. Legal dependence is likely to last long.

France is a case of lower national dependence: even though the legislative power has the capacity to assign (or to remove) competences to the subnational government, many MPs are also in charge of or involved in a local government ("*cumul des mandats*"). As a result, the local level can intervene in the decentralization laws. The fact that French local authorities are autonomous from the national state also leads to national policies which propose (and do not impose) cooperation schemes for local authorities. Cooperation is especially encouraged for municipalities, due to their large number, but eventually each town defines with whom and on what it will cooperate.

In federalized states, the dependence of municipalities to regions should be evident. This may be the case in Austria and Germany, but not in Belgium, where the federalization process is more recent (Lievois, 2013). The Special Act of 13 July 2001 gives regions the responsibility for the composition, organisation and operation of the provincial and municipal institutions in their area as long as local autonomy guaranties are respected. Here we can see the influence of the separation principle or principle of non-interference: each level of government has its own competences that are strictly defined and non-shared with the others. The autonomy of each level of government is ensured by law.

In any case, the influence of the regional level of government on small and-medium sized towns, when it exists and has broad competences, should be considered. The OECD (2011, p. 6) argued that

> "The governance structure of a region is another regional characteristic mutually connected with urban-rural linkages and, in turn, with their effects on the effectiveness of services provision and local wellbeing. In some respects, the extent to which a region carries out its policy making processes with an integrated vision of the territory, beyond a sectoral and micro-territorial perspective, can characterise the "territorial identity" of a region, which helps defining the capacity of regions to provide public goods starting from their endogenous abilities and resources." (OECD 2011, p. 6).

Here we can quote two examples. In the study of the Centre Region, one of the largest in area in the French context, three territorial contexts can be distinguished, each having a specific influence on towns regarding their social, economic and urban dynamics (Demazière et al., 2013). However, the Regional Council, which has a competence for spatial planning and heavily supports the policies of large cities, towns and rural areas does not put subregional disparities at the forefront, but is more interested in a hierarchical approach to urban settlements. Following a period of consultation and work that involved more than

[4] In Slovenia, after the *Local Self-government Act* (1994) the number of municipalities has been constantly increasing from 62 communes to 212 municipalities in year 2012. In the Czech Republic, the number of municipalities increased from 4,100 in 1990 to 6,258 in 2001.

4.000 people, the Council of the Centre region adopted in 2011 the "*Regional Plan for Sustainable Development and Planning*" (SRADDT), which gives a vision of the future development of the region. In the part "Geographic positioning and structure of the territory" the accent is put on the dialogue between actors and on trying to maintain a balanced urban structure, in particular between the two large cities of Tours and Orléans, mid-sized cities and 16 'poles of centrality' organised around a municipality of at least 5000 inhabitants and providing a wide range services to an hinterland. For these towns, the strategic plan makes a priority to "guarantee a high level of superior services" (Région Centre, 2011, p. 119) which include, inter alia, to be a node in the regional train network, wide band internet, health services, music halls, swimming-pools, and so on… This may be costly for the Region, and may be not efficient in the context of rivalry between the central municipalities and the suburban and rural ones, to attract or to retain residents. So the plan also pleads cautiously for a progressive reorganisation of supra-municipal cooperation bodies at the level of micro-regions (fr. *bassins de vie*). But this is in the hands of the State, on the one hand, of the municipalities, on the other hand.

In the case of Wales, the Welsh National Spatial Plan (Welsh Government, 2008) established a comprehensive identification of all significant settlements in Wales (Atkinson and Smith, 2013). It distinguishes between settlements in terms of a functional hierarchy of Key Settlements with National Significance, Primary Key Settlements, Cross-boundary Settlements and Linked Centres representing a single "Key Settlement".

The Spatial Plan has also recognised that

> "Much of rural Wales is more sparsely populated than any rural areas in England and is more like the Highlands and Islands of Scotland. As a consequence, many places in rural Wales with populations of more than 15,000 perform roles characteristic of much larger towns elsewhere. This poses unique challenges for the effective delivery of services." (Welsh Government, 2008, p. 22)

The fact that rural small towns often punch over their size has led to the recognition that smaller towns need to develop collaborative relationships and work together in a complimentary manner if they are to provide a full range of services to the relevant populations.

Following the huge literature on strategic spatial planning (e.g. Albrechts et al., 2003; Healey, 2007), we can expect to find across Europe examples of regional plans putting in evidence the fundamental role of small towns located within large metropolitan region. Even if urban cores dominate the region in terms of number of jobs, productivity and provision of advanced services, small towns can act as an alternative and cheaper choice for residence often associated with a higher environmental and social quality. However, the recognition of the role of towns in the development of metropolitan areas is scarce and probably under-researched. Actually, several of our case studies show that there are strong resistances to the institutionalisation of metropolitan city-regions. In Italy, Metropolitan cities were created by the reform of local authorities (Law 142/1990), later amended by 1993, 1995, 1997, 1999 and 2009 provisions (Cabodi et al., 2013). As defined by law, the metropolitan city includes a large core city and the smaller surrounding towns that are closely related to it with regard to economic activities and essential public services, as well as to cultural relations and to territorial features that form its metropolitan area. The metropolitan city is therefore a metropolitan city-region. The original 1990 law individuated as metropolitan areas Turin, Milan, Venice, Genoa, Bologna, Florence, Rome, Bari, Naples (commune and their respective hinterlands). For instance, according to the law, the Metropolitan City of Turin should be composed by 315 Municipalities covering an area of over 6,800 km^2. The whole area is characterized by an extreme multiplicity from the urban, economic, environmental points of view, showing, as a consequences, very different problems and needs.

As of 2013, none of these administrative authorities has been activated. The reasons for this delay have been various: firstly, because of the lack of clear indications to define the legal extent of the areas; secondly, because of the several levels involved (Municipalities, Provinces and Region), it was difficult to come to an agreement. Most conflicts to the constitution of metropolitan cities come from Provinces, as the main aim of the reform was to give metropolitan areas the administrative powers of a province. In fact, metropolitan cities should assume the functions that at present are under the Provinces' responsibilities in the following matters: planning and infrastructure networks; public services, mobility and traffic; economic and social development. At the same time, part of these coordinative problems are overtaken by strategic plan, which are voluntary agreements among municipalities that got developed since mid '90s (Servillo and Lingua, 2012). Despite the strong strategic and coordinative capacity, they present all the problems of voluntary agreements.

In Spain, the possibility to establish metropolitan areas is recognised in the Regulating Law of Local Regime 7/1985, but this kind of entity did not achieve any relevant institutional recognition (Guttierez and Russo, 2013). Madrid, Barcelona, Bilbao or Valencia have constituted their metropolitan areas in the decades of the 1940 and 1950s, but the newly created entities had only few years of continuity and some years later they were all ceased. Municipalities and AACC are the levels with competence for the creation of Metropolitan areas, but none of them was really concerned with their creation (Romero and Farinos, 2011). So, historically there were no officially recognised metropolitan entities with a strong history of activity associated with any administrative and/or political capacity. Nowadays, the Valencia and Barcelona metropolitan areas are exceptions, though in both cases the entity is in a primary phase, acts as an agency to promote collaboration between municipal governments and does not have any exclusive competences.

Sometimes, history, and we may say administrative inertia, helps to foster cooperation. In Slovenia there are 58 territorial administrative units (NUTS 4) that serve as outposts of the state administration. These areas are equivalent to former larger communes with the exception of Ljubljana (Pichler-Milanovič et al., 2013). Between years 1955-1995 former communes (or current NUTS 4 areas) in Slovenia represented *basic local units* for implementation of polycentric development policies (spatial and regional) from 1970s onwards. Today NUTS 4 areas are still important as local labour system, and therefore they can be considered as micro-regions. These administrative units perform tasks for all ministries. While taking into account the new map of municipalities, the other ministries organise their policies at the level of these administrative districts.

5.2. Horizontal relationships

A typical situation between sub-national governments, very present in the scientific literature in regional science, is competition for the attraction of resources. Brennan and Buchanan (1980) argued that such competition forces governments to become more efficient in their allocative activities, providing better services at lower costs. In the case of small and medium-sized towns, such competition does not always lead to an optimum, far from that. Here there are two main arguments. First, it is difficult to argue that 'towns' are able to compete with metropolitan cities to attract or retain firms and people. Several case study towns illustrate a tendency to deindustrialization, or the relative lack of youth in the (active) population. We can think that on average the decentralization trend favors large conurbations rather than small and medium-sized towns. In large cities local decision makers can anticipate, be pro-active and react better than in smaller towns thanks to well organised in house services, with a lot of competent staff; they can also tap into high quality consultancy. The advantage of being small is not obvious in public policy, unless this is compensated by a privileged access to political networks. This strategy is obvious in the French case studies, because the 'cumul des mandats' is common. In many other countries this is not possible.

Second, the intensity of horizontal competition is linked, inter alia, to the autonomy given to local authorities regarding tax rising. We saw earlier that there is often a discrepancy between the town in administrative terms and in functional terms. This means that if fiscal competition exists, it may be between municipalities corresponding to a single town. Or it may be among groupings of municipalities within a single micro-region. So a key point is the autonomy of the local to collect taxes and the importance of local taxes in the local resources. Another point is whether the state has a possibility to regulate the interterritorial competition, through transferring mechanisms from wealthy to deprived places. The UK offers an example of a country which is centralized and where the local authorities have little power to benefit from local taxes, whereas Germany is a federal state, with a large fiscal autonomy for the *Länder* and the municipalities, but with also large redistribution mechanisms to the regions and the territories in need of resources. The case is similar with Sweden (Johansson et al., 2013). But the Swedish regional policy that earlier was focused on equalizing economic differences has moved away from more transfers and rather uses public means to mobilizing internal resources for growth and development, hoping this will create new employment opportunities. These are new rules of the game for towns.

Whatever the will and the capacity of the national state and of other subnational levels of government to help small and medium sized towns to devise development strategies, it seems that more cooperation between municipalities is nowadays a precondition for such strategy to be developed with realistic chances of reaching objectives. Such horizontal cooperation is a learning process and we can see differences between nations. There are also strong differences within nations.

The size and the area covered by municipalities does matter. In Wales, given that local authorities will typically incorporate more than one small town, the power to make spatial development plans is also likely (in an ideal case) to incorporate some process of partnership between the small towns and the planning authority in Wales (Atkinson and Smith, 2013).

In Spain, the municipalities in the northern regions are often smaller than in the South. As local administrations concentrate important competences, among which urban planning, there is an important number of small sized municipalities with problems to develop this competence because of insufficient funding. For this reason, in these areas, the supra-municipal level of horizontal cooperation results strategic. In this respect, A. Guttierez and A. Russo (2013) mention an intermediate administrative level between regional and local level: *comarcas*. Of voluntaristic nature, these supra-municipal entities carry out local development, environment and tourism policies. In the context of small and medium-sized towns, they represent an interesting level for the analysis of local development strategies and policies. *Comarcas* have a size that sometimes can be associated with a micro-regional functional area. For this reason, the town that acts as capital of a *comarca* has historically achieved a role of administrative, service and trading centrality of its functional region.

In Italy, the law 142 in 1990 introduced the Unions of Municipalities in order to promote the inter-municipality joint management of several functions in the fields of culture, education, social service etc. (Cabodi et al., 2013). In very small municipalities, this solution is the only possible, in order to reduce costs and improve the efficiency of management. In 2012, a little more than one-fifth of the total number of *Commune* in Italy were involved in such a Union. There are no size limits to join a Union. However, statistics show that the average population of municipalities in Unions is less than 5,000 residents. In general terms, the Unions of Municipalities are composed mainly by small and very small Municipalities, as it can be seen in Piedmont and Lombardy regions characterized by a high number of very small municipalities. Nevertheless, in Emilia Romagna region, more medium-sized municipalities take part in Unions. So, we can conclude that the Union is not, so far, an institutional form well-suited to the development needs of a small or medium-sized town.

In Cyprus, in the recent years, efforts are taking place in order to restructure the local authorities, mainly based on the strengthening of existing partnerships and creating new partnerships (with support and incentives by the central government) of adjacent rural communities in order to facilitate their long term incorporation into new municipalities (Mesaritis et al., 2013). Due to the recent economic austerity, adjacent municipalities are now seeking to strengthen their own partnerships or to create new ones. But in our view, this type of cooperation is too recent and too narrow in focus to support the development strategy of a small town, as this can be the case with the Spanish *comarcas*.

In the Czech Republic, the fragmented local government structure does not correspond with socio-economic geography within which the daily life of population is organized (Sýkora and Mulíček, 2013). Most municipalities (5473; 87.6%) in the country are members of voluntary micro-regions (about 570 in 2008) and various municipal associations which establish companies to organize certain tasks, such as collection and liquidation of municipal waste or water, sewage and other technical networks construction and management. Although the cores of Czech cities and towns amalgamated some surrounding villages (before 1990), functional urban areas usually consist of core town municipality and many village municipalities recently affected by new suburban developments. While in some instances core towns and municipalities in its hinterland form voluntary micro-regional co-operations, there are also cases when the core town/city stands in the position of competition with administratively independent yet functionally related village municipalities in its hinterland.

France has experienced a tendency towards decentralisation over the last three decades, but as this took place in the context of a fragmented municipal system, limits to public spending have been met (Demazière et al., 2013). Can they be overcome by more cooperation between municipalities? Inter-municipal cooperation has existed for 130 years to manage jointly local public services or facilities while benefitting from economies of scales. During the 1990s and 2000s, the State fostered municipalities to create more integrated cooperation bodies to manage local development projects (e.g in economic development, social housing, transport…). Such *communautés* can raise local taxes and get funding from the state. In 2012, there were 15 urban communities (over half a million inhabitants), 202 communities of agglomeration (at least 50,000 inhabitants around a municipality of over 15,000 inhabitants, up to 300,000 inhabitants) and 2,360 communities of municipalities (below 50,000 inhabitants). Inter-municipal arrangements are seen by the State as a possible solution for municipal fragmentation and an instrument of a more rational organization of territories. However, since such bodies are created voluntarily by the municipalities, they may group well-off municipalities as opposed to deprived ones. There are numerous examples. This is why the State has initiated a reform to merge such bodies, so that they can express more territorial cohesion as well as reaching a critical size making possible to activate the strategic competences that they exert at the local level.

Horizontal cooperation can also take the form of networking and lobbying. In Cyprus, two independent bodies, the Union of Cyprus Municipalities and the Union of Cyprus Communities bring together in a voluntary association all the municipalities and the communities of the Republic. Their main objectives include presenting urban issues and developing local government autonomy. In Swedish, the county councils and towns/municipalities are gathered in the Swedish Association of Local Authorities and Regions (SKL) in order to organize and collect information on the regional and local levels to be better prepared to take care of common interests and then also work as a lobby group. In France, networks are more specialised and may suffer from a lack of efficiency in their lobbying. The Association of Small Towns gathers municipalities between 3000 and 20000 residents, whereas the Association of Medium-sized Towns gathers municipalities or communautés having between 20000 and 100000 inhabitants. But other networks of local governments exist, grouping respectively municipalities, *communautés*, departments, regions, large cities, and so on.

Finally, the EU Cohesion Policy clearly fosters horizontal cooperation. For instance, in Cyprus, in the last decade, almost all communities and municipalities participate in district development agencies (non-profit organisations with the municipalities/ communities being the stakeholders) in order benefit from EU programmes. There are many other such examples in the case studies we conducted. We shall go back to this important aspect of cooperation for towns in Chapter 7.

6. Conclusions

At the beginning of this chapter, we set that national institutional systems have a great influence on the fate of small and medium-sized towns, and probably a bigger one than on large cities, where local actors can more easily mobilize other resources, including from the EU. The literature survey and the analysis of 10 case study countries confirm this hypothesis and lead to three main conclusions.

First, even though most European countries experience a decentralization trend, the institutional systems remain specific. The federalized and Nordic States have much in common, but the two other categories – regionalized states, unitary states – are quite heterogenous. Rather than contrasting national situations, it is more important to stress that the kinetic of the decentralization process explains to a large extent the depth of devolution. When decentralisation is rooted in history, as in Sweden, there is an interesting tendency to adapt the subnational levels of government to new challenges. In Sweden, this historically took the form of merging municipalities, and more recently this has been the case for counties. Among our case study countries, this is a very rare case of institutional flexibility, but probably a positive one for addressing territorial questions. In most of the other countries, we have seen the development of policies trying to address territorial problems without changing the institutional structures. As towns most of the time exceed the municipal boundaries (this is the case for all countries but Sweden - as shown in Ch.2 and 3), this is a serious limit.

When decentralisation is only a few decades-long (Belgium, Spain, Italy, France), time is necessary so that the public actors reorganize their policy tools. In short, the institutional reforms were made by political majorities at the government and parliament level, in specific contexts. Decentralization can have various motivations, the issues around small and medium-sized towns never being a direct reason for a reform. Decentralisation also has diverse effects in spatial terms, sometimes reinforcing territorial cohesion, sometimes not. It is also a learning process for public actors. And in some countries, mainly in the East of Europe (Poland, Czech Republic, Slovenia), granting local autonomy and creating new layers of subnational government have been the main and nearly only milestones of institutional change. How this mechanics will work remains to be seen, as well as the consequences on 'towns' – a quite important issue when we see tendencies of the capital city-regions to concentrate people and future sources for economic growth. In any case, in relatively small countries like Cyprus or Slovenia, the level of devolution will probably remain objectively limited.

Second, what is crucial for towns in these institutional systems experiencing decentralization? There are two complementary ideas. Obviously, the competences which are transferred to the subnational level, and especially to the LAU2 level, are to be examined. According to the case study countries, we may attend to a structural 'hollowing out' of the state, with a clear division of labour between the various layers of governement, which does not prevent multi-level cooperation, far from that. Within such institutional systems, there is interdependence. This is very different from the situation of dependence of the subnational levels, and especially the LAU2, vis-à-vis the state. Legal dependence means that the local government can have competences in a variety of domains, including strategic ones, like urban planning, housing or economic development, but the state foresees these activities and orientates them through laws or other means. Here, we can talk of 'governing at distance' (Epstein, 2005).

Another important issue around decentralisation is the degree of fiscal autonomy. We saw that this notion is complex to manipulate, but it is clear that there are sharp differences between countries. Only in Sweden, and in France to a lesser extent, can we consider that local taxes exceed the transfers from the state. This is an important aspect in a period of economic downturn and public debt, where national governments have far less resources to redistribute. In countries with significant fiscal autonomy, can local governments be more imaginative to find new resources, than where they depend financially and legally on the national state? As we saw earlier, Sweden and France tell two different stories. In Sweden there are compensatory transfer grants between 'poor' and 'rich' municipalities so as to compensate for the inequalities in the capacity to grow in economic terms. In France, the fiscal autonomy rather gives way to dispersed efforts by all layers of subnational governments, so as to attract tax-payers (residents and firms). This system seems to be unsustainable in financial terms (hence the recent reform of the business tax), but also harmful to French municipalities at the heart of 'towns'.

In these institutional contexts, which also have a political and fiscal dimension, what are the possibilities for small and medium-sized towns to emerge in national/regional debates, and to carry out development strategies addressing the challenges they face? Horizontal cooperation of a voluntary form is a key answer. We could see that such possibility for cooperation between municipalities exists, but in several countries it appears to be too narrow in scope (Italy, Cyprus, Czech Republic), or in area and population covered (France). Even if these limits can be set, as tend to show some cases of *comarcas* in Spain, or the recent reform to merge municipal groupings in France, another very important level of cooperation is between the town and its hinterland. Following the OECD (2011), we should see that in in a world of increasing spatial interdependency, the hinterland of 'towns' may not be only rural, also urban as some of them are increasingly incorporated in diverse flows in the vicinity of a much larger conurbation. So, even if cooperation networks of small and medium-sized towns are to be encouraged, establishing cooperation within a metropolitan area is also a possibility to be considered as a way to increase their influence in policy-making.

7. References

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Chapter 5 – Functional analysis of urban systems: identification of small and medium sized towns and their territorial arrangements

Luděk Sýkora, Ondřej Mulíček

1. Introduction: objectives of functional analysis

The key objectives of the functional analysis have been to identify these small and medium sized towns which play the role of urban micro-regional centres and to identify territorial arrangements of these small and medium sized towns/micro-regional centres, i.e. whether they are autonomous, networked, or agglomerated. While the identification of small and medium sized towns that play the role of micro-regional centres contributed to the more nuanced definition of the object of analysis, the identified functional settlement context of small and medium sized towns served as one of the key information in the explanation and interpretation of differences in town's development dynamics and performance.

Due to the complexity of functional analysis and especially facing the non-existence of data for the whole European territory, the analysis had to be accomplished within case study regions using local data. While the results cannot be used in pan-European analyses, it serves for more in-depth view and links between pan-European and local levels of inquiry. In particular, it moved the analysis forward from the morphological sphere to functional aspects of towns positioned within their urban and regional systems, while reflecting the administrative statute of towns.

The results of functional analysis have been used to serve wider goals of the ESPON TOWN project, especially in two areas. Firstly, functional analysis is one of the essential approaches to the definition, identification and delimitation of small and medium sized towns and to the assessment of functional differences among them. In the frame of ESPON TOWN project, the results of functional analysis have been confronted with the outcomes of morphological analysis accomplished on the Europe wide scale, of course, here only in case study regions. Secondly, the outcomes in terms of territorial arrangements and spatial delimitation of town's micro-regions have been used as an important explanatory variable of town's socio-economic performance and as a contextual background for policy analysis questions reflecting the position of towns in urban and regional systems and their relation with small municipalities in their own hinterland.

The main aims of functional analysis were:

- the identification of settlements (in their administrative boundaries), which play the role of urban centres;
- the identification of urban regions (local labour areas, daily urban systems) of these urban centres;
- the distinction between small and medium sized urban centres (towns) and large urban centres (cities);
- the identification of territorial arrangements of small and medium sized urban centres (towns), i.e. whether they are autonomous, networked or agglomerated.

For the accomplishment of each of these goals we used specific methods:

- the identification of cities and towns used the concept of urban centres and centrality functions;
- the identification of urban regions (of cities and towns) used the core-hinterland analysis of commuting flows;
- the distinction between lower and upper tiers of urban hierarchy, i.e. between small and medium sized centres (towns) and large centres (cities), used functional analysis of relations between urban centres;
- the identification of small and medium sized towns territorial arrangements (autonomous, networked, agglomerated) used the analysis of the intensity and directionality of flows among identified small and medium sized urban centres and their urban regions.

In this chapter we first outline the theoretical and conceptual views of functional-spatial perspective. Secondly, we present the methods of functional analysis aimed at accomplishing the above specified objectives. We show the individual steps in the analysis using examples from the functional analysis of the Czech settlement system. Thirdly, we present an overview of results from case study regions using comparative perspective focused on main structural properties of settlement systems. This is accompanied by selected examples of specific instances that well illustrate both the universal and specific features of small and medium sized towns in particular regional contexts.

2. Theory and concepts: the functional-spatial perspective

This part discusses theories and concepts in two particular areas of functional perspective on the study of small and medium sized towns. Firstly, taking the position that small and medium sized towns shall play an active role in territorial socio-economic development (CEC 1999), realisation of the EU2020 strategy, and other EU, national and regional policies, we deal with the question which settlements are small and medium sized towns, adding new perspective to the use of population size and more sophisticated yet sole use of morphological approach used in the TOWN project for their identification. Furthermore, we reflect the hierarchical differentiation of cities and towns in urban and regional systems to distinguish between small and medium sized towns and large cities. Secondly, emphasizing the importance of relationships of towns with other cities, towns and village settlements in urban and regional systems for their own development trajectory and socio-economic performance, we focus on (a) the relations between towns and the settlements in their hinterland, and (b) functional linkages between towns and larger cities playing the role of urban centres, which allow us to discuss their various territorial arrangements.

Our starting point is that any urban centre serves for its (usually but not exclusively rural) surrounding. Therefore, the urban centre forms its hinterland and together with hinterland its urban region. The size of urban hinterland and the strength of relation with the urban centre is determined by the competition from other surrounding urban centres. While we can think about the boundaries of urban regions of competing urban centres, town's specific functions can often reach beyond own hinterland or even beyond nearby towns. Besides having impact in hinterlands of other towns, we specifically emphasize the importance of relations with other urban centres and interactions within larger regional context that lead to the formation of urban networks and hierarchies. Both aspects of functional territorial positionality, the relation of urban centre with its own hinterland and functional interactions with other urban centres within wider urban and regional systems are essential for the understanding of towns socio-economic performance and development trajectories. Hence, it should be reflected in both regional policies towards small and medium sized towns as well as by own local development policies of small and medium sized towns.

2.1. Urban centres and regions

Most literature defines small and medium sized towns using their population size. However, national and regional variations in settlement systems and urban hierarchies (ESPON Project 1.4.2., SMESTO; Böhme 2006) make such definitions problematic and inadequate (Bell, Jayne 2009). As Rondinelli (1983: 385) suggests, ”the value of small urban centres is not so much in their … sizes as in their functional characteristics”. We can more productively think about towns “in terms of influence and reach, rather than population size, density or growth” (Bell, Jayne 2009, pp. 689). While the size is a good indicator, we argue that the key characteristic of small and medium sized towns is their role as centres in settlement, urban and regional systems.

In general, there is a strong relation between population size and political, economic, social and cultural functions, such as jobs, services or public administration, concentrated in towns and cities. While some of these functions dominantly serve population of town and city, many of them have wider territorial reach serving settlements in their surrounding region. In the case of small centres, they usually serve the core town and villages in its hinterland. Larger centres possess functions, such as headquarters of major transnational companies or international institutions, which have international or even global reach. Many functions exclusively located in large cities serve wider territories including small and medium sized towns and villages.

From the functional-spatial perspective we argue that small and medium sized towns, side by side with large cities, play the role of nodes/centres in national and regional settlement, urban and regional systems. These cities and towns are centres which possess centrality functions that serve their immediate hinterlands and, in the case of large centres, wide territories. Cities and towns thus qualitatively differ from settlements which do not possess centrality functions, which are not centres. Therefore, settlements that do not have the role of a centre, or lost this function in the course of development, while they could have it in the past, are qualitatively different places. While they may be in an ordinary language called towns, from the functional perspective they do not perform the roles associated with the term town or city. Consequently, the primary goal of functional analysis is to identify these places that through centrality functions perform the role of urban centres.

Urban centres are highly differentiated according to the strength and significance of their centrality functions and hence their territorial / regional influence. Hence we can distinguish between large metropolises, medium cities and small towns according to the particular degree of centrality which ranks or positions any city or town within urban hierarchy. This role of cities and towns as centres and their hierarchically organized system has been conceptualized in the Central Place Theory of Walter Christaller (Christaller, 1933).

Towns and cities that play the role of urban centres do so within and for urban regions. The most usual form of urban region is with one node, which is the core town/city, and usually rural hinterland. There can be also twin cities in the core of urban region. In large urbanized areas, where urban nodes form strongly interconnected networks, the single node urban regions are replaced by polynucleated and polycentric urban regions. Andersen et al. (2012) point that traditional urban analyses based on individual urban places and an urban rural dichotomy have severe limits in highly urbanized territories such as Denmark, where “the functional areas of many large cities have merged to form continuous urban landscapes” (p.

595). These calls for more nuanced views of urban regions, however, do not challenge the prime emphasis in current urban studies debates on the role of urban regions as the most essential functional territorial unit of urban and regional systems (OECD 2002; Antikainen 2005). "City regions are becoming increasingly central to modern life … it has become increasingly apparent that the city in the narrow sense is less an appropriate or viable unit of local social organization than city regions or regional networks of cities (Scott 2001, 11).

While most of the work on urban regions, including ESPON analyses, concern major cities and their metropolitan areas, we have argued elsewhere, that smaller towns and their regions are vital and important socio-economic territorial units, therefore should be taken into account in national and EU regional development policies (Sýkora and Mulíček, 2009). The urban regions of small towns represent the micro-level territorial systems that represent the daily–life spaces of the population (Hägerstrand 1987). We shall therefore seek to identify the smallest complete territorial units within which the daily life of the population takes place without excessive needs to travel for jobs and services to other areas or their urban centres.

We use urban region as a general term that refers to territorial units that are spatially integrated by the population's socio-economic activities. On the micro-regional level, the most important mechanism of the spatial integration of human activities is the repetitive daily relation between homes and jobs through commuting to work. While the concept of urban region on general level refers to the socio-economic region tightly organized around urban cores, there are important differences between the various ways the term is used. We distinguish two essential variants. In both cases, a key role is played by central places that concentrate jobs and attract commuters from wider hinterlands. The first variant, which we call functional urban regions (ESPON projects use the term functional urban areas – FUAs) represents highly urbanized regions characterized by a high degree of spatial intensity and the integration of socioeconomic activities usually represented by commuting directed towards core cities, leaving less urbanized areas outside functional urban regions (van den Berg at al., 1982; van der Laan, 1998; Pumain, 2004). The other form of urban regions at micro level is different in the sense that these urban micro-regions cover the whole territory linking each settlement to one of the urban regions even if it is linked to urban cores by weak ties (Berry 1973, Hall and Hay 1980). While this distinction between functional urban regions that represent only highly integrated urban areas and micro-regions which include both highly urbanized cores as well as less urbanized, rural and peripheral territories is important for the understanding of the nature of urban systems, the primary issue is to distinguish those settlements, which play the role of urban centres from those, which do not.

The major aspect of this internal spatial differentiation is the distinction between centres and other places. Centres spatially concentrate functions that attract people and human activities from non-central areas. A functional region is bound together through the division of roles between places of residence and places of work and services, which are on a daily basis integrated via transportation, telecommunication, commuting and flows of information. A very important feature is that daily social life mainly takes place within the borders of these functional regions. Although functional regions have become more and more integrated with the outside world and have become significantly shaped by their external relations (Massey 1993), they have kept some autonomy and independence.

ESPON SMESTO identified three key ways for identification of towns (as further elaborated in Ch.1. of the present report) The administrative approach defines towns as the legal entities (with their own territories) that have administrative or political statute of town. However, as there are major differences between countries, administrative definitions can hardly serve for supranational comparative research. Furthermore, while some places acquired the statute of town in history, nowadays they do not fulfill the roles that are usually associated with such a town status. The morphological approach defines towns and their urban areas focusing on the continuity of the built-up area, the number of inhabitants and settlement densities. Thanks to the advanced techniques of analysis of satellite images, this approach can be used for a comparative research across wide territories. However, it has some weaknesses as it rather identifies the types of physically urbanized landscapes without any closer insights into the real socio-economic spatial relations and political-territorial arrangements. The functional approach identifies towns and their urban areas focusing on the interactions between the town municipalities in the surrounding territories. Using analysis of daily commuting flows, town and its urban region are seen and conceptualized as socio-economic territorial entities. In ESPON TOWN we use morphologic and functional approached as mutually complementary for both the identification and territorial delimitations of towns, while reflecting town's administrative and political statuses.

2.2. Territorial arrangements of urban centres

Towns evolve in relationships with other towns and cities and together they form urban and regional systems (Berry 1964, O'Donoghue 2002 in Andersen et al. 2011). A key research goal is to understand "the ways in which small cities link with other cities (and non-urban places) and the forms that these linkages take" (Bell, Jayne 2009, pp. 689). Functions of small and medium sized towns depend on proximity to other more important cities that might limit their influence on the territory. Towns can only be studied in relation to the environment of urban and regional system in which they are embedded (Andersen et al. 2012, p. 600). Towns in contemporary Europe are not isolated; they are networked within local, regional, national, supra-national and global systems.

The operation of economies of scale and scope lead to the growing size of firms and other entities and in combination with agglomeration economies to their concentration to decreasing number of larger urban places. Small towns are threatened by the loss of firms and hence jobs and consequently also other centrality functions. In such context, their development options remain restricted to serve as residential and in some cases as tourist place. While the territorial development stemming from agglomeration economies and concentration of population and especially jobs can be more economically effective, it brings larger commuting distances, worse accessibility of jobs and services in particular for less mobile population. It also further strengthens concentration to major urban areas and depopulation of rural and peripheral regions thus undermining territorial cohesion and bringing new socio-spatial injustices. Hence it is vital to observe development trends of small towns and apply policies to support or even enhance their role of local centres.

While economies of agglomeration work against small towns, they can benefit from being a "cheaper locations to live, work and run a business if compared with large cities, because they have shorter commuting and lower land and wage costs" (Hildreth 2006: 16). While small and medium sized towns can be less affected by agglomeration diseconomies this would not be sufficient to stimulate economic development and better performance. However they can gain some advantage from agglomeration economies through networking with other towns and cities. Referring to the concept of borrowed size Phelps et al. (2013: 160) suggests that "small firms are increasingly able to thrive away from existing centres of economic activity". The term borrowed size refers to the phenomenon "whereby a small city or metropolitan area exhibits some of the characteristics of a larger one if it is near other population concentrations" (Alonso, 1973: 200). The concept suggests that towns some towns may perform better than others provided they can benefit from agglomeration economies developed and shared among geographically proximate towns and cities. Meijers and Burger (2010) refer to polycentric urban regions emphasizing that external economies may not be confined to a single urban core, but shared among a collection of close-by and linked cities. Certainly, we may expect that in polycentric urban regions with urban centres functionally interlinked in urban networks, physical proximity is likely to be enhanced by functional linkages that reflect the “possibilities for the ‘borrowing’ of certain skills and expertise from nearby urban areas” (Phelps 2013: 160).

There are, however, several instances of such territorial arrangements. Smaller towns in metropolitan areas can borrow some of the advantages from large core metropolises, while avoiding their costs. However, it is less clear, whether the networks of small and medium sized towns can substitute for agglomeration economies of large cities (Phelps et al., 2001). So the issue is whether a network of small and medium sized towns can substitute for the agglomeration advantages of a large metropolis as suggested by Johansson and Quigley (2004). This was tested by Meijers and Burger (2010) who came to a more pessimistic insights finding that “a network of geographically proximate smaller cities cannot provide a substitute for the urbanization externalities of a single large city” (Meijers and Burger 2010: 1383).

It is worth to distinguish between territorial arrangements of small and medium sized towns and test their effect on towns’ performance. The basic forms of such territorial arrangements are: autonomous (or even isolated) towns, towns agglomerated with large cities and towns networked with other small and medium sized towns. The key issue is to focus on relations of networking between urban centres (towns and cities).

Settlement systems consist of two basic qualitatively distinct elements: settlements and relations between settlements. Settlements differ between themselves by size and significance. On the one end of settlement landscapes we can see major metropolises and conurbations, on the other end small villages and dispersed individual housing and farms. Larger cities not only concentrate more people and economic activities in comparison with smaller settlements, they dispose of such functions and activities which are not available in smaller settlements and hence individuals, households and firms from smaller places are dependent on the provision of these functions from larger settlements. This dependence is basic for hierarchical relations between settlements and hierarchically organized settlement systems.

However, such relations are rarely one-sided. Cities (their inhabitants and firms) need small settlements for agricultural products and increasingly for short term recreation in the countryside. However, in such relation larger towns and cities dominate smaller towns due to their power stemming from the location of key decision-making and most progressive functions such as government, headquarters, finance and other higher rank services. We can also increasingly observe growing share of reciprocal relations between towns and cities of similar size and significance. Such reciprocal linkages develop due to specialization of these towns and complementarity of their function. They are, however, also outcomes of free choice of service, job place, etc. by inhabitants and firms among several places that offer them thanks to increasing mobility, growing accessibility and diminishing friction of distance.

While traditional hierarchically organized urban systems are largely based on single one way relations between settlements, strongly urbanized regions with polycentric organization are more and more characterized with multidirectional relations between several towns or cities, forming a complex web or network of relations between multiple urban settlements. We can thus distinguish basic types of relations between settlements: (A) hierarchical and reciprocal, and (B) single-directional and multidirectional.

3. Methodology of functional analysis

This part presents the methodology and methods of functional analysis (FA). The basic steps of functional analysis were:

- identification of those settlements that play the role of job centres;
- delimitation of micro-regions (MRs) and the set of micro-regional centres;
- distinguishing between lower and upper tiers of urban hierarchy, i.e. between small and medium sized MR centres (interpreted as small and medium sized towns) and large MR centres (interpreted as large cities);
- identification of small and medium sized (MR) centres' (interpreted as small and medium sized towns) territorial arrangements, i.e. those that are autonomous, networked with other towns, and agglomerated to large cities.

The functional analysis works with the smallest yet complex settlements and data available for the established territorial-statistical units. In most countries these are LAU2 – usually municipalities that contain central settlement that can be city, town or village and often including other small settlements in its hinterland or vicinity. In most cases, there is a correspondence between morphological settlement and its administrative delimitation for which statistical data are available. Of course, due to amalgamation of municipalities the administrative territory can beside the central settlement contain also number of smaller settlements in its vicinity. Yet in the case of urban settlements, we assume that vast majority of population and especially jobs are located within the central settlement. The use of LAU2 can and shall be modified in countries with very large LAU2 that contain many settlements, such as Sweden, using smaller spatial units on sub-LAU2 level, of course, depending on data availability. Another type of adjustment applies to countries where the real organic urban areas actually consist of several municipalities, such as in France. In this case, municipalities (LAU2) shall be amalgamated to represent the whole urban area as the complete territorial entity.

The functional analysis works with two types of information and data. First is the information about the size or strength of each settlement (LAU2 or other spatial analytical units). The second is information about the relations between settlements. Concerning the size and strength of a settlement, functional analysis works with the number of jobs and population. The number of jobs is calculated as economically active population minus the unemployed, plus the in-commuters, minus the out-commuters. The number of jobs and its relation to residing population is an important yet not sufficient aspect of settlement functionality in terms of the position / role of a settlement in urban and regional system. Hence FA also works with functional relations between settlements analyzing commuting flows from places (settlements, municipalities, LAU2) of residence to places of job. In the analysis we work with number of jobs and inhabitants in each settlement and with a matrix of commuting flows between settlements.

Techniques used in FA include basic database and GIS operations with all analytical steps executable using standard statistical and GIS tools (ArcMap, Access). ESPON TOWN functional analysis works with (usually census origin) data from around year 2000. Where possible, it is also encouraged to use newer data for around 2010 to analyze and detect the development in settlement systems.

The commuting flows database should cover all job-commuting flows between all settlements (LAU2) within the studied region. Especially in studies below sub-national levels where the regions are not perfectly self-contained travel-to-work the data should also include the flows going across the region borders. This is needed not only to grasp the nature of relations between settlements abut also for calculation of the number of jobs in settlements (LAU2) according the formula *(no. of jobs) = (no. of economically active employed population) – (outgoing job commuters) + (ingoing job commuters).* It is also preferable to analyze total flows of commuters, not only those commuting daily. The format/structure of commuting database is a simple table structured into 3 columns where each row represents a commuting flow between a pair of LAU2 (see Tab. 1).

Table 1 Structure of commuting flows database - example

LAU2 of departure	LAU2 of arrival	number of commuters
X	Y	125

<u>Czech example:</u> The database including all job-commuting flows between 6258 municipalities in the Czech Republic in 2001 comprises approximately 222.000 rows.

3.1. Identification of job centres, delimitation of micro-regions and micro-regional centres

The functional analysis first identifies those settlements that play the role of job centres. The job centres are selected from municipalities (and other types of LAU2) using two criteria (1) size: threshold value of minimum job size (number of jobs); (2) functionality: job centre is the main commuting destination from at least one another LAU2 (this criteria may be in some instances modified in countries with large LAU2, based on local knowledge).

In ESPON TOWN and based on an earlier experience (Sýkora and Mulíček 2009) job centre is defined as LAU2 (or smaller spatial unit corresponding to urban settlements) with at least <u>1.000 jobs</u> (this may vary in specific national contexts), which is, at the same time, the main commuting destination for at least one other LAU2 (settlement).

The process of identification / selection of LAU2, that are centres, include three analytical steps:

- calculation of number of jobs in each LAU2 - no. of jobs = no. of economically active employed population – outgoing job commuters + ingoing job commuters; *output = working dataset comprising LAU2 with 1.000 and more jobs*
- directional assignment of the highest outgoing flow from each LAU2 (= identification of destinations of the maximal flows) (a situation may occur in which LAU2 has no single maximum flow – e.g. there are two or more major flows equal - in this case all destinations of these flows are included in the dataset) *output = working dataset comprising LAU2 which are the destinations for the highest flow(s) outgoing from any other LAU2*
- database intersection of two working datasets (dataset) and final selection of job centres (job centres include all size categories of centres, not only SMST but also large cities); *output = dataset comprising jobs centres.*

<u>Czech example:</u> Based on 2001 data 493 of 6258 Czech municipalities fulfilled the criterion on minimum 1.000 jobs; at the same time 645 municipalities were classified as destinations for maximal commuting flow from another municipality. The intersection of these two datasets resulted in a set of 367 job centres with 1.000 and more jobs that were, at the same time, the major commuting destination for at least one other municipality.

The settlement pays the full role of centre in urban and settlement system if it forms its own micro-region. Not every job centre is strong enough to form its own micro-region. The capability for forming micro-region and being a micro-regional centre is usually determined by two factors: (1) the size and strength of job centre and (2) its relative autonomy and exposition to nearby competing job centres. We assume that towns that play the key functional role in urban and settlement systems are those that perform the function of micro-regional centre (therefore, SMS-MR centres).

The functional analysis thus continues with the delimitation of micro-regions and identification of their respective urban centres. The micro-regions of job centres are delimited integrating the settlements to the centres according to maximal commuting flows, i.e. each settlement is assigned to one centre/functional region. Usually, the boundaries will have to be adjusted and territories of micro-regions consolidated. Not every job centre is able to form a strong region. It is therefore necessary to discuss and set a threshold of a minimum population size and number of jobs in micro-region and dissolve those not meeting the criteria among neighboring micro-regions.

This part of functional analysis can be divided into three stages:

- delimitation of “proto-micro-regions”;

  output = dataset of proto-micro-regions of various population size, i.e. list of all LAU2 in case-study region, each assigned to one urban centre

- setting up the minimal threshold value for proto-micro-regions population size, dissolving proto-micro-regions with population below the threshold;

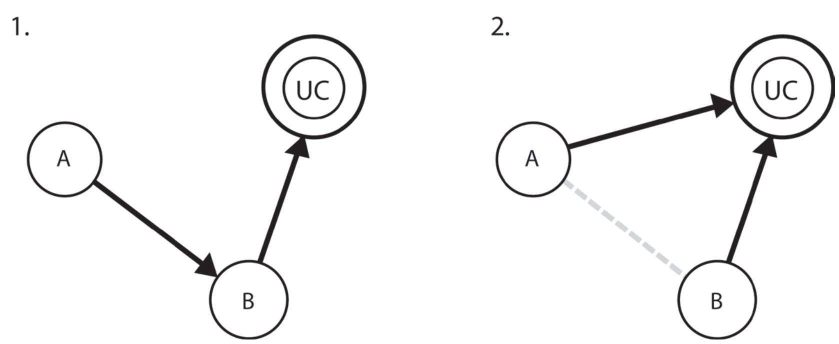
  output = (1) reduced dataset of proto-micro-regions; (2) shapefile of LAU2 indicating their membership to proto-micro-regions

- territorial consolidation of proto-micro-regions, final delimitation of micro-regions:

  output = (1) dataset of modified proto-micro-regions = final micro-regions; (2) shapefile of LAU2 indicating their membership to final micro-regions

Having the set of job centres, settlements are linked to the job centres via the criterion of the strongest commuting-to-work flow. If the largest flow from LAU2 is not directed to one of the identified job centres, the LAU2 is linked to a job centre indirectly. If the main commuting destination “B” of LAU2 “A” is not an urban centre, then LAU2 “A” is linked to the urban centre “UC” that is the main commuting destination for municipality “B” (Fig. 1). This approach results in the delimitation of proto-micro-regions (PMRs). Dataset of proto-micro-regions is usually very heterogeneous in terms of territorial and population size of PMRs.

Figure 1: Assignment of LAU2 to urban centres

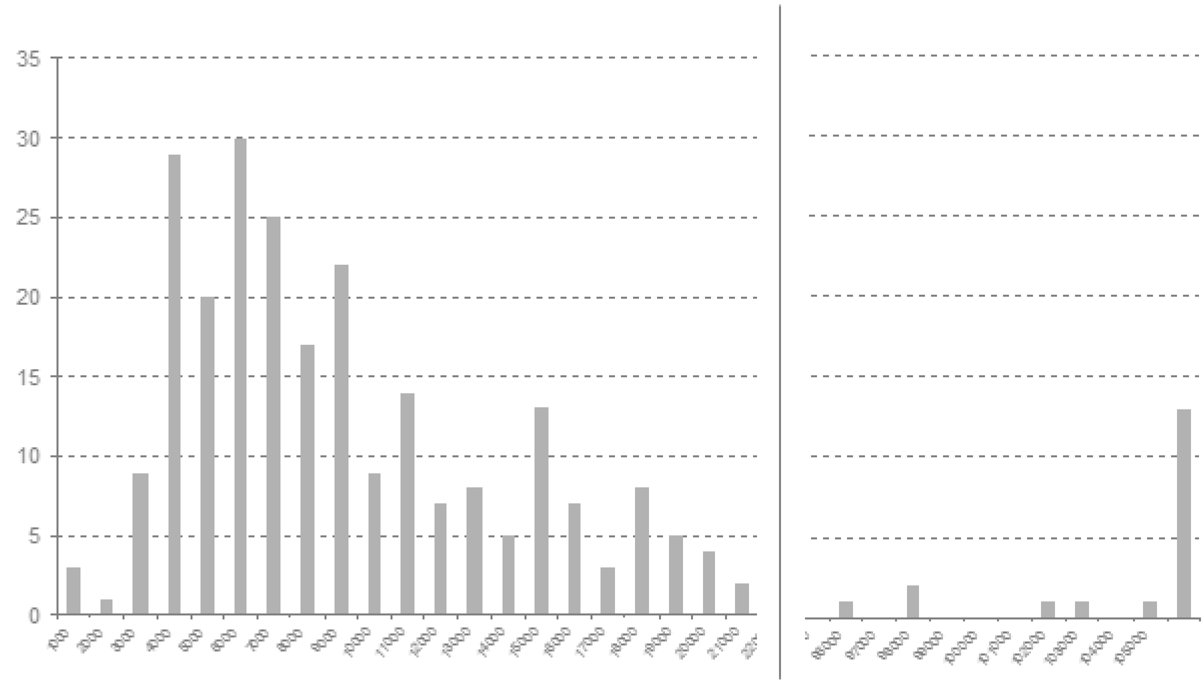


<u>Czech example:</u> There were 352 proto-micro-regions delimited. You may notice that the number of PMRs is different from the number of job centres. The reason is that commuting

hinterlands of some job centres consisted of municipalities which were at the same time job centres for other municipalities.

Proto-micro-regions should be treated as preliminary representation of micro-regional pattern. However final micro-regions should fulfil criteria of minimal population size and territorial integrity. It is advised to use some kind of histogram (frequency) analysis to find a reasonable threshold value applicable in the analyzed region/country. Applying minimal population to the set of PMRs, some proto-micro-regions will fall under the threshold. Consequently, they have to be dissolved to other neighbouring proto-micro-regions. When attaching the dissolved PMR municipalities to the larger PMRs, several aspects should be taken into account, such as commuting directionality of their original job centre or other significant commuting flows of municipalities.

Fig.2: Distribution of PMRs frequencies according to their population size



<u>Czech example:</u> The threshold value of 6 .000 inhabitants was employed in the Czech case as derived from frequency analysis (see Fig. 2). Minimal population size criterion of 6 .000 inhabitants was fulfilled by 260 PMRs. The rest (92 PMRs) was dissolved.

As the territories of PMRs are often spatially fragmented they have to be consolidated into spatially continuous territories. This operation should be executed over the map project of PMRs. Particular LAU2 have to be re-assigned to other centres (regardless to the direction of their maximum outgoing flow) to ensure continuous and not fragmented territories of final micro-regions (changes of LAU2 membership in PMRs will affect the population size of modified (consolidated) proto-micro-regions). The final map and dataset of modified proto-micro-regions represents the result, i.e. the set of LAU2 assigned to territorially coherent <u>micro-regions</u>. Each of micro-regions is organized around its <u>micro-regional centre (MRC).</u> Micro-regional centres represent the urban nodes with certain levels of job centrality; their centrality is reflected in the size of respective micro-regions. The set of micro-regional centres will enter further parts of functional analysis.

Czech example: Territorial consolidation of 260 PMRs over 6.000 inhabitants did not affect their number. As a result, 260 final micro-regions were delimited for 2001 covering the whole territory of the Czech Republic.

3.2. Lower and upper tiers of urban hierarchy (small and medium sized towns and large cities) and territorial arrangements of small and medium sized towns (autonomous, networked and agglomerated)

Micro-regional centres (or urban centres in general) have various sizes, centrality and position within the urban hierarchies/networks. They include both both small and medium size towns as well as large cities. With ESPON TOWN focus on small and medium sized towns, we have to differentiate between small and medium-sized and large centers. In ESPON TOWN we implicitly work with small and medium sized towns pre-defined as settlements with population size 5-50 thousands inhabitants. However, we are also aware, that the real quantitative “thresholds” differ between national and even regional settlement systems. In functional analysis, we have already dealt with the bottom line - while identifying urban centres we found settlements with population over 5..000 but without a role of job and micro-regional centre as well as we have settlements with population below 5.000, yet having a role of centre for its surrounding. Now, we face similar issue: how is medium sized town differentiated from large city? Of course, we could take the simple way of taking the threshold of population of 50..000. However, this will violate the differentiated nature of settlement systems. In the first step of functional analysis, we considered that ‘town’ has to be the urban centre of a micro-region (micro-regional centre). So, what is the nature of being small town, medium-sized town and large city? Large city is not only larger in population terms, but it also has more important territorial influence. It concentrates functions that serve and are used not only by population and firms of its own micro-region, but also by firms and population from other micro-regions. Commonly, we understand that capital cities play in certain aspects the role of national centres. Yet between national (macroregional) and micro-regional centres, there is (are) other mesoregional territorial level(s).

We can identify and analyze the different levels using data about the size and concentration of particular functions in urban centres. However, in functional analysis we analyze relations between urban centres. As we have already worked with commuting to jobs between settlements (LAU2), we further utilize these data (being aware that it does not provide a full and complex picture). However, this time functional analysis uses only commuting between micro-regional centres to identify hierarchical levels and thus the functional importance of centres which in combination with other characteristics help us to distinguish between small and medium sized centres (towns) and large centres (cities).

In the further analysis, we do not analyze all but only significant flows – functional connections between micro-regional centres. By significant we understand that the flow is important for the source urban centre, for the destination urban centre and also for the urban system as whole. The dataset with significant flows between micro-regional centres is then used not only for the determination between lower and upper tiers of urban hierarchy, i.e. between small and medium sized towns and large cities but also for the next step of identification of small and medium sized towns territorial arrangements (autonomous, networked, agglomerated).

We start with the matrix of flows between LAU2 delimited as micro-regional centres. A simple solution would be to use just the largest commuting flow from each urban centre. But this would have certain limitations. Despite in majority cases, there is just one major commuting flow, there are urban centres from which there are commuting flows on similar level and importance to 2, 3 or even more destinations.

<u>Czech example:</u> Empirical analysis of Czech settlement system indicates that almost 64 % of municipalities generate just one significant outgoing job commuting flow, 23 % of municipalities generate two significant flows.

Therefore, we decided to work with significant flows between micro-regional centres (MRCs). But, what are the "significant flows" and how to identify them? We use a simple technique suggested by Van Nueffel (2007). First, we identify 5 highest outgoing flows from each micro-regional centre and represent them in relative way as shares on the total sum of 5 identified highest flows (in %) (Tab. 2).

Table 2 **Relative sizes of top 5 commuting flows**

FROM	FLOW1			FLOW2			FLOW3			FLOW4			FLOW5		
	TO	size	rel. size %	TO	size	rel. size %	TO	size	rel. size %	TO	size	rel. size %	TO	size	rel. size %
LUT	OL	500	80,5	LIT	59	9,5	BM	28	4,5	HLU	22	3,5	DOL	12	2,0
BOS	BLA	311	42,1	BM	214	29,0	CHR	76	10,3	VYS	69	9,4	SKA	68	9,2
NST	KLA	403	43,2	RAK	221	23,7	PRA	218	23,4	SLA	50	5,3	BER	41	4,4

Second, we decide which flows of the five are significant. We correlate real distribution of flows with five ideal types of distribution to determine the number of significant flows. The number of significant flows corresponds to the ideal type with which the real distribution has the highest correlation (See Tab. 3).

Table 3 **Determination of number of significant flows**

real situation A (LUT)		ideal types				
flows	rel. size	1 sign. flow	2 sign. flows	3 sign. flows	4 sign. flows	5 sign. flows
flow1	80,5	100	50	33	25	20
flow2	9,5	0	50	33	25	20
flow3	4,5	0	0	33	25	20
flow4	3,5	0	0	0	25	20
flow5	2,0	0	0	0	0	20
correlation:		0,99	0,70	0,52	0,39	0,26

In the case A the best fit is between real situation and the ideal type with 1 significant flow. The number of significant flows going out of the LAU2 Lutin (LUT) is one, i.e. only first flow is significant.

real situation B (BOS)		ideal types				
flows	rel. size	1 sign. flow	2 sign. flows	3 sign. flows	4 sign. flows	5 sign. flows
flow1	42,1	100	50	33	25	20
flow2	29,0	0	50	33	25	20
flow3	10,3	0	0	33	25	20
flow4	9,4	0	0	0	25	20
flow5	9,2	0	0	0	0	20
correlation:		0,80	0,93	0,73	0,60	0,52

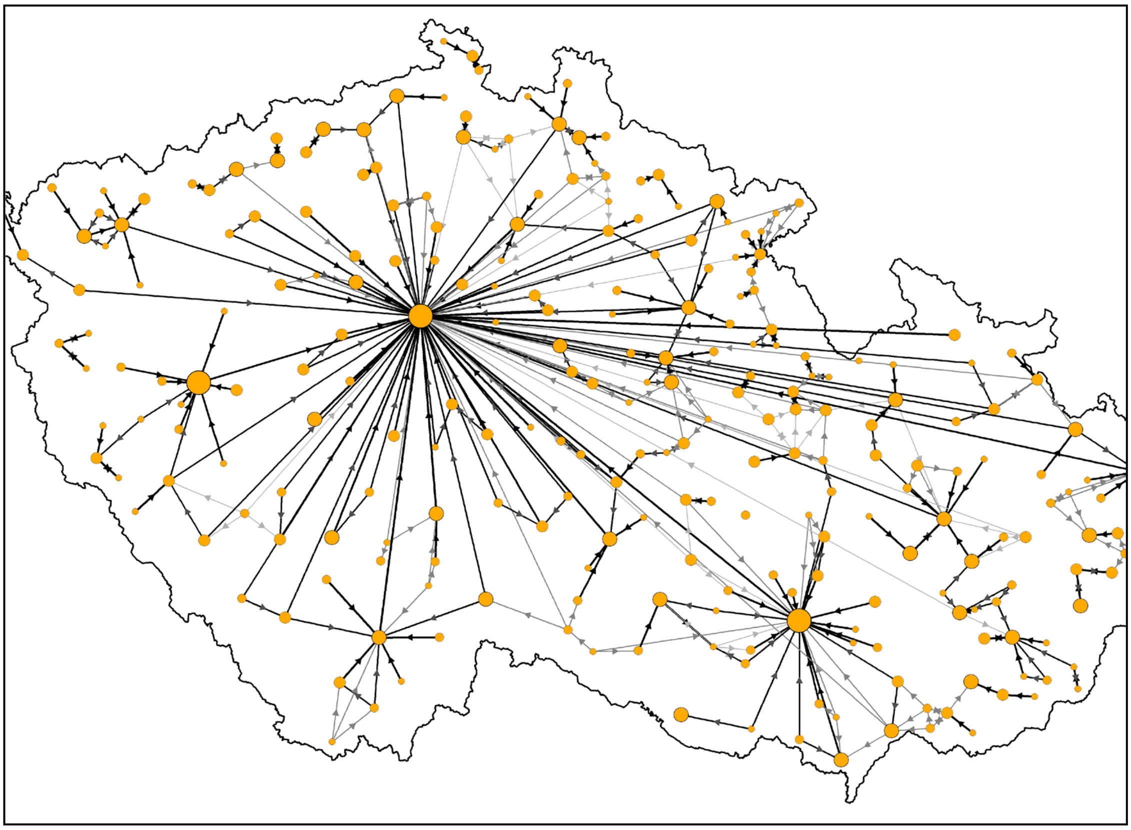
In case B the highest correlation is between real distribution and ideal types of 2 significant flows – first two flows going out of Boskovice (BOS) are significant.

real situation C (NST)		ideal types				
flows	rel. size	1 sign. flow	2 sign. flows	3 sign. flows	4 sign. flows	5 sign. flows
flow1	43,2	100	50	33	25	20
flow2	23,7	0	50	33	25	20
flow3	23,4	0	0	33	25	20
flow4	5,3	0	0	0	25	20
flow5	4,4	0	0	0	0	20
correlation:		0,79	0,79	0,89	0,68	0,50

Analogically, in this case first three flows are significant.

Once the significant flows are detected we can prepare a table and map of significant flows between micro-regional centres (Fig. 3).

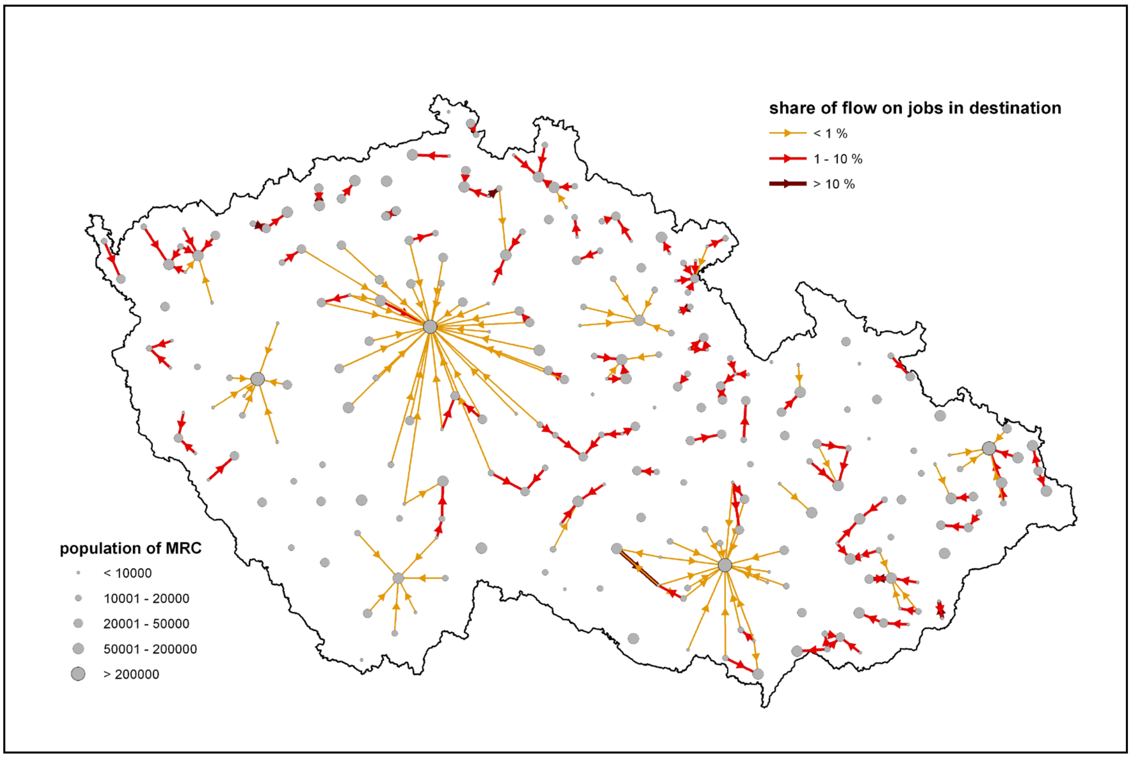
Figure 3: Significant flows between micro-regional centres in Czechia: step 1



However, some of the flows are relatively small. We think that significant flow has to be important in relation to economically active population of source urban centre and in relation to number of jobs in the destination urban centre. Therefore, we tested and finally applied following criteria. First, we calculated the share of out-commuting population on economically active population of source centre. And we eliminated all flows that accounted for less than 5% of economically active population (leaving from urban centre to work in another urban centre). This way we have micro-regional centres that do not have any significant outgoing flow (and also do not have incoming flow) – so they are autonomous. Secondly, we evaluated these flows relating them to number of jobs in the destination micro-regional centre, i.e. how important is this commuting flow for the labour market in the target city. In Czechia, we tested that flows below 1% share on no. of jobs in destination centre are less important for the destination centre (while important for source centre), while flows with 1 and more percentage share on the no. of jobs in destination centre are already playing more significant and sometimes very significant role for the job market also in the destination centre. Of course, there is no clear division line, so it is about testing and confronting with other knowledge and specific country and regional contexts.

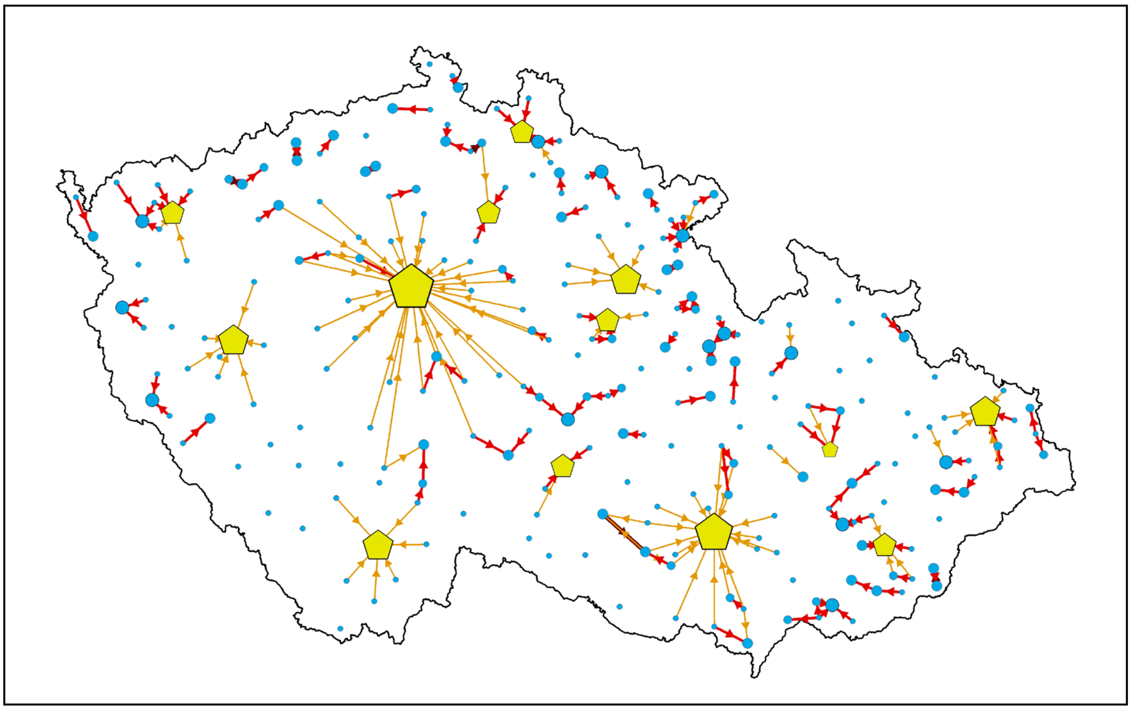
Map 5.4 shows urban (micro-regional) centres (this includes also large centres (cities), which we will differentiate from small and medium sized centres (towns) in the following step) (A) without any significant flows – autonomous, (B) with significant flows only for themselves (share on EA population of source centre) - agglomerated, and (C) with significant flows also for destination centre (share on its no. of jobs) - networked. On the map, we can clearly identify these 3 types: red flows connect networked systems of urban centres, yellow flows connect agglomerated urban systems and remaining urban centres without any significant connection are autonomous.

Figure 4: Significant flows between micro-regional centres in Czechia: step 2



Now, we will address the issue of distinguishing between those micro-regional centres that are small and medium sized towns (centres) and large cities (centres). We start with the matrix of significant commuting flows between micro-regional centres (those displayed in Fig. 4). For each urban centre we identify the number of flows of which it is a destination - urban centres that are destinations from other urban centres can be considered of being urban centres of higher functional significance. There are urban centres with more than one outgoing significant flows – so it is splitting its value to more urban centres. Therefore rather than simply counting all flows, we will add to each centre either value 1 for each centre from which this is the only destination or a proportional share on value 1 (0,5, 0,33, 0,25, 0,2) in the cases with 2 or more outgoing flows. Having a table listing all micro-regional urban centres, their population size and the value of functional position in urban system (given by significant flows relating them to other urban centres) we will pay attention to urban centres around the population size of 50.000. In Czechia, we found that the value for urban centres with over 50..000 is larger than 2, i.e. they are destination from 2 or more micro regional urban centres (recalculated in shares). To be considered large centre (city), it should have population over 50.000 and at the same time have the value of position in urban system over 2. In our context, there were 3 urban centres below 50.000 with the value over 2. The population size of two of them is far below 50.000, so we do not consider them as large centre (city). The third has population size 44.000, however, with about the same no. of jobs, it is very powerful job centre, as strong as cities with population of 70-80 thousands. Therefore, we consider it as large centre (city). On the other hand, we have 7 urban centres with population over 50.000, however, with lower or low value of position in urban system – ranging from 0 to 1. Most of them are in vicinity of larger cities (centres), being either agglomerated or having small regional influence due to strong nearby competitor(s). Hence, we do not consider them as large cities (large urban centres). Out of 260 micro regional urban centres, we identified 13 large cities (centres) (Fig. 5).

Figure 5: Hierarchical levels of micro regional urban centres



Finally, we perform the analysis of the intensity and directionality of flows among identified small and medium sized centres (towns) and their urban regions with an aim to identify their functional territorial arrangements. The basic types of territorial arrangements are: (1) autonomous (isolated, self-standing) small and medium sized towns (usually in peripheral rural regions), (2) agglomerated small and medium sized towns that are integral parts of polynucleated metropolitan areas and conurbations dominated by large cities/major metropolises, (3) polycentric networks of Small and medium sized towns. However, considering the orientation of commuting relation as well as the position of urban centre within the urban and regional system we distinguish more subtypes:

(A) Autonomous urban centres have no out or incoming significant flow (AUTO).

(Ba) urban centres with outgoing flows that are significant only for themselves (significant share on EA population of source centre) and are linked to large centre (LC) – they are agglomerated to large centre (AGLO-LC)

(Bb) urban centres with outgoing flows that are significant only for themselves (significant share on EA population of source centre) and are linked to another town – they are agglomerated to small and medium sized towns (AGLO-SMST)

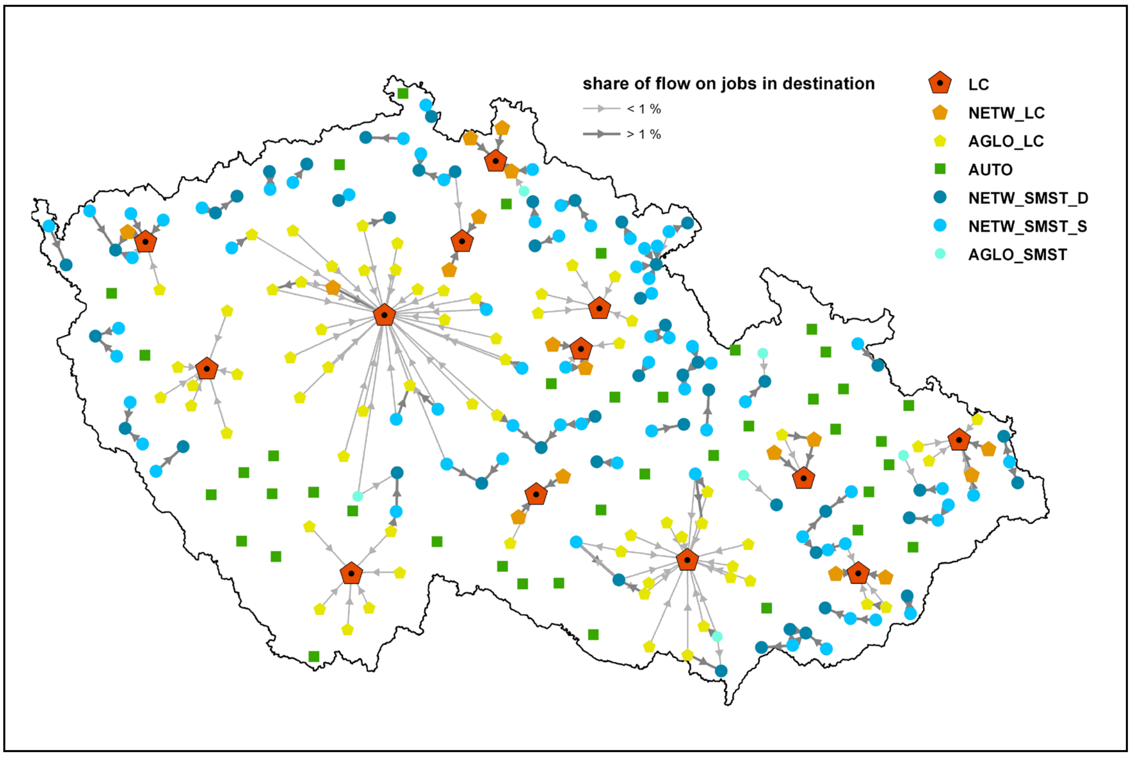
(Ca) urban centres with outgoing flows that are significant also for the destination centre (with significant share on its no. of jobs) and are linked to large centre (LC) – they are networked with large centre (NETW-LC).

(Cb) urban centres with outgoing flows that are significant also for destination centre (with significant share on its no. of jobs) and are linked to this destination town – they are networked with SMST as source (NETW-SMST-S).

(Cc) urban centres with significant incoming flow(s) from other SMST (both yellow and red) – they are networked with small and medium sized towns as destination (NETW-SMST-D).

(Da) urban centres with two or more outgoing flows of different character (both yellow and red), and/or to two destination of which one is LC and other SMST – these shall be sorted according to the flow, which is strongest. The result is small and medium sized towns differentiated to 3 groups of autonomous, agglomerated and networked (Fig. 6). This typology is to be used in further analyses, for instance in performance analysis.

Figure 6: Types of urban centres according to territorial arrangements (autonomous, networked, agglomerated)



We distinguished, whether networking and agglomeration occurs with large city (large urban centre) or just with or between small and medium sized towns (micro-regional urban centre that is not LC). There are significant urban systems organized around large centres (cities) in which small and medium sized towns are usually agglomerated with some of them networked (in cases of similar size and significance). There are, however, also important urban systems of small and medium sized centres (towns) and in their cases most towns are networked. Not surprisingly, the population size of large centres is of different rank than average population size of the types of small and medium sized towns (tab.4). The largest average population size has small and medium sized centres (towns) networked with large centres (cities), and small and medium sized centres (towns) networked with other towns as the destination centres. Larger are also small and medium sized centres (towns) agglomerated with LC, even larger than small and medium sized centres (towns) networked with other towns in the role of sources. Expectedly smallest are small and medium sized centres (towns) agglomerated to other towns – their average size is even below 5.000. The average population size of autonomous centres is 14 thousands.

Table 4 **Characteristics of types of urban centres**

Type	Pop 2001	EA 2001	Jobs 2001	Pop 2011	EA 2011	no.	pop11_avg
LC	2 743 321	1 357 795	1 703 260	2 822 127	1 414 113	13	217 087
NETW_LC	399 952	183 324	170 497	379 665	184 381	17	22 333
AGLO_LC	699 398	336 432	387 841	696 801	343 801	66	10 558
NETW_SMST_D	1 114 242	517 439	645 356	1 050 232	501 822	49	21 433
NETW_SMST_S	715 260	333 021	345 656	688 989	329 164	69	9 985
AGLO_SMST	28 259	12 933	12 929	26 363	12 456	6	4 394
AUTO	589 692	276 699	328 926	561 550	270 552	40	14 039
SUM	6 290 124	3 017 643	3 594 465	6 225 727	3 056 289	260	23 945

There is one specific issue open for discussion and further consideration. In the Czech case, there are two with population size over 50 thousands among autonomous urban centres – Usti nad Labem (98) and Opava (58). Usti nad Labem is a regional administrative centre of Northern Bohemia. In the regional settlement context of larger towns and located close to frontier is does not attract any significant flow from other micro-regional centres, so it acts as autonomous and according to above criteria we have not considered to be large centre (LC). The other is Opava in Moravian Silesian Region (northeast). Again in the context of strong competition from Ostrava and being at the frontier with Poland it does not attract any significant flow from other micro-regional centre. The other urban centres with population over 50 thousands are all networked with LC or other small and medium sized towns. The third largest autonomous centre has population 34 thousands. So, based on this knowledge, we tend to reconsider the definition of large centres considering a specific type of large urban centre, that is autonomous – which also means that it is large, is not agglomerated to larger urban centre but also has small regional effect on other smaller urban centres.

4. Functional analysis in comparative perspective

This part presents the results of functional analyses which were carried out within the framework of case studies in 10 regions. The imperative for functional analyses realized in all case study areas was to fulfil two basic tasks. First it was to identify places that play the role of employment centres and to delimit the commuting regions that are associated with each employment centre (employment micro-regions) that might also be labelled as local labour areas. We are taking these local labour areas as proxies for territorially demarcated daily urban systems for which the municipal employment centre plays a pivotal function. The second task was to distinguish between those micro-regional centres that are small and medium sized centres (towns) and large ones (cities) and identify small and medium sized towns' territorial arrangements, i.e. whether they are autonomous, networked, agglomerated.

Beside the general aims of functional analysis, the complementary goal has been to compare the functional aspects of small and medium sized towns across case study areas. Therefore the case study teams have been asked to follow the same method. However, due to unavailability of some data essential for performing the functional analysis by proposed method, some of the case study teams were forced to use alternative approaches. The Italian case study used ISTAT data and SLL micro-regions based on a 1991 commuting matrix. The Swedish case study incorporated outputs of earlier national regionalization studies and statistics. In the case of Wales the functional and morphological analyses were combined in order to identify a reasonable proxy for a municipal central area. Still, case studies attempted to address the issues analysed in functional analysis as closest as possible to the proposed method discussed in the above section.

Another issue has been the basic territorial unit used in functional analyses. Municipalities (in the form of LAU 2) were used in majority of case study regions and countries, with the exception of France and Wales, UK. Table 5 illustrates the issue with regards to data for employment (workplace-based estimates). For each of the case study regions/nations the table gives the total number of areal units for which we can obtain employment and commuting data. It gives the average number of jobs per areal unit as well as the coefficient of variance for the number of jobs. It is notable that there is a wide variation in size of the municipal areal units from the very small municipal units of Centre Region (France) or the Czech Republic to the very large local government units of Wales. It is also apparent that these units display considerable variation in the number of jobs located in them. The coefficient of variance confirms that the geography of employment displays a wider dispersal and concentration than the population of resident population (see Table 1, Chapter 3). Using a common threshold of 1000 jobs means that we can identify potential employment centres from these unit (although we will outline later why research teams sometimes used different thresholds) and the final column of the table identifies the number of areal units with more than 1000 jobs located in them.

In the case of the Centre region and Wales, municipal units were not used as the basis of functional analysis. In the case of France, the research team used 'unités urbaines' (aggregations of municipalities) because of employment and interaction data is not made available for municipalities (where there is a risk of disclosure in very small communes) whilst in the case of Wales the research team used electoral wards which are the most fine-grained areal unit for which commuting data is made available.

Table 5 : Cross-national comparison of the units of analysis for functional analysis

case study 'region'/nation	type of areal unit	No. of areal units	average no of jobs per areal unit	CoV for jobs	total employ't (case study region)	total no. potential employ't centres
Flanders (BE2)	municipalities	306	7101	2.56	2,172,955	276
Czech Republic (CZ0)	municipalities	6249	769	13.75	4,803,453	493
Catalonia (ES51)	municipalities	946	:	:	:	:
Central Region (FR24)	municipalities	1842	511	5.67	940,409	146

North West Italy (ITC)	municipalities	2694	2052	9.05	5,528,117	838
Mazovia (PL12)	municipalities	313	2153	8.97	673,843	73
Northern Sweden (SE3)	municipalities	85	8951	1.27	760,843	84
Slovenia (SI0)	municipalities	210	3734	4.01	784,177	109
Wales (UKL)	municipalities	22	52406	0.60	1,152,921	22
Central Region (FR24)	Urban units	131	7179	2.68	940,409	95
Wales (UKL)	electoral wards	868	1328	1.62		306

Thus, it must be recognised that LAU2 and their aggregates (unités urbaines in France) substantially differ among countries in their spatial extent and population size. While the average population size of units in Flanders, French Central Region, Polish Mazovia and Slovenia exceeds 10000 inhabitants, it is 7000 in Catalonia, 5000 in North Western Italy and below 2000 in both Czechia and Cyprus. In countries with large municipalities, administrative territory usually contains not only central town but also a number of smaller settlements in its proximity, while in countries with smaller municipalities, these smaller settlements are administratively independent municipalities-villages. Hence, the selection of job and micro-regional centres needs to reflect local circumstances and hence the research team allowed local team to adjust the methodology for functional analysis accordingly. Table 5.6 outlines the ways in which the local research teams adapted the basic method of functional analysis to take into consideration local contextual issues.

Beside the problems with data availability which led to deviation in methods in some case study areas, the method of functional analysis itself allowed for the adjustments to regional and national specificities in urban and regional systems. These were given by the different character of settlement structure and organisation (in terms of its morphology and functionality) as well as by differences in territorial organization of local government. Furthermore, the method and criteria used in functional analysis were tested for Czech settlement system and partly used in ESPON POLYCE in Central Europe. However, we could not anticipate all the specific circumstances across variety of European context. Hence, the case studies also provided needed feedback to the method, which provided open possibilities for its customization that would allow reflect regional contexts.

We will address these issues of specific regional context while discussing first the identification of job centres, delimitation of micro-regions and micro-regional centres and, second, the distinction between lower and upper tiers of urban hierarchy (small and medium sized towns and large cities) and territorial arrangements of towns (autonomous, networked and agglomerated).

4.1. Identification of job centres, delimitation of micro-regions and micro-regional centres

The first step of functional analysis was the identification of those municipalities that play the role of job centres. Two criteria were used to distinguish municipal job centres: firstly the criteria of 'size' led to the adoption of a threshold number of jobs (workplace based estimate); secondly a functional criterion whereby the municipal centre need to be the main commuting destination from at least one another municipality/settlement. The methodology of functional analysis suggested work with the threshold of 1000 jobs as the starting point for the identification of job centres. This has been followed in most countries/case studies. An exception was Poland, where a threshold of 3000 jobs was used to adjust for the presence of bigger population and job size of municipalities with substantial agricultural employment.

The second criterion for the identification of job centres i.e. being the main commuting destination from another settlement was used in most case studies. However, this method could not be used in countries, where commuting data were not available. The method was adjusted in Slovenia, relatively small and highly centralized country with a majority of main job commuting flows heading towards the capital city of Ljubljana. Hence, in the case of Slovenia all significant (not only maximal) commuting flows were used for the identification of job centres. Slovenia municipalities qualified as a municipal job centre if the municipality contained at least 1000 jobs and was the destination of a significant commuting flow from at least one another municipality (LAU2) in Slovenia.

There are remarkable differences between case study regions in terms of the number and share of municipalities that play the role of job centres (Table 5.5). The major dividing line is between highly urbanized regions of Flanders in Belgium with half of municipalities playing the role of job centre (48 % of municipalities in Flanders) and other regions and countries with the share of municipalities bearing the role of job centre ranging from 5% in Cyprus to 12 % in Catalonia, with Czechia (6%), North Western Italy (9%) and Poland (11%) in-between. Slovenia with 31% of municipalities gaining the status of job centre is in intermediate position, signalling a specific feature of Slovenian urban system characterized by the dominance of Ljubljana accompanied with high polycentricity of many other settlements including quite small municipalities still playing role of local job centres.

Table 6 Summary of functional analysis criteria in the regional studies

case study area	year for data	initial employment threshold	commuting criterion	size threshold (population) for micro-region	contiguity applied	complete territorial coverage	areal unit
Flanders (BE2)	2001	1000	highest from one other	9500	yes	yes	municipalities
Cyprus (CY0)	2001	1000	highest from one other	5000	yes	yes	municipalities
Czech Republic (CZ0)	2001	1000	highest from one other	6000	yes	yes	municipalities
Catalonia (ES51)	2001	1000	highest from one other	5000	yes	yes	municipalities
Central Region (FR24)	2009	1000	highest from one other	10000	no	no	unites urbaines
North West Italy (ITC)	1991	1000	highest from one other	x	yes	yes	municipalities
Mazovia (PL12)	2006	3000	highest from one other	20000	no	yes	municipalities
Northern Sweden (SE3)	2012	1000	None applied	:	yes	yes	municipalities
Slovenia (SI0)	2011	1000	significant from one other	10705	yes	yes	municipalities
Wales (UKL)	2001	1000	highest from one other	5000	yes	yes	electoral wards

The next step in functional analysis was the delimitation of micro-regions and identification of micro-regional centres. After the initial identification and delimitation of proto-regions, case study teams used the minimal threshold value for proto-micro-regions population size. The population threshold value differentiated between regions from 5.000 in Catalonia and Cyprus to 20.000 in Poland reflecting specific regional and national contextual characteristics. In the case of French Central Region and Polish Mazovia Voivodeship, the complementary thresholds of minimal job size (4.000 in France and 8.000 in Poland) was added to better reflect the nature of micro-regional system. Polish case study has been the most specific in this instance. Polish team used these strict criteria and much higher threshold values to restrict the inclusion of large municipalities with relatively large concentration of jobs, yet mostly organized locally around agricultural production. Of course, this approach is debatable, but within ESPON TOWN we accepted and acknowledged local expertise and local perspective on the matter. Thus teams chose to adapt their initial employment threshold for qualifying areal units as initial employment centres, their commuting criterion, the size threshold of the final micro-region, the degree to which the micro-regions were contiguous territorial entities (whether the final micro-regions were a single continuous entity or several), the degree to which the micro-regions covered all (or part) of the case study region. Variations of the year for which data was used and the initial areal units for the data were determined by local data availability. The details of these adaptations are all outlined in Table 6.

Similarly as in the case of job centres, there are quite significant differences between case study regions in terms of the number of micro-regional centres and their share on all municipalities (or alternatively defined settlements) ranging from 2% in Cyprus to 42% in Flanders (Table 7). While in some countries the delimitation of micro-regions and selection of micro-regional centres led only to partial adjustment in the number of urban nodes, there has been remarkable shift in Cyprus and Catalonia. When comparing the numbers of job and micro-regional centres (which is equal to the number of micro-regions), in Cyprus micro-regional centres accounted only for 37% of job centres. Similarly in Catalonia only 56% of job centres play the role of micro-regional centres. The share of micro-regional centres on the total number of job/urban centres was high in Slovenia (85 %), Poland (83 %), Belgium (86 %) and France (100 %).

Table 7 Job centres and small area units in case study regions

region *(data year)*	**total population**	**Number of municipalities (LAU2) or alternative units**	**number of job centres (JC)**	**Job centres (JC) % from all units in region**
Flanders, Belgium (2001)	5732724	308	149	48,38
Catalonia, Spain (2001)	6343110	946	118	12,47
Centre Region, France (2009)	1694082	123	20	16,26
Mazovia voivodeship, Poland (2006)	5285604	314	35	11,15
Slovenia (2011)	2055496	192	59	30,73
Cyprus (2001)	689565	388	19	4,90
Czech Republic (2001)	10230060	6258	367	5,86
North Western, Italy (2001/2010)	14762464	3058	268	8,76
Wales, UK (2001)		881	75	
Northern Sweden (2012)		85	41	

Notes: *Unités urbaines* were used as the analytical units in the case of France

Table 8 Micro-regional centres

region *(data year)*	**number of micro-regions (MR) / micro-regional centres (MRC)**	**MRC** *% from all units in region*	**MR – size criteria** *population/ jobs*	**average population size of MR**	**average population size of MR centre** *total/for SMST without LC*
Flanders, Belgium (2001)	128	41,56	9.500	44.787	43.161 / 23.854
Catalonia, Spain (2001)	66	6,98	5.000	96.107*	48.827 / 22.878
Centre Region, France (2009)	20	16,26	10.000/4.000	84.704	62.673 / 24.292
Mazovia voivodeship, Poland (2006)	29	9,24	20.000/8.000	182.262**	99.369 / 29.394
Slovenia (2011)	50	26,04	10.705	41.109	26.905 / 17.687
Cyprus (2001)	7	1,80	5.000	98.509	67.535 / 23.582
Czech Republic (2001)	260	4,15	6.000	39.346***	24.192 / 14.360
North Western, Italy (2001/2010)	112	3,66		131.807****	-
Wales, UK (2001)	75		5000	38000	
Northern Sweden (2010)	17	20,00		83400	

Notes: *Unités urbaines* were used as the analytical units in the case of France
* 46192 without Barcelona
** 72913 without Warsaw
*** 33961 without Prague
**** 106187 without Milano

4.2. Lower and upper tiers of urban hierarchy (small and medium sized towns and large cities) and territorial arrangements of small and medium sized towns (autonomous, networked and agglomerated)

The second major aim of functional analysis has been to differentiate small and medium sized towns from large cities and identify territorial arrangements of towns, i.e. whether they are autonomous, networked or agglomerated. The analysis used the matrix of significant commuting flows between micro-regional centres which were identified in the previous phase of functional analysis. By significant commuting flow we mark such flows, which are important for the labour market of the source urban centre (accounting for at least 5% of economically active population), for the labour market in the destination urban centre (accounting for at least 1% of jobs) and also for the urban system as whole. The nature of micro-regional centre role and position in the urban system is given by its relations with other urban centres

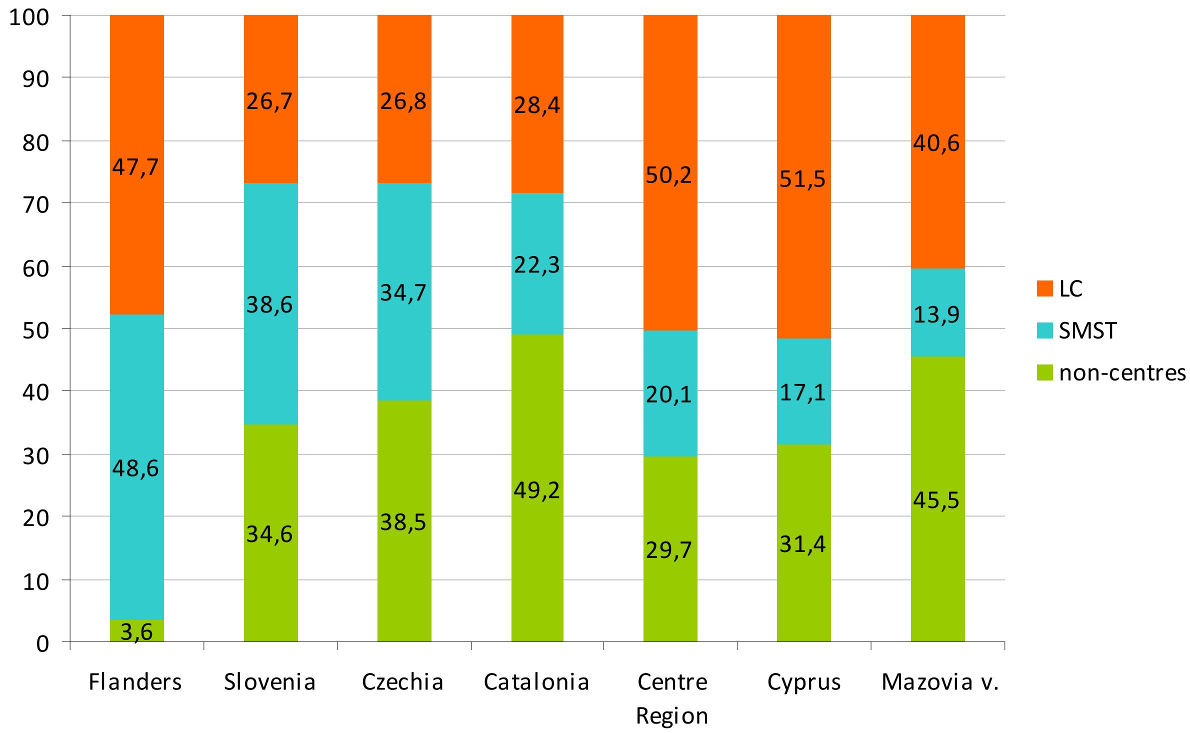
The analysis of territorial arrangements revealed substantial differences between urban and regional systems studied in ESPON TOWN case studies. Flanders is exceptional in many instances. First of all, beside major concentration of population to large centres, which can be also found in French Central Region and on Cyprus, only negligible part of population lives outside urban centres while largest share of population, compared to all other case study regions, lives in small and medium sized centres (Fig. 7). While in French Central Region and Cyprus half of population concentrates in large centres, small and medium sized centres account only for 20 respectively 17%, with the rest living outside urban centres. Czechia and

Slovenia exhibit similar structure with more even distribution of population between large centres (cities), small and medium sized centres (towns) and non-centres. Catalonia has nearly half population living outside urban centres with the rest of balance more screwed towards large ones, a pattern that has been even further shifted in Polish Mazovia due to capital city of Warsaw.

The balance between population living in small and medium sized centres and population in large ones is about in balance in Flanders (49% in towns), Catalonia (45%) and Czechia (55%). Slovenia is only country with slightly more population in towns (59%) compared to large centres (41%). In Cyprus, Poland and France, large centres concentrate the majority of population with only 24%, 26% and 29% share of small and medium sized towns (Fig. 8).

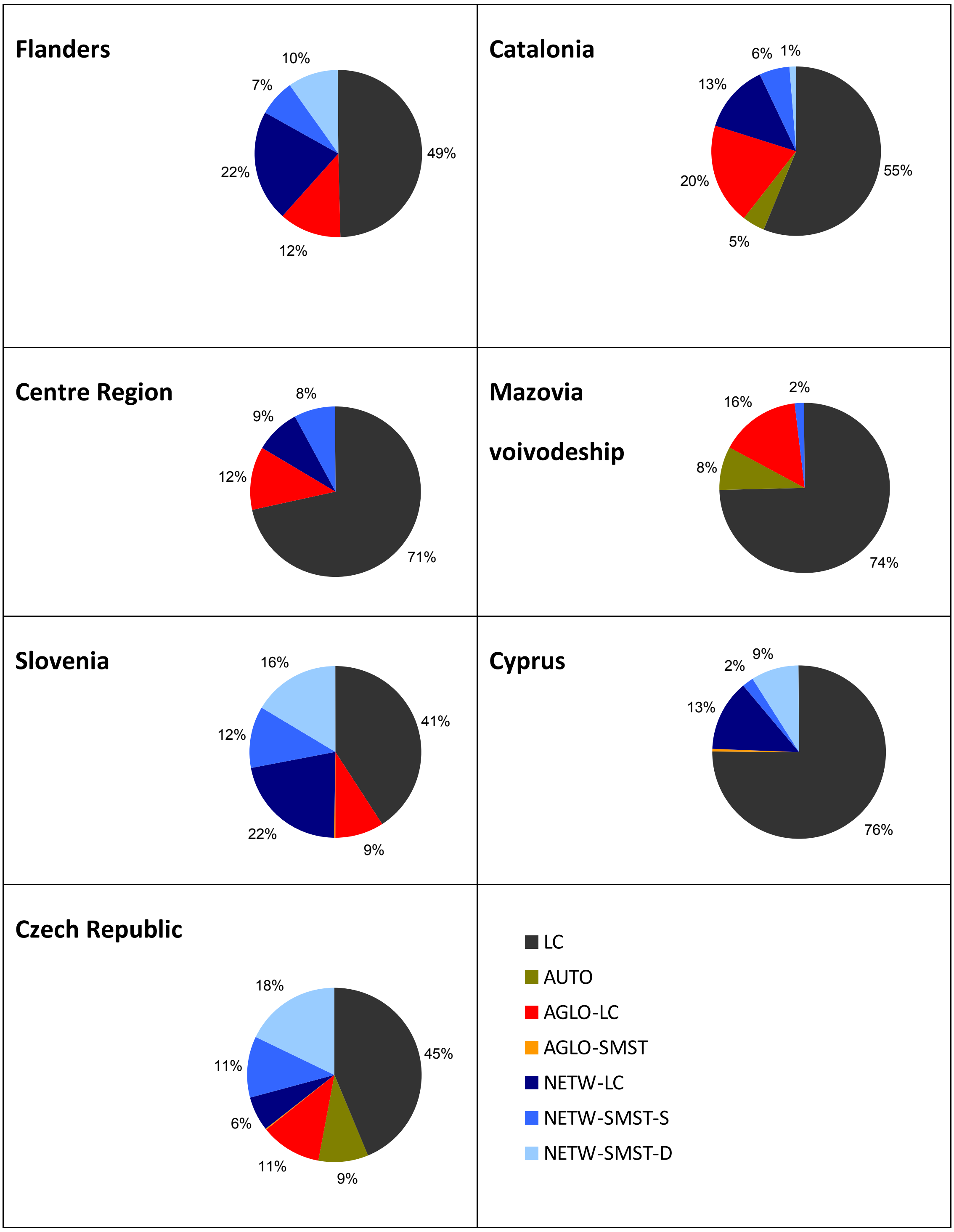
Most importantly, there were no autonomous small and medium sized centres (towns) in Flanders and French Central Region. This can be explained by a highly urbanized landscape. However, they also have not been identified in Slovenia and Cyprus. In the case of Slovenia, it can be explained by the polycentric pattern at national level with the agglomeration of small and medium sized centres (towns) to large centres (cities) and polycentric arrangements of towns on local level. Cyprus is specific case due to the nature of settlement structure with a very small number of centres. On contrary, autonomous towns have been very common in Italian North Western Region and Polish Mazovia, and usual in Czechia and Catalonia.

Fig. 7: Share of population in micro-regional urban centres (large and small and medium sized centres) and non-centres



The urban systems have been in many case study regions dominated by large centres (cities) (Table 9). This concerns not only their overwhelming share on total population (Table 10, Fig. 7) but also their role in settlement systems documented by the fact that the small and medium sized centres (towns) agglomerated to large centres (AGLO-LC) and small and medium sized centres (towns) networked to large centres (NETW-LC) are the most frequented types of towns' territorial arrangements. Towns agglomerated to large one (AGLO-LC) dominate case study regions of Catalonia in Spain, Central region in France, and Mazovia Voivodeship in Poland.

Fig. 8: Distribution of population in types of urban centres



High numbers and large shares of small and medium sized centres (towns) in Flanders and Slovenia also show strong functional ties with large centres, however, their relations are more reciprocal and less hierarchical accounting rather for the networking with large centres (NETW-LC type). The agglomeration of towns to large cities is also quite high in the Czech

Republic. However, Czech urban system is much more based on the dense networks of towns which is demonstrated by the dominance of networked territorial arrangements between small and medium sized centres. Networking among towns is also significant in Catalonia, Slovenia and Flanders.

Table 9 Number of large cities and towns in types of territorial arrangements

Region (data year)	LC	AUTO	AGLO-LC	AGLO-SMST	NETW-LC	NETW-SMST-S	NETW-SMST-D
Flanders, Belgium (2001)	11	0	34	0	48	22	13
Catalonia, Spain (2001)	4	12	19	0	11	18	2
Centre Region, France (2009)	5	0	8	0	3	3	0
Mazovia voivodeship, Poland (2006)	4	10	13	0	0	2	0
Slovenia (2011)	5	0	9	1	15	12	8
Cyprus (2001)	2	0	0	1	1	1	2
Czech Republic (2001)	13	40	66	6	17	69	49
	AGLO_LC	AGLO-SMST	AUTO	isolated	local centre	NETW-SMST	
North Western, Italy (2001/2010)	62	99	32	6	25	20	
Wales, UK							
Sweden							

Note: North Western Italy case study used modified methodological approach due to problems with data availability.

Table 10 Population in large cities and towns of particular types of territorial arrangements (% on total population of the region)

Region (data year)	LC	AUTO	AGLO-LC	AGLO-SMST	NETW-LC	NETW-SMST-S	NETW-SMST-D	non-centres
Flanders, Belgium (2001)	47,7	0,0	11,4	0,0	20,9	7,0	9,3	3,6
Catalonia, Spain (2001)	28,4	2,3	9,9	0,0	6,5	2,9	0,7	49,2
Centre Region, France (2009)	50,2	0,0	8,6	0,0	6,0	5,5	0,0	29,7
Mazovia voivodeship, Poland (2006)	40,6	4,5	8,5	0,0	0,0	0,9	0,0	45,5
Slovenia (2011)	26,7	0,0	6,0	0,1	14,1	7,7	10,7	34,6
Cyprus (2001)	51,5	0,0	0,0	0,3	9,1	1,6	6,1	31,4
Czech Republic (2001)	26,8	5,8	6,8	0,3	3,9	7,0	10,9	38,5
	AGLO_LC	AGLO-SMST	AUTO	isolated	local centre	NETW-SMST	other	
North Western, Italy (2001/2010)	5,3	5,0	2,5	0,2	4,8	4,5	77,7	
Wales, UK								
Sweden								

Note: North Western Italy case study used modified methodological approach due to problems with data availability.

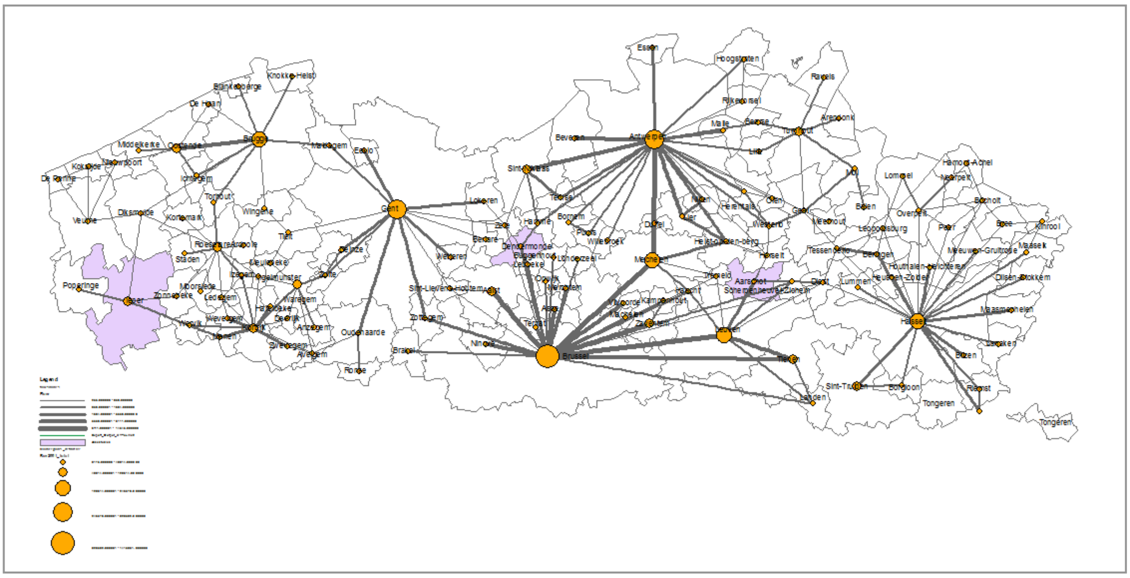
4.3. Regional profiles

In this section, we present short profiles of each case study region as reflected in functional analysis. The text below is based on reading and extracting condensed information from ESPON TOWN case studies (Atkinson and Smith 2013; Bański, Czapiewski, Górczyńska 2013; Cabodi, De Luca, Toldo 2013; Demazière, Hamdouch, Banovac, Daviot, 2013; Guttierez, Russo 2013; Johansson, Haas, Troglio, Altés, Lundh 2013; Lievois 2013; Mesaritis, Loizou, Mesaritis 2013; Pichler-Milanovič, Drobne, Konjar 2013; Sýkora, Mulíček 2013) putting it in a comparative perspective in the light of above analyses.

Flanders, Belgium

Flanders are with its high levels of urbanization, high settlement and population densities, well developed morphological and functional polycentricity and excellent accessibility an exceptional area between the case studies. This specific form of urban regional system has effect on the functional roles and types of small and medium sized centres. Flanders is dominated by large centres that concentrate 47.7% of population. However, even slightly more population (48.7%) is present in small and medium sized towns while only 3.6% people live outside urban centres. Large cities significantly structure the role of small and medium sized towns (Fig. 9a). *Autonomous* towns do not exist in the Flemish area. One third of population (32.3%) lives in towns which are *agglomerated* (11.4%) to large centres or *networked* (20.9%) with large centres. Flanders are also characterised by strong networking between small and medium sized centres (towns) with 16.3% of population living in the small and medium sized towns that are networked with other towns rather than with large centres. However, in Flanders, 80% of population live in urban places that are either large centres or agglomerated to or networked with large centres.

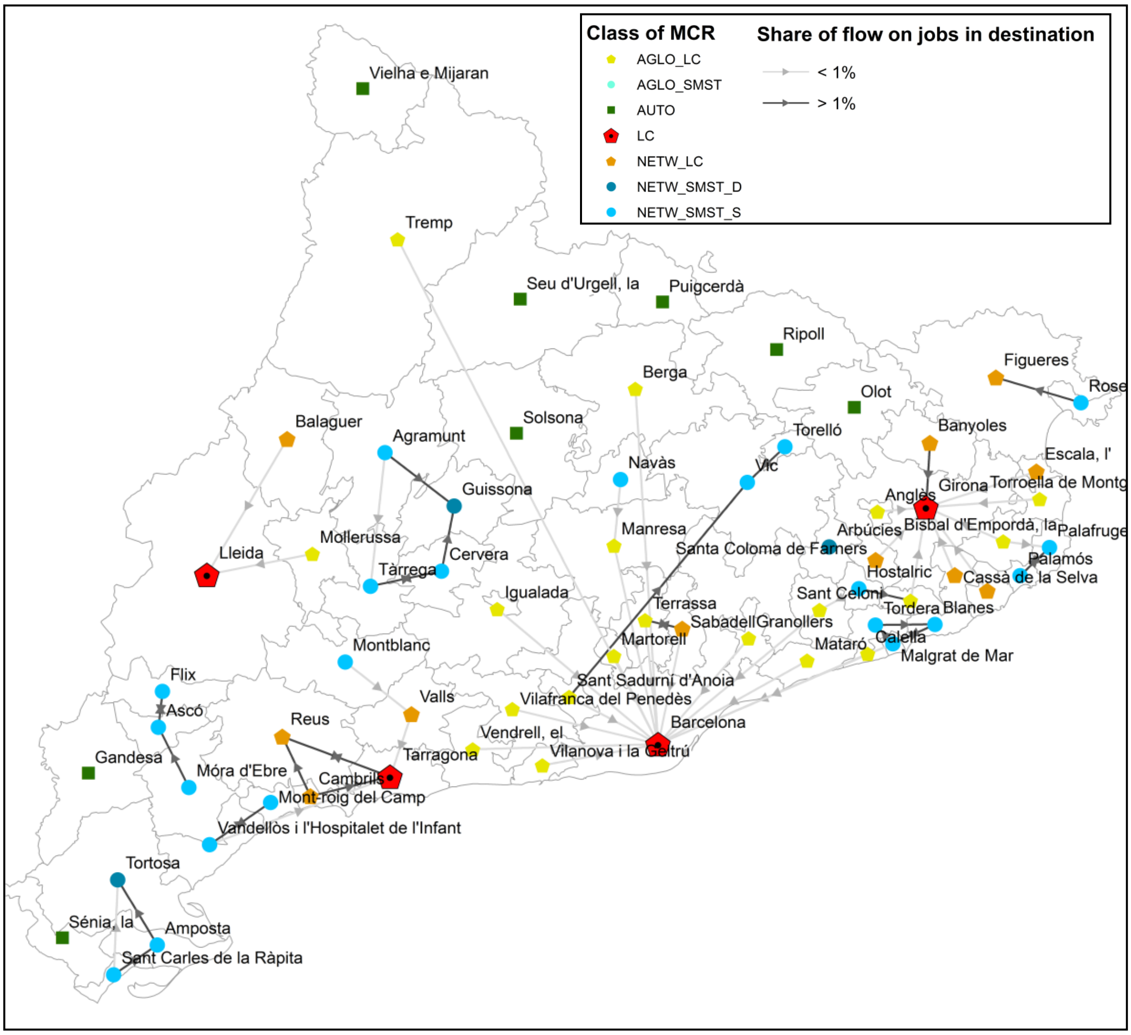
Fig. 9a: Significant commuting flows in Flanders and urban centres (2001)



Catalonia, Spain

Contrary to Flanders in Belgium, nearly half of population lives outside of cities and towns that play the role of micro-regional centres. From the urban population accounting for the second half, nearly 60 % concentrate in large centres (28.4% from total population). Small and medium sized towns account for 22.3% of population. The urban system of Catalonia is dominated by hierarchical structure centred on Barcelona with secondary role of three other large centres. Large centres affect majority of small and medium sized towns, which are either agglomerated (9.9%) or networked (6.5%) with large centres. Peripheral parts of Catalonia especially in sparsely populated counties in the Pyrenees area are served by *autonomous* micro-regional centres, which impact large territories, however, account only for a small share of population (2.3%). Beside the systems centred on large centres, in Calalonia, there are also systems or networked relations between several small and medium sized towns accounting in total for 3.6% of population in the region, which is 6% of urban population.

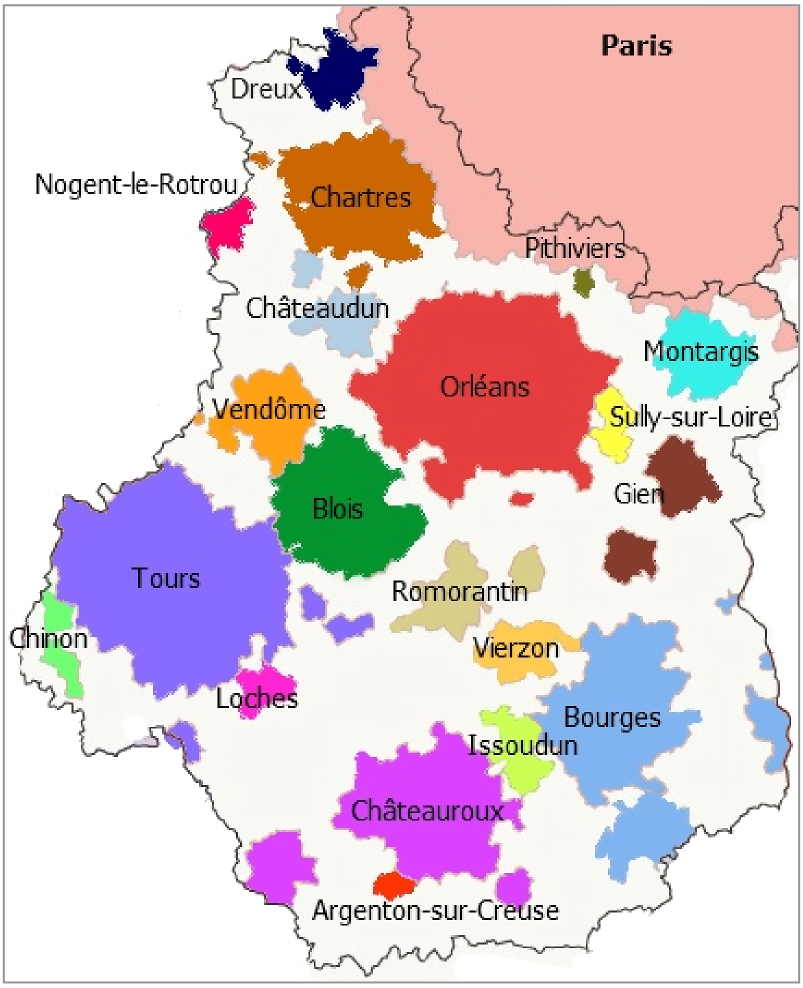
Fig. 9b: Types of urban centres and their territorial arrangements in Catalonia



Central Region, France

The settlement system of French Centre Region is organized around main regional centres of Blois, Bourges, Chartres, Orléans and Tours. However, the close proximity to Paris is a very significant factor forming regional urban functional patterns. Paris and its micro-region is the main job-commuting destination for many cities and towns in the region. Large centres concentrate half of population and another 30 % lives outside of cities and towns that play the role of micro-regional centres. Small and medium sized towns concentrate the rest, i.e. 20% of population. Due to the strong role of large cities as major urban centres and key nodal points, towns are not able to organise and influence large catchment areas. Functional commuting ties take place between few strong centres. Most of small and medium sized micro-regional centres are agglomerated to large centres (8.6% of population) or networked to large centres (6%). Only 3 small and medium sized towns (5.5% of population) are networked to other towns, however, those that are further related to large centres. In the urbanised and interlined landscape of French Central Region dominated by large centres there is no room for towns that would play the role of micro-regional centres and retain autonomy from other cities and towns.

Fig. 9c: Micro-regions in the French Central Region (micro-region of Paris included)

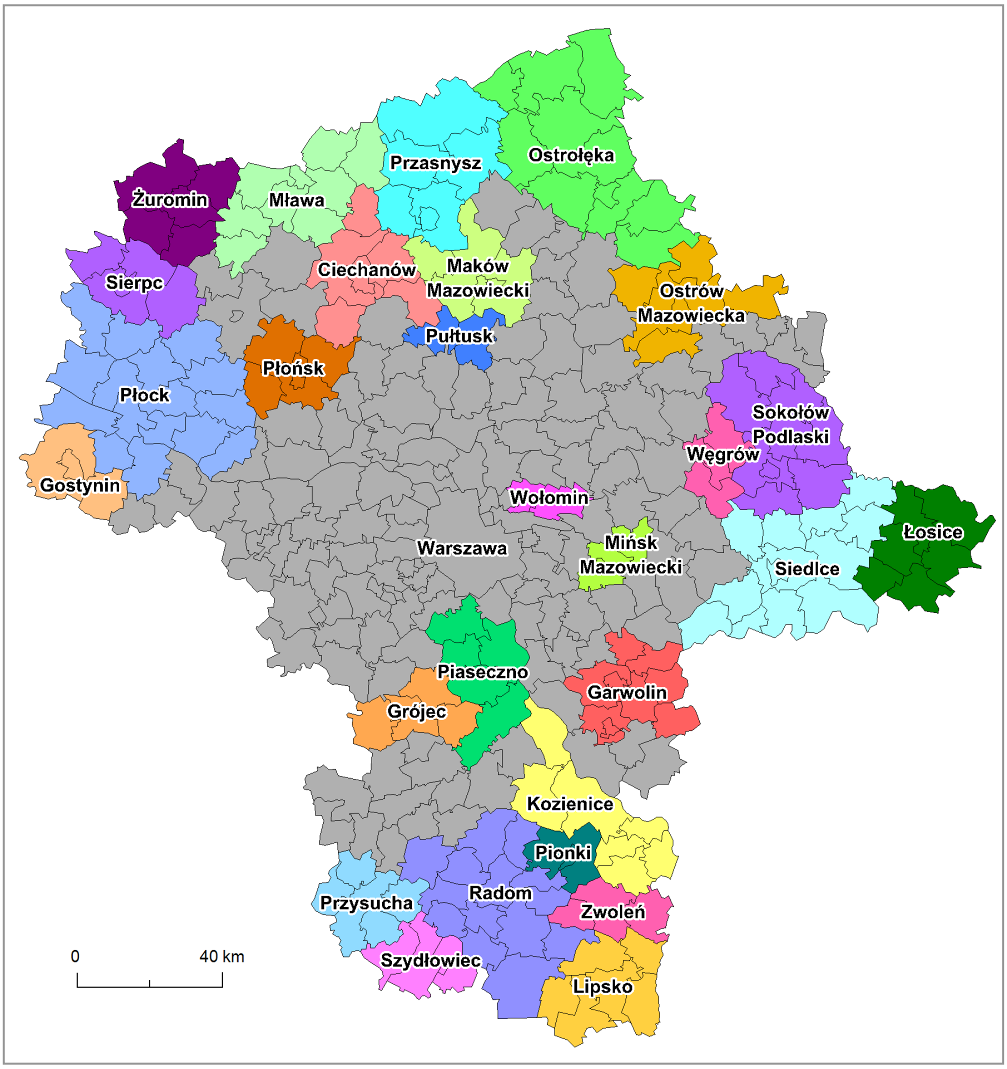


(Source: L'Observatoire des Territoires, Datar 2012 – IGN GéoFla)

Mazovia Voivodeship, Poland

The urban system of Mazovia voivodeship is centred on the national capital of Warsaw with large areas of rural Poland in more remote parts of the region. This impacts on a strong polarisation between the micro-region of Warsaw, which is composed of 138 communes and other micro-regions formed around urban county centres containing approximately 5-6 communes and those created around subregional poles (Radom, Płock, Siedlce, Ostrołęka) that contain over a dozen of communes. Considering the functional strength of Warsaw it is not surprising that the polarisation concerns also the share of population living in large centres (40.6%) and outside of urban centres (45.5%) with remaining 13.9% in small and medium sized centres (towns). This bias is also reproduced in territorial arrangements of towns of which 13 (8.5% of population) are agglomerated to large centres in Mazovia while in peripheral parts we will find 10 autonomous (4.5% of population) and 2 mutually networked (0.9% of population) towns.

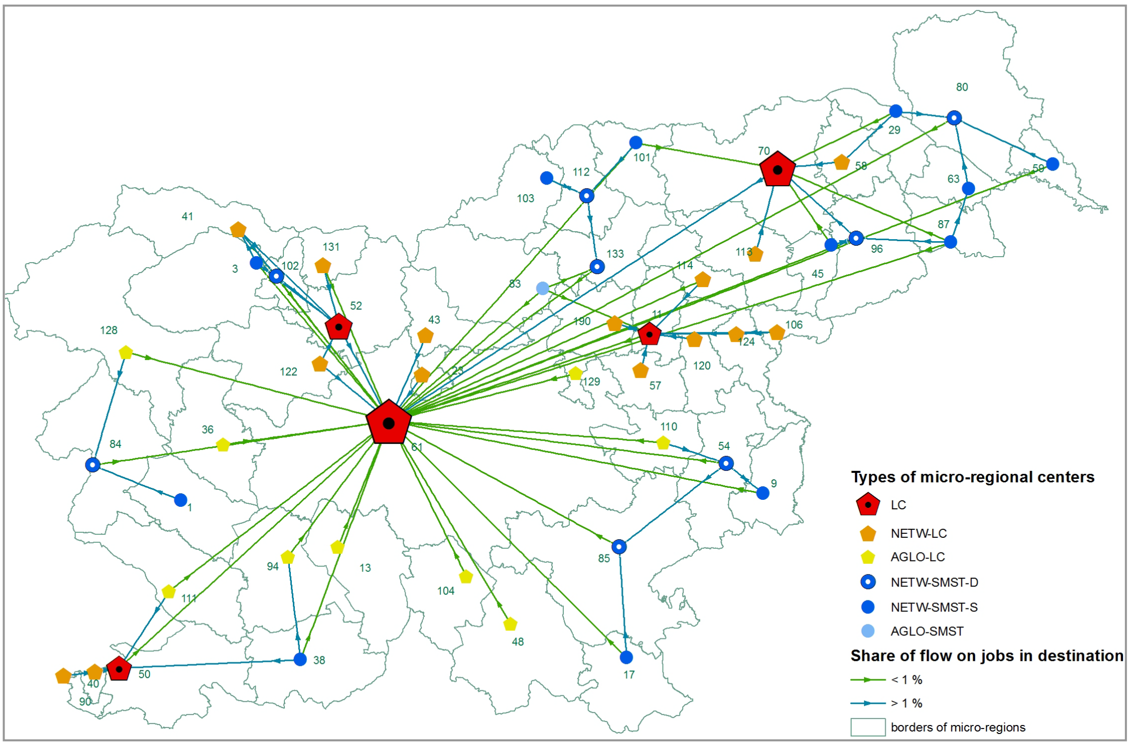
Fig. 9d: Micro-regions in Mazovia voivodeship, Poland



Slovenia

Slovenian urban system is on the one hand side dominated by the capital city of Ljubljana - almost every micro-regional centre is connected to the capital city. On the other hand side, Slovenia has developed polycentric urban network which is mainly based on small towns, which play a significant role of urban centres of local importance. Slovenian towns concentrate more population (38.7%) than cities (large centres) (26.7%) and non-urban settlements (34.6%). It is the higher share from all regions under investigation, similar only to Czechia. The polycentric nature of the urban system in Slovenia results in the absence of autonomous centres and in high representation of networked towns (32.6% of population). However, many of networked towns are connected to the large centres (Ljubljana, Maribor, Kranj, Celje, Koper) accompanied by 9 small and medium sized centres (6.1% of population) agglomerated with large centres.

Fig. 9e: Types of micro-regional centres according to territorial arrangements in Slovenia (2011)



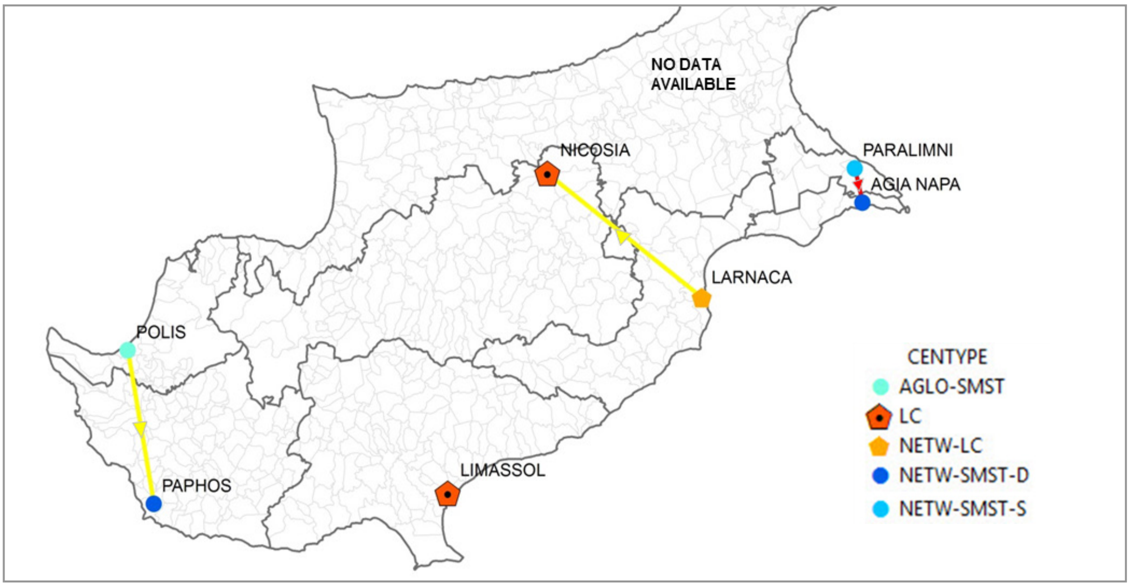
Czech Republic

Czech settlement system is historically based on the dense network of small and medium sized towns. Despite the presence of strong urban centres like Prague or Brno, the functional pattern consists of relatively small micro-regional daily urban systems organized around towns. 247 small and medium sized towns account for 24.7% of population, which is comparable with 26.8% of population that concentrate in large centres. There is still large share of population (38.5%) living outside of micro-regional centres. However, this population is mostly living in villages or new suburbs which are tightly linked with the urban cores. The functional typology includes all types of micro-regional centres. Over half of micro-regional centres is networked. Towns that belong only to the networks of towns account for 18.2% of country population, and further 10.7% are towns that are either agglomerated or networked to large centres. Autonomous towns, which account for 5.8% of population, can be found in outer frontier regions as well as in inner peripheries in-between the influence zones of large centres.

Cyprus

Cyprus is generally characterized by two dominant spatial development patterns. The first one is suburbanization taking place at the periphery of the four main urban areas. The second one is coastalization, which has been taking form through tourism development sprawl upon prime agricultural land and coastal landscapes. The two biggest micro-regions organized around large centres of Nicosia (main employment centre) and Limassol (main port city), agglomerate more than 50% of municipalities and communities and concentrate 51.5% of population. With 31.4% of population living outside cities and towns, small and medium sized centres (towns) account only for 17.1% of population. The coastal micro-regional centres form two bipolar networks, one in the east part of the island and the other to the west part, with Larnaka networked to Nicosia.

Fig. 9f: Significant flows between micro-regional centres in Cyprus

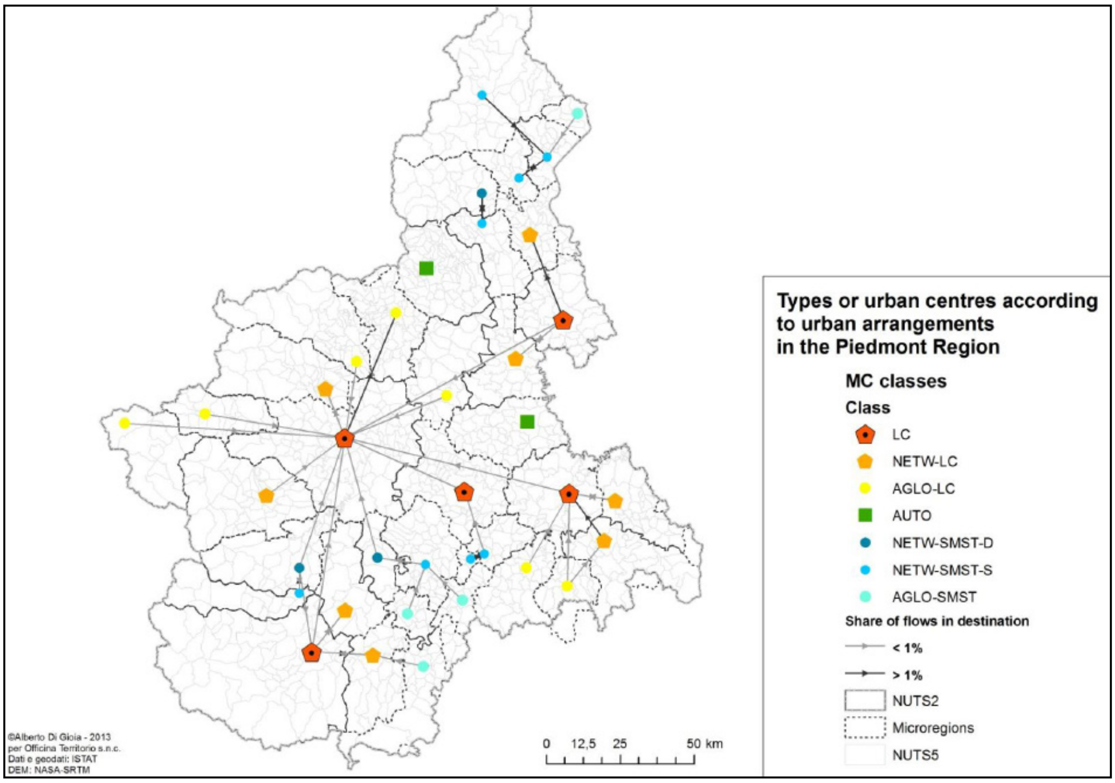


North Western Italy

The urban system reflects the variability of geographical conditions of North Western Italy. It can be divided into 4 distinct subregions (mountain region of Aosta Valley, varied Piedmont region, coastal-mountainous region of Liguria and densely populated Lombardia). Metropolitan areas of Turin, Milan and Genoa form a triple pole of economic development axis recognized at international level, although with substantial differences between the three cities. Rural and peripheral areas are characterized by a lower proportion of urban centres. While the province of Turin tends to be quite monocentric (high proportion of agglomerated centres), the Lombardy region shows more polycentric arrangement.

The results from the case study of North Western Italy are not directly comparable with other case studies due to differences in the methodological approach. However, the case study team used the universal method in a specific study of Piedmont subregion which resulted in the final typology of centres, which was elaborated in comparable way. In Piedmont 37 micro-regional centres have been identified - 5 large centres (cities), 2 autonomous small and medium sized centres (towns), 11 agglomerated towns and 19 networked towns). This micro study showed that the urban system of Piedmont seems to be more networked (polycentric) in its non-central parts, while the central areas are centred to Turin.

Fig. 9g: Types of micro-regional centres in Piedmont

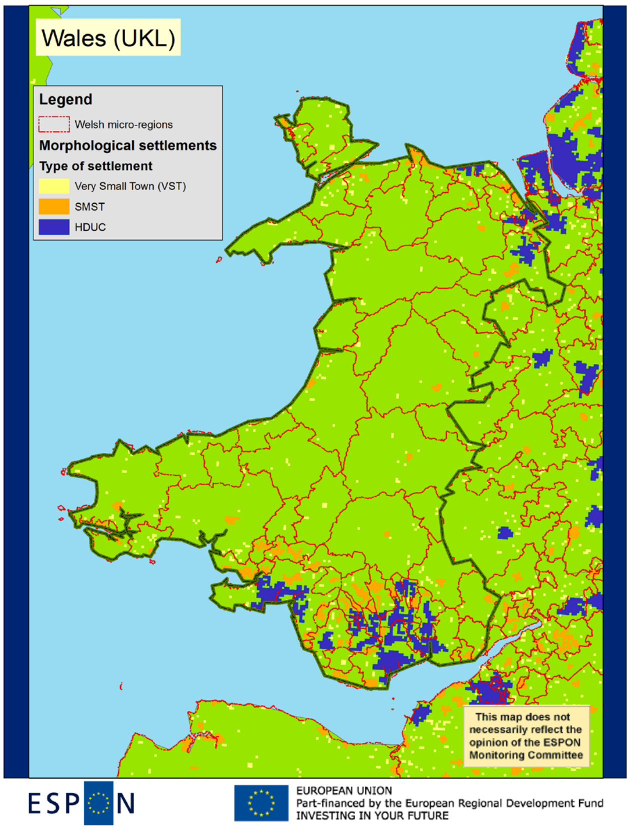


Wales

Wales is a devolved nation within the United Kingdom. It is a devolved nation with a marked urban structure that is somewhat fragmented within Wales itself: the southern area of Wales is dominated by larger cities that are linked together along a motorway and in many way this motorway facilitates links to South Western England; the northern coastal belt of settlements is linked to the economies of the North West of England; whilst the central areas and western coasts are sparsely populated and mountainous with an urban structure based on very small towns. Communications between the northern and southern parts is problematic given the nature of the infrastructure within Wales.

The functional analysis based on electoral wards needed to deal with the issue of cross-boundary commuting to and from England and so both the area of Wales plus a border strip of England were included in the analysis to account for the boundary effects. On average a Welsh micro-region is made up of 11 wards and has a mean resident population of 38,000 residents and a workplace population of 15,000 working age adults. Figure 9h outlines the geography of the 141 micro-regions across Wales and the English borders. If the geography of micro-regions is compared with the geography of settlement polygons, it is notable that of the 75 Welsh micro-regions, 16 contain neither a SMST nor a HDUC polygon. These are mainly located on the most rural and western fringe of Wales where settlements are generally smaller.

Figure 9h: Employment micro-regions in Wales and the English border counties

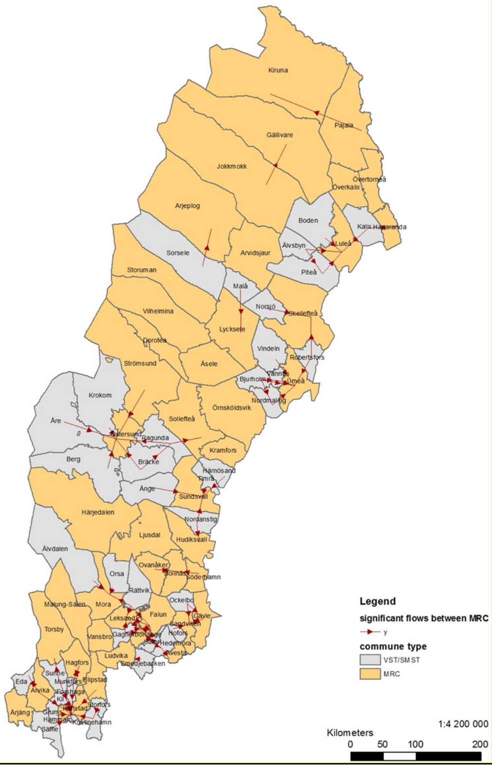


The geography of micro-regions was then compared with the geography of the settlement structure (based on the grid-derived settlements). Thus the whole area of Wales can be defined as one of five types of areas: an area associated with a large (HDUC) settlement, an area associated with a small (SMST) town, an area associated with a very small (VST) town, a rural area associated with a hinterland within a micro-region but not associated with a settlement and finally an area associated with a micro-region that appears to have no settlement within it.

Northern Sweden

Northern Sweden is an extremely sparsely populated area. All of Sweden is disaggregated into labour market areas aggregated from municipalities (LAU2s). The sparseness of population in the north means that there are no metropolitan areas and few large towns. The distances between local centres and the peripheral municipalities in the far north are long enough to hamper daily commuting albeit there are more complicated commuting patterns in the south of the region. It is possible to identify 42 employment micro-regions in Northern Sweden but only 17 of them have a significant commuting flow from a second municipality. Figure 5.9i maps the northern Swedish micro-regions with the morphological settlements identified from Chapter 2. This shows that micro-regions based on significant numbers of jobs can emerge where the morphological analysis does not identify settlements considered to be SMSTs. This appears to be a consistent issue of sparsely population rural areas where settlements may play a functional role greater than there population size alone would suggest.

Figure 9i: Micro-regions in Northern Sweden with settlements

<table>
<tr><td>Northern Sweden and settlements</td><td>Northern Sweden and inter-municipal commuting patterns</td></tr>
<tr><td>
</td><td>
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4.4. Population and job performance of functional types of cities and towns

While the primary goal of functional analysis was the identification of towns defined as urban centres at micro-regional level and of their territorial arrangements, this work has been accomplished for further analyses. We have anticipated that the position within urban system, i.e. whether the town is autonomous, agglomerated or networked may have an influence on their performance. Within the scope of functional analysis we have made simple descriptive analyses for regions and countries, where the data were available, to monitor the growth or decline of population and jobs for the four categories of large centres and autonomous, agglomerated and networked small and medium sized centres.

We use simple measures of relative population and job growth for each urban centre between two periods which are presented in a table 9 and plotted in simple two axes graphs (Fig. 10a – 13d) for all urban centres in given country or region as well as for each of the towns' categories (autonomous, agglomerated and networked) and large centres separately. In the instance of graphs for individual towns' categories according to their territorial arrangement, we have also marked the position of case study towns, which were further analyzed in performance and policy analyses.

The results have clearly indicated the exclusive position and performance of large centres in comparison with small and medium sized centres in Czechia, Central region in France and Slovenia (Table 11). A most pronounced difference has been observed in Czechia, where the number of jobs in Czech small and medium sized centers declined by 12%, jobs in large centres increased by 11%. Similar change was recorded in Slovenia with 13% job growth in large centres, 2% job growth in networked towns, and 4% job decline in agglomerated towns, which can be explained by the competition from large cities and transformation of agglomerated towns from places of production and services to more residential suburban nodes. Almost identical change happened in French Central Region, with 7% job growth in large centres, 1% job growth in networked towns and 5% decline of jobs in agglomerated towns. Flanders differed in this instance with generally overall job growth in the whole region and specifically growing agglomerated towns, which is related to job deconcentration within the Flemish polycentric urban and regional system. While the changes in job distribution were quite significant, the distribution of population according to the place of residence was stable. A minor trend, however, could be observed in stronger population decline of networked towns compared to agglomerated towns in Czechia and France or lower growth in the case of Flanders (not in Slovenia).

As the aggregate growth trends have not shown any major differences between the types of towns' territorial arrangements, we have tested an alternative view. Both agglomerated and networked towns can be divided into those that are agglomerated to or networked with large centres and/or small and medium sized centres. We may expect that small and medium sized towns related to large centres will be more affected by this proximity, either, on the one hand side, through borrowing their size and gaining some of the agglomeration benefits, or, on the other hand side, through more intense competition from stronger centres. It also can be expected that while the competition can restrict the job growth, the effect of borrowed size can stimulate population growth and in certain instances also job growth. The small and medium sized towns that are networked or agglomerated with other towns only, can benefit from the functional cooperation between towns of similar size and roles, while losing autonomy due to mutual competition. Autonomy can be advantage in towns that are spatially and functionally isolated and whose position and role is not threatened by any completion from neighbouring centres, however, they cannot benefit from any shared agglomeration effects.

Table 11 Average population and job change in large cities and towns according to the types of territorial arrangements (index of growth/decline from base year)

	Flanders, B	Czechia	Centre Region, F	Slovenia
Population change (ALL)	1,06	0,99	0,97	1,00
Population change (LC)	1,07	1,01	0,98	0,99
Population change (AGLO)	1,07	1,00	0,96	1,00
Population change (NETW)	1,05	0,97	0,93	1,01
Population change (AUTO)	-	0,97	-	-
Job change (ALL)	1,08	0,99	1,04	1,07
Job change (LC)	1,08	1,11	1,07	1,13
Job change (AGLO)	1,13	0,88	0,95	0,96
Job change (NETW)	1,06	0,88	1,01	1,02
Job change (AUTO)	-	0,89	-	-

Table 12 Average population and job change in large cities and towns according to their functional linkages to large cities and small and medium sized towns (index of growth/decline from base year)

	Flanders, B	Czechia	Centre Region, F	Slovenia
Population change (ALL)	1,06	0,99	0,97	1,00
Population change (LC)	1,07	1,01	0,98	0,99
Population change (linked to LC)	1,06	0,99	0,95	1,02
Population change (linked to towns)	1,06	0,97	0,94	1,00
Population change (AUTO)	-	0,97	-	-
Job change (ALL)	1,08	0,99	1,04	1,07
Job change (LC)	1,08	1,11	1,07	1,13
Job change (linked to LC)	1,08	0,88	0,97	1,00
Job change (linked to towns)	1,07	0,87	1,00	1,03
Job change (AUTO)	-	0,89	-	-

The results (Table 12) have not shown any substantial differences between the functional categories of small and medium sized towns. It reflects, that there are more conditions in play that might sometimes have right opposite effects on towns' performance in terms of population and job growth. The aggregate picture is not capable to reveal the variability of contextual factors and their effects. The graphs of population and job performance (Fig. 10-13) show individual urban centres and huge variability in their development and performance trajectories. The overall picture somewhat differs between countries and regions. However, the distribution in graphs showing the variability in performance of large centres, agglomerated and networked towns, is more similar than different for all the three categories. This can lead us to think that there might by another strong territorial condition that can make difference between the performance of towns and cities, such as the performance of regional economy, or that there are many factors conditioning towns and cities development, that cannot be grasped by a simple analyses and multivariate analysis shall be performed to identify the key structural conditions, or that the conditionality is so complex that only individualized case study approach can shed a light on their performance. Both these approaches have been employed in ESPON TOWN and are subject of other chapters in this report.

Fig. 10a Czechia: population and job performance of all towns and cities

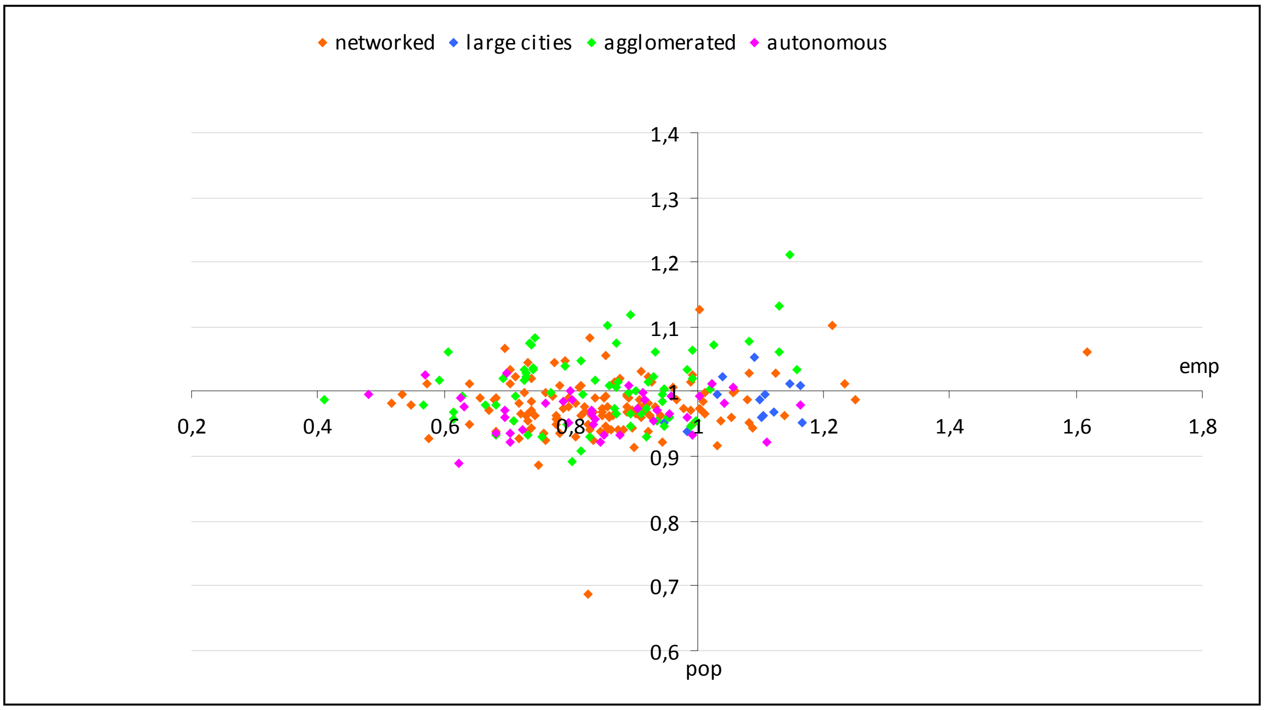


Fig. 10b Czechia: population and job performance of large cities

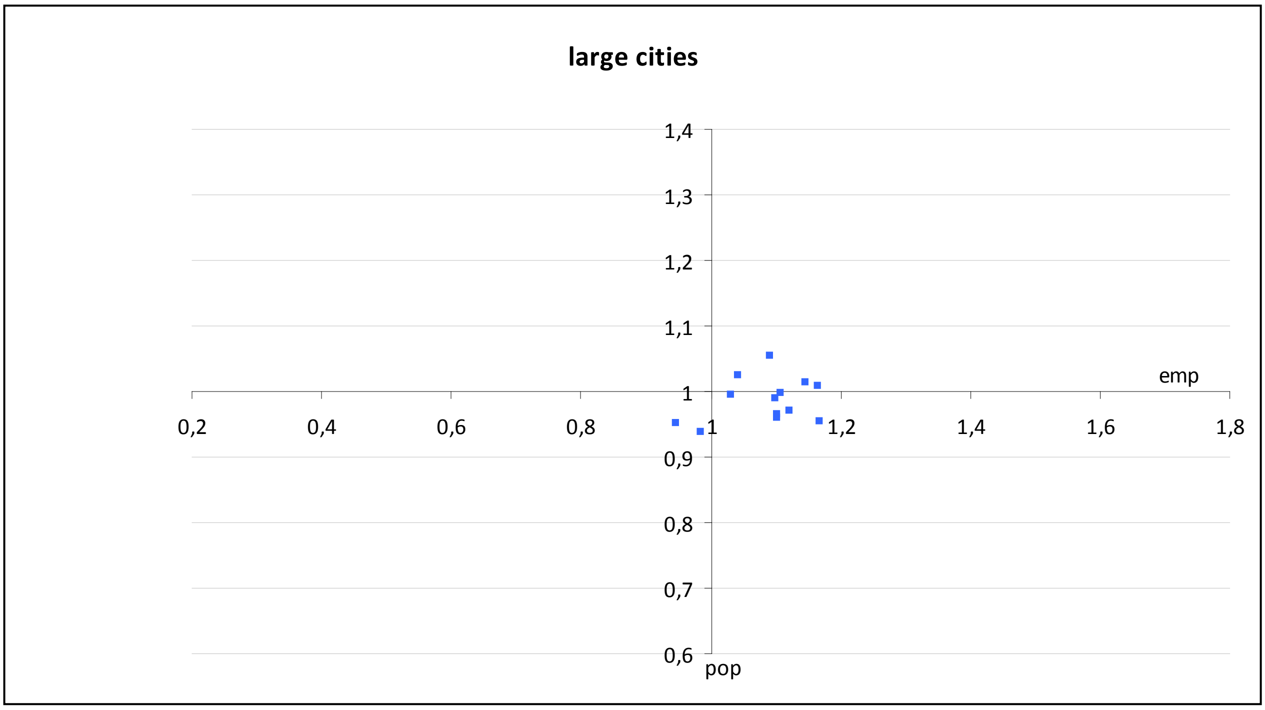


Fig. 10c Czechia: population and job performance of agglomerated towns

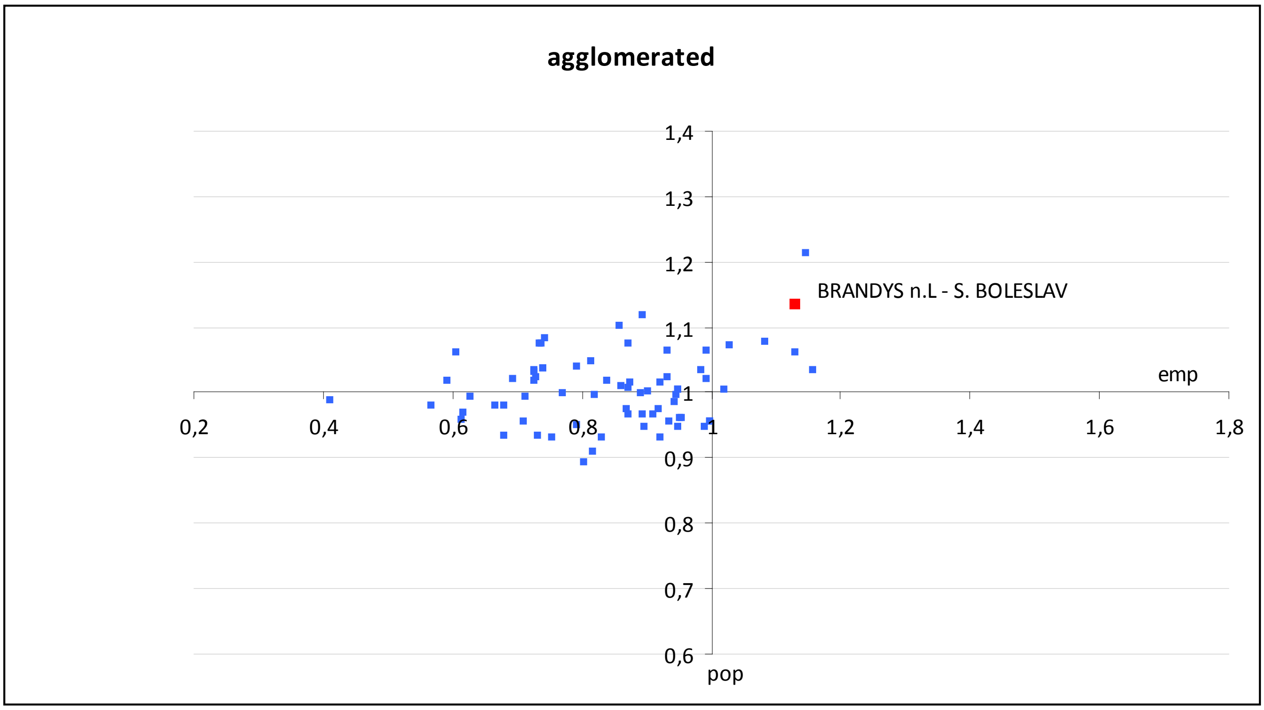


Fig. 10d Czechia: population and job performance of networked and autonomous towns

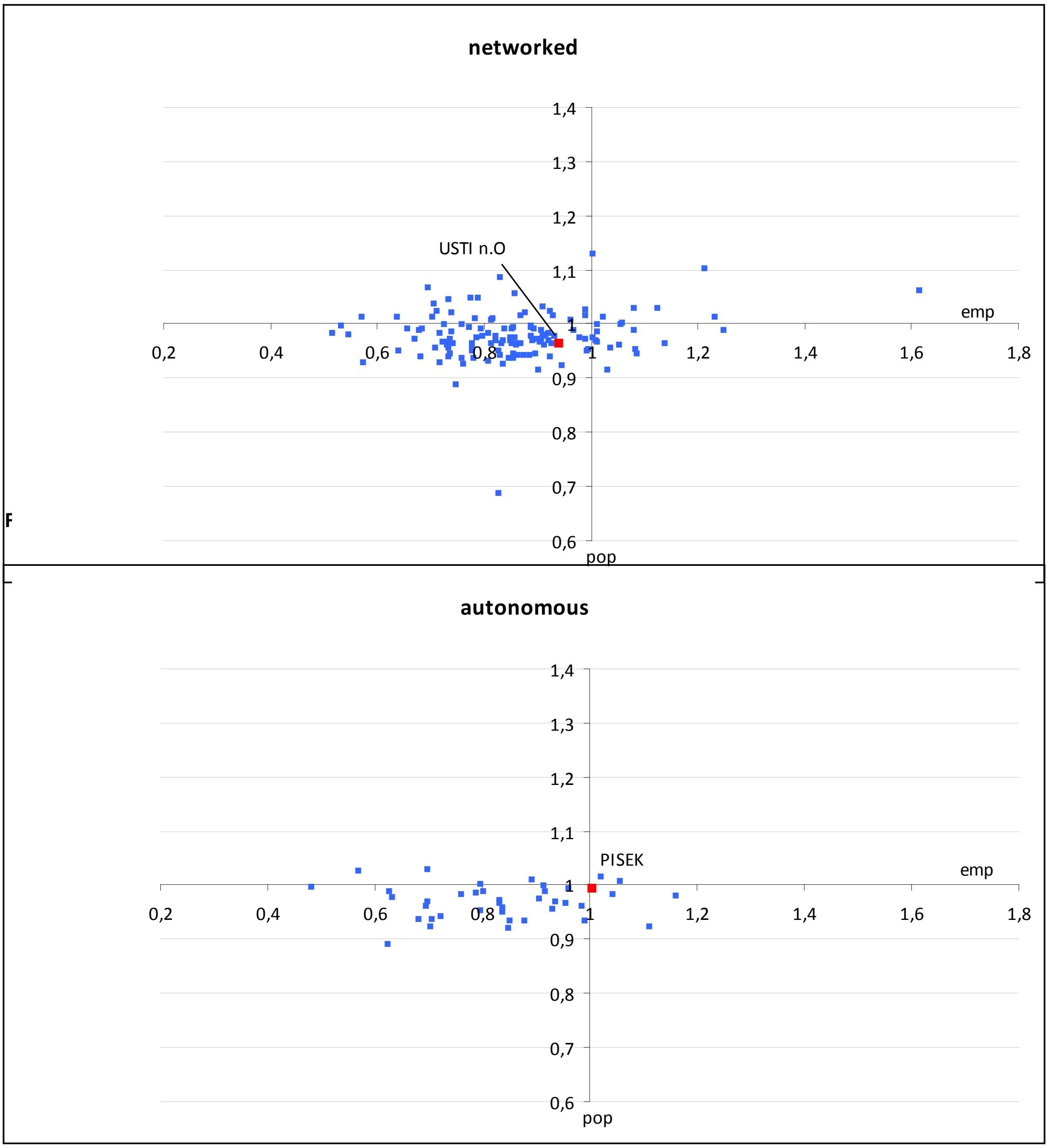
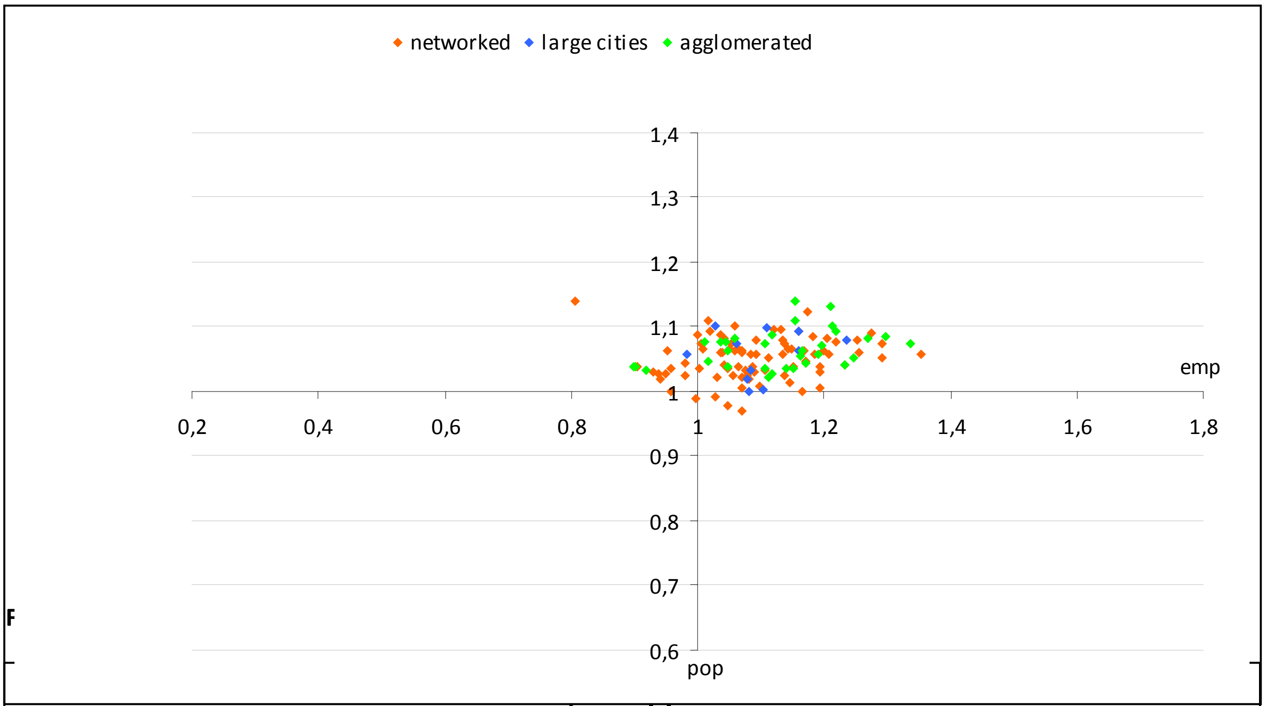


Fig. 11a Belgium, Flanders: population and job performance of all towns and cities



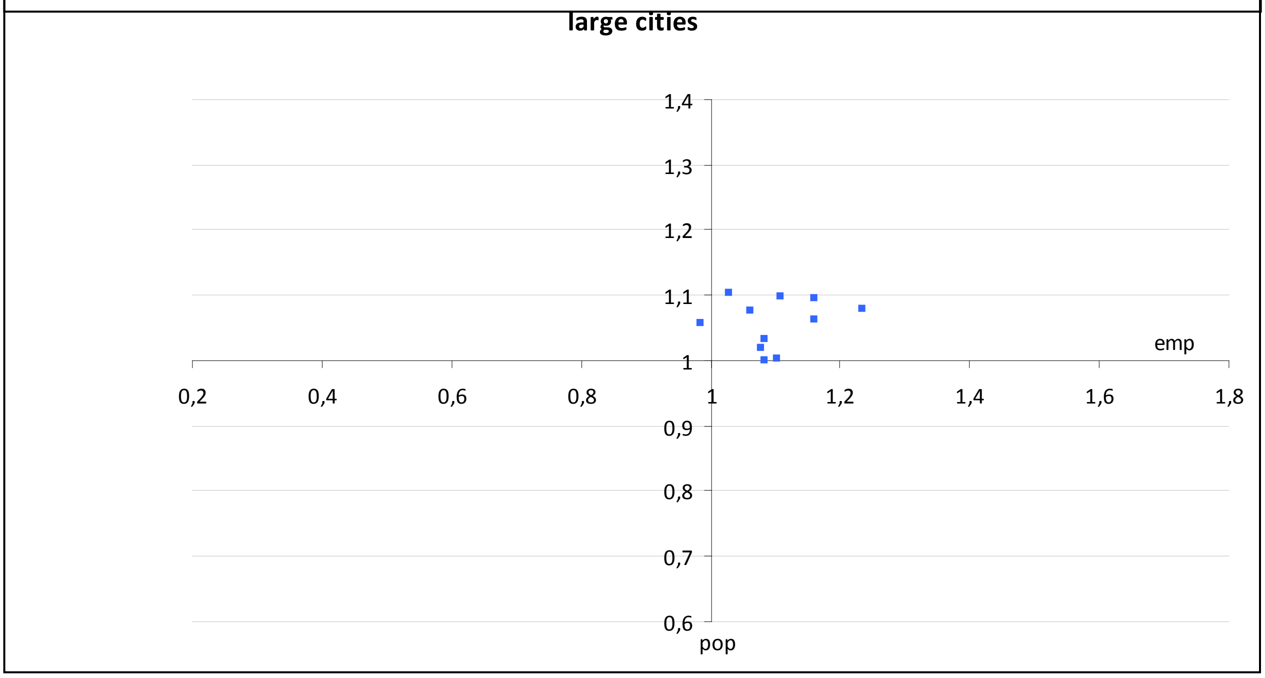


Fig. 11c Belgium, Flanders: population and job performance of agglomerated towns

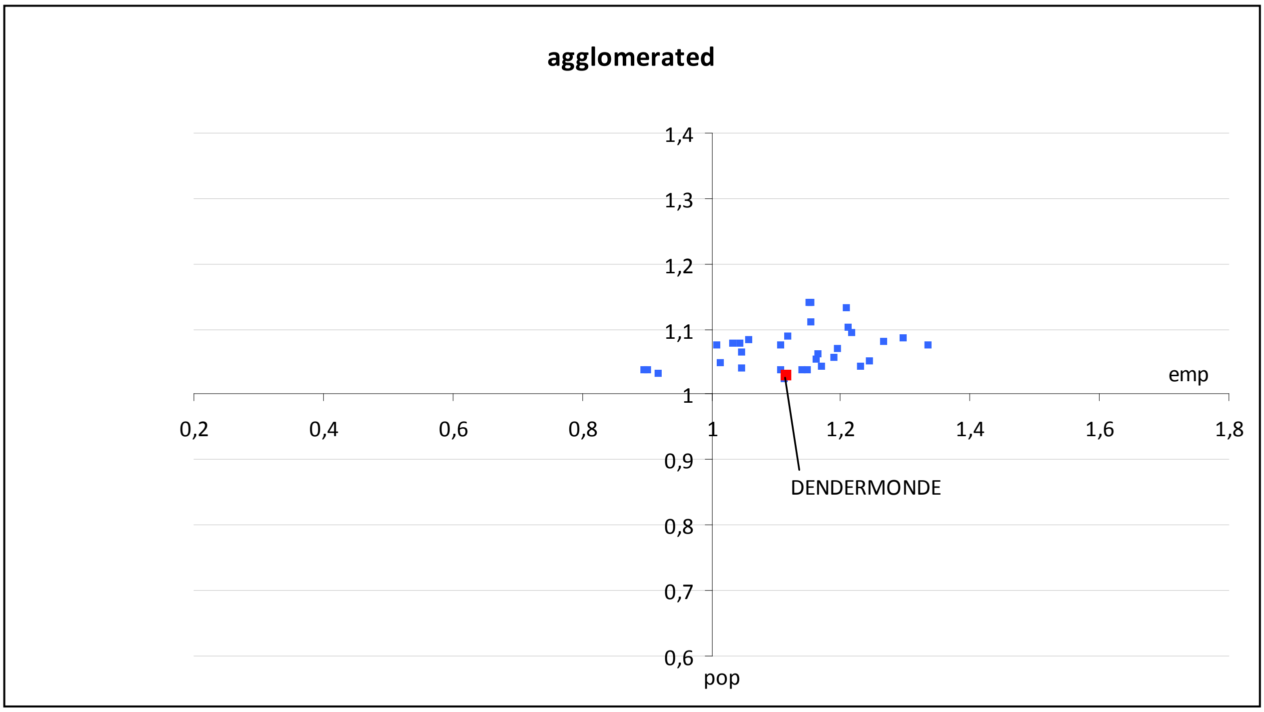


Fig. 11d Belgium, Flanders: population and job performance of networked towns

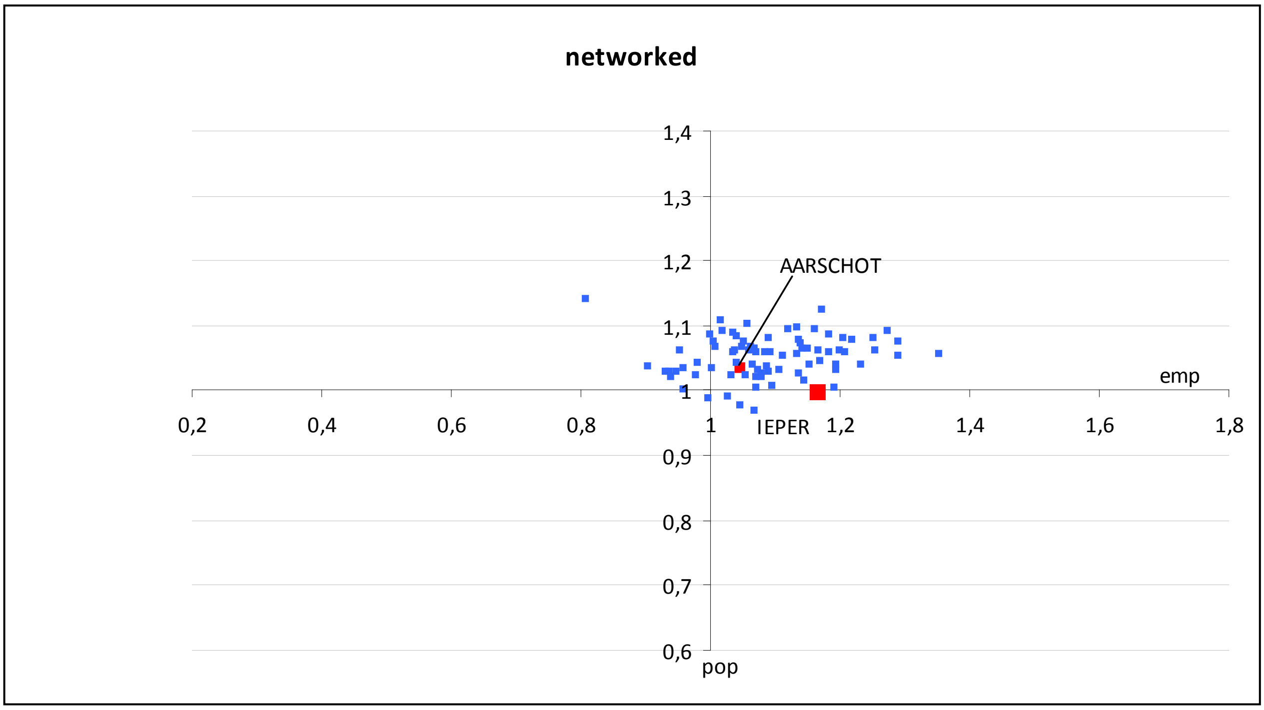
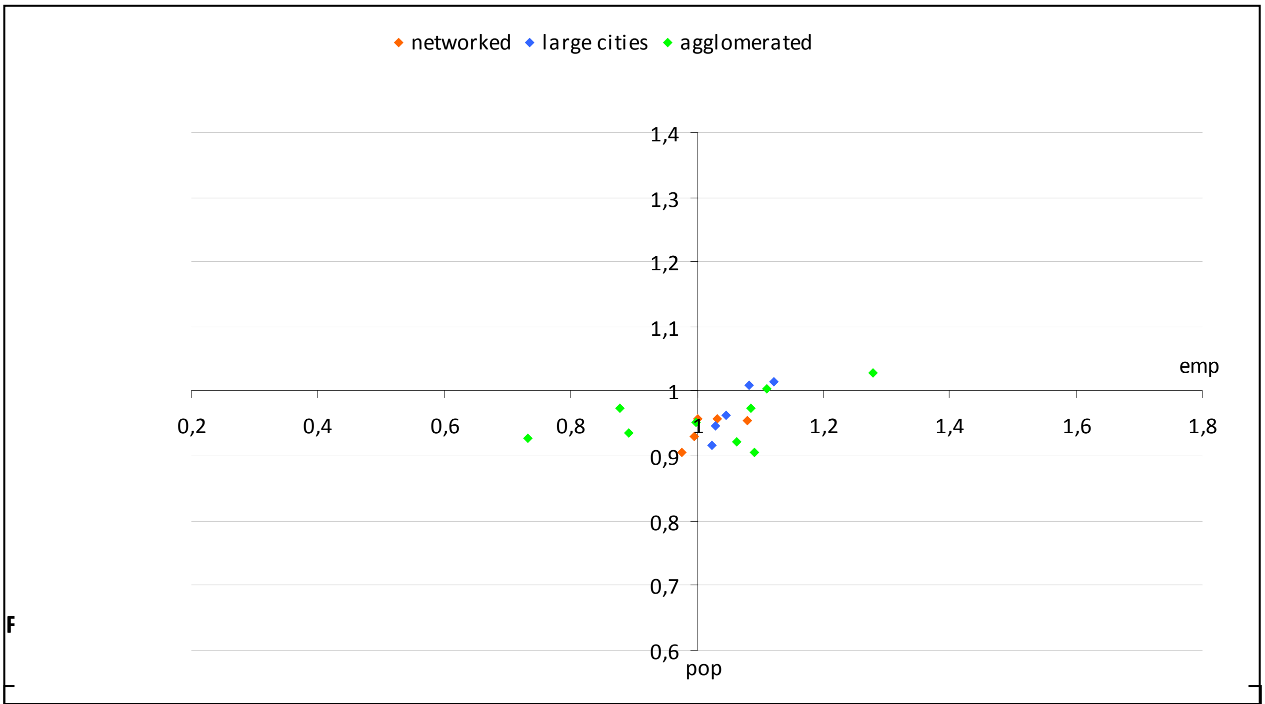


Fig. 12a France, Central Region: population and job performance of all towns and cities



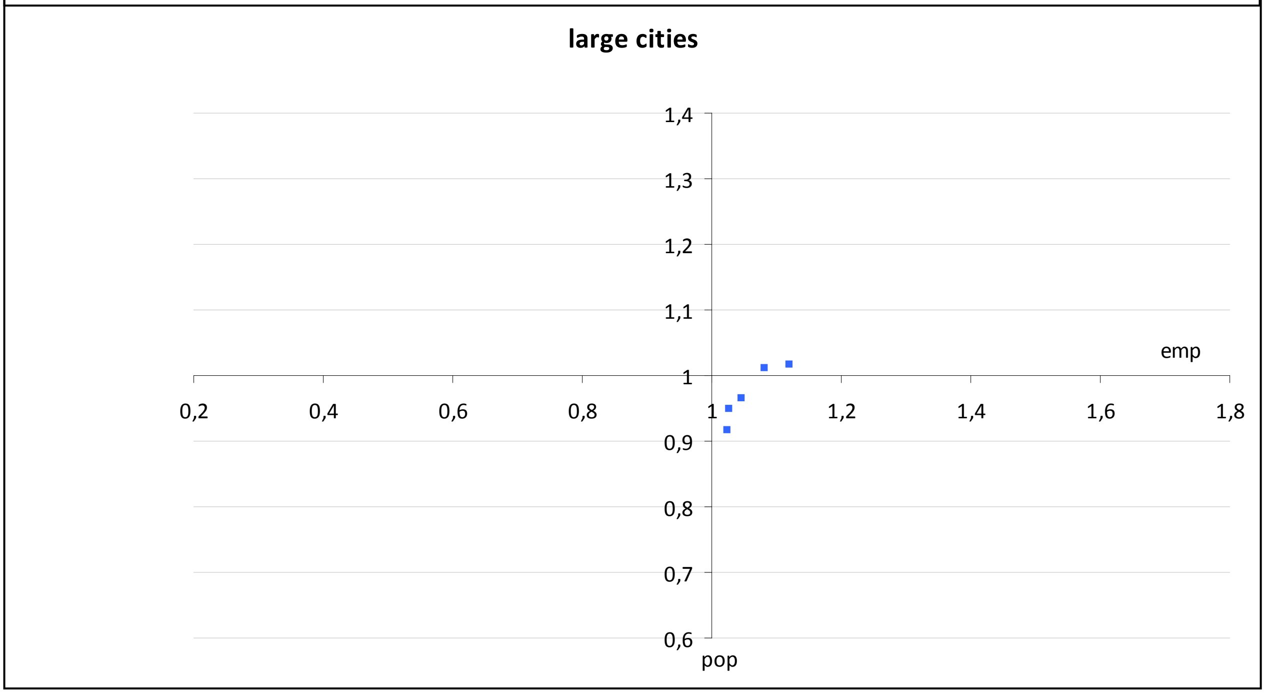


Fig. 12c France, Central Region: population and job performance of agglomerated towns

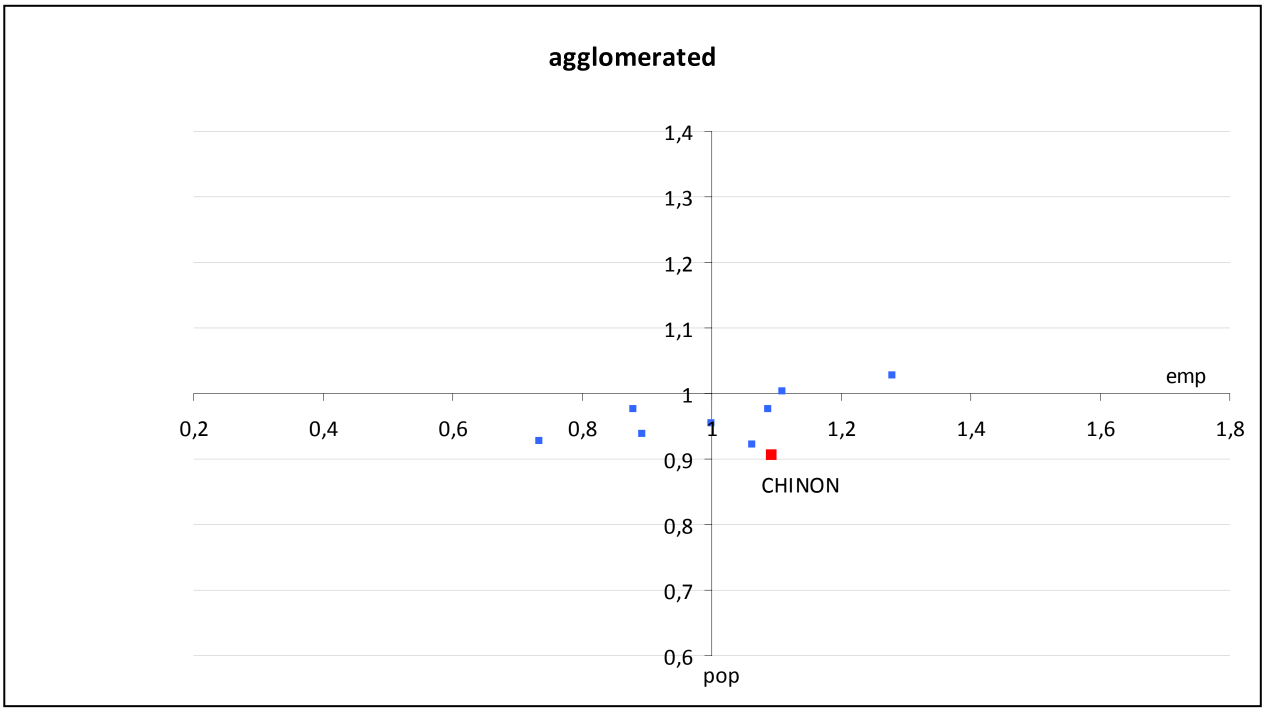


Fig. 12d France, Central Region: population and job performance of networked towns

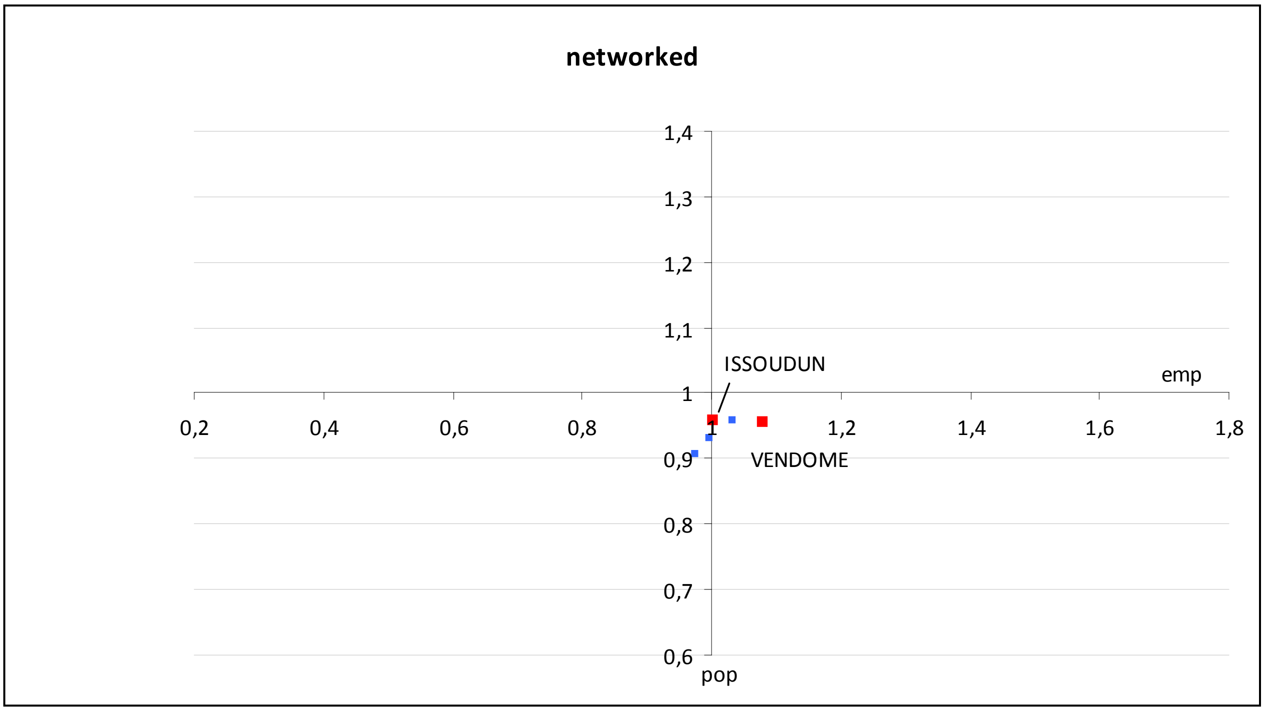


Fig. 13a Slovenia: population and job performance of all towns and cities

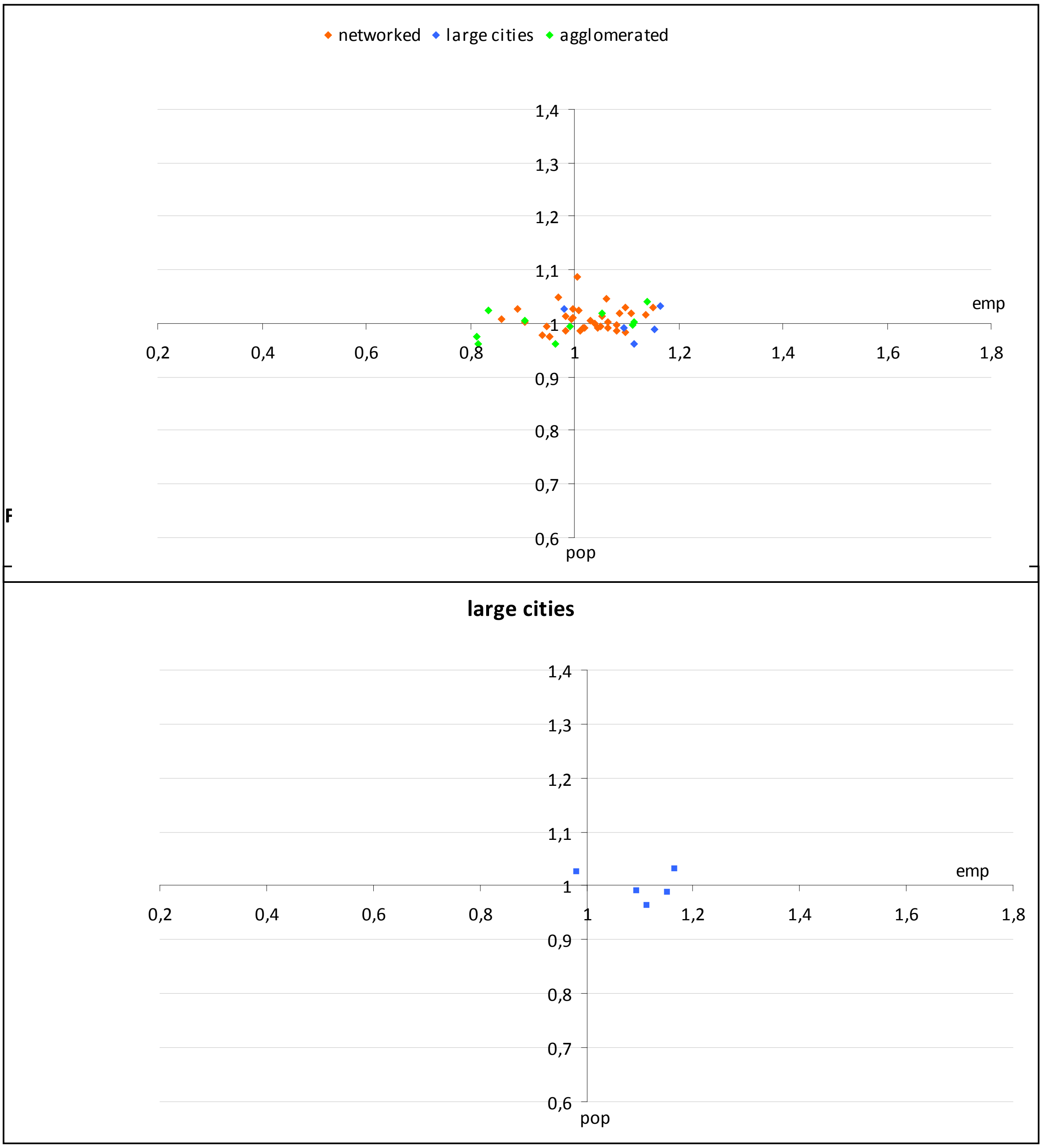


Fig. 13c Slovenia: population and job performance of agglomerated towns

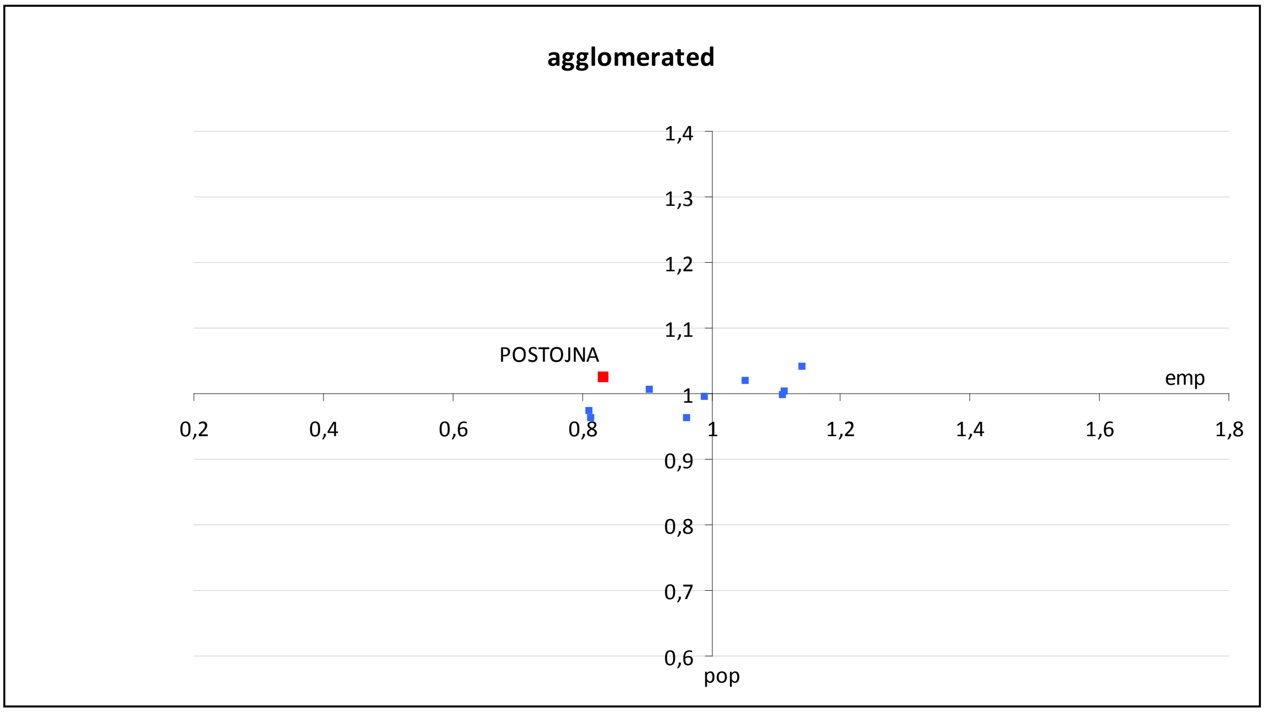
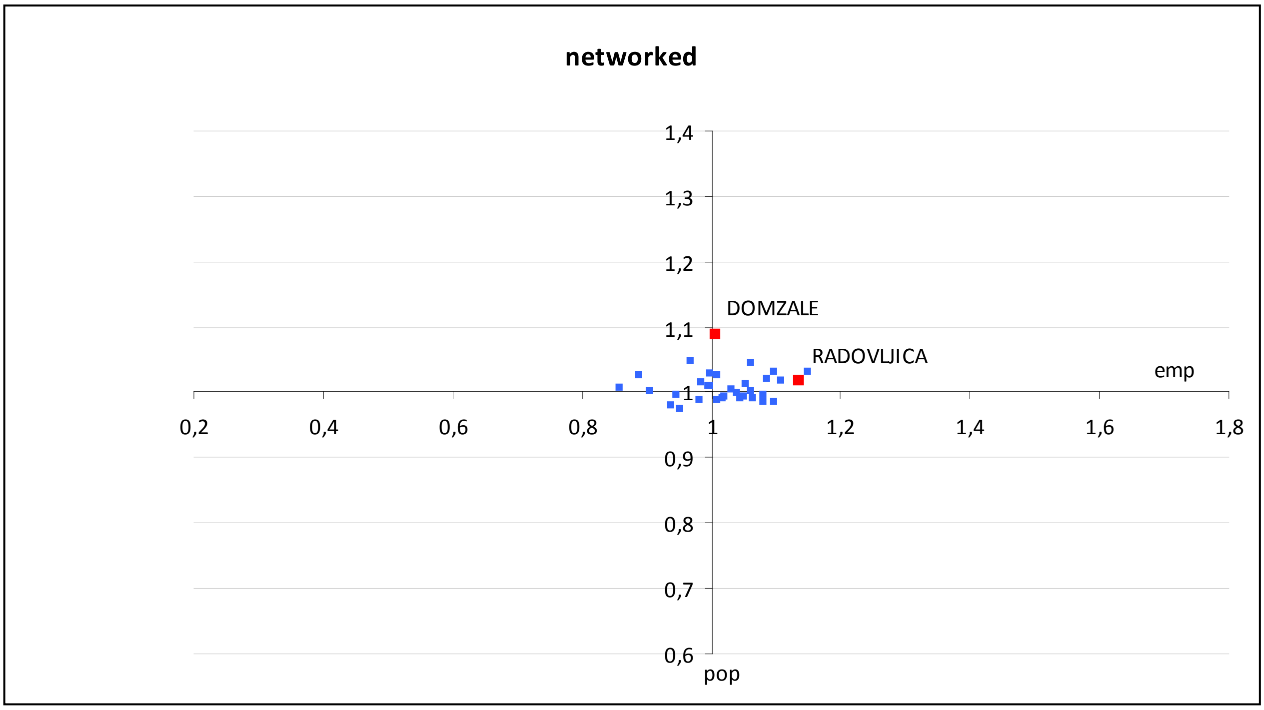


Fig. 13d Slovenia: population and job performance of networked towns



5. Summary and conclusions

The key objectives of the functional analysis were to identify these towns which play the role of urban micro-regional centres and to identify territorial arrangements of these towns/micro-regional centres, i.e. whether they are autonomous, networked, or agglomerated. The forms of territorial arrangements have been expected to serve as an important explanatory variable of town's socio-economic performance.

In this chapter we first discussed the functional-spatial perspective on the study of small and medium sized towns. First, we dealt with the question which settlements are towns problematizing the simple use of population size and more sophisticated yet sole use of morphological approaches to the identification of small and medium sized towns. We took the position that settlement that shall be considered to be town should play the role of an urban centre that provides primarily jobs, but also services, etc., to other settlements in its proximity. Secondly, emphasizing the importance of relationships among urban centres for their own development trajectory and socio-economic performance, we discussed three main types of towns' territorial arrangements: autonomous, agglomerated and networked.

Following part was devoted to the methodology of functional analysis. Our aim was to provide such approach that would allow for comparative functional analysis across the variability of national and regional contexts. Methodology has been developed and tested for the key tasks of functional analysis: (1) identification of job centres, delimitation of micro-regions and micro-regional centres, and (2) detection of lower and upper tiers of urban hierarchy (small and medium sized and large centres) and of territorial arrangements of small and medium sized towns (autonomous, networked and agglomerated).

Comparing results of functional analysis across case study countries and regions, we found striking differences. The most exceptional are Flanders, Belgium, with it highly urbanized landscape of large municipalities of which nearly 42% play the role of urban micro-regional centres, with large centres being decisive in terms of concentrating population, jobs and, especially, linking on themselves small and medium sized towns in their proximity. It seems that with evenly distributed growth between large centres, agglomerated and networked towns all urban places benefit from this polycentric, yet large city dominated urbanization pattern. Larger share of municipalities keeping the role of urban micro-regional centres has also been found in Slovenia, country with two key forms of territorial organization working in a symbiosis: major role of capital Ljubljana for the whole country and polycentric arrangements of small and medium sized towns in particular country local sub-regions. In Both, Flanders and Slovenia the large share of urban centres on the total number of municipalities can be partly explained by the existence of larger municipalities that are composed of several settlements. In these municipalities, part of the territorial division between centre and hinterland is already accommodated within municipal boundaries. Both regions/countries can be seen as good examples of polycentric urban systems with a strong role of large centres.

However, Slovenia differs in one substantial aspect which is large share of population living outside urban micro-regional centres. In this aspect it is more similar to Czechia, Catalonia or Mazovian region in Poland. While Czechia and Catalonia have well developed all forms of townss' territorial arrangements and show thus large variability of situations, Mazovian area shows two mutually distinct faces: that of the large region of capital city of Warsaw and, on the other hand side, a ring of towns in the peripheral part of the region, somewhat squeezed between the large centres and extensive rural settlement. In this aspect, there is some similarity with French Central Region, where the key role is played by large centres with still substantial share of population living outside of urban micro-regional centres, while already smaller share of small and medium sized towns' population and jobs is further shrinking. Cyprus is specific case itself, with tourist oriented coastal development accompanying the role of capital city of Nicosia and rural, sparsely populated areas in inner parts of island.

Preliminary analyses of population and job performance according to functional types of urban centres have shown three patterns. Firstly, there are evidences of a better performance of large centres in comparison with small and medium sized ones in particular in terms of employment. Secondly, there is much higher variability among small and medium sized centres with many cases that are performing both worse and much better than large centres. Thirdly, there is no clear difference in performance between autonomous, agglomerated and networked towns as well as between autonomous towns, those linked to large centres, and towns networked with other towns.

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Chapter 6 – Socio-economic profiles and performance dynamics of European SMSTs: Methodological approach and lessons from 31 case studies

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1. Aim and research questions

The socio-economic situation of SMSTs is quite diverse across regions and nations. The research results presented in the previous chapters confirm that SMSTs perform important functional roles of urban centres within regions, while their size and functional categories vary and depend on the context. Some SMSTs within metropolitan regions may have a significant impact on segments of manufacturing and tertiary production systems due to participation of local firms in an innovative cluster, or due to presence of a university branch. Other SMSTs that are well connected to large cities and that offer beautiful natural environment may attract population of commuters. There are also SMSTs that have kept their rural character and as such are looked for by second-home owners, tourists or people who want to move to a quieter living environment.

In their analysis of French towns, a group of researchers (Léo et al, 2012; Carrier and Demazière, 2012) shows that economic growth is not related only to population size, but rather to innovative and network strategies and building on local comparative advantages, resources and distinctiveness (Knox and Mayer, 2009). In that respect, why does the local economy of some SMSTs thrive, while others do not? Can SMSTs become alternative socio-economic spaces that are resilient to the negative effects of global changes and new competitive pressures? What in particular can be their positive, creative and innovative responses to such multiple challenges?

Indeed, socio-economic characteristics of SMSTs are related to their performance in terms of the capacity to create jobs, to provide services, to attract new population and to engage in inter-territorial and innovation networks (Carrier et al., 2012; Demazière, 2012; Demazière et al., 2012). This is not only the result of their geographic proximity to large cities, but also of flows from the crossing of their inherent value with wider spatial divisions of labour. The smaller size of the working population often leads to a specialisation in some activities (manufacturing, tourism, etc.), whose fate is eventually linked to economic and social change at regional, national or even international level. Among other factors, the socio-economic characteristics may clearly be related to both the geographic position and the framing of policy actors.

As regards the main characteristics of local economy, we argue that different socio-economic profiles can be observed in SMSTs, depending on the key sectors that found their local economy. There are towns whose local economy mostly relies on activities and services related to population needs and local demand (housing, public services, etc.; more detail on this in section 2.1 below). As our analysis will suggests, such **"residential" local economy** may be considered as the key driver of SMSTs socioeconomic dynamics in countries with generous remains of the welfare state (Belgium, France, Germany, The United Kingdom) or in regions benefitting from transnational migrations to their coastal settings (South of Portugal, Costa Brava and Costa Daurada in Spain). In times of world economic crisis, the residential economy is a stabilizing factor for SMSTs since it allows the capture of income and the jobs it generates are not directly exposed to global competition.

Some towns have their local economy oriented to external demand and base their activities on manufacturing, business, traded services and also tourism (more detail on this in section 2.1 below). This **"productive" economy** of SMSTs in developed countries has its main origins in the period of industrialization (though some towns still rely significantly on agriculture and derived activities, i.e. agro-food, agro-tourism, etc.), especially during the Post-War boom when SMSTs experienced growth of population coming from rural areas, industrial development and social and economic modernization. It was also the period where SMSTs were often selected by companies whose rapid expansion was based on the production of standardized goods and services that required cheap and low-skilled workforce. In most European countries, productive economy based on manufacturing and tertiary production systems is connected to larger cities and metropolises (e.g. Ile-de-France, London, München or Milano).

Finally, there are towns whose local economy is either related to residential or external demand, but at least partly based on knowledge, innovation and creative activities such as higher education, design-based activities, etc. (more detail on this in section 2.1 below). Through the implementation of conditions favourable for creative businesses (i.e. subsidies or tax incentives) and through improving the life quality for the population, a SMST may build on its resources and talents so to attract new investment and new residents. In addition, this **"creative and knowledge economy"** based on activities such as architecture, design, advertising and software creation may provide innovative inputs for other sectors, namely agriculture, handicrafts, furniture, textiles, tourism and gastronomy.

In that respect, it seems interesting to analyze how these three socioeconomic profiles (residential, productive, creative-knowledge based) may combine specifically in the local economy of SMSTs and to what degree such profiles change in time and under which conditions.

The earlier ESPON research on the role of SMSTs (ESPON 1.4.1 SMESTO, 2006) made some steps in that direction. A system of socio-economic indicators was used to analyze and to classify SMSTs into categories (dynamic, declining, restricting, and potential developing). The research argued that the size and the morphology of the SMST do not necessarily determine its standing within the territory. On the contrary, it is the degree of importance of a town's functions that determines its main profile and the place it has within the urban hierarchy (see previous chapter). Furthermore, the research concluded that both variables - specialization and performance - indicate to which degree the town succeeds or fails. Regarding peripherality and accessibility, they do not necessarily explain the decline or the dynamics of a SMST. In fact, these two dimensions need to be analyzed in combination with other factors such as services provision, institutional capacity, valorisation of local resources, local networks and relations among actors, etc. Overall, the ESPON 1.4.1 SMESTO research delimited four categories of SMSTs (p. 136):

- **Dynamic and growing towns**: where accessibility, demography and economy are positively related. The main characteristics of these towns are: high economic growth, positive population dynamic, territorial centrality, good accessibility, good sector performances, high attractiveness and high knowledge dynamic.
- **Declining towns**: where accessibility, demography and economy are negatively related. The main characteristics of these towns are: negative economic growth, high unemployment, social distress (poverty), population decline (outflow), weak functions, bad accessibility and peripherality.
- **Restructuring towns**: where accessibility, demography and economy show deterioration of functions but a process of upgrading of their functions is ongoing. Such towns are characterized by: economic slowdown, reallocation of resources,

diversification, upgrading of services, upgrading of qualification (skills), unemployment increase and then stabilization and or progressive slowdown, in process (upgrading of accessibility).

- **Potential developing towns**: where new trends are emerging for different endowed resources (geo-physical, historical, location related, quality factors). Such towns are characterised by: weak economic growth, strengthening of weak sectors, upgrading of services, improved accessibility, and improved attractiveness, good potential in terms of location and/or human resources and/or natural resources.

Pushing the argument even further, we analyse ten national case studies' reports on socio-economic dynamics in SMSTs (see Figure 1). The key objective is to identify the main features and trends of local economies in 31 selected European SMSTs (see Figure 1). More precisely, we address at least partly the following questions:

- What profiles of local economy are leading to higher performances?
- Are activity-diversified profiles performing better than more activity-specialized ones?
- Can policy make the difference in terms of performance, once controlling for the size and context (geographical, historical, institutional, competitive, etc.)?
- Are there policies more specifically tailored for each of the profiles of local economy?

The perspective on socio-economic dynamics in SMSTs is based on several assumptions that we explore further in this chapter:

(1) **Even though the economic situation of SMSTs is diverse across regions and nations, it is possible to identify three major socio-economic profiles of local economy of SMSTs.** The first profile is a SMST with a dominant 'residential economy' that mostly relies on local activities that meet the needs of people in an area, be they residents, commuters or tourists. The second profile corresponds to a SMST with a dominant 'productive economy', based on production of goods and services to be mainly consumed out of the area. The third profile of SMSTs is the one with important activities in the 'creative-knowledge economy' that is based on entrepreneurial dynamics, and on interconnections and collaboration of all agents in innovation, creativity and knowledge dynamics (Hamdouch and Depret, 2013). Of course, these three profiles are rather analytical landmarks than ideal-types as most SMSTs display hybrid, usually mixed local socio-economic profiles regarding the bases of their local development.

(2) **Profiles are shifting between residential economy, competitiveness and innovation in the orientation of their development dynamics, and SMSTs present different degrees of awareness and capacity to steer the processes.** SMSTs are specific and heterogeneous, as are their levels of specialization or diversity of activities within productive, residential or creative-knowledge economies. Each town can assume different roles in terms of functionality: administration, residential services, tourism, research and development or manufacturing. In order to survive and face challenges, SMSTs are making places more attractive to inhabitants and potential investors. Depending on the town, it can be done by promoting and improving natural and built heritage, quality of life, or specialized skills and know-how. In any case, it seems that social networks are crucial to counterbalance the geographical factors which favour large cities. This point is also significant when creative and knowledge-based activities grow in SMSTs.

(3) **Better performance of SMSTs in terms of positive demographic change and job growth is underpinned by a combination of factors.** The positive demographic change may be seen in SMSTs that are in proximity to a large city (market access); whose wider region has a positive population change as well; and towns with positive employment rate and housing occupancy. The job growth in SMSTs is related to positive employment change within their wider region; SMSTs that have skilled resident active population and many existing businesses; towns that are not in close proximity to a large city and whose local economy is diversified (not based strictly on industrial or public sectors). In addition, we argue that regional characteristics and dynamics are important in predicting economic and social change in SMSTs.

(4) **Specific contextual factors such as geography and institutional settings play a structural role in SMSTs.** Geographic factors affecting the development of SMSTs are closely related to the effects of spatial proximity and concentration of economic activities. As they fulfil diverse functions in the urban hierarchy, SMST's development depends on the usage of comparative advantages and the nature of relations with other surrounding urban and rural settlements. Likewise, a flexible institutional setting including patterns of behaviour, legal framework, power structures, local agents and their modes of interaction, policies and regulations may create an encouraging environment for SMSTs. Indeed, the inter-connectedness of geographic and institutional factors and their co-evolution in the course of time reflect their complex relationships of mutual influences. Hence, the key is to observe SMSTs as dynamic phenomena in the rocess of change over time (Hamdouch and Moulaert, 2006).

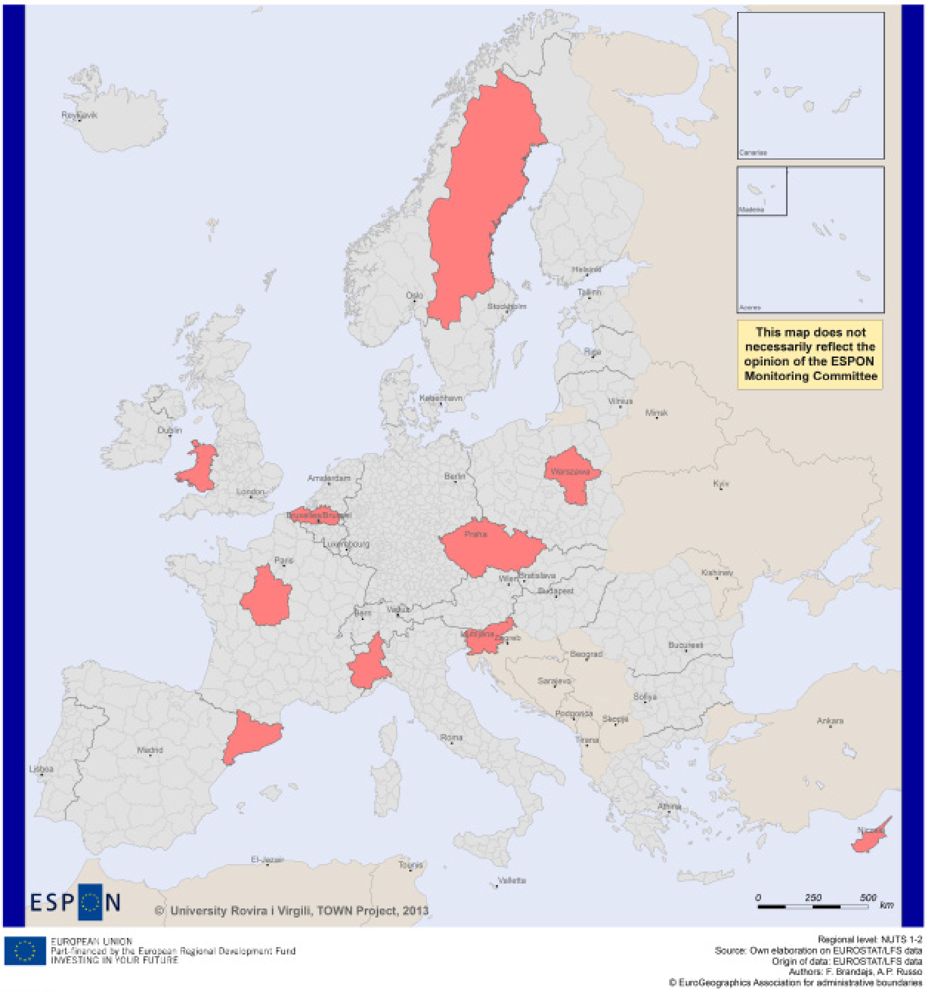
Selected case study countries	Selected SMSTs and number of inhabitants
 Coverage of functional analysis data	**Aarschot** (BE): 28,636 inh **Dendermonde** (BE): 44,257 inh **Ieper** (BE): 22,051 inh **Brandys nad Labem** (CZ): 16,247 inh **Pisek** (CZ): 27,979 inh **Usti nad Orlici** (CZ): 12,457 inh **Cambrils** (ES): 34,919 inh **Tarregà** (ES): 17,129 inh **Vilafranca del Penedès** (ES): 41,322 inh **Chinon** (FR): 5,355 inh **Issoudun** (FR): 11,965 inh **Vendôme** (FR): 8,578 inh **Alba** (IT): 25,520 inh **Ceva** (IT): 5,056 inh **Fossano** (IT): 20,565 inh **Garwolin** (PL): 15,478 inh **Łosice** (PL): 6,194 inh **Szydlowiec** (PL): 10,418 inh **Kiruna** (SE): 16,368 inh **Östersund** (SE): 39,843 inh **Timrà** (SE): 9,268 inh **Avesta** (SE): 21,583inh **Domžale** (SI): 23,793 inh **Postojna** (SI): 7,581 inh **Radovljica** (SI): 8,231 inh **Colwyn Bay** (UK): 32,895 inh **Llandrindod Wells** (UK): 6,450 inh **Tredegar** (UK): 15,103 inh

Figure 1. Case study countries and SMSTs covered by this report. (Source: Own elaboration).

To sum up, this chapter assesses the relevance and applicability of the socio-economic typology of local economy on 31 case studies. In that scope, we take into consideration the contextual specificities of each case study and include qualitative data into analysis. Secondly, the chapter verifies, from a more general perspective, the relationship between profiles of local economy and performance records (i.e. demographic trends, employment creation and job structure). We also look at the functional role of selected SMSTs identified in previous chapters and its relation to socio-economic profiles and performance. Finally, by analysing the policy orientations and actions in case studies, we observe their effects on change in profiles and performance.

2. Approach to the analysis of socio-economic dynamics in SMSTs

In this section, we develop the idea that the socio-economic characteristics and development paths of SMSTs can be explained through profiles of local economy – the residential, the productive and the creative-knowledge economy. We provide the main characteristics of these three profiles and list sectors of economic activities that are used in profile identification. It is necessary to underline that listed profiles do not exclude one another (SMSTs can build their development pattern through varied combinations of "ingredients" pertaining to more than one single profile) and their contents and delineations are subject to evolution over time (a SMST is susceptible to change more or less progressively its dominant profile through specific investments and policies). Also in this section, we present the connection between profiles and performance as well as the effect of specific contextual factors on (economic) performance of SMSTs.

2.1. Identification of profiles and their change in time

The idea of local economy profiles has existed in French context for some time now. The French National Statistics Office (INSEE) has been classifying economic activities into productive, residential and public spheres in order to analyze localised data concerning jobs occupied and wages paid. However, the creative and knowledge-based profile has been introduced in this report in order to explain dynamics in some SMSTs focusing on innovations, creativity and knowledge. In other words, SMSTs with creative and knowledge-based profile have university branches, R&D activities that are promoted either by public institutions or by private investors; they have highly educated population, and local firms participating in innovative clusters or creative networks. It is unlikely that in case of SMSTs, creative and knowledge-based profile can prevail over more "traditional" ones - residential and productive profiles. Instead, it may constitute a dynamic input for the residential and/or productive economy while covering per se several economic sectors and activities such as creative and cultural industries, high-tech businesses, recurrent cultural events, etc.

Nevertheless, scientific literature agrees that some cities and towns have been shifting towards new development models (Kourtit et al., 2012). For example, concepts of *smart cities*, *green cities*, *sustainable cities*, *healthy cities*, *or cultural capitals* have been booming intensively over the last decade. The common innovative characteristics of these new visions of cities are investment in human and social capital and modern infrastructure (ICT) in order to enable sustainable economic development and high quality of life, with a wise management of natural resources, through participatory action and engagement. Our argument is that such vision is not exclusive to large cities. SMSTs can also share that orientation of their future, as we show in this chapter (see below; Cf. also Knox and Mayer, 2009).

Indeed, as summarized below (see Table 1), the three profiles differentiate along several crucial dimensions, namely: the groups of actors targeted; the factors of attractiveness; the specific drivers; and the policy tools privileged. The residential profile is characterized by economic activities mainly related to population needs and local demand: construction, real estate and housing; public services, social services, administration; retail, repair and proximity services; other private services to households (leisure, banking, insurance, etc.). The productive profile is based on domination of manufacturing and business services activities (and sometimes on agriculture and derived activities) in the local economy mainly oriented to external demand. The creative and knowledge-based profile is either related to residential or to external demand, but its main characteristic is that this profile is based on knowledge, innovation and creativity: higher education, research, knowledge intensive business services, design-based activities, cultural activities and events, etc.

	RESIDENTIAL	PRODUCTIVE	CREATIVE-KNOWLEDGE
Target groups	Residents, commuters and tourists	Business actors	Creative class and innovative firms
Factors of attractiveness	Good living environment, heritage, quality of provision of services, culture, health and schools, real estate conditions	Competitive business environment, labor skills, availability or land	Creative environment, quality of provision of services
Specific drivers	Diversity of equipment and amenities, accessibility	Sectoral specialisation, concentration of business activities	Innovation systems and knowledge-based activities, concentration of entrepreneurial activities
Policy tools	Improving public and private services to population, developing/improving cultural, leisure and touristic infrastructures, investing in transport facilities and green spaces, preserving the environment and the cultural heritage	Creating/improving the quality of business areas, developing supporting services to business, lowering professional taxes, subsidies to targeted businesses	Developing/encouraging clusters, networks and creative "arenas" creating/attracting higher-education and research institutions, developing incentives to entrepreneurship

Table 1. Main characteristics of the three local economy dominant profiles in SMSTs (Source: Own elaboration).

The orientation of local economies may be linked to external markets (in case of productive economy or knowledge-creative based economy), or in a larger part to internal (local) demand (in case of residential economy). We can also point out place-based resources as the potential key drivers of development. In the case of residential economy, it is natural and built heritage, and quality of life, whereas in the case of productive economy specialized skills, know-how and professional practices are strong assets for selling on outside markets. In both cases, social networks may counterbalance the geographical factors which favour large cities. This point is also significant when knowledge-based activities grow in SMSTs. Finally the qualification of the local economy provides information on the type of performance sources and of target groups (firms, new entrepreneurs, residents, commuters, tourists, etc.) who contribute to the economic development within a SMST context. In the case of productive economy, the competitiveness is based on human and/or physical capital in relation to external market demand; in the case of residential economy, the advantage of the SMST is in quality of life and amenities; whereas in creative-knowledge economy it is the vibrant and creative environment, the connectivity of the SMST to metropolitan areas, and also the quality of life, which may attract creative people and innovative firms.

For the purpose of this analysis, we use a detailed typology of economic sectors to identify the dominant profile of economic activity in case studies and their change over a period of time. More precisely, firstly we categorize the sectors into three profiles (see Table 2.). Secondly, we calculate the share of employment of each sector in total employment. Thirdly, we define some thresholds that allow us to identify the dominant profile. In that respect, given that all towns perform a residential function, a reasonable assumption is to consider a town with dominant residential profile as one having nearly or more than 2/3 of total employment in residential sectors of economic activity. Consequently, a town with dominant productive profile will then considered as having nearly or more than 1/3 of total employment in productive sectors of economic activity. Finally, towns will be considered as displaying a mixed profile when any of these thresholds is matched. Here, it is necessary to confirm that we have not found cases with creative and knowledge-based activities as dominant profile. However, scanning across European SMSTs, we found that most towns have a rather small portion (few per-cents) of jobs related to creative-knowledge activities, while others are much more involved in such activities. Consequently, we arrived to a reasonable delineating threshold considering that SMSTs with significant creative component would have at least 10% of total employment in creative and knowledge-based sectors of economic activity.

We have calculated the share of employment for the base year and for the end year in order to observe the change of dynamic over a period of time. The base and the end year analyzed were slightly different due to availability of data in ten countries. In general, the base year for most countries was 2000 and the end year 2010. Therefore, we are able to observe the change in profiles in case studies over a 10-year period.

Residential profile
• **Collection, purification and distribution of water**
• **Collection and treatment of wastewater**
• **Collection, treatment and disposal of waste recovery**
• **Remediation activities and other waste management services**
• **Construction of buildings**
• **Civil Engineering**
• **Specialized construction**
• **Trade and repair of motor vehicles and motorcycles**
• **Wholesale trade, except of motor vehicles and motorcycles**
• **Retail trade, except of motor vehicles and motorcycles**
• **Hotels and accommodation services**
• **Restaurants and catering**
• **Financial service activities, except insurance and pension funding**
• **Insurance**
• **Activities auxiliary to financial services and insurance**
• **Real estate activities**
• **Veterinary activities**
• **Renting and leasing**
• **Activities related to employment**
• **Activities of travel agencies, tour operator reservation services and related activities**
• **Investigation and security**
• **Services to buildings and landscape activities**
• **Administrative and other activities of business support**
• **Public administration and defence, compulsory social security**
• **Public transport**
• **Education**
• **Activities for human health**
• **Medico-social and social housing**
• **Social work activities without accommodation**
• **Repair of computers and personal and household goods**
• **Other Personal Services**
• **Activities of households as employers of domestic staff**
• **Undifferentiated activities of households as producers of goods and services for own use**
• **Activities of extraterritorial organizations and bodies**

Productive profile
• **Crop and animal production, hunting and related services**

- Forestry and logging
- Fishing and aquaculture
- Mining of coal and lignite
- Hydrocarbon extraction
- Mining of metal ores
- Other mining and quarrying
- Support services to mining
- Food industries
- Beverage
- Manufacture of tobacco
- Textile Manufacturing
- Clothing industry
- Manufacture of leather and footwear
- Woodworking and manufacture of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- Manufacture of paper and paperboard
- Printing and reproduction of recorded media
- Coke and refined petroleum
- Chemical Industry
- Pharmaceutical industry
- Manufacture of rubber and plastic
- Manufacture of other non-metallic mineral products
- Metallurgy
- Manufacture of fabricated metal products, except machinery and equipment
- Manufacture of computer, electronic and optical products
- Manufacture of electrical equipment
- Manufacture of machinery and relating equipment
- Automotive industry
- Manufacture of other transport equipment
- Manufacture of furniture
- Other manufacturing industries
- Repair and installation of machinery and equipment
- Production and distribution of electricity, gas, steam and air conditioning
- Land transport and transport via pipelines
- Water transport
- Air transport
- Warehousing and support activities for transportation
- Postal and courier services

Creative and knowledge profile

- Newspapers, edition and publishing
- Motion picture, video and television program production
- Sound recording and music publishing
- Programming and broadcasting activities
- Telecommunications
- Computer programming, consultancy and related activities
- Information Services
- Legal and accounting activities
- Activities of head offices; management consultancy
- Architectural and engineering activities
- Technical testing and analysis
- Scientific research and development
- Higher education (university, professional and specialized training)

- **Advertising and market research**
- **Other professional, scientific and technical activities**
- **Creative activities, arts and entertainment**
- **Libraries, archives, museums and other cultural activities**
- **Organization of games of chance and gambling**
- **Sporting, recreational and leisure services and events**
- **Activities of membership organizations**

Table 2. Classification of sectors of economic activity into the three profiles of local economy (Source: Own elaboration).

2.2. Performance and its connection to profiles of local economy

We are particularly interested to see if the evolution of socio-economic profiles can be beneficial in terms of demographic and/or economic (jobs) growth. We presume that in some SMSTs changes in profile (sectoral shift, in terms of jobs) have been rather successful while in other towns it has been a failure to various degrees. Indeed, the reasons for sectoral shifts are various and context dependent. In some SMSTs it may be the result of strategic planning, while in others it may happen spontaneously or suddenly (provoked by the closure of a major production site, or economic crisis in general). Some scholars argue that sectoral shift for example to residential economy, especially in times of economic crisis, is a stabilizing factor for SMSTs since it allows the capture of income and since the related jobs are not directly exposed to global competition (Davezies, 2010). On the other hand, the sectoral shift of an 'old' productive economy to a 'new' one supported by creative and knowledge-based activities indicates that new economic specializations have been built on existing experience and practices in those SMSTs. This is the case of several Italian industrial districts (Brusco, 1986; Becattini, 1987) or of industrial towns in Canada (Carrier and Gingras, 1984; Carrier et al., 2012). Such places offer particular industrial competences, know-how and skills that local firms or firms relocating to the town can draw upon.

Having this in mind, our performance analysis of selected SMSTs is based on six variables:

- population change
- employment change
- population in employment
- job structure change (change in profile)
- net migration
- and housing change.

Earlier in this chapter we referred to the ESPON 1.4.1 SMESTO (2006) research that categorized SMSTs into four groups (growing, declining, restructuring and potential developing) based on a system of socio-economic indicators. We use this typology to classify performance types of SMSTs in our 30 case studies, but we focus on only the 3 indicators for which we have available data for most of them: gains or losses in population; gains or losses in jobs; change in profile (i.e. change in sectoral employment structure).

- **Growing SMSTs (dynamic towns)** gain both in jobs and population, particularly in the number of jobs in knowledge and creative sectors;
- **Declining SMSTs** have losses both in both jobs and population;

- **Restructuring SMSTs ('towns in transition', in our terminology)** have losses in jobs but gain in population, or *vice versa* they gain in jobs, but lose population. This evolution is combined with a change in profile, whatever it might be;
- **Potentially developing SMSTs** have an increase in employment in creative and knowledge-based sectors. This is accompanied by investment in infrastructure and relying on potential niches (advantageous drivers) for further development.

2.3. Effect of contextual factors on profiles and performance

A set of contextual factors, such as the position of SMSTs within the urban hierarchy, their multiple relations (horizontal, i.e. with other towns or cities; and vertical, i.e. with institutional upper-scales of territorial organization: counties, provinces, regions or the State) and the nature of their relational position with these other territories (cooperation-complementarity and/or competition), influence the socio-economic dynamics of SMSTs.

As shown in previous chapters, SMSTs occupy a specific position in urban systems, urban hierarchy and networks of cities and towns. In that respect, there are functions that are decisive for the development and position of SMSTs in particular local/regional context. The main development trends of SMSTs in terms of population change, growth or decline of labour market, and changes in local economic profile are affected by the size of SMSTs, their regional context and the territorial-functional arrangement (autonomous, networked and agglomerated) characterizing them.

Furthermore, as highlighted in chapter 4, the performance of an SMST is significantly affected by the type of institutional system and national government policies and regulations framework in which its own economy and policies are embedded. The relevance of the institutional system for the performance of SMSTs is related to the distribution of power and resources between the State and sub-national authorities (regions or provinces, counties and potentially SMSTs). In that respect, in some countries local authorities have competence in regulating important issues such as traffic management and local public transport, building regulations and urban planning as well as some social services. By contrast, in other countries central and intermediate levels of governments (i.e. regional level, county or inter-municipal level) share competences in many areas relevant to economic development such as infrastructure human resources, productive environment and social services.

In order to explore if the employment growth in SMSTs is linked to their functional roles, we refer to the results of functional analysis presented in chapter 5. Our case studies are classified according to their territorial arrangement (autonomous, networked and agglomerated). Despite the general results presented in the previous chapter, which shows few differences between the three categories and only a relevant differentiation between large centres and small and medium sized ones, we go further in the analysis based on the 31 case studies. Hence, we analyze if some profiles of local economy have more advantages if being agglomerated, networked or autonomous centres. Also, we use some qualitative data from national reports to support our analysis of profiles and performance from the standpoint of the institutional system of a case studies country (see Figure 2).

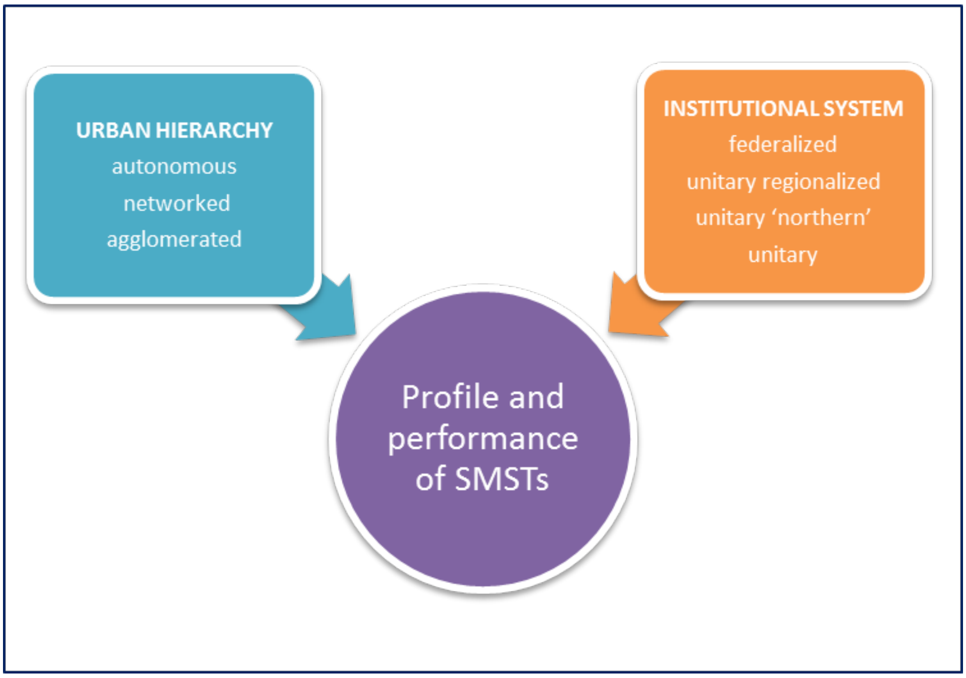


Figure 2. Two contextual factors that influence the profile and performance of local economy in SMSTs (Source: Servillo et al., 2013).

Building on the methodological approach presented in this section, we now turn to the analysis of the 31 towns' case studies drawing from the quantitative and qualitative material offered in the 10 national reports. This material is qualitatively rich, though some missing quantitative data on employment structure change over a sufficient span of time do not allow for systematic including all 31 towns in the analysis of profile changes. The material will then be used selectively in the following section, but with no great damage as regarding the main trends observed and the key conclusions drawn from typical situations of SMSTs.

3. Key insights from SMSTs case studies

Based on the approach to analysis of socio-economic dynamics in SMSTs detailed in section 2 above, specifically on local economy profiles and performance indicators, this section provides instructive results of its application on 31 selected SMSTs and their illustration on some examples. We explore profiles of local economy in SMSTs and their change over a 10 years' time span (base and end year somehow varying from one country report to another, but with no serious biases). Also, we analyse shifts in profiles that have been apparently 'successful' in terms of population/jobs performance as well as the relation between territorial arrangement and performance in SMSTs (see detailed table of towns' profiles and changes in the Annex).

3.1. What profiles and changing patterns in economic activity?

While analysing the sectors of economic activity on selected SMSTs, we find that a large majority of SMSTs have a dominant productive profile of local economy (16 towns out of 31; 52%). This finding is in line with what has been said earlier in this chapter about the dominant productive economy in the overall economy of SMSTs in developed countries having its origins in period of industrialisation, especially during the Post-2nd World War boom. During that period, SMSTs experienced growth of population, industrial development and economic modernization. Given the space exiguity of large cities and the destructions they suffered during the War, many towns were often selected by companies which required large (and cheap) workforce resources for their production of standardized goods and services, and which were also looking for available and cheaper locations for their facilities. The fact that most of studied towns have kept their productive economic base proves that production of traded goods and services is a still important development strategy of SMSTs (Figure 3).

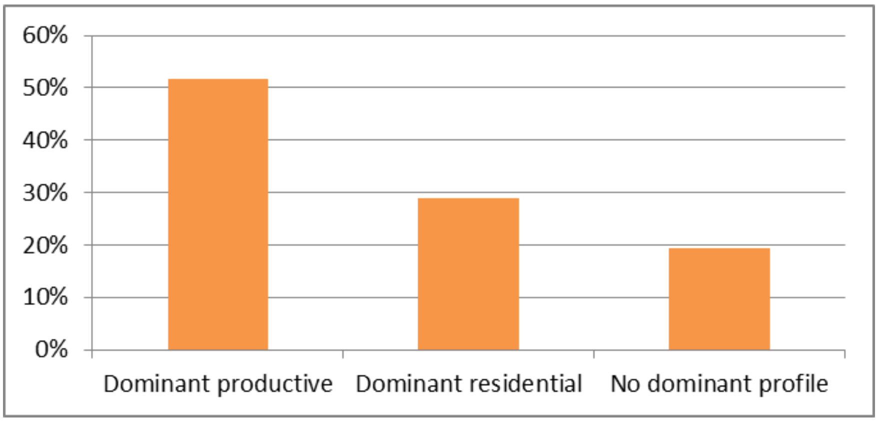


Figure 3. Profiles of local economy identified in 31 case studies (Source: Own elaboration).

For example, **Vendôme, France** is a town with a strong industrial basis going back to that period and later on consolidated. The specialisation of Vendôme is also due to proximity to the Paris Region. Town's industry particularly thrived after the arrival of multinational companies such as Thales, Avionics and Bosch that opened production sites in the town and employed local workforce (a more and more skilled one). Vendôme kept its productive orientation of local economy by focusing on diversification strategy and move towards innovation and technological adaptation in industrial (high-tech) sectors, while assuring a good quality provision of services and facilities to its residents. The town is still doing rather well in terms of employment and residents' attractiveness, but it faces several threats (aging of population, out-migration of youth, ambiguous effects of being connected to Paris in 42mn by TGV high-speed train…) that challenge the local government (Demazière and Hamdouch, 2012). An example of agricultural specialisation is **Łosice, Poland** that plays the role of a local hub of agricultural services. Also, Łosice fulfils other economic roles (i.e. administration, education, trade, housing, services), but they are all subordinated to agriculture, which dominates both at the level of the municipality and the county. In fact, agricultural services and trade in agricultural products are the primary spheres of activity of the enterprises that are active in the town. Farmers mainly cultivate grain, potatoes, corn and locally cultivated mushrooms, strawberries and chokeberries. It is estimated that around 25% of the national production of mushrooms originates from Łosice and neighbouring Nowosielec village which is also the location of Gluchowski Co. known as one of the biggest mushroom producers in Europe.

However, in other cases, the dominance of productive economy indicates a potential vulnerability of SMSTs. As Hildreth (2006, p. 26) argues: "A challenge for many of these towns at the beginning of the 21st century is that the historic competitive advantage that enabled these industries to prosper no longer exists. Nearby raw materials may have been exploited, the industry may have been obsolete or other centres in the world may be able to produce the same goods at considerably cheaper prices due to lower labour costs. As a consequence, these cities may display characteristics that make their economies particularly vulnerable". **Tredegar, UK** is an example of a town with productive profile of local economy that has been affected by negative consequences of de-industrialisation over the past 30-40 years. The town has a low employment rate. Long industrial history with ironworks in a valley that is associated with coal mining has resulted in being one of the least attractive towns to population and business. **Usti nad Orlici, Czech Republic** is an example of a town that is challenged by a declining economy (loss of population and employment). Isolated and poorly accessible, the town has experienced a decrease in population (-4%) and in employment (-6%) in the last 10 years – the highest among our case studies. Usti nad Orlici is a former small industrial town that faces industrial decline, restructuring and unemployment level around 10% which is higher than national average. The town has not been able to attract new major investors due to its peripheral position. Moreover, economic and job decline is mirrored in population stagnation and decline.

Surprisingly, less of one-third of the SMSTs studied (29%) show a residential dominant profile of the local economy (9 out of 31 SMSTs). This might indicate that the industrial heritage remains a strong driver of SMSTs development, while services to population and residential consumption are still seen in a majority of SMSTs as complementary drivers to overall economy. Nevertheless, among residential SMSTs, there are towns where the tourism is the major driver in terms of activity and jobs. **Paralimni, Cyprus** is an excellent case of one-dimension economy based on tourism (and related services, i.e. accommodation and food services). This town is the main coastal tourist resort in Cyprus and has been developing its development strategy on strengthening the touristic sector, upgrading tourist-related infrastructure and attracting young and active population to reside in the area.

Also, there are residential SMSTs with dominant elder population and where personal services and services related to healthcare have an important role for local economy. Other SMSTs, located at a short distance from large cities specialize in attracting commuters and their families. The case of **Vendôme, France**, already mentioned, is connected to Paris by high-speed train (in only 42 minutes) and as such is a combination of the two latter categories. Between 1990 and 2008, the number of professionals has increased by 30% (a growth of 300 people in absolute terms) and the number of pensioners has increased by 50% (a growth of 2,500 inhabitants), which is far more than in other SMSTs in the same region.

A group of 6 towns (19%) show a mixed (hybrid) profile of local economy. Such SMSTs pursue more or less balanced employment in residential, productive and creative sectors. There is no distinctive dynamics in terms of profiles of their local economies. To give some examples, **Fossano, Italy** is located in the agricultural plain of the Cuneo Region and at the crossroads of the two main ridge transport systems. As such, the town acts as an important link, especially with southern France via the Liguria port system. Fossano's productive economy is based on the manufacturing industry, especially the agri-food and engineering industry. Although, the agri-food and engineering industry have been severely affected by competition and changes in the market, not many enterprises were lost and these sectors managed to resist. The residential economy is based on the retail sector in which the number of employees increased by 4% over the last ten years. At the same time, professional, scientific and technical activities that characterise the creative and knowledge-based economy increase both in terms of the number of firms (by 4%) and in the number of jobs (by almost 5%). Another example of a mixed profile of local economy is **Kiruna, Sweden**. The town is the economic engine in the region. Its local economy is largely dependent on the mining industry and fluctuations in prices of raw material especially iron. In fact, due to increased demand of iron, the town centre is on the move from nowadays location to another place in order to expand the mining activities. At the same time, Kiruna develops other sectors such as tourism and the aerospace industry. Regarding the tourism, it already accumulated 50% of touristic activities in the region. Regarding the aerospace industry, Kiruna is the Centre of European Space and Sounding Rocket Range (ESRANGE) and relating research and technology development. In addition, many local business partnerships have been created in these sectors which contribute to local economy dynamics.

Finally, we identify 15 SMSTs (48%) in which we observe, whatever their dominant economic profile (productive, residential or mixed), a significant creative component in local economy (at least 10% of total employment in creative and knowledge-based sectors). As mentioned earlier, it is unlikely to find a town with creative and knowledge-based sectors as a dominant component of local economy. On the contrary, we find towns with either mixed residential and creative profiles or mixed productive and creative (both thresholds matched). This is rather a significant result that indicates the orientation of SMSTs towards new visions of development based on creativity, knowledge and innovation.

Changes in profiles			SMSTs
Base year	**End year**	**Over 10 years**	
residential	residential	Maintaining the profile	Östersund, Ieper, Dendermonde, Cambrils, Ceva, Paralimni
productive	productive		Vendôme, Issoudun, Domžale, Postojna, Radovljica, Vilafranca, Alba, Dali, Athienou
residential	more productive	Shifting the profile	Kiruna
residential	more creative		*Cambrils*
productive	more residential		Chinon, Tarrega, Fossano, Aarschot
productive	more creative		*Vilafranca, Athineou*
mixed profile	more productive and creative	Focusing the profile	Timra
mixed profile	more residential and creative		Garwolin

Remarks:

1. Available data on the sectoral structure of jobs in base *and* end years allow for the assessment of profile evolution in only 22 cases of 31.

2. Some towns may appear in two categories of change in profile as their evolution can entail evolution toward more than one direction (e.g. from productive to more residential *and* more creative, or from residential to more productive *and* more creative, etc.). Such towns appear in italics in the table.

Table 3. Change in profiles in case studies over a 10-year period (Source: Own elaboration).

A nice example comes from **Östersund, Sweden**. The town has transformed the university college into a full university that became a link between R&D and business. This was accompanied by localization of public authorities, which changed population and employment structure of the town. Also, there is a strong partnership between the Mid Sweden Science Park and business community, regional council, university and sports associations. Furthermore, the town plays the role of the centre for eight surrounding municipalities by providing them above mentioned infrastructure and services: personal services and trading, university, hospital, airport, high schools. Finally, the absence of large industries resulted in maintaining healthy environment and high living quality with lots of outdoor recreational activities. **Domžale, Slovenia** has seen the increase of employment in the creative and knowledge-based economy by 7.5% from 2001 to 2011. The town has a large number of different educational institutions among which there is the Biotechnical

Faculty of the University of Ljubljana. The population of the town is highly educated (above the national average). The detected economic potential for the future local development is in the development of commercial, congress and educational tourism in connection with sustainable economy, mobility and green countryside.

When it comes to changes in profiles over a 10-year period, most of case studies with a dominant productive profile in the past, have kept it over the last decade (9 out of 16 towns). However, there are SMSTs that experience the shift towards residential and creative and knowledge-based economic activities. In our 31 towns sample, there are 10 cases (32%) that experience some sort of change in profile over the past decade (from productive to residential/creative; and *vice versa* from residential to productive/creative), which indicates **that at least every third town in our case studies is in a process of structural change of local economy**. Moreover, it is very likely that this process will continue to exist in years to come.

3.2. Is change in profile associated with benefits?

Analysing the main variables related to economic performance (population change, employment change, active population, job structure change, net migration and housing change), we find that **the evolution of socio-economic profile can be beneficial in terms of demographic and/or economic (jobs) growth. Most of our SMSTs (55%) are dynamic towns with positive growth rates in both population and employment.** In fact, among our case studies, only Usti nad Orlici in Czech Republic has experienced decline in population *and* in employment over the last decade. When it comes to the rest of our case study towns, **42% of the sample is in a restructuring process** and experience either growth in population but decline in employment, or growth in employment but decline in population. Those are also the towns that are in search for new strategy for local development and are therefore changing their profile of local economy (see Figure 4).

There are **examples of *'successful' evolutions towards a more residential economy*** such as Chinon in France, Aarschot in Belgium, Tàrrega in Spain and Fossano in Italy. Also there are **examples of *'successful' evolution towards a more creative economy***: Vilafranca del Pendès and Cambrils in Spain and Athienou in Cyprus.

As sectoral shifts are varied and specific to each case study, for the purpose of this report we chose to illustrate this dynamics just on some instructive examples.

Issoudun, France is a town of 11,964 inhabitants with a local economy that was traditionally based on industry (know-how in leather). The town's economy relies on industrial specialization in the manufacturing of plane seats and cloths. However, over the last decade, the town started to diversify industry, to encourage new economic activities and to improve the services offered to its population (social housing, sport and cultural facilities, support for small local business, etc.). At the same time, Issoudun hosted a branch of the University of Orléans that offered two degrees in technology and communication and in trade. The town also started experimenting with new vocational training in art and new media and it opened its own broadcasting centre. Over that period of transition from 1999 to 2009, the town increased the number of jobs, but had losses in population. The important change for the performance was the increase in the share of employment in creative and knowledge-based sectors (from 13% to 17% in total employment).

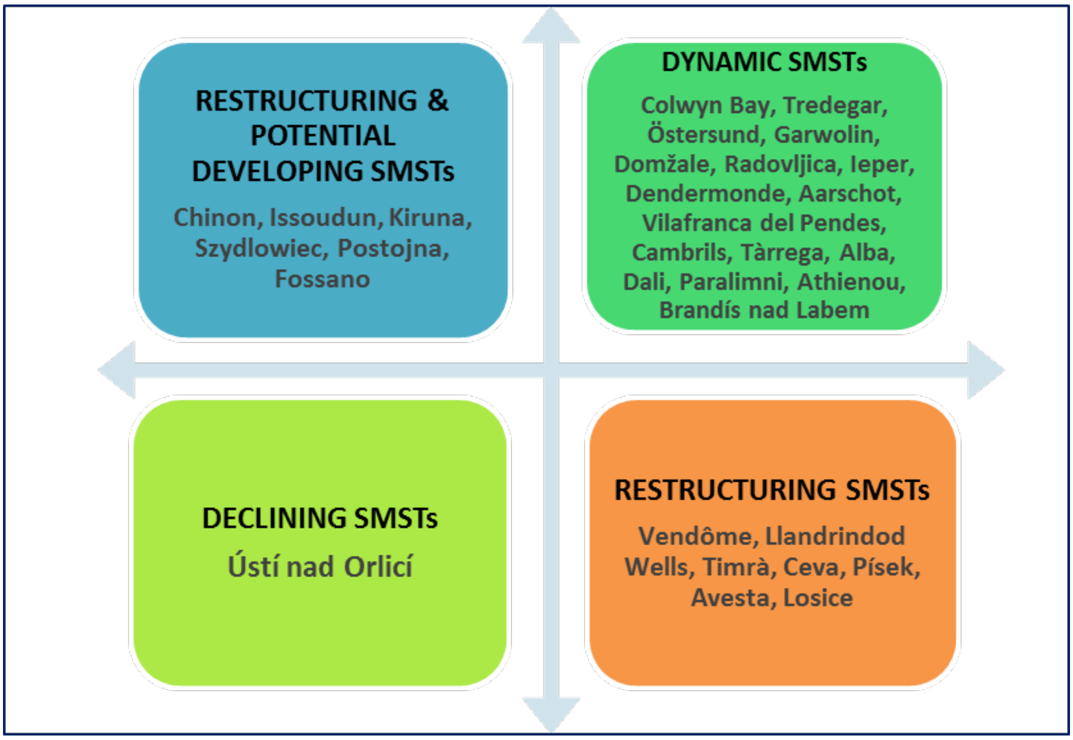


Figure 4. Typology of performance of cases studies (Source: Own elaboration, based on the typology of ESPON 1.4.1. SMESTO, 2006).

Radovljica, Slovenia with 8,231 inhabitants has the most successful performance records among the three Slovenian case studies. During a 10-year period from 2001 to 2011, the number of companies in the town grew by more than 5%, as well as employment rate (+12%) and population (+1%). In addition, the employment in residential and creative sectors increased both by 3%. Radovljica is a town with traditional jobs in manufacturing industry such as furniture, recycling, electricity production, optical equipment, production of vehicles and skies. A combination of several factors influenced the performance of Radovljica. First, the town is accessible by air, road and rail. Second, it is a part of a strong and 'successful' region with internationally known sport and tourist resorts. Third, it has small ad flexible companies and high number of educated young people. Fourth, as administrative centre, it provides services such as education, sport facilities, health and social care, museum, cultural centre. Finally, it has a preserved environment and natural and cultural heritage.

Tàrrega, Spain, a town of 17,129 inhabitants, is an example of a dynamic town that over the past decade it had an increase in population (+26%), employment (+24%), active population (+23%) and housing (+33%). In terms of employment, all three profiles (residential, productive and creative) gained jobs. In fact, the evolution of employment is better than in the regional average during the last 20 years. More than 80% of local employment is covered by local residents. Tàrrega hosts a large number of micro-enterprises related to services and commerce, which are mostly situated in the city centre. The weight of the productive profile is traditionally high as key drivers of local economy have been agriculture and industry. The agriculture is the main sector in terms of employment growth, while the relative decrease of employment in industrial sector is related to the progressive tertiarisation. The town plays a role of a centre of services (both public and private) and commerce for the surrounding area. Also, Tàrrega has the only high school of design and artistic creation in the region.

Alba, Italy (34,235 inhabitants) is a touristic town with a strong agro-food and wine sector used to develop a robust, high-quality tourist system. The agro-food sector drives both residential and productive economy, complemented by good cultural offerings such as events and fairs. Alba succeeded to attract new generation of culturally informed young people with higher levels of education. There are mainly young entrepreneurs with high qualifications in the agro-food sector, which is due to national policy to open new faculties with specialisations fitting with regional economic specificities. The productive economy is diversified among large-scale industries (food, textile and mechanical products) and an increasing number of small and very small enterprises. Alba, known for quality and excellence of local food and wine (Barolo wine, truffles and hazelnut) is a centre of culture and well-being. Over the last decade, Alba gained 16.6% in population and 8.7% in employment. The employment in creative and knowledge-based economy increased by 3%. However, these rather positive dynamics must be nuanced as they are also accompanied by a delocalisation process (for the first time) of the traditional firms rooted in the territory, and therefore the risk for Alba of remaining 'only' with tourism and residential economy.

From a more general point of view, this shift in local economy, as illustrated by the Alba case, raises a shared danger for many towns that follow more or less such trajectory because it may give the illusion that the local economy can rely only on 'soft activities', such as tourism and combined residential activities.

3.3. Is employment growth linked to a functional role?

The analysis of case studies suggests that **SMSTs with residential profile have more advantages as agglomerated or networked centres rather than autonomous centres**. **On the contrary, we find no clear evidence on productive/creative towns and functional role (in terms of employment)**. These results go in line with the urban literature that recognises the importance of various forms of mobility in positioning SMSTs in urban hierarchy (see e.g. CERTU-CETE, 2011, for a detailed analysis in the French case). It is argued that in contrast to some of the disadvantages of larger cities (e.g. traffic congestions, high property prices, social segregation, crime and pollution), SMSTs that provide services and a better quality of life have become attractive to both population and investments.

Referring to the typology of SMSTs' dynamics introduced by the ESPON 1.4.1. SMESTO (2006), we find that **almost all dynamic SMSTs in terms of gaining population and employment are networked or agglomerated rather than autonomous** (see Figure 3.3). The exception is **Athienou, Cyprus** that is growing in isolation (the only case of dynamic-isolated SMST). Its economy is mainly based on agriculture and agroindustry. The Cooperative organisation of Athienou has largely contributed to the development of business activity and local identity of population. The Cooperative supports local entrepreneurship, not only by commonly trading the local agricultural products and by providing loans, but also assuring storage facilities. Moreover, local population values its identity and is known for its competitiveness and innovative temperament.

An example of *'successful' residential-agglomerated* town is **Colwyn Bay, UK**. It is the second largest business centre in North Wales, only about 50 km from Liverpool to which it is agglomerated. The local economy is dominated by the tourism sector. In fact, the employment in tourism is nearly twice the average for small towns. During the last decade, the town has gained in population by 7% and in employment by 3%.

Equally interesting, the analysis highlights some examples of *'successful' residential-networked* towns. **Cambrils, Spain** is located about 10 km from Tarragona, Reus and Vilaseca. The town seeks to position itself as the centre of reference for the eastern part of the province and acquires a hub role in terms of accessibility, since it is located at the crux of different mobility corridors. The population and employment have increased during the last 10 years (36% in population and 15% in employment). The town's school of hospitality and tourism, that offers a degree in hotel, catering and tourism management, is unique in the province.

Finally, **Pisek, Czech Republic** is an example of an autonomous town in the restructuring process located in South Bohemian region between the capital city and two regional capitals in a rural area. The town plays a role of the local administrative centre providing services to neighbouring rural municipalities. As there is no proximity to major urban centres, Pisek retained strong autonomy and position within its own region. While the number of jobs has remained stable (+0.5%), the population has slightly declined over the last 10 years (by -0.7%). Pisek is one of the first towns which offered new industrial zone for incoming investors. Firms in the new industrial zone currently employ about 2,500 people. Town offers jobs not only in the mentioned industrial zone, but also in service sector and tourism. Therefore, the town was awarded to be the best city for business in Southern-Bohemian Region.

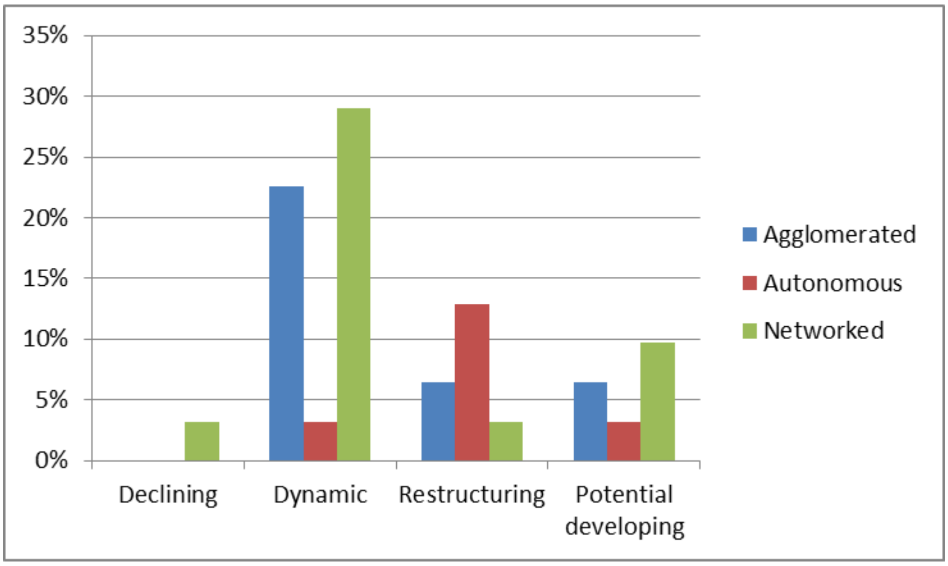


Figure 5. Performance of case study SMSTs in relation to their territorial arrangement (Source: Own elaboration).

3.4. What are common trends?

Our analysis of 31 case studies offers some insights on common trends and trajectories that we list below. However, much more cases across Europe should be observed in order to be able to conclude that these results reflect, in general terms, the reality of SMSTs in Europe:

- The majority of case studies have a **dominant productive profile** of local economy (16 towns out of 31).
- Some SMSTs studied show residential activities as a dominant profile of the local economy (9 out of 31 SMSTs). Rather, if not productive or residential, case studies have a mixed (hybrid) profile of local economy with no clear threshold being matched.
- Almost half of case studies (48%) have a **significant creative component in local economy** (at least 10% of total employment in creative and knowledge-based sectors).

- Most of towns in case studies having a dominant productive profile in the past remained productive during the last decade. 32% of case studies have experienced some sort of change in profile over the last 10 years or so. This means that every third town in our case studies, though to different degrees, is in a process of structural change of local economy.
- The **evolution of socio-economic profile can be beneficial** in terms of demographic and/or economic (jobs) growth. More than half of our SMSTs (55%) are dynamic towns with positive growth rates in both population and employment. Also, almost all dynamic SMSTs in terms of gaining population and employment are either networked or agglomerated than autonomous.
- Towns with residential profile have **more advantages as agglomerated or networked centres than as autonomous centres**. On the contrary, there is no clear evidence on relations between productive/creative towns and functional role (in terms of employment).

4. Conclusion

Our research started with the objective to identify the main features and trends of local economies in selected European SMSTs. More precisely, we focused on analysis of performance in terms of population and employment change over a 10-year period and on finding what influences better or worse performance. In that scope, we observed the relation between performance and profiles of local economy, on the one hand, and the relation between performance and territorial arrangement (functional role) on the other.

Despite limited sample, our analysis offers evidence that is aligned with our presumptions presented at the beginning of this chapter. Firstly, we have been able to identify the presence of three major socio-economic profiles of local economy in case studies: residential, productive and knowledge-creative. Even though we expected to have more mixed profiles of local economy and fewer cases of dominant profile (indicating a strong specialisation), we found that the local economy in our towns still relies strongly on their industrial (and, to a lesser extent, on agriculture) heritage. Secondly, we got confirmation that SMSTs are experiencing sectoral shifting from productive local economy to one that is more residential and more knowledge-creative, especially over the last decade (marked, as we know, by global industrial restructuring processes and macro-agricultural change dynamics). Very significant was that half of selected towns are significantly (more than 10% of employment) engaged in creative and knowledge-based activities. This means that SMSTs understood the importance of creativity, innovation and knowledge for their future development. Thirdly, a majority of selected towns are dynamic meaning that they have an increase in both population and in employment. Others are in the process of restructuring, which means that they search intensively for solutions to reconfigure themselves and to attract population and/or jobs. Finally, we found evidence that there may be connection between performance and territorial arrangement. Better performance (growth in population and in employment) is found in towns that are agglomerated or networked. It concerns in particular the sectors related to residential economy, and it shows the relevance of the urban system in which SMST is embedded in and the capacity to be interconnected and share functional and territorial role in an integrated fashion in order to create territorial critical mass.

In addressing the question if SMSTs across Europe face ‘common problems’, we argue that social and economic problems of SMSTs are only ‘common’ in an abstract sense. In practice the ‘problems’ of towns are mainly framed by their national and/or regional context. In fact, context (geographical and institutional) seems to be more important than the characteristics of the town itself, even if local specificities and circumstances may be also decisive in some cases.

Regarding recommendations for the European policy, we then propose giving SMSTs a stronger voice in regional debates. It is clear that SMSTs play an important functional role for their territory and have factors of attractiveness that differ from those of large cities. In fact, they are often very dynamic in terms of population and employment, thus their fate may be different from the one of decline and degradation. Finally, more support to alternative visions of the local economy that is oriented towards creativity and knowledge would benefit to SMSTs as well. As illustrated by our case studies economic growth based on interconnections and various forms of scientific, technological and industrial partnerships may also happen in SMSTs. Equally important, they can offer a vibrant and creative environment attractive to population and business just like larger cities. Therefore, SMSTs should not be excluded from public debate on future development of European territory. On the contrary, given their significant and growing share in total European population (72% for SMSTs compared to 28% for large cities), they should be considered, seriously, as a key component of the territorial new European landscape in terms of employment and population location, and of spatial mobility dynamics and economic development.

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Annex: Detailed presentation of towns' case studies

COUNTRY	SMST	SOCIO-ECONOMIC PROFILES (rank)			Population change	Employment change	Job structure change	Performance typology	TERRITORIAL CONTEXT
		Residential	Productive	Creative					
France	**Vendôme (8,578 inh)**	2	1	3	- 3,5%	+ 8,4%	R: 50.1% (1999) > 56.2% (2009) (+ 6.1) P: 41.2% (1999) > 36.1% (2009) (- 5.1) C: 8.7% (1999) > 7.7% (2009) (- 1)	restructuring	networked
	Chinon (5,355 inh)	1	3	2	- 10,4%	+ 8,5%	R: 55.7% (1999) > 60.1% (2009) (+ 4.4) P: 36.2% (1999) > 31.1% (2009) (- 5.1) C: 8.1% (1999) > 8.8% (2009) (+ 0.7)	restructuring & potential developing	agglomerated
	Issoudun (11,964 inh)	3	1	2	- 4,5%	+ 0,2%	R: 52.3% (1999) > 48.8% (2009) (- 3.5) P: 34.4% (1999) > 34.3% (2009) (- 0.1) C: 13.3% (1999) > 16.9% (2009) (+ 3.6)	restructuring & potential developing	networked
UK	**Colwyn Bay (32,895 inh)**	1	2	3	+ 7,1%	+ 2,9%	R: 88% (2010) P: 12% (2010)	dynamic	agglomerated
	Llandrindod Wells (6,450 inh)	1	2	3	+ 5,7%	- 1,3%	R: 86% (2010) P: 14% (2010)	restructuring	autonomous
	Tredegar (15,103 inh)	2	1	3	+ 0,3%	+ 4,2%	R: 51% (2010) P: 49% (2010)	dynamic	networked
Sweden	**Kiruna (16,368 inh)**	1	2	3	- 2,7%	+ 15,4%	R: 61.2% (2011); change: - 8 P: 33.3% (2011); change: + 3.5 C: 5.5% (2011)	restructuring & potential developing	autonomous
	Östersund (39,842 inh)	1	3	2	+ 2,2%	+ 2,6%	R: 78.3% (2011); change: + 2.7 P: 14% (2011); change: - 4.4 C: 7.7% (2011)	dynamic	agglomerated
	Timrå (9,268 inh)	1	2	3	+ 1,3%	+ 1,8%	R: 60.5% (2011); change: - 0.9 P: 33.7% (2011); change: - 5.4 C: 5.8% (2011)	restructuring	agglomerated

Poland	**Garwolin (15,477 inh)**	1	3	2	+ 0,6%	no information	R: 59.7% (2009) > 58.9% (2012) (- 0.8) P: 22.9% (2009) > 22.5% (2012) (- 0.4) C: 17.3% (2009) > 18.6% (2012) (+ 1.3)	dynamic	agglomerated
	Łosice (6,193 inh)	X	X		- 1,1%	no information	no information	declining	autonomous
	Szydłowiec (10,418 inh)	2	1	3	+ 0,1%	no information	R: 42% (2012) P: 52.5% (2012) C: 5.5% (2012)	restructuring & potential developing	networked
Slovenia	**Domžale (23,792 inh)**	1	3	2	+ 8,1%	+ 0,6%	R: 43.3% (2001) > 44.6% (2011) (+ 1.3) P: 42.8% (2001) > 34.0% (2011) (- 8.8) C: 13.9% (2001) > 21.4% (2011) (+ 7.5)	dynamic	networked
	Postojna (7,580 inh)	3	1	2	+ 2,4%	- 19,9%	R: 59.1% (2001) > 49.7% (2011) (- 9.4) P: 30.6% (2001) > 33.5% (2011) (+ 2.9) C: 10.3% (2001) > 16.9% (2011) (+ 6.6)	restructuring & potential developing	agglomerated
	Radovljica (8,231 inh)	1	3	2	+ 1,2%	+ 12,0%	R: 42.6% (2001) > 46.0% (2011) (+ 3.4) P: 43.8% (2001) > 36.5% (2011) (- 7.3) C: 13.7% (2001) > 17.4% (2011) (+ 3.7)	dynamic	networked
Belgium	**Ieper (22,050 inh)**	1	2	3	0%	+ 14,2%	R: 64.6% (2010); + 31% (2001 - 2010) P: 23.6% (2010); + 8% (2001 - 2010) C: 11.8% (2010); - 4% (2001 - 2010)	dynamic	networked
	Dendermonde (44,257 inh)	1	3	2	+ 2,7%	+ 10,5%	R: 64.5% (2010); + 18% (2001 - 2010) P: 20.7% (2010); - 2.5% (2001 - 2010) C: 14.8% (2010); + 9% (2001 - 2010)	dynamic	agglomerated
	Aarschot (28,636 inh)	1	3	2	+ 3,4%	+ 4,5%	R: 62.2% (2010); + 23% (2001 - 2010) P: 18.7% (2010); - 31% (2001 - 2010) C: 19.1% (2010); + 10% (2001 - 2010)	dynamic	networked
Spain	**Vilafranca del Penedès (41,321 inh)**	1	2	3	+ 21,9%	+ 14%	R: 50% (2011); + 9% (2001 - 2011) P: 36% (2011); - 6% (2001 - 2011) C: 11% (2011); + 159% (2001 - 2011)	dynamic	agglomerated
	Cambrils (34,919 inh)	1	3	2	+ 36,4%	+ 15%	R: 76% (2011); - 5% (2001 - 2011) P: 11% (2011); + 33% (2001 - 2011) C: 12% (2011); + 164% (2001 - 2011)	dynamic	networked

	Tàrrega (17,129 inh)	1	2	3	+ 25,6%	+ 24%	R: 60% (2011); + 14% (2001 - 2011) P: 36% (2011); + 6% (2001 - 2011) C: 4% (2011); + 156% (2001 - 2011)	dynamic	networked
Italy	**Alba (25,519 inh)**	2	1	3	+ 5,8%	+ 28.2%	R: 33.8% (1991) > 38.6% (2001) (+ 4.8) P: 60.4% (1991) > 52.4% (2001) (- 8) C: 5.8% (1991) > 9% (2001) (+ 3.2)	dynamic	networked
	Ceva (5,056 inh)	1	2	3	+ 2,3%	- 5.2%	R: 74.1% (1991) > 63.1% (2001) (- 11) P: 19.5% (1991) > 25.5% (2001) (+ 6) C: 6.4% (1991) > 11.4% (2001) (+ 5)	restructuring	agglomerated
	Fossano (20,564 inh)	2	1	3	+ 4,1%	- 3.9%	R: 58.1% (1991) > 56.5% (2001) (- 1.6) P: 34.9% (1991) > 33.5% (2001) (- 1.4) C: 7% (1991) > 10% (2001) (+ 3)	restructuring & potential developing	networked
Cyprus	**Dali (10,466 inh)**	2	1	3	+ 79%	+ 98%	R: 52.1% (2005) > 56.3% (2011) (+ 4.2) P: 39.2% (2005) > 34.3% (2011) (- 4.9) C: 8.7% (2005) > 9.4% (2011) (+ 0.7)	dynamic	agglomerated
	Paralimni (14,963 inh)	1	3	2	+ 35%	+ 15%	R: 77.2% (2005) > 77.9% (2011) (+ 0.7) P: 8.9% (2005) > 9.2% (2011) (+ 0.3) C: 13.9% (2005) > 12.9% (2011) (- 1)	dynamic	networked
	Athienou (5 017 inh)	3	1	2	+ 18%	+ 26%	R: 40.1% (2005) > 44% (2011) (+ 3.9) P: 50.2% (2005) > 44.4% (2011) (- 5.8) C: 9.7% (2005) > 11.4% (2011) (+ 1.7)	dynamic	autonomous
Czechia	**Brandýs nad Labem - Stará Boleslav (16,247 inh)**	1	2	3	+ 12,6%	+ 12,1%	R: 54.0 % (2001) P: 36.7 % (2001) C: 9.4 % (2001)	dynamic	agglomerated
	Ústí nad Orlicí (12,457 inh)	2	1	3	- 3,7%	- 6,2%	R: 43.5 % (2001) P: 46.8 % (2001) C: 9.7 % (2001)	declining	networked
	Písek (27,979 inh)	1	2	3	- 0,7%	+ 0,5%	R: 48.6 % (2001) P: 41.6 % (2001) C: 9.8 % (2001)	restructuring	autonomous

Chapter 7 – Policy measures and approaches across countries

Rob Atkinson

1. **Aim and research question(s)**

In this chapter we build upon the outputs of the earlier chapters and more specifically consider the results of the case studies in terms of their more general policy implications for SMSTs across Europe and the extent to which our results enable us to:

- Identify any appropriate EU, national and regional policies/approaches that support SMSTs
- Identify the extent to which SMSTs have developed appropriate policy responses independently and/or by cooperating with other SMSTs (territorial governance) and other levels of governance (the vertical dimension)
- Analyse how, if at all, SMSTs have sought to mobilise and enhance their existing assets and/or develop new ones as part of a development strategy
- Consider the extent to which it is possible to identify particular 'policy bundles' appropriate for use in relation to SMSTs with similar socio-economic profiles and regional contexts
- Identify the spatial planning approaches (if any) developed to support policy development

When addressing these questions it is important to bear in mind that in recent years there has been an increasing, albeit still limited, acknowledgement that small and medium-sized towns (SMSTs) have an important role to play in the European territory and its urban system. For instance the Leipzig Charter (German Presidency, 2007, p3) noted

> Coordination at local and city-regional level should be strengthened. *An equal partnership between cities and rural areas as well as between small-, medium-sized and large towns and cities within city-regions and metropolitan regions is the aim*. We must stop looking at urban development policy issues and decisions at the level of each city in isolation. Our cities should be focal points of city-regional development and assume responsibility for territorial cohesion. It would therefore be helpful if our cities would network more closely with each other at European level. (Emphasis added)

While this was a welcome acknowledgement of the role of SMSTs it might be argued that it did not go far enough in the sense that the emphasis remained on SMSTs in city regions and metropolitan regions and, by omission, neglects the many SMSTs in rural/isolated contexts and other territories outside city-regions.

More recently the Cities of Tomorrow report (CEC, 2011, p. 1) pointed out:

> Only 7 % of the EU population live in cities of over 5 million inhabitants compared to 25 % in the USA. In addition, 56% of the European urban population – around 38% of the total European population – live in small and medium-sized cities and towns of between 5,000 and 100,000 inhabitants.

Along with this there is now more awareness of SMSTs significance for rural areas, in terms of preserving people's well-being and quality of life, as (local) service centres, countering migration to urban areas and rural depopulation and as part of regional economies and thus their overall role in achieving "…balanced regional development, cohesion and sustainability of the European territory" (ibid, p. 4). Thus there is a general recognition that SMSTs "…are an important element of the settlement hierarchy of any region or country, and are a vital asset to Europe." (ECOVAST, 2013, p21).

While this belated growing recognition of the role of SMSTs at European level is undoubtedly welcome it only represents a first step in terms of creating a 'policy framework' that can support them. However, the new regulations for the Structural Funds post-2013 have the potential to assist SMSTs through the emphasis on the use of the Common Strategic Framework, Partnership Agreements[5], Integrated Territorial Investment and the focus on territorial development that allow for the improved integration and focussed use of different strands of the Structural Funds (e.g. ERDF, ESF and the Rural Development pillar of CAP [EAFRD] and the EMFF)[6]. Where appropriate it may also be possible to support groups of SMSTs and their relationships with larger urban areas through the use integrated sustainable urban development[7]. Finally, the mainstreaming of the LEADER approach in all the funds and the associated emphasis on Community-Led Development will help support a 'bottom-up' approach that could also benefit SMSTs. In association with Europe 2020 and its emphasis on smart, sustainable and inclusive growth along with the placed-based approach there is the potential to develop more tailored approaches to SMSTs in their regional/functional context (e.g. in some regions the reinvigoration of agriculture through an emphasis on the 'smart rural economy' and the role SMSTs can play as functional/service centres).

Despite this much will depend upon how Member States engage with lower levels of government in drawing up Partnership Agreements and in particular how and to what extent the Managing Authorities choose to utilise these new possibilities and the degree to which they actively engage with local authorities and identify the role of SMSTs during the design of their Operational Programmes[8]. This also highlights the need for European level policies

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[5] The Partnership Agreement should identify:

- The national strategy, key thematic objectives, indicate financial allocations and provide a list of programmes
- Set out the overarching strategy for developing integrated approaches to territorial development
- The implementation arrangements (see Pucher et al, 2012).

[6] Artmann et al (2012) writing specifically on rural-urban partnerships note the separation between EU Cohesion policy and rural development policy and the need for better links/integration between these two funds in the post-2014 period. Moreover, they also highlight for the need to develop a less sectoral and more territorially based and integrated approach in the use of the various funds at national and sub-national levels (similar points are made in OECD, 2013). They point out that the Common Strategic Framework can provide important guidance to member states on how to develop this approach along with support of Community-Led Development and Integrated Territorial Investments. The important issue at member state level (both national and subnational) is to ensure that an integrated approach to territorial development is incorporated in Partnership Agreements and operational programmes and that it reflects the territorial dynamics of the relevant areas. The roles and functions of SMSTs within a specific territory should also figure as part of this integrated territorial approach.

[7] The new rules for the funds specify a minimum of 5% of a member state's ERDF funds be used for integrated sustainable urban development.

[8] As Partnership Agreements and Operational Programmes are currently still being elaborated it is not possible to specify how, if at all, SMSTs will figure in these. Much, of course, will depend upon how Member States and relevant sub-national authorities put these into practice and it is not unreasonable to expect considerable variation both between and within Member States as they 'adapt' the goals of Europe 2020 and the relevant Structural Funds to their development priorities/objectives.

to be integrated with and supplemented by appropriate actions at national, regional and local levels. Here the place-based approach of the Barca Report (2009) takes on a particular significance as a 'guiding framework' for thinking and action.

The results of the case studies will provide insights into the extent and ways (if any) that Member States, at national and/or regional level, have either directly or indirectly recognised and addressed the issues facing SMSTs. More specifically the 31 case studies will provide evidence on what is actually happening in ten Member States, offering insights into the problems and challenges SMSTs face, the ways in which different SMSTs understand their situation and are mobilising (or not) their assets to address their situation. This will involve a consideration of the relevant governance arrangements and spatial planning policies developed and the extent to which they are appropriate responses to the situation(s) facing our case study SMSTs. This evidence needs to be considered in the context of their socio-economic profile (Chapter 6), the general performance of SMSTs (Chapter 10) and regional context; although without assuming these factors inevitably pre-determine the fate of SMSTs. This will allow us to offer more general insights into the possible types of policy approach that can be developed and potentially generalised to other similar SMSTs (to be further elaborated in Chapter 11). Although the proviso should be added that the analyses carried out in Chapters 6 and 10 do necessarily, if all, represent the way(s) in which the relevant SMSTs understand their situation.

It should also be remembered that SMSTs, just like larger towns and cities, are strongly influenced by wider national, European and global developments – in order words they are not immune to the vicissitudes of wider economic, social and cultural forces but the way(s) in which they are affected by and interact with these forces may well differ when compared to larger towns and cities and that they may be more affected by their specific regional context and spatial location (e.g. as an 'isolated SMST' or one that is part of a metropolitan region).

2. The EU, National and Regional Policy Contexts of SMSTs

2.1. Introduction

As noted in the Introduction to this Chapter there has been a growing interest in SMSTs at the European level, albeit starting from a 'low base' and arguably still 'embryonic'. To a certain extent this has been replicated, to varying degrees within Member States. First of all we will provide a brief background to developments at European level drawing on EU documents and other relevant sources. Then, drawing on the case studies, the section will discuss how, in a general sense, within the relevant case study countries, SMSTs have figured in the thinking, policy and action of the relevant Member States.

2.1.1. European Policy Approaches

In terms of EU policies SMSTs have, if at all, been addressed within two distinct 'policy domains':

- Regional Development - Territorial/Spatial Development
- Rural Development

It is important to note that SMSTs are rarely the specific objects of analysis or policy in either of these policy domains. Moreover, although we have identified these two policy domains separately (a similar point is made by Artmann et al, 2012) in fact there is considerable overlap between them with regard to how SMSTs are viewed, although their role(s) may be seen in rather different ways and the policies in each policy domain take somewhat different forms. Nevertheless, there are some important elements of complimentarity between them in terms of normative assumptions and general policy approaches. This 'separation' has had important implications for the coordination and integration, or lack therefore, of policies and this applies not just to those considered here but a wide range of other policies that have implications for SMSTs (e.g. services of general interest, transport, energy, economic and industrial policy).

While Regional Policy has a longer history than Territorial/Spatial Development the two have essentially become one sharing an underlying discourse. This policy discourse has been closely associated with the development of the European Spatial Development Perspective (ESDP, 1999) and its subsequent evolution. The role of SMSTs was acknowledged in the ESDP, although this was at a rather general level. In terms of policy options the ESDP suggested: "Promoting integrated spatial development strategies for city clusters in individual Member States, within the framework of transnational and crossborder co-operation, including corresponding rural areas and their small cities and towns." (ESDP, 1999, p21). The ESDP also recommended strengthening the role of SMSTs as development hubs, supporting partnerships and networks at national and transnational level, improving transport links (whilst acknowledging that high-speed transport networks may disadvantage many SMSTs) and supporting their role as providers of services of general interest.

What was apparent from these early comments on SMSTs was that they were largely considered to constitute a 'homogeneous category' of towns and it failed to appreciate the wide range of places included in the category SMSTs and the roles/functions they played. Indeed, it might be argued that they were primarily understood in terms of their location within particular metropolitan or city-regional contexts where it could plausibly be argued polycentric urban structures existed. The roles of what have often become known as 'market towns' or isolated small towns have until recently been largely ignored. The Fourth Cohesion Report (CEC, 2007a) did pay more attention to their roles and functions and their complex relationship with surrounding areas. Thus (referring to towns with populations between 5,000 and 100,000) it pointed out:

> Towns can benefit rural areas through the services they provide, while people living in towns can equally benefit from being close to rural areas. Towns can, therefore, serve as centres of development for rural areas, as markets for the products produced there and a focus for employment services of all kinds and cultural and recreational activities. There is a mutual dependence between rural towns and the surrounding areas since the viability of the services the former provide is partly dependent on the demand in these surrounding areas. Consequently, cooperation between rural and urban authorities is important for spatial planning and development.
>
> Towns are important in strengthening territorial cohesion either by supporting polycentric development or by offering key services to surrounding rural areas. There are a number of examples of towns in reasonable reach of each other cooperating by sharing the functions they perform and between them providing a range of services and amenities. Such cooperation contributes to less spatial concentration and to more a balanced pattern of regional development. (ibid, p59)

The *Green Paper on Territorial Cohesion* (CEC, 2008) brings together many of these issues and emphasises Europe's territorial diversity. Indeed, it is this territorial diversity that is portrayed as one of Europe's major strengths and this, in principle, supports a greater emphasis on the position and role of the smaller places we focus on in this project. The emphasis is very much on identifying and supporting the strengths of a diverse range of places and supporting endogenous growth as a way forward that will benefit all countries, regions and places – the ultimate win-win situation.

What this brief overview of thinking on Regional Policy and Territorial/Spatial Development indicates is that particularly since the publication of the ESDP there has been an increase in awareness that SMSTs do have a role to play in Europe's spatial and territorial structure and its development[9]. A point emphasised in relation to Europe 2020 (CEC, 2010) by the accompanying Territorial Agenda 2020 (2010) which argues "In rural areas small and medium-sized towns play a crucial role; therefore it is important to improve the accessibility of urban centres from related rural territories to ensure the necessary availability of job opportunities and services of general interest". (p8; see also Hungarian Presidency, 2011, pp53, 54 and 80-81). However, this increased recognition has not been accompanied by any specific analysis and policies.

In terms of the post-2014 approach and Europe 2020 as we noted in the Introduction to the Chapter there are potentially promising signs for SMSTs regarding the use of the Common Strategic Framework, Partnership Agreements, Integrated Territorial Investment and territorial development that potentially allow for the improved integration and focussed use of different strands of the Structural Funds (e.g. ERDF, ESF and the Rural Development pillar of CAP) and Community-Led Development along with the growing emphasis on the place-based approach (Barca, 2009). The emphasis is therefore on the need for greater coordination of the different funds, as Pucher et al (2012, p10-11) point out "cross sector policy coordination is the crucial point in Cohesion Policy." and this is a key aim of the Common Strategic Framework and the Partnership Agreement.

In terms of Rural Development Policy associated with Pillar II of the CAP the Commission's 1988 document on *The Future of Rural Society* (CEC, 1988) is often seen as "…the starting point of a genuine rural development policy in the EU." (RuDi, 2010, p24) and prefigures much of the subsequent debate and shares many of the same concerns and approach to be found in the wider European policies on Territorial/Spatial Development and Regional Development. The approach to rural development outlined in *The Future of Rural Scoiety* is based on (economic) diversification by utilising the indigenous potential of local circumstances and developing strategies appropriate to the social and economic conditions of each region. This requires a multi-sectoral strategy that integrates with other policy areas. Dialogue between and partnership involving a wide range of partners (see CEC, 1988, p62) is seen as central to the development and implementation of the strategies and the avoidance of "…errors of diagnosis that are all too common when planning is carried out from the outside." (ibid.p62). Although subsequently there has been no detailed analysis of the role of SMSTS in rural development policy.

[9] It is worth bearing in mind that such actions are an important part of territorial cohesion. Territorial cohesion, along with the more long standing notions of economic and social territorial cohesion, is now part of the Treaty on European Union (art. 1.3) and in the Treaty on the Functioning of the European Union (art.4, 14, 174). Thus we can now talk of economic, social and territorial cohesion elements of an 'integrated' Cohesion Policy.

A key influence on the evolution of rural development policy has been the LEADER initiative. LEADER (*Liaison Entre Actions de Développement de l'Économie Rurale*) was launched as a Community Initiative in 1991 and has become the best know and most widespread element in EU Rural Development Policy, during its lifetime there were three versions: LEADER I, LEADER II and LEADER+. The 'LEADER approach', in terms of its core elements and development, shares much in common with an urban initiative - URBAN. Like URBAN it has received considerable publicity and been widely utilised across the EU. It has also been the subject of considerable academic scrutiny during its life-time both as a stand alone initiative and in terms of its wider implications for EU Rural Development Policy (cf. Ray, 2001; High and Nemes, 2007; Maurel, 2008; Dargan and Shucksmith, 2008; Böcher, 2008)

While the LEADER approach has obviously evolved since its inception there has been a consistent core set of ideas and actions that have defined the essence of the approach, put somewhat simplistically it is a method that involves local partners in steering the development of their area.

There is no requirement that local LEADER projects should be implemented within pre-existing administrative boundaries, the focus is on identifying and working within small areas that are homogenous, socially cohesive territories that share common traditions, a local identity, a sense of belonging or common needs and expectations. Nor is the definition of the local area considered as fixed and static, as the Commission guide to LEADER notes (CEC, 2006b, p9).

The emphasis is on a bottom-up approach with a strong element of community capacity building that seeks to construct a local partnership, draw in a wide range of local partners/stakeholders to identify the area's strengths and weaknesses, develop a sustainable strategy and implement it. One might argue that this is about recognising strengths and weaknesses in local *territorial capital* and developing mobilisation mechanisms and appropriate forms of local governance to achieve this. The emphasis is very much on innovation (not just in an economic sense but also in relation to social and cultural innovation) and learning. The Local Action Group (LAG) is central to the whole process. As the Commission guide noted "The LAG has the task of identifying and implementing a local development strategy, making decisions about the allocation of its financial resources and managing them." (CEC, 2006, p10). As LEADER has evolved LAGs have been encouraged not only to build up local or regional networks; emphasis has also been placed on the need to participate in national and international networks as part of a learning and knowledge exchange process.

This is not the place to attempt an assessment of LEADERs achievements, but it should be noted that in previous programming periods the initiative was limited to rural areas and of course was the responsibility of DG Agriculture while DG Regio was responsible for the various URBAN initiatives emphasising once again highlighting the administrative division within the Commission and in policy. However, given that it has been mainstreamed in the 2014-2020 Programming Period the Commission clearly believes it has achieved a sufficient degree of success to justify the approach being integrated into the mainstream of rural development to facilitate that process. Moreover, the extension of the general approach to all areas, especially when taken in conjunction with the new emphasis on Community-Led Development shows that the Commission has recognised the artificial, and potentially damaging, effect of this arbitrary divide between 'urban' and 'rural' and the need to adopt a territorial and integrated approach, a point emphasised by the recent OECD (2013) report on Rural-Urban Partnerships.

Despite the potential for SMSTs to be the beneficiaries of the above approaches there is little or no evidence to suggest that to date at the European level they have been the object of EU policy, indeed it may reasonably be suggested that they have largely been neglected in favour of an emphasis on large cities which are deemed to be the motors of Europe's economic growth and crucial to its competitiveness (see CEC, 2005 and 2007b). Hopefully the new approach in the post-2014 period will lead to more emphasis on the role of SMSTs, although much will depend on what takes place at and within Member States.

2.1.2 National and Regional Approaches in the Case Study Country

In the previous sub-section we sketched out the general understanding, or lack thereof, of SMSTs at European level, here we turn to the case studies and their national and regional level. What is clear from the case study reports is that none of the case study countries has an 'explicit policy'[10] towards SMSTs. Although in some countries SMSTs are considered 'indirectly', albeit as a rather fragmented or disaggregated category (i.e. not as a coherent object of thinking or policy) but rather in terms of wider categories into which some of them *may* fall (e.g. market towns, coastal towns, isolated towns, development nodes in rural areas). For instance in the UK some SMSTs were included in the focus on 'market towns' outlined in the Rural White Paper (DETR, 2000), while the Wales Spatial Plan (Welsh Government, 2008) acknowledged the important role some SMSTs play as service and employment centres in sparsely populated rural areas and they were identified as part of a hierarchy of towns in Wales to which services and employment were to be directed (something similar can be found in the Catalan case study). While in the Czech Republic the *Urban policy guidelines (Zásady urbánní politiky, 2010)* did refer to SMSTs in terms of their influence on the urban structure of the country. However, in this document the country's dense network of SMSTs was seen in two ways: as an obstacle to development of large growth poles whilst simultaneously considering them as supporting territorial cohesion because they provide important services and jobs for rural areas and therefore needed to be supported. In addition the search for a 'balanced and polycentric structure' included supporting some SMSTs in less urbanized areas. However, in other Czech national policy documents, such as the *Strategy of regional development* (*Strategie regionálního rozvoje, 2007-2013*) they were not mentioned. What this brief snapshot suggests is that when SMSTs are considered at national level/regional level it is in terms of the *particular* roles they play within certain policy contexts (in the cases citied above rural policy, spatial policy and urban policy). While this may be quite sensible it does make it more difficult to identify consistent policy messages from the case studies, on the other hand one could quite reasonably argue that policy(ies) towards SMSTs can *only be meaningful when they are considered within their particular functional and spatial contexts* and that it is pointless to search for general policies for SMSTs. Thus the starting point for any approach to SMSTs is to identify the role(s) and function(s) they play within a particular territory and to understand the dynamics of the territory and the challenges it faces. Then it will be possible to begin to develop an integrated and place-based approach to the territory in which SMSTs figure.

Moreover, it is difficult to find a consistent definition of what constitutes a SMST in any of the case study countries (Northern Ireland was the only country/region that had a 'statistical

[10] In terms of what constitutes an 'explicit' policy this chapter broadly follows the definition offered by van den Berg, Braun and van der Meer (2007, p1) as regarding cities as "…policies that affect the cities knowingly and directly." (see also CEC, 1992). Thus an 'explicit' policy on SMSTs would be one that 'affected SMSTs knowingly and directly'.

definition of a small town) adding further confusion to an already complex situation particularly when we are thinking comparatively across the case studies. Nevertheless in the course of this chapter we will, cautiously, suggest that certain themes can be identified.

In addition we also we need to bear in mind the institutional context within which SMSTs operate. As Chapter 4 has pointed out this is very complex, with our case studies being embedded in a variety of different institutional arrangements ranging from Unitary (e.g. UK and France) to Federal states (e.g. Belgium), degrees of regionalisation (e.g. Italy and Spain) and varying degrees of political and fiscal decentralisation which do not necessarily reflect any simple notion that Unitary States are more centralised while Federal States are more decentralised (e.g. Slovenia is a Unitary State with a relatively high level of decentralisation and the same applies to Sweden). Nor does a higher degree of 'financial autonomy' (i.e. less reliance on central funds and a greater potential capacity to raise funds from local sources) necessarily mean SMSTs have more resources available to develop local policy responses. Indeed some would argue that such autonomy might lead to competition between municipalities as they seek to attract residents and businesses by levying lower local taxes and charges ('race to the bottom').

Furthermore some countries have large numbers of small municipalities/local authorities (e.g. France and the Czech Republic) leading to a territorially fragmented structure while others have much smaller numbers of large municipalities (e.g. Sweden and the UK). In both cases this has implications for SMSTs. In the former case this means the municipality is only likely to cover the core of the SMST while in the latter the municipality may well include a number of SMSTs (as is the case in Wales). In both cases the issue of collaborative working/cooperation between SMSTs is important but how it can be facilitated varies: for instance in states such as France with lots of small municipalities 'financial incentives' provided by the central state have been used to 'persuade' or induce neighbouring municipalities to work together while in the UK it is the municipality that will play the primary role in facilitating towns within its administrative boundaries to work together.

What all this means is that we cannot draw any simple inferences from the general role of institutional structure in facilitating SMSTs to develop their own policy responses. What is apparent from Chapter 10 is the importance of regional context and we might reasonably ask does a greater level of regional autonomy allow the regions to develop responses to the position(s) of SMSTs in their territory? Some support for this may be found in the case studies. For instance if we take the cases of Wales[11] (part of a Unitary State with some decentralisation) and Catalonia (part of a Unitary 'regionalised' State) we can see some evidence of a regional approach to SMSTs being developed. In both regions (and sub-regions within them) a hierarchy of towns and cities has been identified and within this certain places that will be the sites for future growth in terms of jobs and housing and as service centres for a wider hinterland. In both cases this is linked to a particular vision of the region's future development and this entails a degree of decentralisation of population, jobs and services from the main metropolitan centres and supporting the specified SMSTs (although the converse of this is that other SMSTs will not receive similar support). On the other hand in the Italian case study region despite being in a Unitary State with ongoing regionalisation there is no evidence of a regional approach to SMSTs. Similarly in a Federal State such as Belgium with powerful regions the case study provides no evidence that Flanders has developed a regional approach to SMSTs. Indeed the main emphasis is on the development of four Metropolitan Regions and SMSTs will presumably then be addressed

[11] Whilst Wales is one of four constituent nations that make up the United Kingdom here we treat it as a region.

within those regions or in relation to them. So once again we cannot identify a simple and straightforward relationship between institutional structure and propensity to address SMSTs at the regional level.

What is apparent is that, despite a growing interest in SMSTs, at European, National and Regional level there is no clear overall focus on them. Within countries they have tended to be addressed, if at all, in a somewhat tangential manner through national programmes/initiatives addressing more overarching categories (such as market towns, coastal towns). While this has undoubtedly been of benefit to individual SMSTs that met the relevant criteria for these programmes it has been somewhat ad hoc in nature and varied depending on the particular policy focus adopted at a point in time. In many ways this emphasises the importance of the regional level in addressing the position and role of SMSTs within the relevant region as part of a wider regional strategy. However, in many cases the regions simply lacked the capacity to do this. Only in Wales and Catalonia was there evidence of a regional approach to SMSTs and this involved defining an 'urban hierarchy' in which certain SMSTs were designated as sites for employment/housing/services/retail in the particular sub-region in which they were located.

3. The overall evidence from the case studies

Figure 1 in chapter 6 indicates the regional local location of our 31 case studies and provides a list of them with the most recently available population totals. What this shows is the wide variation in population size (the smallest was just over 5,000 and the largest almost 40,000), nevertheless we cannot draw any clear conclusions from this as much depends, in terms of their role(s) and function(s), on the regional location of the SMSTs (e.g. whether they are in a Metropolitan region and agglomerated to a large city or in a rural region and are an isolated town). What is also clear from the case studies is that the past history of the individual SMSTs is important in determining their present situation and the challenges they face in terms of future development (e.g. where they have been industrial towns and undergone a process of deindustrialisation).

One thing that is important to bear in mind is that, as noted in Chapter 4, an SMST, even when it coincides with a municipality, rarely covers its micro-region and is embedded in a much larger regional/sub-regional territory (that may include other SMSTs) to which it has a variety of different types of relationships. The Flanders case represents what is perhaps an extreme example of this where large numbers of SMSTs and municipalities are in close proximity to one another and frequently are, to varying extents, agglomerated to metropolitan regions. Only in a few cases (such as some of the Swedish case study SMSTs) were there no other SMSTs in the vicinity.

Here we will seek to:

- Identify the extent to what SMSTs have developed appropriate policy responses independently and/or by cooperating with other SMSTs (territorial governance) and other levels of governance (the vertical dimension)
- Analyse how, if at all, SMSTs have sought to mobilise and enhance their existing assets and/or develop new ones as part of a development strategy (including access to resources)
- Consider the extent to which it is possible to identify particular 'policy bundles' appropriate for use in relation to SMSTs with similar socio-economic profiles and regional contexts

- Identify the spatial planning approaches (if any) developed to support policy development

Given the number of and the wide variation in the case study SMSTs what follows is an illustrative selection of different 'types of small towns', the dilemmas they face and how they have sought to address them. We start with three rather different towns, in terms of location, size and problems, but which are examples that appear to have developed coherent strategies to address their situation. We then examine two successful isolated towns that illustrate local endogenous development and a third case that expresses some of the challenges facing many isolated towns. Next we consider three more successful towns whose success has been strongly influenced by their location in (or adjacent to) a major metropolitan regions. Then we consider two towns experiencing deindustrialisation. Finally we consider issues related to cooperation between adjacent towns through two rather different examples of networked SMSTs that illustrate the issue of cooperation between what are in principal complimentary adjacent towns.

In terms of our small towns only a few appear to have developed a 'meaningful policy' of their own. Perhaps the best example of this is the isolated Swedish town of Östersund. It is the largest of our SMSTs with a population of around 40,000 and it also has a university. The town has a developed its own vision: 'A Sustainable Östersund'. The town's strategy is based on sustainability and endogenously generated growth based on its local assets (perhaps reflecting its isolated location). This strategy focuses on its role as a 'winter city' emphasising winter sports, tourism and associated R&D. The university appears to have a significant role not least as a local employer but also as a centre for research related to tourism. Developing these interrelated aspects is seen as key to the town's strategy for development. The other, related, key issue is increasing the population; this seems to a key focus around which everything else is organised. This aim will be supported by new developments in business, housing and infrastructure to attract new population. A range of plans (and sub-plans) have been developed to implement this overarching strategy. The town has been successful in accessing EU funds to support these developments and it also receives regional funding to support these initiatives. A series of partnerships with local stakeholders have been developed and these appear to function well. The town is also engaged in regional partnerships which are important to the town's future development. The case study report gives the impression that it is quite unusual for a Swedish municipality to develop this range of partnerships and networking. While it appears to be the public sector that is driving the overall process there is also evidence of strong relationships and partnerships between the public sector, private sector and civil society. It seems to be the bringing together of all sectors to develop and support a common vision for the future that underlies the strategy. Perhaps this is a case of isolation and a strong 'local identity' acting as the driving force that binds the various partners/stakeholders together and provides a sense of common purpose.

Another example of a town developing its own development policy is the French town of Issoundun, this is a much smaller town than Östersund with a population of almost 12,000. The town has a range of plans that aim to restructure the local economy by developing new economic activities – especially in the service sector – and reverse the 'brain drain' that it suffers from. It has a longstanding and well-connected mayor ably supported by a deputy mayor; the mayor appears to be the driving force behind the local development strategy and its attempt to develop/improve the local economy and society. The town has engaged in a range of projects to achieve this, some of which are quite innovative (e.g. the provision of social housing in partnership with a private company, provision of a 'free' rural-urban bus service to help connect the town to its hinterland). However, the case study report suggested that the impacts of these projects are not always apparent and it is difficult to determine the extent to which the desired change is being brought about. Perhaps this reflects the absence of an overall strategic vision for development and an associated integrated framework within which projects are implemented.

Colwyn Bay in Wales provides another, although somewhat different, example of where a long-term strategy has been developed for an SMST. Here the process was led by the local authority (Conwy Country Borough Council) in which the town is located. A range of plans were developed by Conwy Council for the whole of its territory and Colwyn Bay was identified as part of a coastal Urban Development Strategy Area in which most new development in the county will take place. Within this wider framework Conwy council chose to focus on the town and embark on a range of initiatives to regenerate it. As part of this regeneration process a number of projects were developed (including new sea defences, seafront environmental development, a multi-purpose sports and leisure park and townscape improvements). Initially these were developed in isolation but subsequently have all been 'joined up' by a Masterplan for the town. The aim is also to upgrade the town's retail offer and to develop new forms of tourism designed to benefit from the increased numbers of visitors to the seafront development and the adjacent sports and leisure park. The town's inclusion in the Objective1/Convergence Area has also helped facilitate this process through the provision of considerable additional funds.

The process has been driven by senior officers in Conwy council working across boundaries and coming up with 'innovative' approaches to accessing, combining and using different funds. Partnership working with Welsh government and other partners (Welsh Rugby, Bay Life Initiative) has been an important aspect of the strategy. In addition it has drawn on a range of funding sources (e.g. EU, Welsh Government, Conwy council and Welsh Rugby) using them is a focussed manner to support the development strategy. The partnership structures in the town are well developed and apparently functioning effectively, although the private sector is weak and underrepresented in the process. Despite impressive achievements to date all concerned recognise that there is a long to go as the retail offer remains weak and the tourist infrastructure underdeveloped.

These cases suggest that it is possible for SMSTs, or in the case of Colwyn Bay the relevant local authority, to develop a local strategy that attempts to identify local assets and deficiencies and to address them in a considered manner, although the degree to which they can be considered a 'success ' is not clear. In these cases it is possible to identify a 'driving force behind' the strategy: in Issoundun the town council led the process, in Colwyn Bay the local authority of Conwy led the process, while in Östersund to a great extent the public sector, albeit working in close partnership with other sectors, has led the process. This is typical of the majority of our case studies; the public sector, albeit at times in partnership with other sectors, has played the leading role in developing and implementing a strategy.

On the other hand two of our case studies provide examples of 'successful' SMSTs in which the public sector appears to play little if any role. The Italian town of Alba is a service/administrative centre and networked SMST. However, it has 'poor connectivity' and is considered to be remote/isolated in terms of the rest of the region. But this does not seem to have affected its development. The town has developed its own distinct (high quality) brand that has a global presence. Its particular strengths lie in the agri-food sector and high quality tourism. It also has some large-scale manufacturing plans and many SMEs. In other words it has a diverse economy that is strong and performing well. The town appears to be successful; however, the impression gained from the case study is that there is not a conscious strategy for the future. The case study suggests that the local authority is not the leading actor and that the development of the town is driven by actors in the private sector and civil society. This may be a case of the 'local milieu' being the 'generator' of development building on reciprocal local networks (e.g. social capital, 'knowledge exchange' and trust) and an associated strong sense of 'local identity' built up over a long period of time and its 'isolated/remote' position.

A similar argument may be applicable to the Cypriot SMST of Athienou. This is a remote, isolated rural town on the 'border' between the north and south of the island located in the UN Buffer Zone. The town has its own Local Plan as well as a local development plan, but this is of uncertain status. The main focus is on supporting local agriculture, residential development and maintaining/enhancing the position of the town and diversification of the existing, largely agricultural, local economy. The town's development has been based on local sources of investment from local entrepreneurs and it has its own long established Cooperative that provides a range of services to local agriculture (loans, storage facilities, machinery, etc). The impression gained from the case study is that much of the activity in the town is locally generated and operates through reciprocal 'community' networks. This case also appears to represent an example of endogenous development driven by local society. The case study makes much of its 'entrepreneurial spirit', social cohesion and dense social networks, in recent years its location on the 'border' may actually have enhanced these factors as the town has sought to rebuild its economy.

We find a rather different example of an isolated SMST in the case of Łosice which is in a peripheral area of eastern Poland. It is an administrative/service and employment centre in a rural agricultural area near Belarus border with poor connectivity. Services, trade and the labour market are developing thanks to the intensive production of mushrooms, chokeberries and strawberries in the rural areas surrounding Łosice. The town functions as local labour hub providing residents of the nearby smaller villages healthcare, basic and secondary education, and a number of services as well as being a local transport and trade hub. In recent years the town has sought to develop its social and self-government functions linked to the creation of several socially oriented non-governmental organizations that focus on a combination of self-governance, improving living standards, social work, and support for the socio-economic development of the town and the county as a whole.

The town's economy is dominated by small businesses and there is an absence of large firms that would provide greater stability in the labour market. The result is a shortage of jobs and unemployment. The overwhelming dominance of agriculture in the town and the areas economy is also seen as a potential weakness as it creates a lack of economic diversity. These problems are compounded by the loss of young people ('brain drain'), which means many there is a lack of highly education and well qualified people.. Local government seems to lack a strategic and integrated approach to the town's problems. EU funds are accessed but not used in a strategic and integrated manner to address problems. It does not have its own development strategy.

In some ways the towns of Alba and Athieniou are not significantly different from Łosice in that they are too are isolated and have an important agricultural sector, the difference appears to lie in the ways in which agriculture has been developed and utilised to support local endogenous development. In comparison to these two SMSTs Łosice seems to lack the capacity to effectively mobilise and develop its local assets to generate sustained growth. While in Alba and Athienou the factors generating success are rooted in the local milieu this is not the case in Łosice, here local government is the leading actor. The local authority in Łosice has not been able to create strategic plans for development in either the short or long term. The problem is that the local authority seems to be unable to provide the necessary leadership to support long term local development. For instance planning documents for the county (*Local Development Plan* 2004), the commune and the town (*Local Development Plan* 2004) were outlined and accepted about 10 years ago. However, they make the mistake of simply repeating very broad projections originally conceived for other administrative units, and did not clearly address the specific issues and challenges facing the area. While most of these documents contain a sound socio-economic diagnosis of the area and its problems this did not lead to the production of a detailed strategic vision and approach and associated goals for the town. The town's development policy appears to rely on *ad hoc* initiatives which the case study report describes as seeking to "plug holes" and sweeping problems under the carpet, only addressing difficulties as they arise (i.e. being reactive rather proactive). The goal of local policy would see to be to maintain the "status quo" while at the same time searching, unsuccessfully to date, for new investors. Thus there has been a lack of the necessary driving force to take the town forward, a situation in which many other similar towns find themselves.

The point should be made that Alba and Athienou in many ways represent 'outliers' in our case studies because of the apparent lack of leadership by the public sector. What they do illustrate, however, is the variety of possible paths of development available to SMSTs, although it would be difficult to replicate the conditions for success elsewhere as they appear to be deeply rooted in the way in which local society and the economy have developed over a long period of time.

In terms of how SMSTs falling within the influence of important metropolitan regions have developed the Czech town of Bradýs nad Labem, the French town of Vendôme and the Catalan town of Vilafranca del Penedès provide us with interesting examples of this. Bradýs nad Labem is agglomerated to Prague and has a population of around of 16,500 and is an administrative centre for the district. The key to its success appears to be its proximity to Prague, location on a highway and being part of a regional mass transit system. It has a growing population mainly due to migration which is strongly linked to suburbanization from Prague. As a result there is a large amount of out commuting to Prague. However, it has its own industrial base and people commute into town for work from the surrounding region. In recent years it has seen a growth in recreation and tourist related employment and has a low unemployment rate.

The town has a good quality of life, services and education facilities and is considered to have good social cohesion. Its location seems to be the key to its success. The main policy of the local authority has been one of ensuring a supply of land for residential and non-residential development by private developers and individuals. This seems to be largely a reactive approach in the sense of responding to perceived market trends.

However, it faces a dilemma – its success seems to be largely related to its proximity to Prague and the associated suburbanisation process. This means many residents shop in Prague and engage in recreational/cultural activities there, this is seen as a threat to the towns future as this will undermine those available in the town – thus there is the spectre of becoming a 'dormitory town'. The municipalities is aware of this 'threat' and is prioritorising local economic, social and cultural development through the provision of technical and transport infrastructure and housing along with renovation of the built environment (public spaces in particular). At the moment how the town will develop in the future is unclear, but as part of its thinking on the towns future the council has identified two scenarios: massive (population) growth or stabilisation. Whether the town has the capacity to 'control' population growth is questionable, but more growth could undermine the very conditions that have made it attractive to migrants from Prague.

Vendôme is located in the Northern Area of its region and is strongly influence by the Ile-de-France because of its location on the TGV line to Paris; this means that there is extensive daily commuting to Paris. The council seems to lack a common vision for the area and overall one is left with the impression that the town is orientated to Paris rather than the rest of the region. As a result it does not appear to cooperate with surrounding 'rural' municipalities.

Council policy is focussed on improving the quality of life and associated services, perhaps to attract more people and firms from the Paris region. The town seems unable to decide where its future lies: as a 'suburb' of Paris or as part of the region in which it is located. Perhaps this also relates to the changing population of the town created by an influx of people from the Paris region who do not 'identify' with the town or the region.

Vilafranca del Penedès is a city in the Province of Barcelona, is the county capital of Alt Penedès and is agglomerated to the Barcelona metropolitan regional system. The town is in an area dominated by agriculture and is a centre for the local wine industry as well as being an important service and employment centre for the area. It has grown steadily at the expense of the more rural areas of Alt Penedès, aided by its excellent transport links and by the strength of the local economy (particularly the wine industry). The town, along with other medium sized cities in the metropolitan Region of Barcelona, has been and continues to be the, object of planning policies aimed at broadening the range of functional specialisations and at strengthening its capacity to attract and retain population within the wider context of a multi-polar metropolitan development strategy.

Despite the severity of the crisis affecting Spain Vilafranca del Penedès, while not unaffected, has maintained a relatively successful development strategy along with its service and employment roles. This has been achieved in part through the development of the 'creative economy' in the town but also by the development of its tourism offer related to the wine industry. The town along with the County Council of the Alt Penedès has created a consortium to promote wine tourism related to the "wine landscape" economy. This is an 'integrated package' involving wine tasting, culture and heritage, museums and related tourism and knowledge sectors such as a graduate management program for wineries and wine establishments. In conjunction with this there has been an effort to develop rural tourism through the provision of cottage accommodation. As a result Alt Penadès receives 480,000 visitors annually principally oriented to wine tourism.

Bradýs nad Labem, Vendôme and Vilafranca del Penedès are in many ways successful towns in the sense that all have a growing population and economy with relatively low levels of unemployment, a good quality of life and few social problems. However, Bradýs nad Labem, Vendôme face the potential problem of becoming dormitory towns for a large metropolis and all this entails in terms of possible negative affects on the local economy and society. Bradýs nad Labem appears to have recognised this dilemma and is seeking to counter it while Vendôme appears to be somewhat uncertain over its future direction of development. What this does illustrate is that 'success' brings with it new problems and challenges that need to be addressed through a thorough going analysis of change and what it is that makes the town attractive and how further developed (in this case population growth) might actually undermine that attractiveness. Of course whether either town has the capacity to 'control growth' in terms of limiting new housing development for people is questionable as the past growth strategy appears to have been based on this. On the other hand what Vilafranca del Penedès illustrates is that even when there is the presence of a dominant metropolitan centre an SMST, albeit quite a large one, can when supported by sympathetic regional policies and working with surrounding municipalities, develop a distinctive approach of its own based on the territorial assets of the town and the surrounding region

We will now turn to two rather different examples of deindustrialising towns: Tredegar in Wales and Ústí nad Orlicí in the Czech Republic. Tredegar is an agglomerated declining industrial town (mining and steel) on the periphery of the Cardiff capital region. It is located in a quite densely populated 'urban area'. While it retains some manufacturing industry and retailing it is very much a secondary centre in the administrative authority of Blaenau Gwent which is one of the most deprived local authority areas in Wales. The town has a role as local centre for shopping and some services. Blaenau Gwent has a range of strategies for the whole of its area. Tredegar is seen as part of a linked series of towns (know as the Heads of the Valleys) forming a distinct sub-region. These towns are expected to work as a network of complimentary towns with Ebbw Vale as the main centre. Most investment has been directed to Ebbw Vale (e.g. the development of a former large industrial site as a centre for education, housing and business known as The Works). Blaenau Gwent has designated Tredegar as a secondary functional and employment centre. There have been attempts to revive the retail offer in the town and improve its built environment (especially in and around the town centre) which is also linked to attempts to develop a 'cultural heritage tourist' offer in the town. It also has a business park (part of an Enterprise Zone) that aims to offer 'high quality offices' as part of an economic diversification strategy. Blaenau Gwent Council aims to 'upgrade the economic base' of its area by developing advanced manufacturing, knowledge-based industries and tourism. This entails creating a better educated and qualified/skilled workforce (The Works has a key role to play as the site of major investment in education provision for the area). Tredegar has been the recipient of a considerable number of projects (supported by various EU, Welsh and local funds and organisations). On paper these are 'joined up' by Blaenau Gwent's over arching strategy, but in practice it is difficult to see a clear and consistent strategic focus on Tredegar. However, given that Blaenau Gwent's responsibilities cover the whole borough this is to be expected, particularly as Ebbw Vale is the key focus of activities. One important issue is how the Heads of the Valleys Towns will work together in a collaborative and complimentary manner.

The proposed Circuit of Wales (a large scale proposed motor sports development to be located close to the town) is seen as *the* key development related to developing the area's economic base and employment. Tredegar hopes to benefit from this in terms of employment but also through tourism (spill over from those attending events at the circuit) – however, the town currently lacks any basic tourism infrastructure to take advantage of the development should it go ahead. In addition the proposed development intends to locate various R&D facilities (and other associated manufacturing and retail facilities) on the site that it is hoped will provide additional local employment opportunities.

Towns such as Tredegar appear to have entered into a long-term 'spiral of decline'; experience suggests that it is extremely difficult to break out of such a spiral. Developments such as The Works and the Circuit of Wales offer the potential for towns such as Tredegar to break out of this 'spiral of decline', but this will not happen automatically. Much will depend on the plans and actions of national, regional and local government and private investors and enterprising individuals who will need to take advantage of the opportunities provided by these developments. Even then it is likely to be a lengthy process before real change becomes apparent and Tredegar once again becomes a 'vibrant and viable' place.

Ústí nad Orlicí is networked with two other SMSTs and located in a peripheral region, it has a population of almost 14,500. It was a textile and engineering centre but this entered a period of long-term decline post-1989; pre-1989 it also had an important administrative role but this too is declining. Not only does it have a relatively peripheral location but it also has poor accessibility. Its population has declined slightly over the last 20 years and it has an aging population. The town's basic problem is that it has been unable to attract new investment because of location and poor connectivity.

As a result of industrial decline it now has a derelict industrial environment and cannot provide employment for all its residents. As a result many people commute out to work in regional capitals. In an attempt to counter the decline in the 1990s there was heavy investment in infrastructure, but today the town is heavily indebted. There have also been negative impacts on the local economy and trade in the town (this is a similar situation to other SMSTs in the region). Moreover, it is also losing the best educated section of the population (brain drain) as young people more away to university and do not return. Nor is it attractive to foreign investors, this reflects the inadequacy of its skills base and labour force qualifications; this also probably reflects its peripheral location.

The town has a Strategic Plan based on an innovation strategy and has good cooperation with other towns in its hinterland and the region more widely. However, the notion of a polycentric region with associated division of urban functions is not well developed which leads to duplication and 'competition'. Overall the town seems to lack the capacity to bring about change.

Both Tredegar and Ústí nad Orlicí illustrate the problems of towns facing long-term industrial decline and the legacy of such an industrial structure which means there is a poorly qualified and educated workforce that is not attractive to outside investors. In the case of Ústí nad Orlicí this is compounded by its peripheral location and poor connectivity. What further compounds the problem is the loss of the best educated sections of the population who leave to seek higher qualifications elsewhere and do not return. Such towns do appear to have entered into a 'spiral of decline' that is extremely difficult to break out of without sustained and massive investment from the public sector which in both cases does not appear to be forthcoming. Perhaps the only realistic future for such towns is simply one of continued decline ameliorated by limited public investment.

Finally we consider the two examples of networked towns to illustrate the issue of cooperation. The Slovenian SMST of Radovljica is a town that is performing quite well in an Alpine location, it is an administrative/service centre, a tourist centre and has good connectivity/accessibility. In national policy terms Radovljica, along with the adjacent towns of Jesenice and Bled, is defined as one of 15 urban centres of national importance. Radovljica is 'networked' with Jesenice and Bled and together they form a 'conurbation', effectively growing into each other. The town has its own development strategy and has used EU Funds, particularly for infrastructure projects. Both of these indicate that the town has a 'capacity to act'.

However, one of the main issues it faces is its relationships with the adjacent towns of Jesenice and Bled. The problem here appears to lie in the (traditional) rivalry between the towns of Jesenice, Radovljica and Bled which means that there is a lack of and inefficient cooperation between the towns and municipalities in the Zgornja Gorenjska subregion, moreover there appears to be a lack of cross-border cooperation with towns in Italy and Austria. The reasons underlying this failure to develop a wider cooperative/collaborative and potentially 'polycentric vision' for the sub-region appear to lie in the primacy accorded to the development of each of the individual towns and the more general lack of a culture of cooperation in the Gorenjska region. One of the main aims of the municipality of Radovljica is to become an 'urban municipality' and the regional centre of Zgornja Gorenjska and this places it in direct competition with Jesenice which has similar ambitions. Thus instead of strengthening cooperation between towns within the Jesenice – Radovljica – Bled urban conurbation, and with other municipalities in Zgornja Gorenjska subregion, the effect is one of rivalry/competition and non-cooperation.

The Flemish town of Ieper (Ypres) aspires to be the 'capital' of Flanders Fields – de "Westhoek". By Flemish standards this region would be considered as one of the more regions' more isolated areas which mean that Ieper has a fairly traditional role as the service centre of a large (rural) hinterland which is not the case in most parts of Flanders. Ieper is seeking to gain recognition for this support and centre role and aspires to be designated as the fourteenth Flemish "centrum city" as this would mean it qualifies for additional funding from Flemish regional funds.

The town aims to strengthen its economic development and the development of amenities in both Ieper and the area of the Westhoek. To achieve this aim it has engaged in a number of different types of partnerships; most notably with the aim of obtaining financial resources for the area to support the further development of services of general interest. In these efforts it (along with other towns in the region) has been supported by the West Flanders Intermunicipal Association (WVI) a long established body that provides a wide range of support to local authorities in the region. The WVI has the task of supporting local authorities with regard to housing, environment, planning and business parks. It also provides access to EU funds which the individual towns find too onerous to access directly.

This regional approach is underwritten by a general recognition on the part of municipalities of the importance of inter-municipal and regional cooperation. While each municipality is also concerned with its individual interests this is accompanied by an acknowledgement of the need to work together when required. In particular this takes place with reference to tourism, marketing the wider region and also by articulating and defending common interests vis-à-vis higher authorities. Furthermore there is also the "Westhoekoeverleg" which is a long established council of mayors. This body cooperates around common regional themes and challenges and seeks to politically represent the region vis-à-vis higher authorities.

What the above indicates is that there is a well established culture of regional and inter-municipal cooperation in the region that has found expression in a range of forms of organisations/bodies that are able to provide both collective political representation and focus on developing approaches to common problems/issues and supporting the individual municipalities. This does not mean competition between individual towns is absent, but when the situation requires it collective action is forthcoming. Nevertheless there was no evidence from the case study that an overarching 'polycentric vision' had been developed by the towns for the region. The approach developed in Westhoek contrasts with that in the Slovenian case suggesting that it is important to develop a tradition (or culture) of cooperation based on recognition of common interests, political commitment and expressed in common organisations able to support the relevant towns individually and collectively.

4. Conclusions

What can we discern from our disparate body of case studies? Overall the case studies appear to confirm the view in Chapter 10 that *regional context* is important. Our research has shown that the category SMSTs contains an extremely varied and often dissimilar group of towns in a wide variety of regional contexts. This is the case not only between countries but within them. Given this it is perhaps unwise to suggest that it is possible to develop an 'SMST Policy' at European level – in other words we should avoid adopting a prescriptive 'one-size fits all' approach.

Nevertheless, this does not mean that the EU cannot do things to facilitate the development of SMSTs. With the framework of Europe 2020 and its emphasis on 'smart, sustainable and inclusive growth' combined with the Treaty of the European Union's emphasis on 'economic, social and territorial cohesion' there is much that can be done to assist SMSTs. The new emphasis in the post-2014 Structural Funds on the development of the Common Strategic Framework, Partnership Agreements and Integrated Territorial Investment should, at least in theory, assist in the improved integration and more focussed use of different strands of the Structural Funds (e.g. ERDF, ESF and the Rural Development pillar of CAP). The Commission could take a lead here by stressing in its guidance that it is important at a national and regional level that the relevant authorities when drawing up their Partnership Agreements, Operational Programmes and strategies for the relevant territories explicitly take into account SMSTs, the role(s) they play in relation to Europe 2020 and the various dimensions of cohesion. This will require the relevant authorities to clearly state their overarching goals, how they aim to achieve them, to provide a systematic analysis of the relevant territorial dynamics and how SMSTs will fit into this framework and what role they will play in it. On this basis it may then be possible, particularly at a regional level, to develop an integrated framework (including the place-based approach) that includes SMSTs. Here the EU could, through the mechanisms of Integrated Territorial Investments, Community-Led Development and integrated sustainable urban development as appropriate, encourage the relevant national and regional authorities to support the development of cooperation among SMSTs and other settlements within the same micro-functional region. The relevant instruments could be used to develop a more integrated and long term (place-based) polycentric vision for the area.

However, we should not assume that this means all SMSTs in a region can be supported, Indeed it may mean identifying an 'urban hierarchy' (as occurred in Wales and Catalonia) which designates certain SMSTs as significant sub-regional centres for employment, services, retailing and housing. The corollary is that other SMSTs, perhaps a majority, cannot expect to receive the same level of attention and support. Much of course will depend on their regional location and it is quite possible that for instance in growing metropolitan regions SMSTs will 'automatically' benefit from on-going suburbanisation processes and that the challenges they face will be related to future population growth and the implications this has for their development (as we saw in the Czech town of Bradýs nad Labem). On the other hand SMSTs in isolated and peripheral regions face very different challenges often related to loss of population, particularly of young people, an aging population, service provision across a sparsely populated area and changes in their traditional economic structures. In these situations different levels and types of support are needed, in particular related to the provision of services, housing and employment. Regardless of the context it is importance to develop appropriate governance structures, including partnerships, for the territory that will allow for a strategic and integrated approach to the territory to be developed (see Pucher et al 2012; OECD, 2013)

More specifically on terms of European policy the mainstreaming of the LEADER approach in all the funds and the associated emphasis on Community-Led Development should help support a 'bottom-up' approach that could benefit SMSTs. Within the regional frameworks European funds could be directed towards particular types of SMSTs (to be designated as part of a national/regional strategy) that have been identified as 'key centres' in their sub-region to support community based forms of development that will facilitate endogenous growth based on local assets whilst simultaneously addressing deficiencies in those assets. In addition it may for instance be possible, depending on the regional context, to use the new regulations on integrated sustainable urban development to support networks of SMSTs in rural areas or assist in developing relations between SMSTs and major cities in metropolitan regions. Much, however, will depend on the creativity, capacity and political will of the national and regional levels in member states to move outside of their 'comfort zone' and begin to engage in developing genuinely strategic and integrated territorial approaches that cut across the silos of EU and national funding streams.

Going beyond the EU, national and regional levels a key question is can SMSTs themselves do anything to 'shake-off' the shackles of their regional context? Alba and Anthienou would seem to suggest the answer is yes. The 'problem' is that their success is based on the presence of a very particular milieu, developed and sustained over a lengthy period of time, which combines 'entrepreneurial' activity, adaptability to changing conditions and 'innovation'. This milieu seems to include the existence of trust and knowledge exchange (of both a formal and informal nature) and is deeply embedded in local social relations and a 'sense of community'. Moreover, these two SMSTs seem to represent 'outliers' in our case studies and it would be very difficult to replicate/transfer the factors that underlie their success (social relations, mix/articulation of territorial capital and modes of 'mobilisation of those assets) elsewhere because they are 'deeply embedded' in the local social structure and reflect a very particular 'history'.

On the other hand some case studies (such as the Welsh SMST of Colwyn Bay) do suggest that concerted and focused action by the relevant public authorities (in this case a local authority working with the Welsh Government and the EU to combine resources and focus them on a particular SMST in a strategic and long-term manner) can begin to lay the foundations for a sustainable regeneration process. However, this is a long term process and in the Welsh case is still in its early stages. What this signals is the importance of a concerted and sustained focus on the SMSTs in question. There is, however, a 'downside' to this; it is highly unlikely that all SMSTs can be the recipients of such sustained and focused action, which means that some, perhaps a majority of SMSTs in a region, will be 'neglected' implying that (national and regional) public authorities need to make explicit choices about a hierarchy of SMSTs in their territories and within this hierarchy identify mutual complementarities based on functional roles which they will support and focus action on. It may be that these should be 'strategic places' identified as administrative/service, job and housing centres for a region or sub-region. There is some evidence from the Catalan case studies that this is what the Catalan regional government is attempting to do as part of a wider decentralization process vis-à-vis Barcelona and the region as a whole.

Another key issue is how SMSTs in a region or sub-region work together: the extent to which they collaborate/cooperate or compete? Our case studies suggest that a variety of forms of collaboration/cooperation exist (see also OECD, 2013) although in most cases this rarely goes beyond the level of basic service provision (e.g. water and waste) while cooperation on other forms of service provision and projects (e.g. health care, education, housing, retailing, economic development) is much more limited. The development and implementation of a polycentric approach in which there is a 'division of functions' between proximate SMSTs is much weaker and we found little evidence of this in the case studies. Perhaps it is up to regional authorities, in cooperation with the relevant SMSTs, to develop such approaches and allocate appropriate funding from EU, national and regional sources to support these developments (here it might be possible to learn from the French approach which has sought to support the development of contracts to facilitate the development of and support inter-municipal cooperation). Although as the OECD (2013) suggests it will be necessary to develop 'models' of governance that are appropriate to the particular situation.

In terms of a spatial planning approach and developing appropriate 'policy bundles' it is difficult to be prescriptive because of the wide variety of regional situations and types of SMSTs we studied. Clearly spatial planning has an important role to play in terms of the analysis and definition of an overarching strategic approach to a territory that recognises and understands its dynamic and fluid constitution and relationships/overlaps with other territories and is not confined/limited by existing administrative boundaries. In conjunction with regional and local stakeholders spatial planners need to create a vision of current and future territorial development that can direct investment decisions (e.g. in infrastructure) and the allocation of resources. Such an approach may involve the definition of appropriate sub-regions and hierarchies based on functional complementarities of SMSTs (perhaps in the framework of polycentric regions) with the appropriate allocation of roles and functions. Relevant SMSTs need to 'buy into' this vision and framework and operate within it whilst developing their own assets. In this situation particular 'policy bundles' will need to be developed to achieve the desired outcomes at different levels – regional, sub-regional and local. However, these need to operate in a nested and integrated manner (i.e. in terms of a place-based approach - Barca , 2009).

We also need to bear in mind the limited capacity and resources of many SMSTs to actually engage with such a process which by its very nature is likely to involve aspects of multi-level governance. A number of our case study towns reported that the complexity of the accessing EU funds was beyond them. In this context they need to be supported through the provision of technical assistance that will simplify and streamline the process particularly of accessing and using European funds as many of our case study SMSTs found this particularly onerous. Hopefully the simplification of the rules governing EU funds in the post-2014 period will help here, but it is probable that many qualifying SMSTs will still need assistance as this is perhaps best provided through regional or sub-regional organisations as we saw in the Flanders case studies (e.g. the WVI in West Flanders) where EU funds were often channelled through regional/sub-regional organisations working with groups of SMSTs.

Finally, it is clear that local leadership is an important aspect of this process (see OECD, 2013, pp93-95), but we need to be aware that there are different types of leadership. For instance in the French town of Vendôme a dynamic and well connected mayor who had been in post for many years was key to developing a strategy for the town and driving the development process forward. In many ways this represents the classic form of political leadership. While the cases of Alba and Anthienou appear to have a more diverse (perhaps collective and amorphous) form of leadership rooted in local civil society and social relations. While these cases may exist at opposite ends of a continuum what must be taken seriously when developing and implementing a strategy is the role of a wider group of stakeholders and the need to develop an appropriate set of partnerships without falling into the trap of creating an over-complex governance architecture that lacks both transparency and accountability. This is essential if the notion of community-led development is to be taken seriously and established as a key element in local development strategies and practice. The important role of leadership, whatever particular form it takes, is to articulate a vision, represent others, to make connections with other relevant bodies/organisations and do this over a sustained period of time.

The key general issues seem to relate to:

- Attitude of national/regional government. Are SMSTs seen as an issue to be addressed – in some cases they are. But much seems to be determined by the national/regional population structure and position of SMSTs – e.g. in sparsely populated rural regions they are seen as more important but much less so in metropolitan regions. The new EU Cohesion Funds allow the European level the opportunity to signal the importance of SMSTs and the need for member states to address their situation in relation to the use of the funds.
- A series of factors that can be included under the general heading of Governance:
    - Multi-level governance (including EU[where relevant], national and regional/local government). This is particularly important for SMSTs in terms of access to additional resources but also in terms of developing joint projects and sharing services. Can SMSTs insert themselves into such systems? Do they have the capacity/experience to do this? Only a few of our case study towns seem to be capable of doing this themselves – Östersund appears to be a good example as does Issoundun. In the case of Colwyn Bay the municipality (Conwy Country Borough) was able to fulfil this function and in Flanders regional bodies did something similar with regard to EU funds.
    - Local capacity to act (moblisation) and create working relationships (e.g. partnerships) with local stakeholders that are inclusive in order to bring together local knowledge and resources (territorial capital). This requires the creation of a 'development vision' for the area and the involvement of a wider range of

stakeholders through the development of appropriate partnership structures to develop and support a long term local development strategy and its implementation. Once again the evidence on this is limited. Although some towns such as Östersund and Colwyn Bay do appear to have been relatively successful at doing this.

- Territorial governance. This can be split into two, albeit interrelated, dimensions:
  - The ability to engage with the wider regional/territorial system of governance and to insert themselves into the relevant regional strategies. Here the evidence of the case studies was limited but there were some indications that this is taking place. For instance In Östersund there was evidence of the town engaging in a set of wider regional partnerships and cross-border collaboration with Norway as part of its strategy. There was also a more general strategy developed by the region (Mellersta Norrland) in which the town was located. However, partly due to its isolation, the town largely appears to operate on the basis of its own strategy whilst complimenting the wider regional strategy. In Flanders Aarschot and Ieper have both engaged in a wider regional (or sub-regional) approach to addressing their problems.
  - Can they collaborate with other proximate towns in ways that build on their individual forms of territorial capital and compliment one another? The case studies suggest there is some evidence of this in terms of common service provision (e.g. garbage and water/sewage projects). Generally it does not seem that they can go beyond more basic projects to engage in concerted actions to support collective local economic development or provision of services that could be used collectively based on an allocation of service functions within a polycentric region. One of the few positive examples was related to Bradýs nad Labem which benefited from a cooperatively organised regional mass transit system in the Prague metropolitan region. The Flemish case study indicated that within the Weshoek and the broader context of West Flanders the importance of inter-municipal and regional cooperation was certainly recognized. Although it was pointed out that each municipality was also concerned with protecting its own individual interests. Nevertheless if mutual support was required this was possible and the example of tourism was cited ("selling the wider region") and in relation to defending towns common interests vis-à-vis authorities. In Flanders cooperation between towns is facilitated by a long history of inter-communal partnership. More generally this raises the issue of how to move from governance arrangements (or partnerships) designed for a single-purpose to more holistic or strategic partnerships (see OECD, 2013).

- The level of resources available to SMSTs that can be deployed – unfortunately we do not have much evidence on this. Although the general impression was that they lacked the resources needed to address their problems and therefore access to resources from higher levels (EU, national and regional) was crucial.
- Appropriate spatial planning approaches and policies that allow for the identification of territorial dynamics and functional relationships, across different spatial and functional scales, whilst seeking to create a shared 'nested vision' for the relevant space (regional, sub-regional and local) which can then be supported through a coherent set of policies. Clearly these will vary depending upon the location of the SMST: for

instance those influenced by their location in, or adjacent to, strong metropolitan regions will require a different approach compared to isolated SMSTs in more rural areas. SMSTs on their own will largely be unable to develop the necessary policies and therefore will need support particularly from the regional level. Our case studies suggest that generally there is an absence of such regional approaches, although in Wales, Flanders, Catalonia and France there is some evidence of the existence of such an approach and associated policies.

- The role of Leadership. This can take the form of dynamic and well connected mayors who are in position for a long period of time and develop a clear long-term agenda and strategy for change (this runs the risk of stagnation and accusations of 'despotism'). But it can also take a more 'collective form' in which a group of people (senior politicians and officers) provide the long-term agenda and strategy. Much seems to depend upon the knowledge/contacts/capacity to access a range of funds and combine them in a focussed manner related to the strategy. But some form of leadership is needed to drive the process.

- The issue of 'local identity'. This is a difficult question, but it does seem that those towns with a strong 'local identity' (or 'sense of community'), and associated social cohesion/capital, are the ones that have been 'more successful' in developing their own strategies, but these may well represent 'unique outliers'. Also it needs to be remembered that such places still need to be 'outward looking' in order to build links with other places.

- Particularly in isolated rural SMSTs population loss (young people and women) is a real problem as is the aging population that remains. Whereas those located in, or close to, metropolitan regions run the risk of becoming 'suburbs', although some towns seem to benefit from this in terms of firms relocating there. In deindustrialising SMSTs there was also evidence of some population loss. These issues will need to be addressed through the provision of appropriate employment, housing and service opportunities in the relevant populations are to be retained and new people attracted.

- Involving the private sector generally seemed to pose particular challenges, in most cases the public sector was the driving force and the private sector played a relatively minor role; in fact in some cases it seems to have been invisible. Only in the case of Llandrindod Wells did we see an instance where the private sector was leading an initiative (the Local Growth Zone) and this was largely because a Welsh Government had specifically tasked a group of local business people with developing the initiative. More generally this problem may reflect the weakness of the private sector and/or its lack of capacity to identify and represent its collective interests. It should be noted that the OECD (2013) noted a similar problem in its case studies of rural-urban partnerships, so this would suggest the issue is not one specific to our work.

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Chapter 8 – Macro trends at EU scale

Antonio Paolo Russo, Loris Servillo

1. Aim and research questions

In this chapter we analyse how the grid-based geography of polygons of urban settlements maps over the established NUTS3 geography and how they performed in time.

First we characterise the different NUTS3 according to their typology of settlements, using different factors and thresholds, highlighting their inner distribution of population between different urban settlement types as defined in Chapter 2 of this Scientific Report.

Second we cross-tabulate these typologies with traditional indicators of performance. This will allow us to identify specific territorial trends which can only be gauged when NUTS3 and their characteristics (in terms of membership to ESPON typologies) and socioeconomic performances are analysed in association with their urban settlement structure.

The identification of regions that are predominantly characterised by smaller settlements cannot depict the precise role of an individual SMST, but it indicates the general performance (measured in the timespan of the first decade of 2000s) of a regional context characterised by smaller urban settlements areas as the predominating type) as opposed to regions that are characterised by a higher degree of urbanisation).

This results in a less fine-scale analysis of what will be achieved in Chapter 9 through the analysis of polygons as associated to LAU2 characteristics. Nevertheless, it captures general territorial trends in Europe and within national contexts, and highlights the role of macro regional and/or national-context factors, offering various other advantages:

- It includes the whole ESPON space in this analysis;
- It uses a number of established regional typologies which are only available at NUTS3 level
- By enlarging the scale of the territorial analysis, it achieves a broader insight over main territorial trends in the ESPON space.

Thus, this chapter will be able to address the following research questions:

- How are NUTS3 regions characterized according to the dominating type of population settlements? What is their general distribution over the ESPON space?
- What are the main territorial trends related to regions characterised by SMSTs as prevailing settlements?
- What are the main performances in relation to NUTS3 ESPON typologies?

2. Population settlement classes at the scale of NUTS3 regions

This section illustrates the main results of overlapping grid-based morphologies and different urban settlement types with NUTS3 delimitations, and is primarily concerned with deriving some macro-patterns of distribution of population by settlement type at NUTS3 level. Thus, a first question that arises from the resulting geography construction of SMST polygons is the following:

Can we identify general territorial patterns regarding the presence, distribution and type of SMST throughout the ESPON space?

This question can be articulated in a number of sub-questions which are entry points for the subsequent analysis of territorial systems of SMST and their role and evolution, to be carried out in the next Chapters of this report:

1. Which share of the NUTS3 regions is occupied by urban settlements of different types? What is the composition of the rest of the NUTS3 territory? Are there evident regional variations or territorial patterns of this value?
2. Which share of the population of NUTS3 regions lives in urban settlements of different types? Are there evident regional variations or territorial patterns of this value?

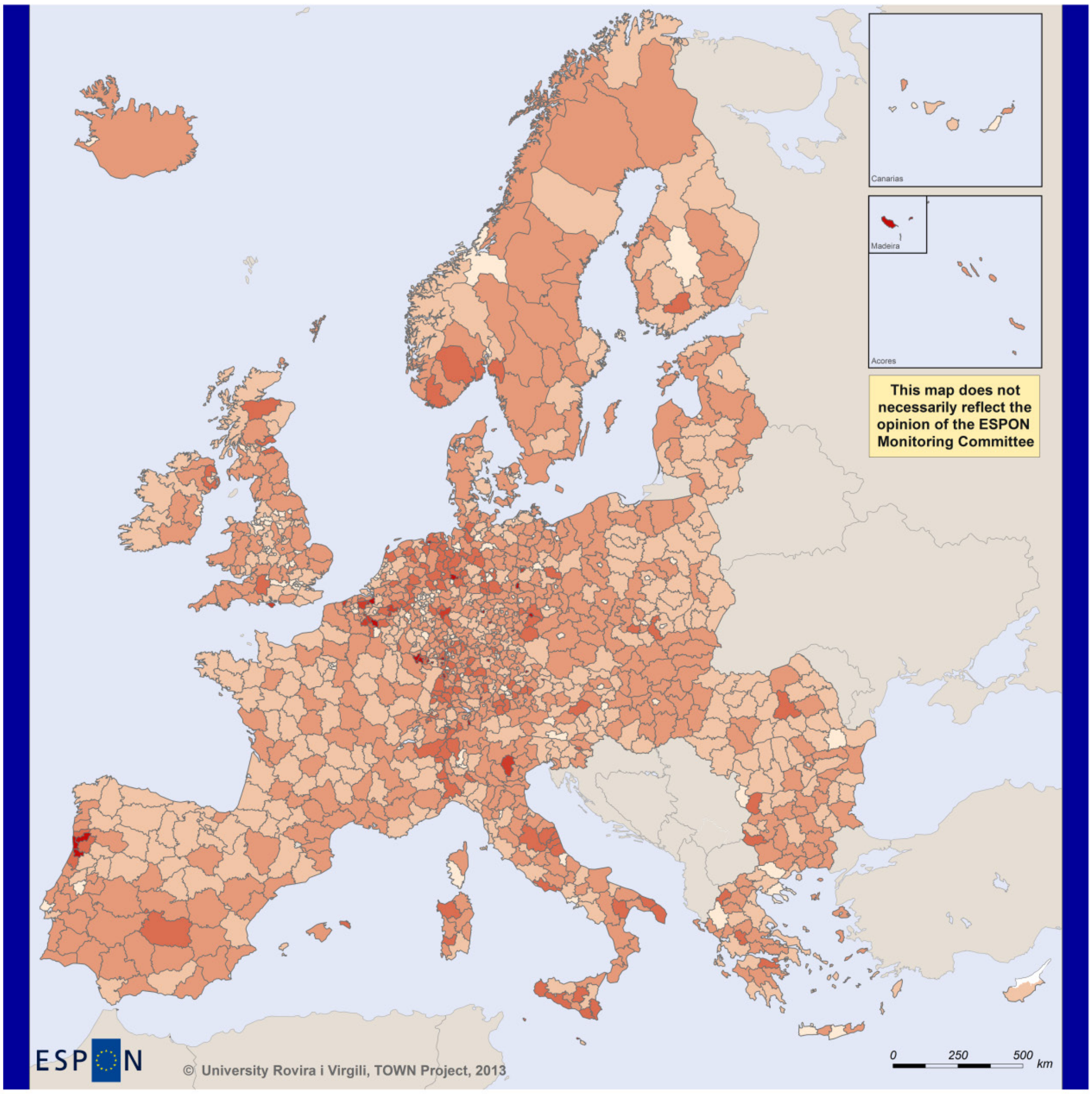
Answers to these questions provide a first step into the analysis of territorial structures, at a more general level, which have been further substantiated through the analysis of governance and functional relations between SMST and between them and larger urban areas.

Thus, we have "transferred" the information regarding grid-based urban settlement polygons to the NUTS3 geography, with the inevitable elements of inaccuracy described above. The calculation of these data involved a rather complex process of estimation using GIS tools, which is subject to an inevitable margin of error. Indeed, we have verified that there is a certain difference between the estimated population of the grids included (completely or in part) in NUTS3 areas and the real population as provided by EUROSTAT. This difference is generally around 1-2% top but in some cases – especially in cases of small NUTS3 areas where there are "more borders" cutting through grid cells and thus a greater estimation error due to the approximation in attributing to bordering NUTS3 areas values of grid cells that are "split" (as in the case of Germany and the UK most notably). Thus they may take on larger values, leading to a sensible under- or over- estimation of the population and population density of polygons (and thus their attribution to one of the different classes that were created).

On these grounds we have calculated a "correction factor" per NUTS3 that is applied to all polygons falling into a given NUTS3 delimitation in order to achieve more realistic estimates of the shares of population (and surface) occupied by the various typologies of urban settlements elaborated in the previous section. We will extend this approach to the LAU2 geography in Chapter 9 of this Scientific Report; however, with a different set of problems involved due to the uneven degree of matching between morphological units and municipal delimitation.

In Maps 1 and 2 we have mapped NUTS3 regions according to the percentage of, respectively, population living in SMST and surface area occupied by SMST polygons in NUTS3 regions. As we can see in the diagrams of Figure 3a and b, the distribution of population shares in SMST is more evenly distributed than that of areas occupied by SMST (urban settlements are relatively "compact" with respect to lower-density and rural settlements but they can accommodate a large share of the population). It must be noted that regions with low values of these indicators should not be understood as relatively de-urbanised, because they may account for larger or lower shares of both HDUC and VST. Thus, high values of the indicators only return geography of regions where the role of SMSTs in urban structures is relatively prominent.

Map 1. Share of regional (NUTS3) population living in SMST polygons



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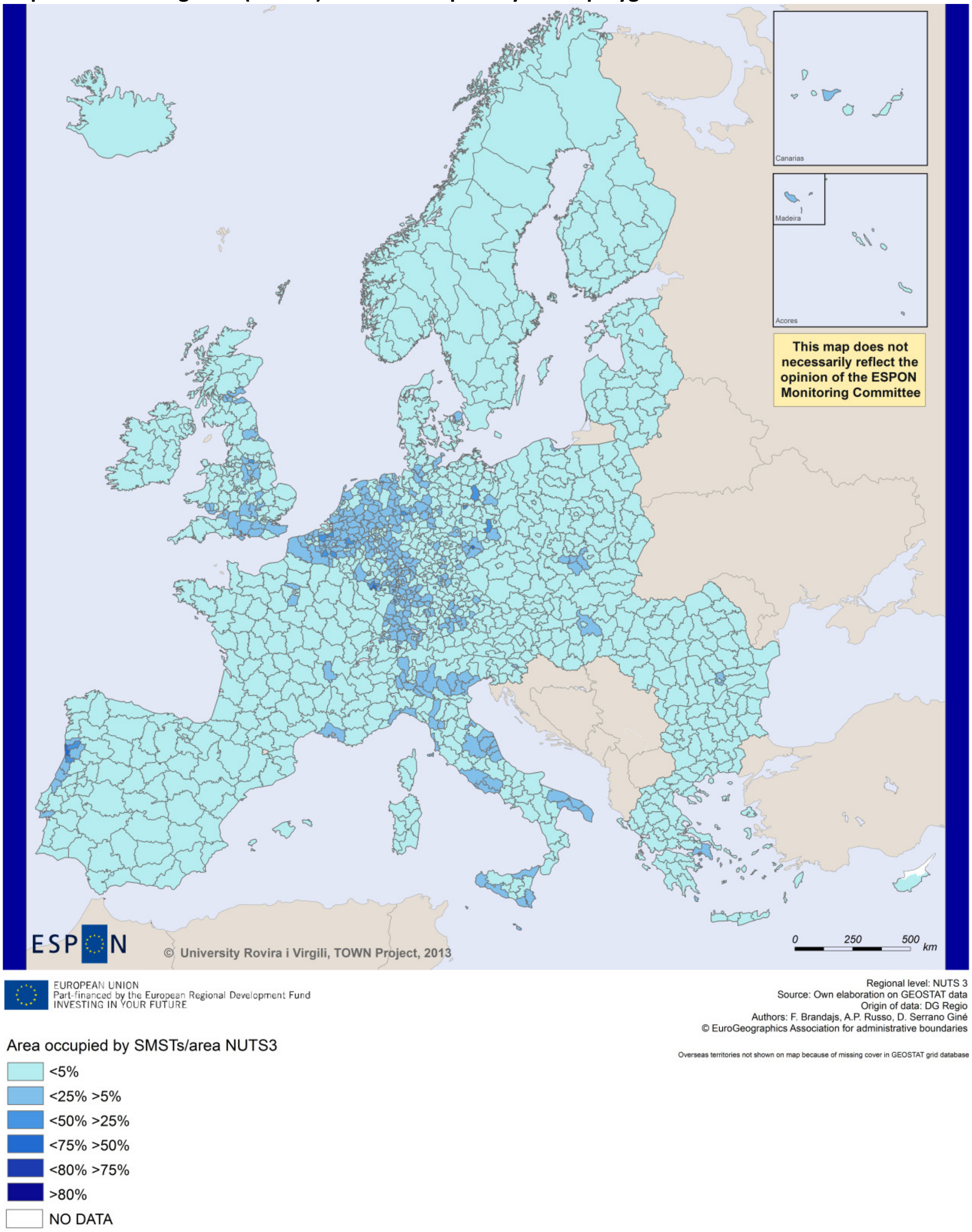
Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
© EuroGeographics Association for administrative boundaries

Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Population living in SMSTs/population NUTS3

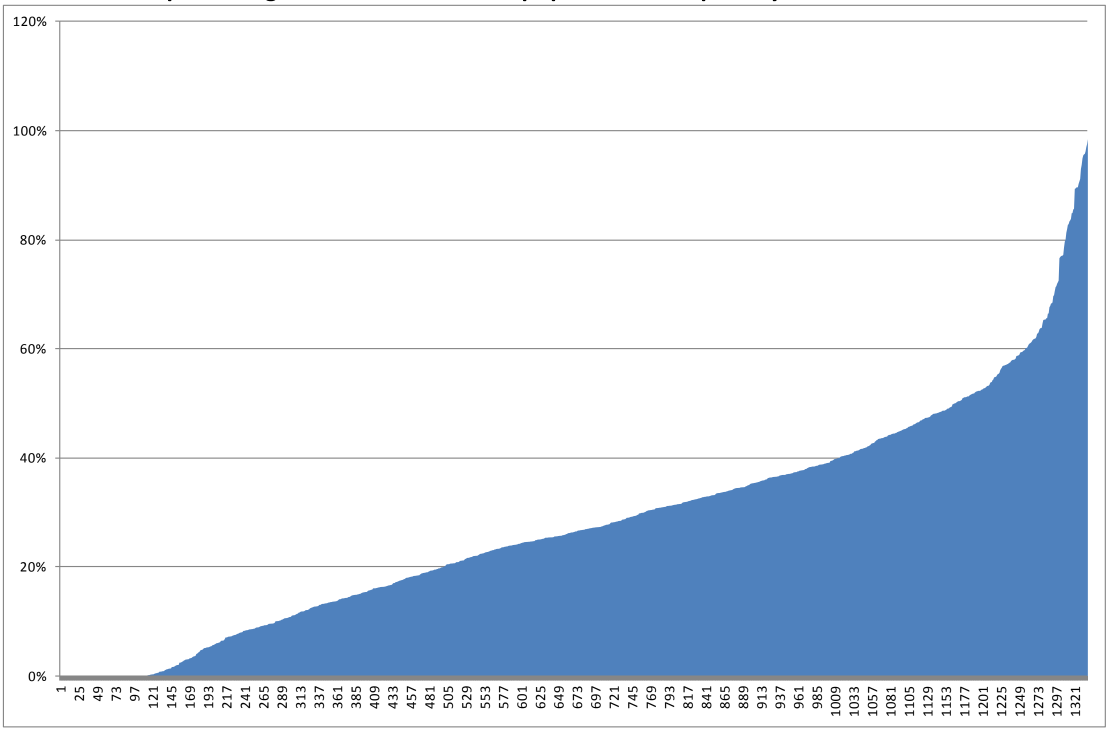
- <5%
- <25% >5%
- <50% >25%
- <75% >50%
- <80% >75%
- >80%
- NO DATA

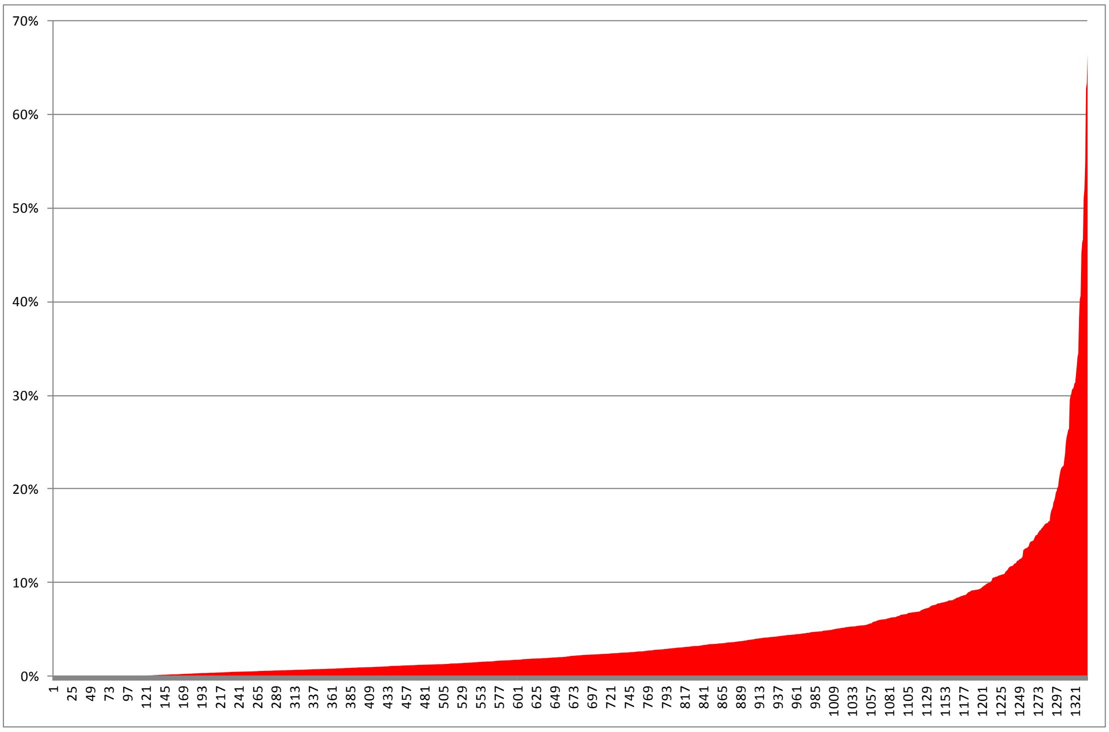
Map 2. Share of regional (NUTS3) surface occupied by SMST polygons



Charting the distribution of such indicators as in Figure 1a reveals that there are 98 NUTS3 regions in Europe that do not include any SMST, and that there are 173 of them where the population living in SMSTs is more than the 50% of the total population; conversely, as can be seen in Figure 1b, only in six of them (five German NUTS3 regions: Passau, Saarbrucken, Kaufbeuren, Wismar, and Chemnitz, as well as the larger Oporto area) the region is occupied by SMST polygons for more than the half of its surface. These cases are in a way exceptional: the SMST polygons that extensively occupy the regions are in some cases predominantly Large SMSTs (with more than 50.000 inhabitants, but with a lower density), which represent the continuum of a core urban area with the surrounding sprawled settlements (e.g. Saarbrucken and Oporto).

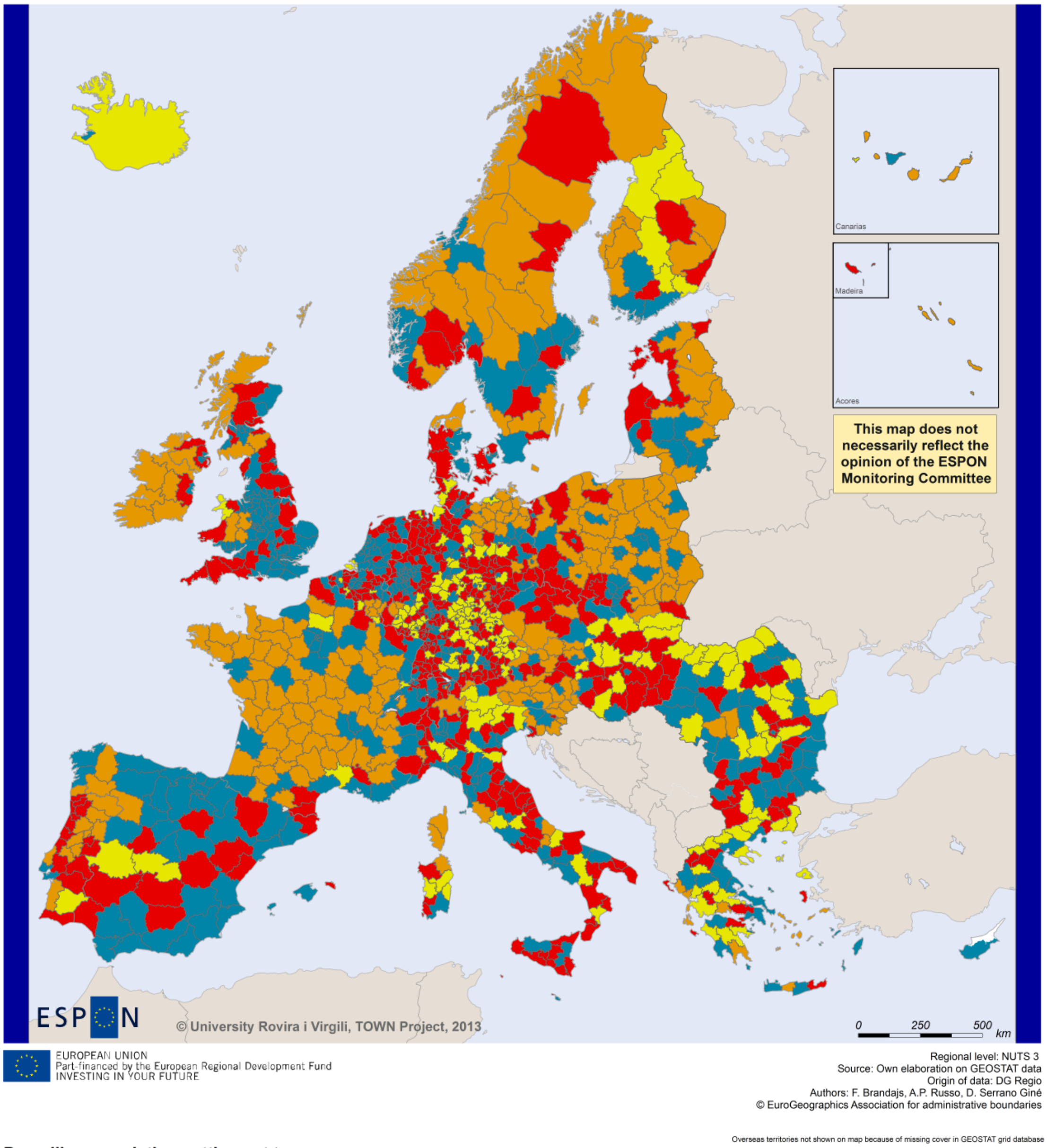
Figure 1 (a) (above): distribution of percentage of NUTS3 population living in SMST; (b) (below): distribution of percentage of surface of NUTS3 population occupied by SMST





The two synthetic maps that follow chart regional typologies that classify regions according to their prevailing types of settlements distinguishing between 1: SMST; 2: HDUC; 3: VST; 4: other types of settlements. Map 3 refers to population, indicating the type of settlements where the relative majority lives, and Map 4 to surface, indicating which type of settlement occupies the larger share of the regional surface in relative terms.

Map 3. Prevailing type of settlements in terms of population shares in NUTS3 regions

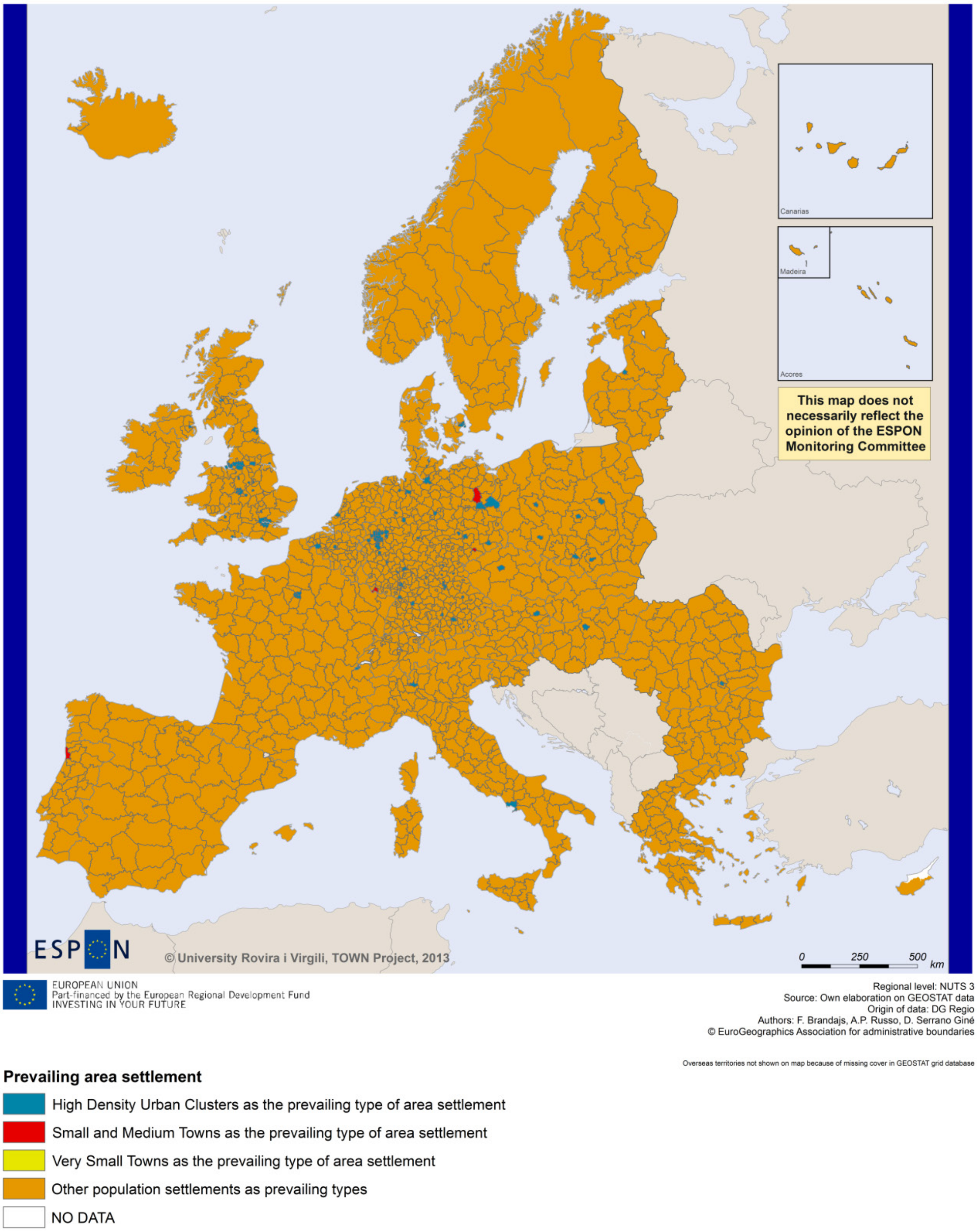


Prevailing population settlement type

- High Density Urban Clusters as the prevailing type of population settlement
- Small and Medium Towns as the prevailing type of population settlement
- Very Small Towns as the prevailing type of population settlement
- Other population settlements as prevailing type
- NO DATA

Thus, in a 'representative' NUTS3 region, taking the average values of these two indicators observed across the ESPON space, the SMST, HDUC, VST and the residual 'other settlements' morphological units will respectively host the 28.0%, 31.7%, 19.5%, and 20.8% of the population, and occupy the 4.2%, 10.5%, 3.8%, and 81.4% of the regional surface; that 'average' region will therefore be classified as a region with 'HDUC as predominant population settlement type' (coloured blue) in Map 3 and one with 'Other population settlements as prevailing types' (coloured orange) in Map 4. This is a perfectly plausible situation, given the uneven population densities involved within each class and shown in Figure 1. Indeed, Table 1 below reports the observed dimension of the combinations of the two classification criteria employed in the two maps.

Map 4. Prevailing type of settlements in terms of occupied surface in NUTS3 regions



The comparison of these two maps and the data in Table 1 confirm that while the population settlements models vary considerably throughout the ESPON space, there is only a very limited number of NUTS3 regions where urban settlements (either of the SMST or of the HDUC type) occupy the larger share of the regional space. It must be highlighted that the regional scale influences these results and the degree of correspondence between the two regional typologies illustrated: a very small NUTS3 region occupied almost in its entirety by a HDUC (as it is the case with most capital-city regions) will be classified as HDUC-dominated in terms of both indicators, while if the same HDUC settlement is in a wider NUTS3 region, concentrating most of the regional population in a metropolitan area, that region is likely to be classified as HDUC-dominated in population terms but not in surface terms, as most probably the greater share of the regional area will be taken up by areas that are outside of the metropolitan settlement.

Table 1. Observed NUTS3 regional classes in terms of settlement types hosting the relative majority of the regional population and occupying the relatively larger share of regional surface

			Predominant settlement type in terms of area covered				
			HDUC	**SMST**	**VST**	**other settlements**	TOTAL
Predominant settlement type in terms of population hosted	**HDUC**	Count	6	0	0	411	417
		% of Total	*.4%*	*.0%*	*.0%*	*30.7%*	*31.2%*
	SMST	Count	1	121	0	397	519
		% of Total	*.1%*	*9.0%*	*.0%*	*29.7%*	*38.8%*
	VST	Count	0	0	0	164	164
		% of Total	*.0%*	*.0%*	*.0%*	*12.3%*	*12.3%*
	other settlements	Count	0	0	0	238	238
		% of Total	*.0%*	*.0%*	*.0%*	*17.8%*	*17.8%*
TOTAL		Count	7	121	0	1210	1338
		% of Total	*.5%*	*9.0%*	*.0%*	*90.4%*	*100.0%*

Only in seven regions SMSTs are prevailing as form of occupation of the space: apart from six German regions (Passau, Kaufbeuren, Oberhavel, Wismar, Saarbrucken, Chemnitz), we find the Oporto region already seen above. As already mentioned above, these are peculiar cases.
Focusing now on the 10 case studies that have been carried out in the TOWN project, Table 2 summarises the settlement characteristics for these 10 case study areas according to these two indicators.

In terms of population shares by settlement, we identify SMST as the prevailing settlement form in

- 3 NUTS3 regions within the case study of Eastern Spain (ES512 Girona; ES522 Castellon; ES533 Menorca);
- 11 regions in Flanders (BE213 Arr. Turnhout; BE221 Arr. Hasselt; BE222 Arr. Maaseik; BE233 Arr. Eeklo; BE234 Arr. Gent; BE235 Arr. Oudenaarde; BE236 Arr. Sint-Niklaas; BE252 Arr. Diksmuide; BE253 Arr. Ieper; BE242 Arr. Leuven; BE258 Arr. Veurne);
- 10 regions in the Italian North West (ITC12 Vercelli; ITC14 Verbano-Cusio-Ossola; ITC15 Novara; ITC16 Cuneo; ITC18 Alessandria; ITC32 Savona; ITC44 Sondrio; ITC47 Brescia; ITC49 Lodi; ITC4A Cremona);
- 2 regions in Slovenia (SI015 Zasavska; SI024 Obalno- kraška);
- 6 regions in the Czech Republic (CZ020 Středočeský kraj; CZ041 Karlovarský kraj; CZ051 Liberecký kraj; CZ052 Královéhradecký kraj; CZ063 Kraj Vysočina; CZ071 Olomoucký kraj);
- 2 regions in Wales (UKL13 Conwy and Denbighshire; UKL14 South West Wales);
- 1 region in the Parisian basin (FR211 Ardennes);
- 2 regions in mid-north Sweden (SE321 Västernorrlands län; SE332 Norrbottens län);
- None in the Central Region of Poland and in Cyprus

Table 2 - Main settlement characteristics of case study regions (SMT and HDUC)

NUTS1 case	Population (2006)	Area sq.km (2006)	n. of NUTS3	% population living in SMST (based on corrected est.)	% area occupied by SMST	n. of NUTS3 regions with SMST as prevailing population settlement	% population living in HDUC (based on corrected est.)	% area occupied by HDUC	n. of NUTS3 regions with HDUC as prevailing population settlement
Flanders (BE2)	6,098,000	13,569.5	22	38.0%	16.0%	11	41.4%	13.0%	10
Wales (UKL)	2,966,400	20,817.7	12	26.2%	2.6%	2	49.9%	3.6%	7
East (ES5)	12,711,000	60,456.8	10	19.9%	1.9%	3	63.4%	2.5%	7
Czech Republic (CZ0)	10,269,100	78,820.0	14	26.9%	2.3%	6	31.7%	1.7%	4
France Central Region (FR2)	10,658,099	146,689.6	22	20.0%	1.0%	1	20.8%	0.5%	5
North West (ITC)	15,585,440	57,978.0	25	20.6%	4.0%	10	58.8%	6.1%	12
Northern Sweden (SE3)	1,705,200	313,436.5	7	34.1%	0.2%	2	11.1%	0.03%	0
Cyprus (CY0)	772,500	9,368.0	1	14,7%	0,8%	0	47,9%	1,7%	1
Slovenia (SI0)	1,705,200	20,331.2	12	25.6%	1.5%	2	26.6%	1.1%	2
Central Region (PL1)	7,736,600	53,804	11	14.6%	1.2%	0	49.0%	2.1%	5

Table 2 (cont.) - Main settlement characteristics of case study regions (VST and other settlements)

NUTS1 case	% population living in VST (based on corrected est.)	% area occupied by VST	n. of NUTS3 regions with VST as prevailing population settlement	% population living in OTHER SETTLEMENTS (based on corrected est.)	% area occupied by OTHER SETTLEMENTS	n. of NUTS3 regions with OTHER SETTLEMENTS as prevailing population settlement
Flanders (BE2)	9.1%	6.4%	1	11.5%	64.6%	0
Wales (UKL)	9.7%	2.0%	2	14.2%	91.8%	1
East (ES5)	7.7%	2.2%	0	9.1%	93.4%	0
Czech Republic (CZ0)	20.6%	4.4%	1	20.8%	91.6%	3
France Central Region (FR2)	22.1%	2.6%	1	37.0%	95.9%	15
North West (ITC)	11.4%	4.3%	2	9.2%	85.6%	1
Northern Sweden (SE3)	16.7%	0.1%	0	38.1%	99.7%	5
Cyprus (CY0)	0.5%	0.1%	0	36.9%	97.4%	0
Slovenia (SI0)	16.7%	3.1%	0	31.1%	94.3%	8

Central Region (PL1)	7.0%	1.9%	0	29.3%	94.8%	6

The classification criteria used in Maps 3 and 4 provides a broad illustration of the overall territorial trends associated with the structure of population throughout the ESPON space, highlighting the diversity of degrees of concentration in population structures (and also in physical terms) in different areas.

Yet they are not useful in analytic terms for what follows in this and subsequent chapters, because they hardly allow to grasp what is the overall weight of small and medium sized towns within NUTS3 and thus to assess the performance of regions characterised in this sense compared to others, and most significantly those in which the population is mainly concentrated in High Density Urban Clusters.

Thus, we now introduce a more simplified, 'operational' classification of regions by prevailing settlement types, in line with the 'degree of urbanisation' criterion used by DG Regio and OECD (cf. Chapter 2 of this Scientific Report). This classification identifies which regions are definitely 'non urban'; we have used an arbitrary threshold in this sense, dividing regions in three classes:

- Regions where **less than the 30% of the population lives in HDUC**; thus, more that 70% of population lives in smaller population settlements, including – but not exclusively – SMST. They give us the possibility to observe some regional dynamics that characterise smaller settlements;
- Regions where **more than the 70% of the population lives in HDUC**, thus they are mostly 'urban';
- Regions where the **HDUC population is between 30% and 70%** - thus regions that do not have a well-defined population structure by type of settlement and thus we cannot make any considerations on the role of SMSTs and their performances.

This classification, in other words, allows us to focus in Section 3 of this Chapter on regions that are *more likely* to be characterised by a prevalence of smaller settlements; assess them in terms of their correspondence with established ESPON typologies, so as to gauge more insights on geographical and socioeconomic types that are more likely to be associated with this kind of population structure; and eventually assess their performance (also along ESPON typology classes) comparing it with that of regions that are characterised by a higher degree of urbanisation.

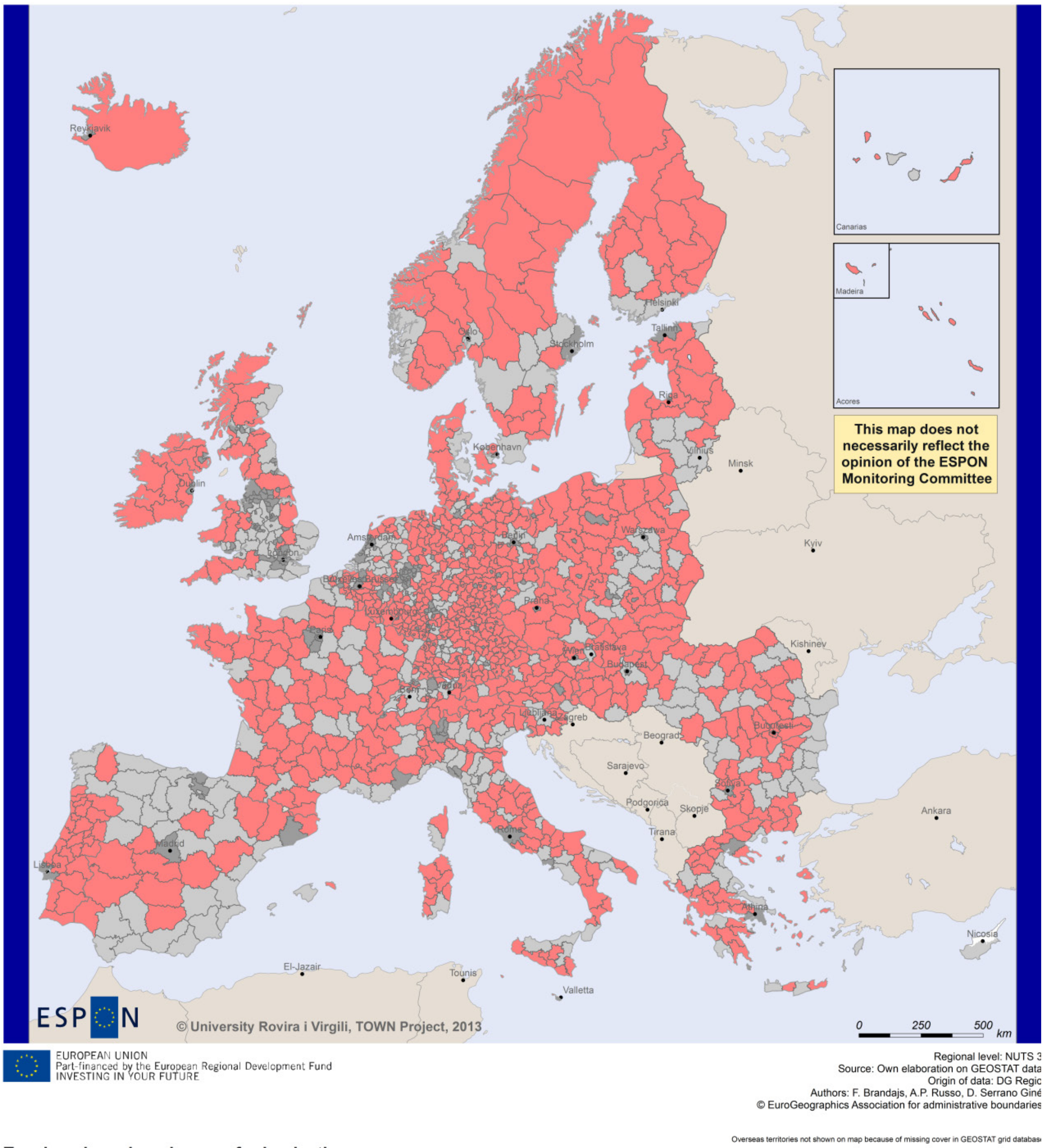
As we see in Table 3, the majority of NUTS3 regions is included in the category of having less than the 30% of the population in 2006 living in urban settlements that are not HDUC. The country data illustrate how many of the NUTS3 regions within that country have a population structure fitting the three classes introduced here; only in Cyprus, Spain, Lithuania, the Netherlands and the UK most NUTS3 regions have a higher degree of urbanisation than that of our basic 'less urban' type.

Table 3 - Degree of urbanisation at NUTS3 level

	Predominant settlement type in terms of population hosted						
	LOW DEGREE OF URBANISATION (Pop in HDUC 2006 < 30%)		INTERMEDIATE DEGREE OF URBANISATION (Pop 2006 in HDUC 30%-70%)		HIGH DEGREE OF URBANISATION (Pop 2006 in HDUC > 70%)		Total
Country	Count	*Country %*	Count	*Country %*	Count	*Country %*	Count
AT	27	*77.1%*	6	*17.1%*	2	*5.7%*	35
BE	31	*70.5%*	7	*15.9%*	6	*13.6%*	44
BG	14	*50.0%*	13	*46.4%*	1	*3.6%*	28
CH	13	*50.0%*	9	*34.6%*	4	*15.4%*	26
CY	0	*.0%*	1	*100.0%*	0	*.0%*	1
CZ	10	*71.4%*	3	*21.4%*	1	*7.1%*	14
DE	260	*63.1%*	50	*12.1%*	102	*24.8%*	412
DK	6	*54.5%*	3	*27.3%*	2	*18.2%*	11
EE	3	*60.0%*	1	*20.0%*	1	*20.0%*	5
EL	37	*72.5%*	12	*23.5%*	2	*3.9%*	51
ES	20	*33.9%*	33	*55.9%*	6	*10.2%*	59
FI	15	*78.9%*	4	*21.1%*	0	*.0%*	19
FR	63	*65.6%*	25	*26.0%*	8	*8.3%*	96
HU	15	*75.0%*	4	*20.0%*	1	*5.0%*	20
IE	7	*87.5%*	0	*.0%*	1	*12.5%*	8
IS	1	*50.0%*	0	*.0%*	1	*50.0%*	2
IT	62	*56.4%*	37	*33.6%*	11	*10.0%*	110
LI	1	*100.0%*	0	*.0%*	0	*.0%*	1
LT	4	*40.0%*	6	*60.0%*	0	*.0%*	10
LU	1	*100.0%*	0	*.0%*	0	*.0%*	1
LV	5	*83.3%*	0	*.0%*	1	*16.7%*	6
MT	1	*50.0%*	0	*.0%*	1	*50.0%*	2
NL	11	*27.5%*	18	*45.0%*	11	*27.5%*	40
NO	14	*73.7%*	4	*21.1%*	1	*5.3%*	19
PL	40	*60.6%*	16	*24.2%*	10	*15.2%*	66
PT	28	*93.3%*	0	*.0%*	2	*6.7%*	30
RO	26	*61.9%*	15	*35.7%*	1	*2.4%*	42
SE	14	*66.7%*	6	*28.6%*	1	*4.8%*	21
SI	9	*75.0%*	3	*25.0%*	0	*.0%*	12
SK	7	*87.5%*	1	*12.5%*	0	*.0%*	8
UK	33	*23.7%*	38	*27.3%*	68	*48.9%*	139
TOTAL ESPON SPACE	**778**	***58.1%***	**315**	***23.5%***	**245**	***18.3%***	**1338**

Map 5 illustrates the result of this classification. We purposefully highlight Class 1 regions characterised by a prevalence of smaller population settlements.

Map 5. NUTS3 Typology based on degree of urbanisation



Typology based on degree of urbanisation

- Population (2006) living in HDUC < 30%
- Population (2006) living in HDUC 30%-70%
- Population (2006) living in HDUC > 70%
- NO DATA

The map above indicates the regions in which there is a prevalence of population living in "smaller settlements". When compared to Map 3, it reflects under this broad category almost precisely the three types of regions in which the prevailing population settlement in Map 3 was not HUDC: SMST, VST and 'Other' ones. The aggregation of these categories offers the opportunity to compare them with other ESPON types, and their relative performance in terms of basic indicators such as population growth and GDP.

Of course, it also shows the approximation of this aggregation. For instance, a region with prevailing smaller settlements of about 500,000 inhabitants may be constituted by 150.000 inhabitants living in one or two HUDCs (e.g. 1 cities of 90,000 inh. and another of 60,000 inh) integrated in a regional context in which 350,000 inhabitants may live in 7-8 SMSTs (e.g. for a total amount of 250,000 inh.), and in about 100 VSTs or other settlements (about 100,000 inhabitants). In this case, the roles of smaller settlements - or of the two large cities (HUDCs) - within the general regional data cannot be ascertained. Still, the prevailing presence of SMSTs and VSTs offers a good approximation of the general conditions of those smaller settlements in that region.

A few broad trends in the EU territory could be highlighted. Spain and Romania are countries with a relatively high degree of concentration of population in HDUC. In general, regions along the coasts are more likely to register a higher degree of urbanisation, and in particular those on the Western Mediterranean arc, the south-east of England, and along the Black Sea; of course metropolitan regions follow the same trend, especially in large parts of England, Flanders in Belgium, the Netherlands, and Northern Italy. On the contrary, in France, most of the central and eastern regions are characterised the dominance of the smaller urban scales. The Scandinavian and Finnish regions present similar and even more radical conditions, with their sparsely populated and very large NUTS3 regions.

It is interesting to notice here the difference with the fine-grained identification of settlements in the morphological maps. There, a strong presence of SMSTs were identified in a central sector going from the south of England throughout the Benelux and the West of Germany to Italy, with other “clusters” in the industrial belt of South-Eastern Germany and Poland, and along the whole Western Mediterranean arc from Spain to Italy (see Ch. 2). Nevertheless, the NUTS3-based representation confirms the statistical outcome of Ch. 2, in which it was possible to distinguish three main types of national urban settlement structures:

- Countries with a neat prevalence of urbanised population, clustered in high-density urban centres, as Belgium, Switzerland, Greece, the Netherlands, Spain, the UK, as well as smaller island states as Malta and Cyprus;
- Countries with an overrepresentation of population living in smaller settlements, like France, Ireland, Lithuania, Luxembourg, Norway and Slovakia.
- All other countries, showing with a more balanced repartition of population between classes of high-density urban clusters and small and medium towns, like Austria, Bulgaria, the Czech Republic, Denmark, Estonia, Latvia, Poland, Portugal, Romania, Sweden and Slovenia.

In this respect, the different historical circumstances of the urbanisation process in each country in the last century – associated to each different socio-administrative institutional framework – prove to be relevant (Antrop, 2000; Jordan-Bychkov & Bychkova Jordan, 2002; Hohenberg & Lees, 1995; Pumain, 2000). It is the case of the different structures in neighbouring countries such as France, with its prevailing mono-centricity, and other countries with an historical polycentric structure such as Italy and Germany. At the same time institutional arrangements, land use policy (Newman & Thornley, 1996) and growth pressure on settlements provoke changes that can be readable also within the same country, such in the case of Belgium with a strong difference of urban patterns between Flanders and Wallonia (Antrop, 1997; Camagni & Salone, 1993; Vasanen, 2012).

3. Territorial trends

3.1 Geographical and socioeconomic specificities of NUTS3 regions characterized by different structures of urban settlements

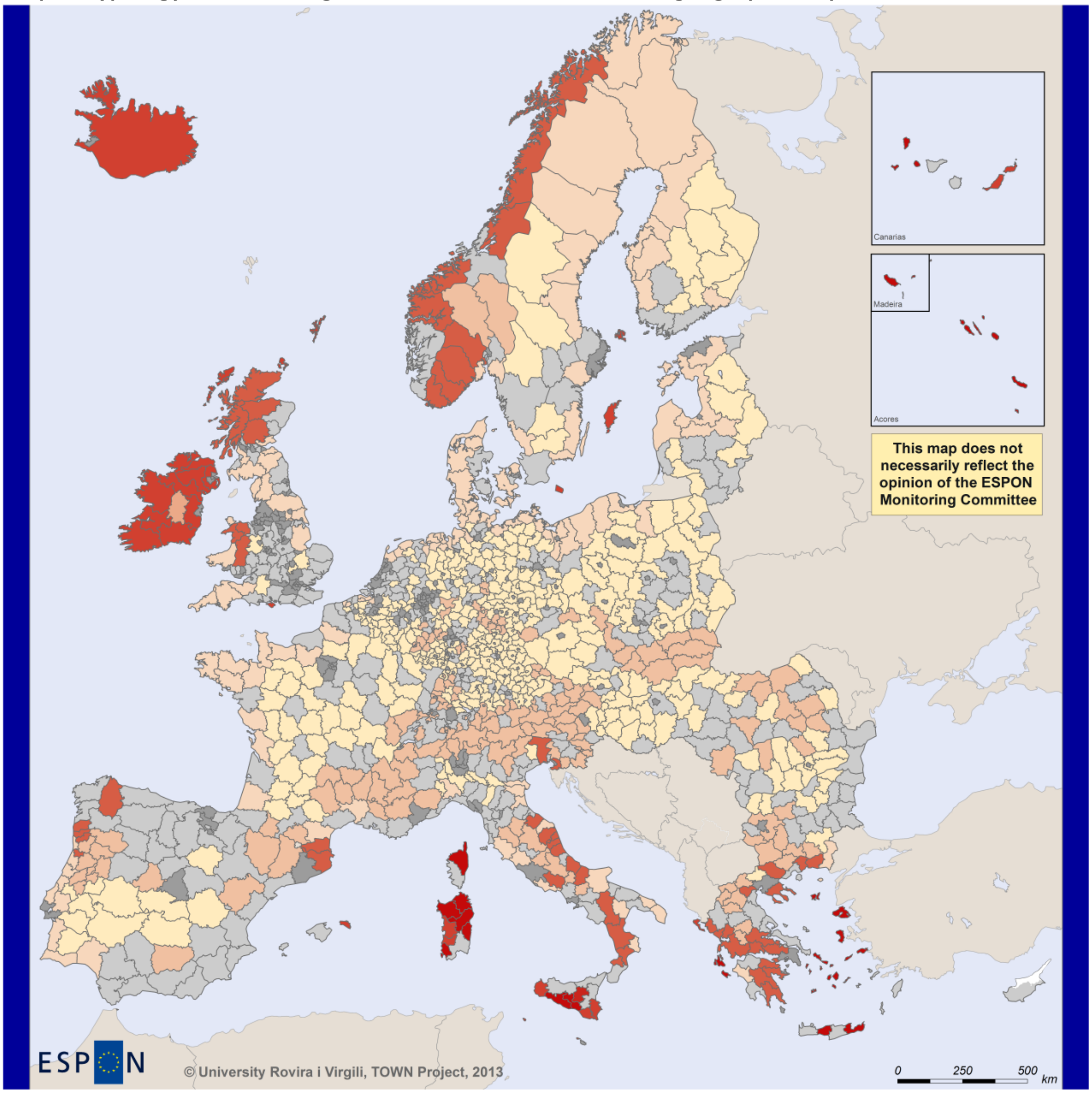
In this section, we further explore the urban settlement structure of Europe. A first question regards the degree to which the characterization of regions as “non metropolitan” as having less than 30% of the population living in HDUC is associated to ESPON typologies of geographic specificity and socioeconomic status, and the emerging territorial trends in such association.

The first aspect we take into consideration is how much low degrees of urbanization are recurrent in regions characterized as coastal, insular and mountainous. Map 6 returns the overall matching of the TOWN typology introduced in the previous section (Map 5) with these three ESPON geographical typologies, reduced to the binary of being or not being included in those (thus bundling all specificities of coastal, island and mountainous regions in single classes).

The map illustrates a high level of coincidence between the urban structure and these territorial features. As confirmed by the analytics in Tables A1-A3 in the Annex 1 to this chapter, all three geographical specificities are associated with a low degree of urbanization, though only in the case of mountain regions this association is statistically significant (χ^2 test < 0.05). Mediterranean coasts (especially the Western Mediterranean arc) are on the whole highly urbanized.

The second group of characteristics that we take into consideration regard the aspect of being a border region (internal and/or external) and an outermost region. Map 7 and the analytics of Tables A4-A5 in the Annex 1 illustrate the association of these characteristics with a low degree of urbanisation. It results that while the association with outermost regions is not statistically significant, border regions of both types do tend to be characterised by a low degree of urbanisation. The result for the regions on the external border is not that surprising as they largely coincide with sparser population regions especially on the eastern EU border, but the result for internal border regions is particularly inspiring.

Map 6. Typology based on degree of urbanisation and ESPON geographical specificities



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Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data and ESPON 2013 data
Origin of data: DG Regio; ESPON 2013
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
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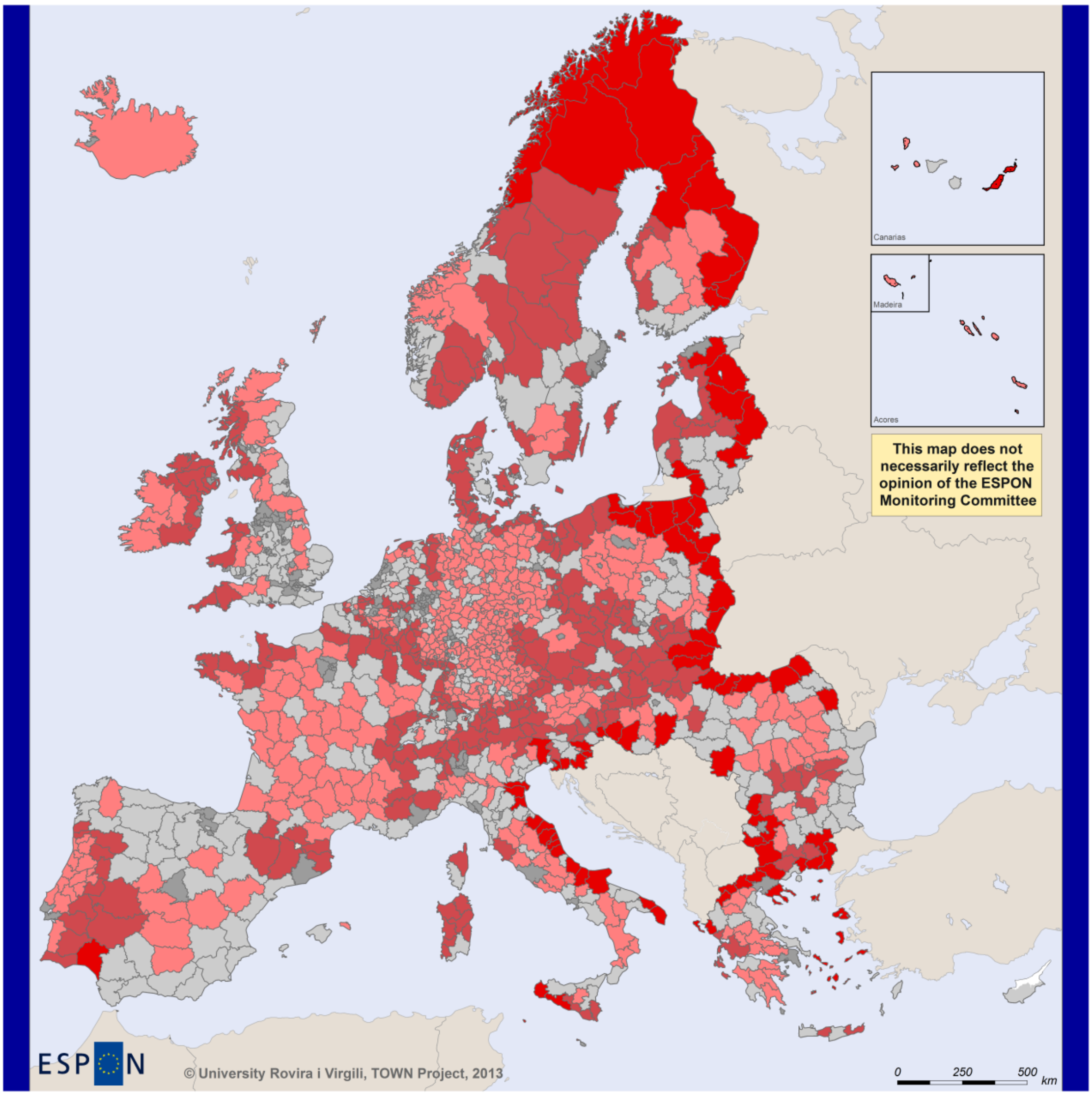
Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Typology based on degree of urbanisation and ESPON geographical specificities

- Population (2006) living in HDUC < 30% and coastal region
- Population (2006) living in HDUC < 30% and mountanous region
- Population (2006) living in HDUC < 30% and island region
- Population (2006) living in HDUC < 30% and coastal region /mountanous region
- Population (2006) living in HDUC < 30% and coastal region/ island region
- Population (2006) living in HDUC < 30% and mountanous region / island region
- Population (2006) living in HDUC < 30% and coastal region/ mountanous region/ island region
- Other regions with Population (2006) living in HDUC < 30%
- Population (2006) living in HDUC 30%-70%
- Population (2006) living in HDUC > 70%
- NO DATA

Map 7. Typology based on degree of urbanisation and ESPON geographical specificities



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Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
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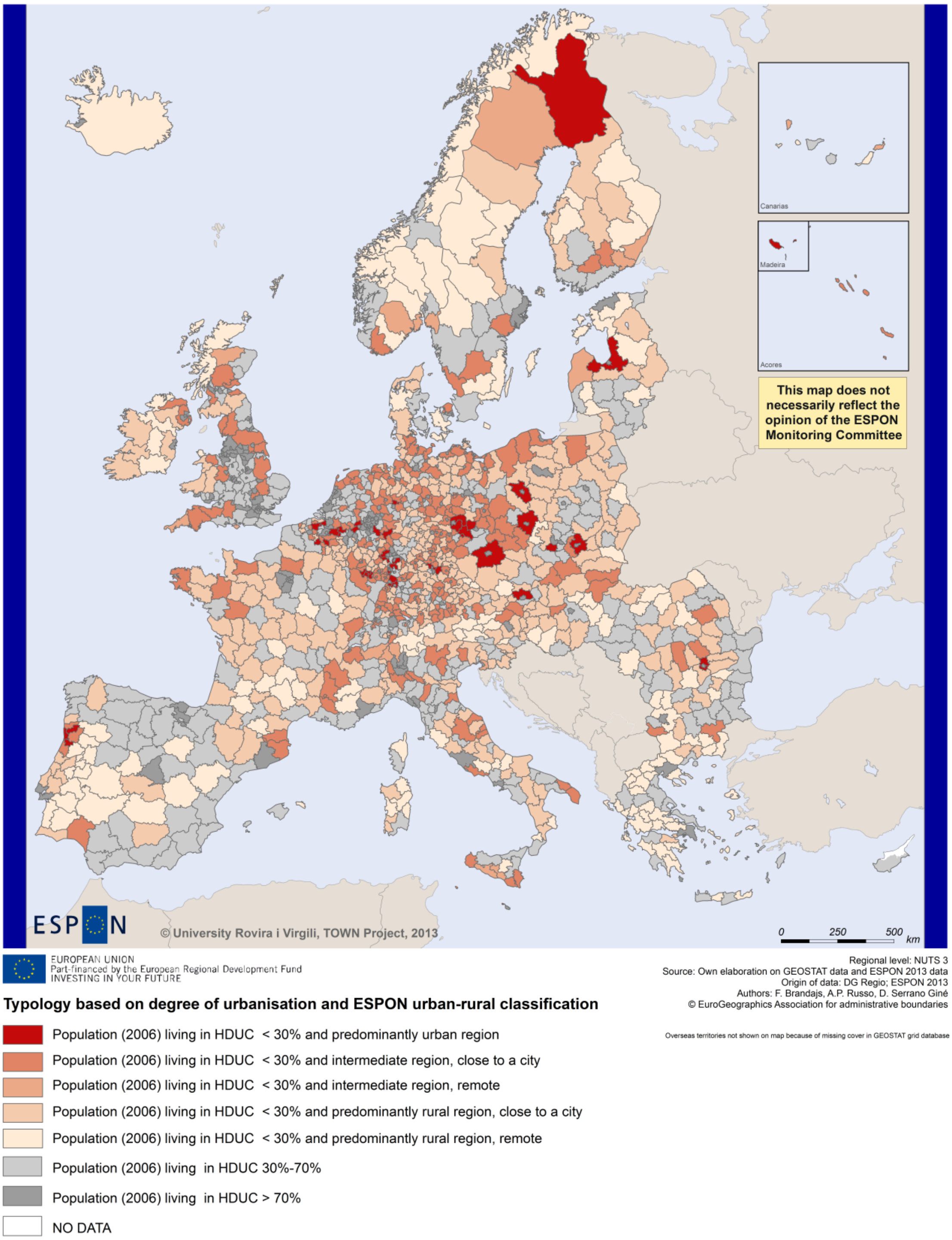
Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Typology based on degree of urbanisation and ESPON geographical specificities

- Population (2006) living in HDUC < 30%
- Population (2006) living in HDUC < 30% and internal border regions
- Population (2006) living in HDUC < 30% and external border regions
- Population (2006) living in HDUC < 30% and outermost regions
- Population (2006) living in HDUC 30%-70%
- Population (2006) living in HDUC > 70%
- NO DATA

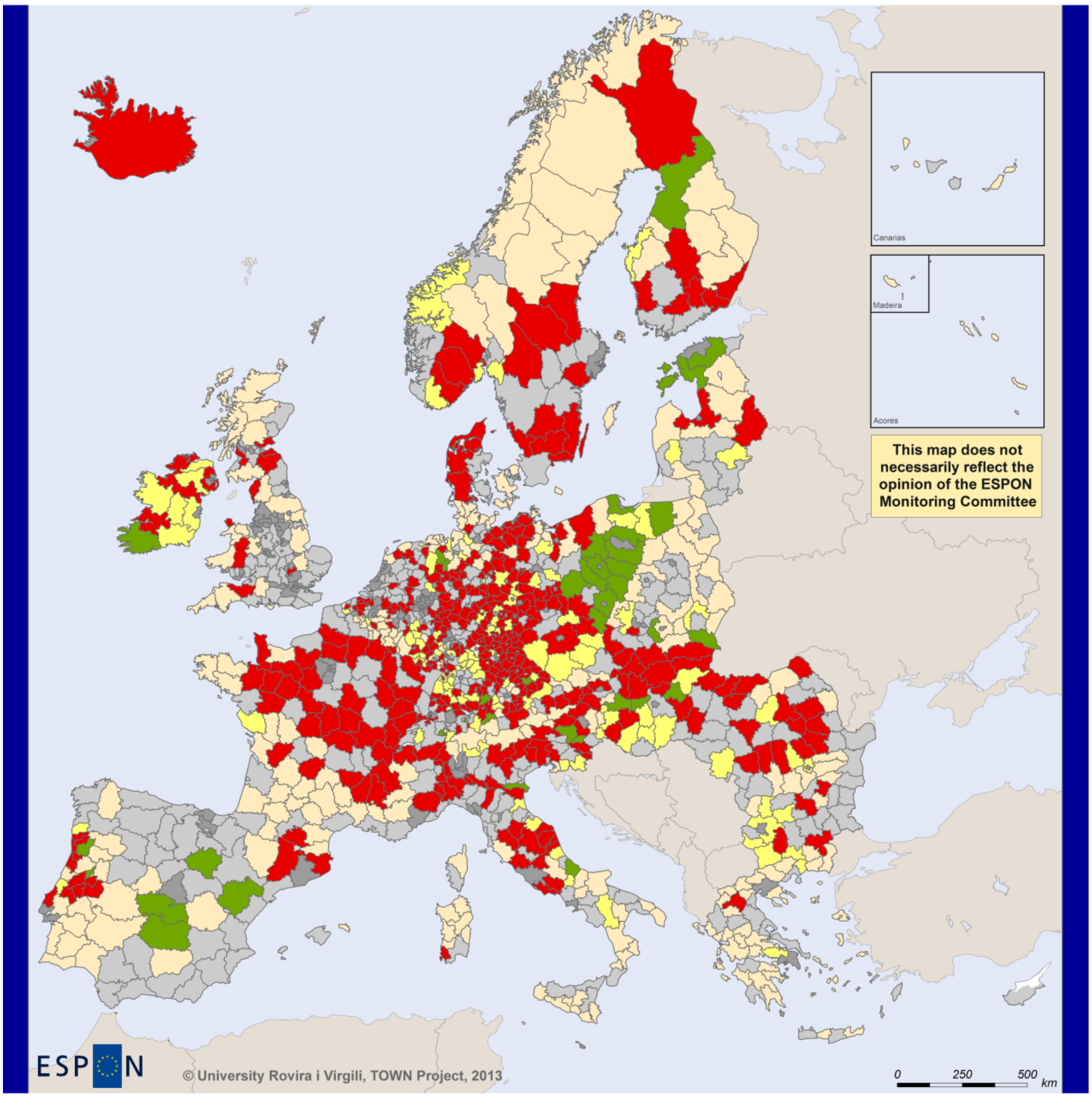
Next we look at the association of a low degree of urbanisation with the ESPON typology of urban-rural regions. While the association is to some degree built-in in the way our typology has been defined, it is still interesting to note (as in Map 8 and in the analytics of Table A6 in the Annex 1) that low degrees of urbanisation positively associate with all classes of non-urban regions except that of intermediate regions close to cities.

Map 8. Typology based on degree of urbanisation and ESPON urban-rural typology



Finally, we checked the relation between a low degree of urbanisation and an index of economic performance such as the ESPON typology of regions in industrial transition. Map 9 illustrates the results, and Table A7 in the Annex 1 the analytics. The association proves to be significant, however while it might be expected that lower degrees of urbanisation would go inversely hand in hand with industrial strength, closer inspection of the statistical tests in Table A8 show a slight underrepresentation of regions characterised by a lower degree of urbanisation among ‘regions with industrial branches losing importance’, and, conversely, their overrepresentation among ‘regions with industrial branches gaining importance’.

Map 9. Typology based on degree of urbanisation and ESPON typology of regions in industrial transition



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Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Typology based on degree of urbanisation and ESPON typology of regions in industrial transition

- Population (2006) living in HDUC < 30% and Region with industrial branches losing importance
- Population (2006) living in HDUC < 30% and Region with industrial branches gaining importance
- Population (2006) living in HDUC < 30% and Region with internal industrial structural change
- Other regions with Population (2006) living in HDUC < 30%
- Population (2006) living in HDUC 30%-70%
- Population (2006) living in HDUC > 70%
- NO DATA

This result presents a double face. On the one hand, and in absolute terms, the overall picture of EU regions (Map 9) indicates the extension of regions with smaller settlements that present industrial branches losing importance (with the caveat of using an indicator of 2006, thus even before economic crisis). In this sense, the large majority of regions characterised by negative trends provides a warring message, because regions with smaller settlements may be more vulnerable when facing changes in their industrial structure.

On the other hand, and within the general European trend, the relative comparison between region with smaller settlements and region with bigger urban areas gives more articulated results, with interesting insight regarding the flexibility of industrial structures in the former. In spite of the fact that it is customary to associate innovation and economic change with large scale urbanisation, less urbanised regions seem to perform better than 'intermediate' regions (in terms of urbanisation structure) in relative terms. This could be interpreted as an interesting trade-off effect between economic and population factors behind the viability of industrial transformation processes. It also emerges that the positive association with industrial change regards especially lower urbanised regions in the periphery of Europe, and specifically some regions in Portugal and Spain, the whole west of Poland, some region of Hungary, Slovakia, Estonia, central Finland, and central Italy.

3.2 Performance of NUTS3 regions characterised by different structures of urban settlements

The next step in this analysis focuses on the performance in terms of population and per capita GDP growth of regions characterised by different "degrees of urbanisation" as set out in the typology of Map 5. The growth rates are generally calculated over the 2001-2011 period, and p.c. GDP is considered in current market prices[12]. Performances are expressed both in terms of deviations from the EU average (in order to capture macro-trends over the ESPON space) and in terms of deviations from the national average, in order to capture finer scale phenomena independently from the overall national scores.

This analysis complements the one that will be performed using performance data at the LAU2 scale in Chapter 9, in that it picks 'scores' of regions characterised by specific urbanisation structures, albeit at a grosser scale (urbanisation structured being 'roughed up' at the regional level as illustrated earlier, similarly to performance data which are also regional), but making it possible to cover the whole ESPON space and not just the area covered at case study level in our project.

Population growth in comparison with EU and national averages
Starting with Map 10, this nuances the dominance of a territorial trend characterized by a shift of population from the East and the North to South and the West of Europe (or high out-migration rate of the former, and high in-migration rate of the latter) that affects all types of regions. This trend, already identified in the ESPON ATTREG project (Russo et al., 2012) for the period 2000-2006, is thus confirmed, albeit a more moderate effect emerges in the last part of the decade. It is possible to imagine that the financial crisis that affected in particular some of the booming – and most attractive – regions played a role in smoothing down such strong migratory trend (cf. ESPON (2013) Evidence Brief on post crisis migration trends). In fact, the general trend of population growth in most of the EU-15 countries has few exceptions such as those areas affected by long-term economic downturns (ie. the Italian Mezzogiorno).

[12] Using Purchase Parity Standard (PPS) per capita GDP would have produced more significant and comparable results especially at the global EU level. However, the possibility of using the EUROSTAT PPS data sets (as we did in intermediate deliveries) is compromised by the existence of important data gaps in the time series 2001-2011, and the difficulty of recalculating such indicator to account for NUTS3 boundary shifts that were introduced with the 2010 NUTS3 edition.

Map 10 - NUTS3 Typology 3A. Type of predominating settlement * pop. growth (dev. from EU average)

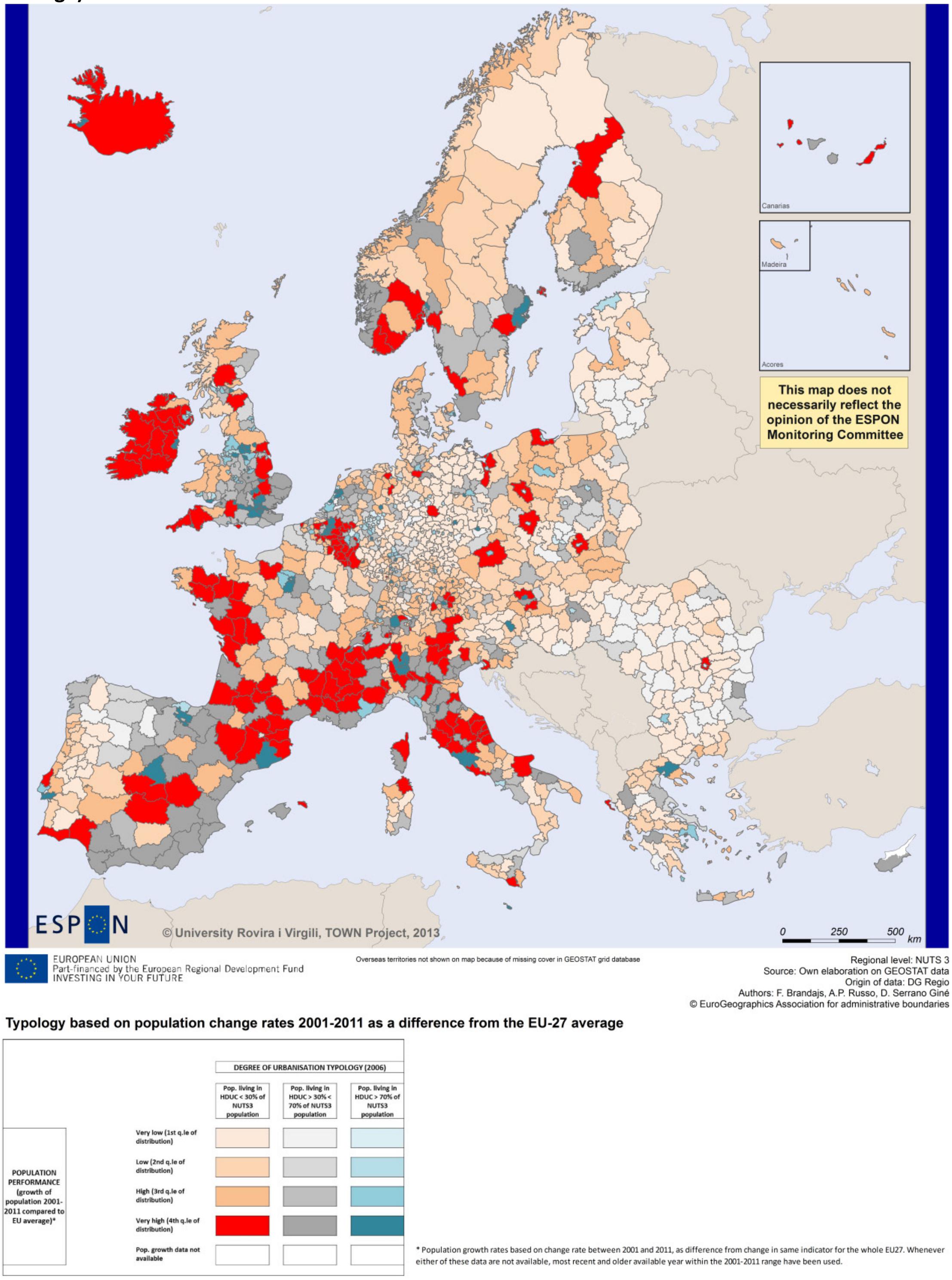


Table 4 illustrates how regions characterised by a lower degree of urbanisation grew at an average rate of 0.55%, which is a much lower rate lower than that of both highest urbanised regions (3.38%) and intermediate regions (3.84%). In terms of deviations from the EU-27 average, they grew significantly less than the two other groups, as proved through a one-way ANOVA test of differences (Table A11 in the Annex). This also got combined with the decrease of intensity of the exceptional interregional migration within the EU that took place after the EU enlargement in 2004. Thus if counter-migration has been triggered by the crisis in some 'overheated' areas, it is a process that in most regions has not be able to invert the overall balance in the whole 2001-2011 period.

Table 4 – Average population growth of NUTS3 regions as classified by degree of urbanisation, in EU and national contexts

Typology based on degree of urbanisation	Population growth in NUTS3, 2001-2011 (mean)	Dev. of population growth rates from EU-27 average (mean)	Dev. of population growth rates from national average (mean)
Pop in HDUC 2006 < 30%	0.55%	-2.92%	-1.55%
Pop 2006 in HDUC 30%-70%	3.84%	0.40%	0.64%
Pop 2006 in HDUC > 70%	3.38%	-0.02%	0.74%
TOTAL	1.84%	-1.61%	-0.62%

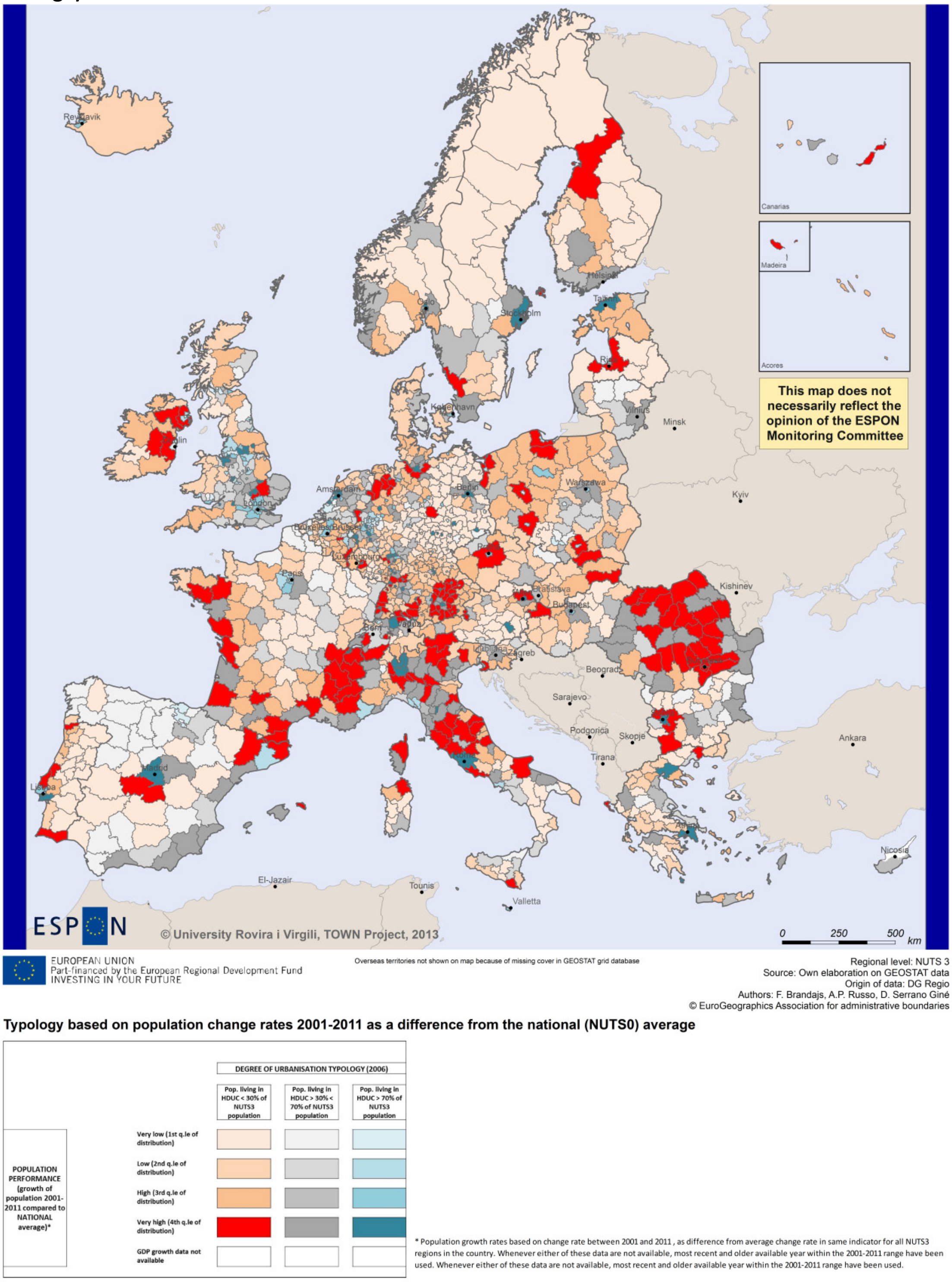
A clearer picture of the macro-trends of population growth performances of regions characterised by a lower degree of urbanisation is provided by the hotspot map included as Map A1 in the Annex 2 to this chapter. This hotspot map, like the following ones, reflects the variation of performance scores over regions with a lower degree of urbanisation, 'masking' the rest.

It is thus possible to recognise a large 'hot spot' ranging, north to south, from the British islands to the centre of Italy, and from southeast to northwest, from southern Portugal to south-central Europe, with appendices in southern Scandinavia and Poland; while there are three 'cold spots': the major one ranges from eastern Germany through Bulgaria cutting through the 'rust belt' of southern Poland and Slovakia, towards the eastern EU border. Then there are two local cold spot phenomena over Latvia and Lithuania, and in Northern Portugal.

Altogether, the inspection of such maps and the related statistics provide us with the following information: there has been indeed a quite large population shift from 'grey' to 'sunny' Europe in the 2000s, partly moderated and in some cases reversed in the aftermath of the crisis in the last part of the decade, and most remarkably, this has produced a partial shift of population towards non-core regions especially in the South West. In this picture, while globally the bulk of population has grown more in more urbanised regions, it cannot be argued that the shift has also been one from 'rural' to 'urban'; on the contrary, it seems that at least in a large part of the EU core, less urbanised regions had a protagonist role in retaining or attracting population, and a decidedly important one as far as the Mediterranean Arc (extending to inland regions in Spain, France and Italy) is concerned. Moreover, the regions with smaller settlements around metropolitan areas seem to perform best, indicating wide processes of suburbanisation and even sub-regionalisation. This process is predominantly evident in the surrounding of Eastern metropolitan areas, e.g. Prague, Krakow, and Bucharest, but also Madrid, Paris, London and other metropolitan areas of EU 15 show the same trend.

This overview of population performances becomes richer when the variation of the population is compared to each national average as in Map 11. This perspective takes into consideration a factor of contextualization, highlighting phenomena occurring within countries, and picking spatial differences in more detail. Again the mean values of population growth across the three urbanisation classes differ significantly (see Table A12 in the Annex). On average (third column of Table 4), regions characterised by a lower degree of urbanisation grow less than others within countries, while more urbanised regions grown more.

Map 11 - NUTS3 Typology 3B. Type of predominating settlement * pop. growth (dev. from nat. average)



There are no great geographical variations over this general pattern: only in Ireland and Poland did population grew significantly more in regions with lower degrees of urbanisation; in Austria, Bulgaria, Denmark, Greece, Norway and Sweden the shift of population favours more significantly more urbanised areas, while in the rest of the countries difference are not significant, and France presents a perfectly balanced trend between urbanisation types.

Looking at the broader continental trends, it thus appears the larger growth rates are achieved by the 'intermediate' class by degree of urbanisation, whereas at national level we get the more intuitive result of higher growth in more urbanised regions. Crossing this analysis with another regional typology considered in this chapter, we learn that at national level the 'predominantly urban region' variety of regions with a low degree of urbanisation registers positive growth rates, while growth rates plunge going from intermediate to remote and from urbanised to rural region. It confirms the pattern that the urban-rural breach seems to have been widening throughout the ESPON space in the study period.

Recurring again to the hotspot map (Map A2 in the Annex 2), which should be read country by country to pick this time intra-national nuances, important hot spots are found in France, where regions characterised by lower degrees of urbanisations in the south – but around the southern second-tiers cities – and west score significantly better than regions in the centre; in a vast stretch from southern Germany to Northern-Central Italy; in Eastern England; the East of Ireland around the Dublin region; northern Poland regions closer to the coast; and the central regions of Romania. Balancing this, cold spots affect particularly large parts of the West of the Iberian Peninsula, central France, Western Austria, Eastern Germany, Western Latvia, and Bulgaria.

Thus, only a few countries present the same distribution of above and under-average growth. On the contrary, Portugal, Spain and France show a polarization trend: on the one hand, the growth of their capital region and urbanised regions on the coast; on the other hand, a general depopulation of central regions. At the same time, the growth of population in regions characterised by small settlements in the French western and southern costs is substantial, which suggests that an interesting process is going on in France (possibly related to decentralization policies carried out in France in recent years and general positive trend of Southern France, also supported by tourism growth).
The core of Europe, consisting of Belgium, western Germany and the Italian north-eastern regions, shows a general growth both in the strongly urbanized regions and in those characterized by smaller settlements, with few and patchy exceptions. It can be argued that the general growth trend and suburbanisation processes have strongly affected the regions with smaller settlements. On the contrary, a strong metropolisation process has taken place in Germany's eastern regions, in Austria and in the Scandinavian countries, where an important shift of population emerges from regions with smaller settlements toward the capitals and other larger urban areas.

In this framework, the eastern European regions present a rather different picture. While we notice a general declining trend of population except for the metropolitan areas, the picture of population growth in comparison with national average shows the importance of regions with smaller settlements. Again, there is interdependency between metropolitan areas and urban regions (e.g. Riga, Warsaw, Cracow, Prague, Brno, Bratislava, Budapest, Bucharest, Sofia) and their surrounding regions characterised by smaller settlements (for an extension that goes much beyond a possible functional region).

These phenomena suggest the presence of saturation effects in the metropolitan areas that, together with the enhancement of mobility systems (mainly on road), has determined a delocalization shift of firms and population. Moreover, it is possible that the activities rooted in areas characterized by smaller settlements have been able to resist better and strengthen their autonomy in those areas in which networks with bigger urban areas have been established. It is a sort of long wave of 'borrowing-size' effects (Meijers & Burger, 2010), according to which towns that are close to bigger urban areas manage to achieve a virtual critical mass in terms of accessibility to services and other urban characteristics.

Furthermore, it can be noted that while population growth in 2001-11 has been significantly larger in regions characterised by a higher degree of urbanisation, the only regions with a lower degree of urbanisation where population grows on average grows are regions with industrial branches gaining importance, but with a lower rate than in regions with a higher degree of urbanisation. On the contrary, population decreases at a lower rate in regions characterised by a lower degree of urbanisation than in regions characterised by a higher degree of urbanisation when they are regions undergoing structural change. Finally, regions with a lower degree of urbanisation with industrial branches losing importance register a population decrease almost three times higher than regions with a higher degree of urbanisation. This confirms the impression that regions with smaller settlements tend to be more vulnerable to structural changes brought by macro-trends.

Per capita GDP growth in comparison with EU and national averages

When taking in consideration the distribution of per capita GDP growth rates in the same way we did for population, the picture presented varies significantly. Table 5 provides the main average values across the ESPON space. It now appears that less urbanised regions have grown in 2001-2011 on average more than those with a high degree of urbanisation (though less than regions in the 'intermediate' class), and significantly so, and this is the case both in terms of deviations from the EU average (Table A.13 in the Annex) and within countries (Table A.14).

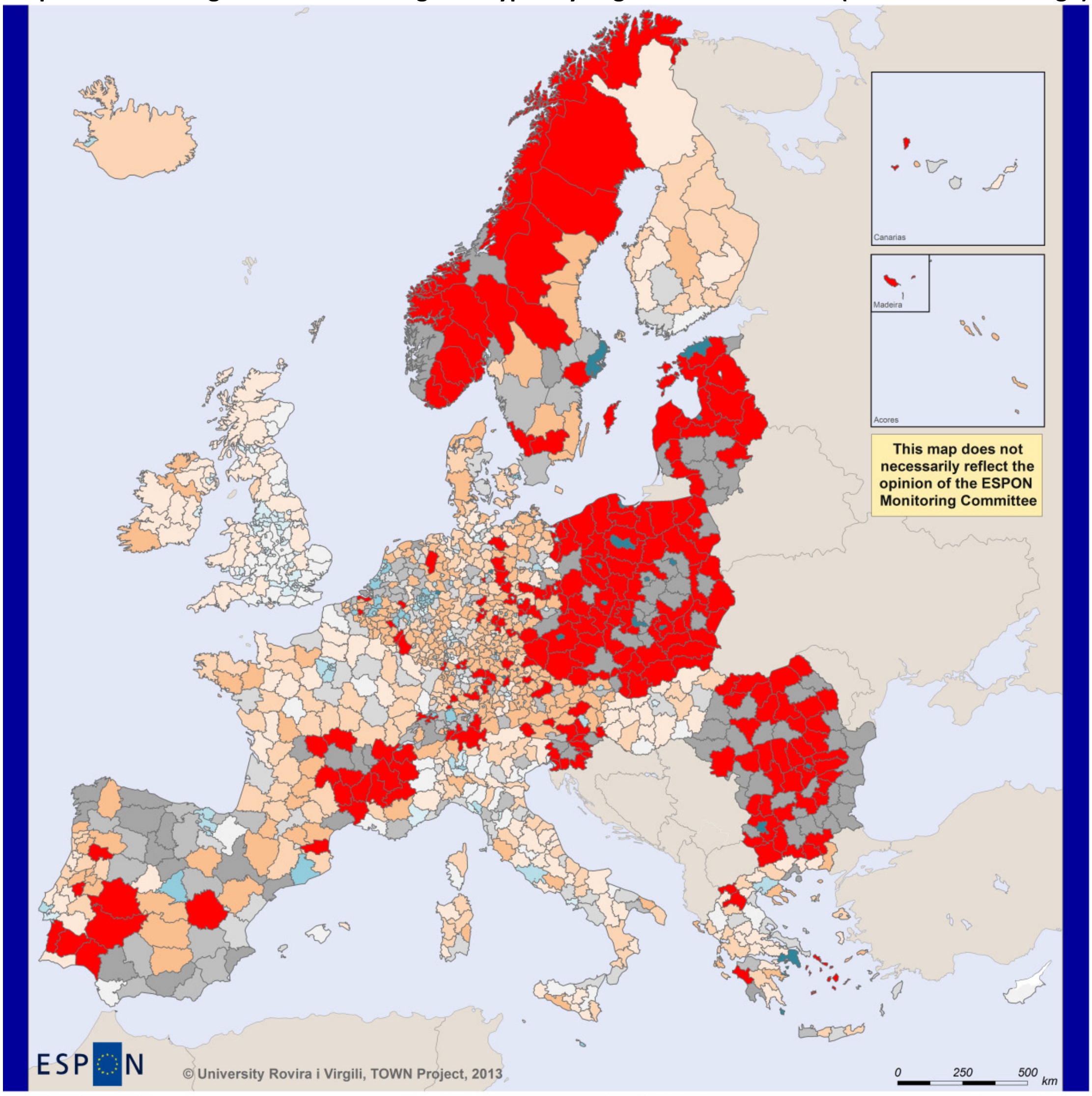
Table 5 – Average p.c. GDP growth of NUTS3 regions as classified by degree of urbanisation, in EU and national contexts

Typology based on degree of urbanisation	P.c. GDP growth in NUTS3, 2001-2011 (mean)	Dev. of P.c. GDP growth rates from EU-27 average (mean)	Dev. of P.c. GDP growth rates from national average (mean)
Pop in HDUC 2006 < 30%	41.63%	31.71%	1.38%
Pop 2006 in HDUC 30%-70%	42.46%	32.86%	1.13%
Pop 2006 in HDUC > 70%	20.74%	11.18%	-3.02%
TOTAL	38.00%	28.22%	0.51%

This information, together with the fact that more urbanised regions have gained population relatively to the less urbanised ones, indicates that the former regional types have lost some of their wealth to the 'periphery' at least at the national scale. In other words, it can be deduced that de-urbanisation has mostly interested the wealthier classes, while urbanisation from less to more urbanised regions has mostly interested the less wealthy.

Map 12 illustrates the distribution of p.c. GDP variation compared to the EU average and it shows a general trend. Due to the high disparity in absolute GDP per capita of the eastern country at the beginning of 2000, it is understandable that the higher performances were registered in the Eastern Europe and the most negative on the Western Europe. Nevertheless, there are notable regional variations in three countries at the EU core, like Germany, France, and Austria, as well as in some countries at the periphery (Ireland, Latvia, Norway, and Portugal) in which less urbanised regions have grown significantly more than others in this period.

Map 12 – P.c. GDP growth scores in regional types by degree of urbanisation (dev. from EU average)



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Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné

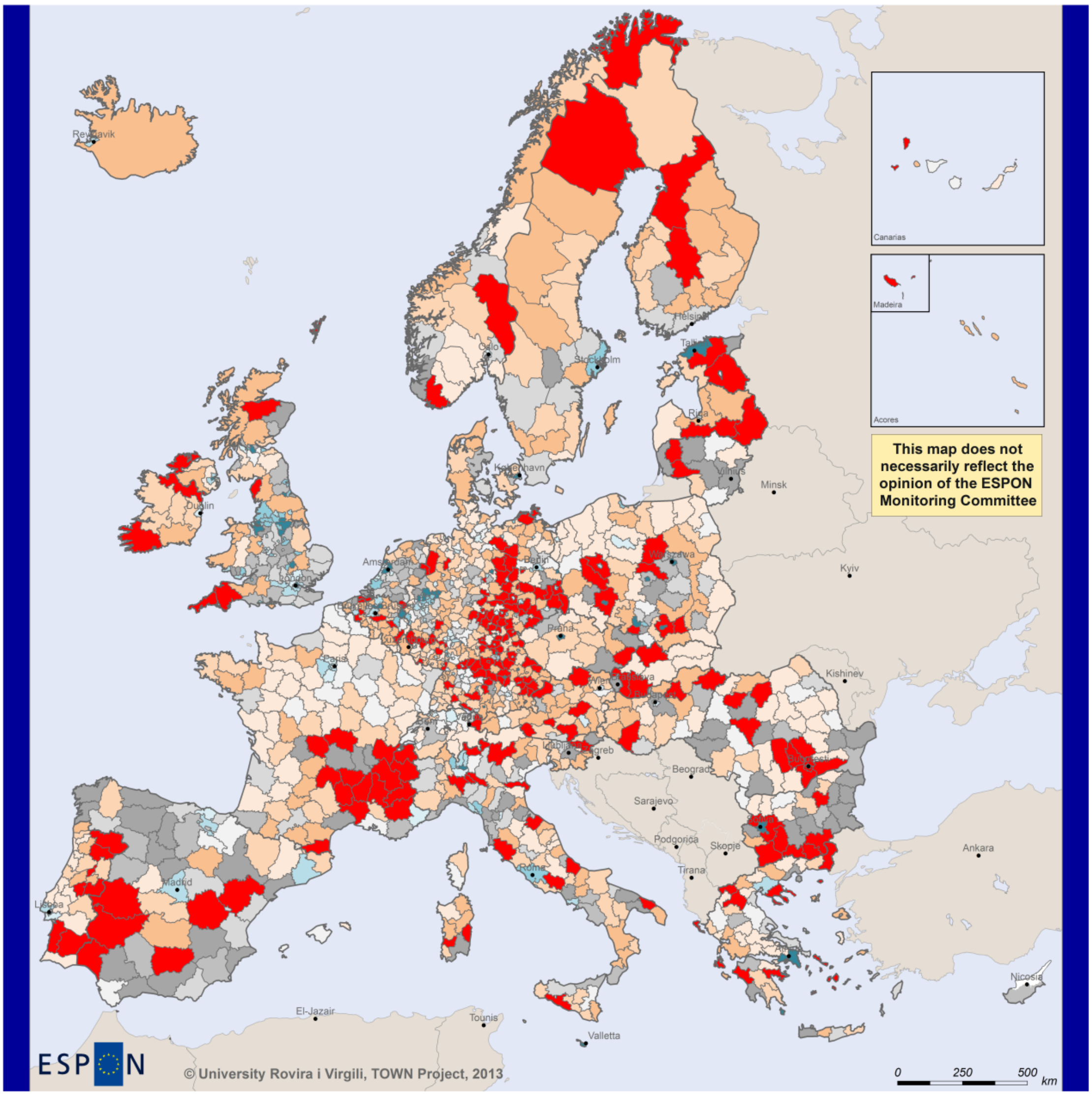
Typology based on p.c. GDP change rates 2001-2011 as a difference from the EU-27 average

		DEGREE OF URBANISATION TYPOLOGY (2006)		
		Pop. living in HDUC < 30% of NUTS3 population	Pop. living in HDUC > 30% < 70% of NUTS3 population	Pop. living in HDUC > 70% of NUTS3 population
P.C. GDP PERFORMANCE (growth of per capita GDP 2001-2011 compared to EU average)*	Very low (1st q.le of distribution)			
	Low (2nd q.le of distribution)			
	High (3rd q.le of distribution)			
	Very high (4th q.le of distribution)			
	GDP growth data not available			

* Per capita GDP growth rates based on change of per capita GDP in current market prices between 2001 and 2011, as difference from change in same indicator for the whole EU27. Whenever either of these data are not available, most recent and older available year within the 2001-2011 range have been used and compared to EU change rate in the same period.

Again we look at a hotspot map (Map A3 in the Annex 2) to capture some of the more general EU trends. The picture indeed results quite different from that nuanced in Map A1 indicating EU trends of population growth; except from Scandinavia, the two maps are almost the 'negative' of one another. Thus a cold spot of relatively decreasing per capita GDP traverses the core of Europe from Ireland and Denmark to Greece and the Italian south, while there are hot spots at the eastern periphery in Romania, Latvia and central Poland, plus a local hotspot in central-southern France and a general above-average growth in some sparsely populated regions in Sweden and neighbouring Norway. Based on these two maps, it is noticeable that the macro-trend of the 2000 decade is thus one of convergence, by which the eastern European regions, and 'Objective 1' regions in the west have done much better in terms of per capita wealth than the EU core; regions with a lower degree of urbanisation have gone along.

Map 13 - P.c. GDP growth scores in regional types by degree of urbanisation (dev. from nat. average)



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Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
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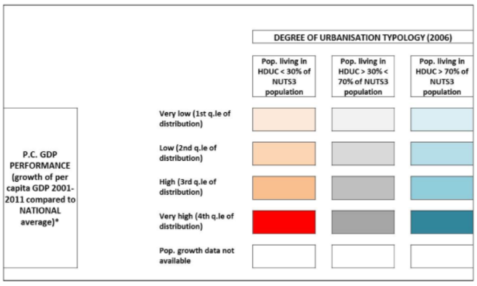
Typology based on p.c. GDP change rates 2001-2011 as a difference from the national (NUTS0) average



* Per capita GDP growth rates based on change of per capita GDP in current market prices between 2001 and 2011 , as difference from average change rate in same indicator for all NUTS3 regions in the country. Whenever either of these data are not available, most recent and older available year within the 2001-2011 range have been used.

Also in this case, the general picture changes significantly when GDP growth is compared to each country's average (Map 13). Per capita GDP growth 2001-11 is on average positive in regions with a lower degree of urbanisation and negative in those with a lower degree, and the difference is significant (see Table A14 in the Annex). This map evidences that the growth in per capita wealth of regions with a lower degree of urbanisation in Belgium, Germany and Austria is at the expenses of metropolitan regions in the same countries including the neighbouring 'intermediate' regions. In Spain and Portugal, 'intermediate' regions are those that do worst.

Conversely, the growth in less urbanised regions in Slovakia, Hungary, Poland, Bulgaria and Greece seems to be occurring at the expenses of remote rural areas. The UK is characterised by polarization of growth in the extreme opposite regional types, i.e. in both the main urban areas and in the smaller settlements regions, at the expenses of those regions in which the population is evenly distributed in high urban clusters and smaller settlements. France comes out patchy to this respect, with a strong role of the second-tiers urban poles. In any case it should be pointed out how peripheral regions that are tourist destinations (both domestic and international) in core areas do particularly well: it is the case of Cornwall and the Lake District in the UK, the Southern Central region in France, the West of Germany, some provinces in Sardinia and Sicily as well as the Alpine regions in Italy.

Map A4 in the Annex provides hotspot values in this complex territorial pattern; the general trend is that of a re-equilibrium of wealth in many countries in the West and the Centre, where the rural periphery does better than the core and less urbanised regions are at the forefront of this trend; conversely, the breach seems to widen at the south-eastern edge of Europe, where regions characterised by lower degrees of urbanisation are left behind in a typical ongoing metropolitanisation process of these economies. Significant 'national' hotspots are thus found in the south of France, Eastern Germany through the Polish west, the south of Norway, Estonia and Western Bulgaria; interesting local phenomena regard areas in Spanish Galicia, Apulia, central Sardinia, southern Greece and northern Scotland.

4. Conclusions

The analyses at NUTS3 level have brought interesting results, and they offered the possibility to have insights on the overall distribution of smaller settlements across Europe, some spatial trends, and main performances associated to regions with prevailing settlement types. Of course, a certain degree of approximation should be noted mainly due to the facts that only very few NUTS3 regions are occupied by only type of urban settlements and the NUTS3 dimensions vary consistently across countries.

All in all, evidences show that settlements types have a varied distribution throughout the ESPON space with a diversity of degrees of concentration and articulation of polycentric urban structures. Such variety is influenced by the overlapping of physical factors and geo-political macro-structures. Therefore, macro-regional and geographical features such mountain areas, islands and coastal regions are at the same time confronted with very present national characterisations. All together, they present several settlement patterns that articulate the European space.

In this perspective, it was possible first of all to distinguish at least three main types of national urban settlement structures:

- Countries with a neat prevalence of urbanised population in NUTS3 regions, clustered in high-density urban centres, as Belgium, Switzerland, Greece, the Netherlands, Spain, the UK, as well as smaller island states as Malta and Cyprus;
- Countries with an overrepresentation of population living in smaller settlements, like France, Ireland, Lithuania, Luxembourg, Norway and Slovakia.
- All other countries, showing with a more balanced repartition of population between classes of high-density urban clusters and small and medium towns, like Austria, Bulgaria, the Czech Republic, Denmark, Estonia, Latvia, Poland, Portugal, Romania, Sweden and Slovenia.

Here the different historical circumstances of the urbanisation process in each country in the last century – associated to each different socio-administrative institutional framework, not last the NUTS3 dimension – proved to be relevant.

At the same time, in terms of geographical distribution, we obtained evidence of correlation between regions with low degrees of urbanization and coastal, insular and mountainous areas. All these three geographical specificities are associated with regions in which smaller settlements tend to be the prevalent type, though only in the case of mountain regions this association is statistically significant. In the other cases, such as islands and coastal regions, especially those of the Western Mediterranean arc, highly urbanized patterns grew in the past decades.

Another relevant correlation has been found between regions with smaller settlements and border (internal and/or external) positions. The result for the regions on the external border is not that surprising as they largely coincide with sparser population regions especially on the eastern EU border, but the result for internal border regions is interesting, because it indicates how national peripheries have limited the growth capacity of urban settlements. Therefore, from a policy point of view, cross-border cooperation is an important policy framework in which to address smaller settlements.

Interesting information came also from the relation between a low degree of urbanisation and an index of economic performance such as the ESPON typology of regions in industrial transition. On the one hand, and in absolute terms, the overall picture of EU regions indicates an extensive distribution of regions with smaller settlements that present industrial branches losing importance (using an ESPON indicator with 2006 data). On the other hand, the relative comparison between regions with smaller settlements and regions with bigger urban areas seems to indicate a certain flexibility of industrial structures in the former. Still, the presence of the large majority of regions with low degree of urbanisation characterised by negative trends provides a warring message, because these regions may be more vulnerable when facing structural changes.

The predominance of macro trends that characterise large regions is in a way the most evident insight about regional performance analysis. Despite a very scattered picture of Europe, the analysis performed in this chapter shows a strong dependency with macro dynamics and macro territorial trends for regions predominantly characterized by a lower degree of urbanization. These regions seem to be able to offer less spatial inertia toward larger-scale phenomena. We can read in this way the fact that the macro-dynamics of population changes tend to prevail in comparison with regional specificities. Therefore, it seems that territorial characteristics can offer few bouncing back capacities toward macro trends of population dynamics. It is an example the dominance of a territorial trend characterized by a shift of population from the East and the North to South and the West of Europe (or high out-migration rate of the former, and high in-migration rate of the latter) that affects all types of regions.

Together with macro scale phenomena, there is also a macro/meso regional path dependency shown both in wealthier areas of the central Europe and in some other regions. In this perspective, while globally the bulk of population has grown more in more urbanised regions, it cannot be argued that the shift has also been one from 'rural' to 'urban'; on the contrary, it seems that at least in a large part of the EU core, less urbanised regions had a protagonist role in retaining or attracting population, and a decidedly important one as far as the Mediterranean Arc (extending to inland regions in Spain, France and Italy) is concerned. Moreover, the regions with smaller settlements around metropolitan areas seems the most well-performing, indicating there wide processes of suburbanisation and even sub-regionalisation. This process is predominantly evident in the surrounding of Eastern metropolitan areas, e.g. Prague, Krakow, and Bucharest, but also Madrid, Paris, London and other metropolitan areas of EU 15 show the same trend.

These phenomena suggest the presence of saturation effects in the metropolitan areas that, together with the enhancement of mobility systems (mainly on road), has determined a delocalization shift of firms and population. Moreover, it is possible that the activities rooted in areas characterized by smaller settlements have been able to resist better and strengthen their autonomy in those areas in which networks with bigger urban areas have been established (e.g. 'borrowing-size' effects).

However, there are specific national differences, which may indicate that specific urban-systems features and national policies matter. It is the case of regions with industrial branches gaining importance, of those affected by national and international tourism (e.g. southern France and some Austrian regions). At the same time, overheated regions that behaved as strong attractor in the early 2000 show effects of saturations such the case of Catalonia.

A remarkable insight from this analysis is that not always high per capita GDP growth coincides with population growth. On the opposite, it more often the case of an inverted relationship: regions with smaller settlements that experienced an increase of population tend to present lower GDP growth and, vice versa, those with higher GDP growth tend to show a decrease of population. The interpretation of this phenomenon is too risky and there are no enough evidences to define some correlations. A basic hypothesis however would indicate as general motivation decentralization of activities and of wealthier population trend from congested urban areas on the one hand and in urbanization trends affecting poorer segments of population on the other hand. In other words, it is possible to suppose that de-urbanisation has mostly interested the wealthier classes, while urbanisation from less to more urbanised regions has mostly interested the poorer classes.

In general term, concerning GDP changes, the general trend is that of a re-equilibrium of wealth in many countries in the West and the Centre, where the rural periphery does better than the core and less urbanised regions are at the forefront of this trend; conversely, the breach seems to widen at the south-eastern edge of Europe, where regions characterised by lower degrees of urbanisation are left behind in a typical ongoing metropolitanisation process of these economies. Significant 'national' hotspots are thus found in the south of France, Eastern Germany through the Polish west, the south of Norway, Estonia and Western Bulgaria; interesting local phenomena regard areas in Spanish Galicia, Apulia, central Sardinia, southern Greece and northern Scotland.

To conclude, this chapter has provided some 'macro' evidence on the association of different urbanisation structures to territorial and geographical features, and to regional performance. In the following Chapters 9 and 10 of this Scientific Report, we will develop a more fine-grained and articulated analysis of the performance of SMST in their territorial context using municipal data in 10 case study areas, which allows picking local phenomena through more sophisticated statistical analysis. The combination of these two approaches should give a broad insight over the overall role that SMST are likely to have played in regional development trends.

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ANNEX 1

Statistical tests on the analysis of regional typologies

Table A1 – Statistical analytics: Predominant settlement type in terms of population hosted * Island typology membership

typ_island		Predominant settlement type in terms of population hosted: Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
0 NOT ISLAND	Count	728	302	240	1270
	% within typ_island	57.3%	23.8%	18.9%	100.0%
1 ISLAND	Count	50	13	5	68
	% within typ_island	73.5%	19.1%	7.4%	100.0%
Total	Count	778	315	245	1338
	% within typ_island	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8,209[a]	2	.016
Likelihood Ratio	9.350	2	.009
Linear-by-Linear Association	7.685	1	.006
N of Valid Cases	1338		

[a]. 0 cells (,0%) have expected count less than 5. The minimum expected count is 12.45.

Table A2 – Statistical analytics: Predominant settlement type in terms of population hosted * Mountainous region typology membership

typ_island		Predominant settlement type in terms of population hosted: Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
0 NOT MOUNTAIN	Count	539	218	223	980
	% within typ_mountains	55.0%	22.2%	22.8%	100.0%
1 MOUNTAIN	Count	239	97	22	358
	% within typ_mountains	66.8%	27.1%	6.1%	100.0%
Total	Count	778	315	245	1338
	% within typ_mountains	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48,363[a]	2	.000
Likelihood Ratio	57.473	2	.000
Linear-by-Linear Association	21.684	1	.000
N of Valid Cases	1338		

[a]. 0 cells (,0%) have expected count less than 5. The minimum expected count is 65.55.

Table A3 – Statistical analytics: Predominant settlement type in terms of population hosted * Coastal typology membership

		Predominant settlement type in terms of population hosted			
typ_island		Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
0 NOT COASTAL	Count	559	201	173	933
	% within typ_coastal	59.9%	21.5%	18.5%	100.0%
1 COASTAL	Count	219	114	72	405
	% within typ_coastal	54.1%	28.1%	17.8%	100.0%
Total	Count	778	315	245	1338
	% within typ_coastal	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6,980[a]	2	.031
Likelihood Ratio	6.833	2	.033
Linear-by-Linear Association	2.943	1	.086
N of Valid Cases	1338		

[a] 0 cells (,0%) have expected count less than 5. The minimum expected count is 74.16.

Table A4 – Statistical analytics: Predominant settlement type in terms of population hosted * Border regions typology membership

		Predominant settlement type in terms of population hosted			
typ_border_B		Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
0 Not a border region	Count	403	174	188	765
	% within typ_border_B	52.7%	22.7%	24.6%	100.0%
1 internal Border	Count	288	102	53	443
	% within typ_border_B	65.0%	23.0%	12.0%	100.0%
2 External Border	Count	87	39	4	130
	% within typ_border_B	66.9%	30.0%	3.1%	100.0%
Total	Count	778	315	245	1338
	% within typ_border_B	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48,363[a]	2	.000
Likelihood Ratio	57.473	2	.000
Linear-by-Linear Association	21.684	1	.000
N of Valid Cases	1338		

[a.] 0 cells (,0%) have expected count less than 5. The minimum expected count is 23.8

Table A5 – Statistical analytics: Predominant settlement type in terms of population hosted * Outermost regions typology membership

typ_island		Predominant settlement type in terms of population hosted: Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
0 Not outermost	Count	771	313	245	1329
	% within typ_outermost	58.0%	23.6%	18.4%	100.0%
1 Outermost	Count	7	2	0	9
	% within typ_outermost	77.8%	22.2%	.0%	100.0%
Total	Count	778	315	245	1338
	% within typ_outermost	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2,266[a]	2	.322
Likelihood Ratio	3.857	2	.145
Linear-by-Linear Association	1.734	1	.188
N of Valid Cases	1338		

[a] 0 cells (,0%) have expected count less than 5. The minimum expected count is 65.55.

Table A6 – Statistical analytics: Predominant settlement type in terms of population hosted * urban-rural typology membership

typ_urbrur		Predominant settlement type in terms of population hosted: Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
1 Predominantly urban region	Count	43	89	184	316
	% within typ_urbrur	13.6%	28.2%	58.2%	100.0%
21 Intermediate region, close to a city	Count	236	193	58	487
	% within typ_urbrur	48.5%	39.6%	11.9%	100.0%
22 Intermediate region, remote	Count	18	3	0	21
	% within typ_urbrur	85.7%	14.3%	.0%	100.0%
31 Predominantly rural region, close to a city	Count	320	24	3	347
	% within typ_urbrur	92.2%	6.9%	.9%	100.0%
32 Predominantly rural region, remote	Count	161	6	0	167
	% within typ_urbrur	96.4%	3.6%	.0%	100.0%
Total	Count	778	315	245	1338
	% within typ_urbrur	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	733,857[a]	8	.000
Likelihood Ratio	767.124	8	.000
Linear-by-Linear Association	561.682	1	.000
N of Valid Cases	1338		

Table A7 – Statistical analytics: Predominant settlement type in terms of population hosted * typology of regions in industrial transition membership

typ_indtrans		Predominant settlement type in terms of population hosted: Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	Pop 2006 in HDUC > 70%	Total
A1 Region with industrial branches losing importance	Count	361	161	106	628
	% within typ_indtrans	57.5%	25.6%	16.9%	100.0%
A2 Region with industrial branches gaining importance	Count	38	10	2	50
	% within typ_indtrans	76.0%	20.0%	4.0%	100.0%
A3 Region with internal industrial structural change	Count	116	35	11	162
	% within typ_indtrans	71.6%	21.6%	6.8%	100.0%
B Area not covered by typology	Count	263	109	126	498
	% within typ_indtrans	52.8%	21.9%	25.3%	100.0%
Total	Count	778	315	245	1338
	% within typ_indtrans	58.1%	23.5%	18.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43,875[a]	6	.000
Likelihood Ratio	48.348	6	.000
N of Valid Cases	1338		

Table A8 – Statistical analytics: Predominant settlement type in terms of population hosted * typology of regions in industrial transition membership (association analysis)

typ_indtrans * TYP_NUTS3_A1 Crosstabulation

			TYP_NUTS3_A1: 1	5	6	Total
typ_indtrans	A1	Count	361	161	106	628
		Expected Count	365.6	147.4	115.0	628.0
		% within typ_indtrans	57.5%	25.6%	16.9%	100.0%
		% within TYP_NUTS3_A1	**46.3%**	51.3%	43.3%	**46.9%**
		% of Total	27.0%	12.0%	7.9%	46.9%
	A2	Count	38	10	2	50
		Expected Count	29.1	11.7	9.2	50.0
		% within typ_indtrans	76.0%	20.0%	4.0%	100.0%
		% within TYP_NUTS3_A1	**4.9%**	3.2%	.8%	**3.7%**
		% of Total	2.8%	.7%	.1%	3.7%
	A3	Count	116	35	11	162
		Expected Count	94.3	38.0	29.7	162.0
		% within typ_indtrans	71.6%	21.6%	6.8%	100.0%
		% within TYP_NUTS3_A1	**14.9%**	11.1%	4.5%	**12.1%**
		% of Total	8.7%	2.6%	.8%	12.1%
	B	Count	264	108	126	498
		Expected Count	289.9	116.9	91.2	498.0
		% within typ_indtrans	53.0%	21.7%	25.3%	100.0%
		% within TYP_NUTS3_A1	**33.9%**	34.4%	51.4%	**37.2%**
		% of Total	19.7%	8.1%	9.4%	37.2%
Total		Count	779	314	245	1338
		Expected Count	779.0	314.0	245.0	1338.0
		% within typ_indtrans	58.2%	23.5%	18.3%	100.0%
		% within TYP_NUTS3_A1	100.0%	100.0%	100.0%	100.0%
		% of Total	58.2%	23.5%	18.3%	100.0%

Table A9 – Statistical analytics: Predominant settlement type in terms of population hosted * typology of regions in industrial transition membership (population changes, ANOVA test on averages)

		TYP_NUTS3_A1			
		1	5	6	Total
		dPOP_nat	dPOP_nat	dPOP_nat	dPOP_nat
		Mean	Mean	Mean	Mean
typ_indtrans	A1	-1.41%	0.47%	-0.58%	-0.79%
	A2	0.43%	1.15%	4.66%	0.74%
	A3	-0.87%	-0.87%	-1.25%	-0.90%
	B	-1.10%	-0.05%	0.78%	-0.40%
	Total	-1.14%	0.16%	0.14%	-0.60%

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
dPOP_nat * TYP_NUTS3_A1	Between Groups	(Combined)	.054	2	.027	13.027	.000
	Within Groups		2.764	1335	.002		
	Total		2.818	1337			

Table A10 – Statistical analytics: Predominant settlement type in terms of population hosted * typology of regions in industrial transition membership (p.c. GDP changes, ANOVA test on averages)

		TYP_NUTS3_A1			
		1	5	6	Total
		dGDP_nat	dGDP_nat	dGDP_nat	dGDP_nat
		Mean	Mean	Mean	Mean
typ_indtrans	A1	-3.08%	-3.55%	-1.65%	-2.96%
	A2	0.54%	8.48%	8.53%	2.44%
	A3	-1.77%	-3.23%	3.12%	-1.75%
	B	-0.75%	-2.51%	-0.15%	-0.98%
	Total	-1.92%	-2.78%	-0.58%	-1.88%

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
dGDP_nat * TYP_NUTS3_A 1	Between Groups	(Combined)	.067	2	.033	2.168	.115
	Within Groups		20.496	1335	.015		
	Total		20.563	1337			

Table A11 – Statistical analytics: Predominant settlement type in terms of population hosted * population growth in NUTS3 regions as deviation from EU average

Deviation of population growth rates from EU-27 average

	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound		
Pop in HDUC 2006 < 30%	-,0353223	-,0230233	-,59037	,95731
Pop 2006 in HDUC 30%-70%	-,0056481	,0136180	-,29846	,39755
Pop 2006 in HDUC > 70%	-,0077142	,0072951	-,20022	,18615
Total	-,0205822	-,0115441	-,59037	,95731

ANOVA test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,322	2	,161	23,428	,000
Within Groups	9,171	1335	,007		
Total	9,493	1337			

Multiple Comparisons

(I) Typology based on degree of urbanisatio	(J) Typology based on degree of urbanisatio	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	-,03315774*	,00553522	,000	-,0440164	-,0222991
	Pop 2006 in HDUC > 70%	-,02896323*	,00607204	,000	-,0408750	-,0170515
Pop 2006 in HDUC 30%-70%	Pop in HDUC 2006 < 30%	,03315774*	,00553522	,000	,0222991	,0440164
	Pop 2006 in HDUC > 70%	,00419451	,00706033	,553	-,0096560	,0180451
Pop 2006 in HDUC > 70%	Pop in HDUC 2006 < 30%	,02896323*	,00607204	,000	,0170515	,0408750
	Pop 2006 in HDUC 30%-70%	-,00419451	,00706033	,553	-,0180451	,0096560

*. The mean difference is significant at the 0.05 level.

Table A12 – Statistical analytics: Predominant settlement type in terms of population hosted * population growth in NUTS3 regions as deviation from national average

Deviation of population growth rates from national average

	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound		
Pop in HDUC 2006 < 30%	-,0205734	-,0104534	-,54938	,99830
Pop 2006 in HDUC 30%-70%	-,0009372	,0137106	-,20108	,27943
Pop 2006 in HDUC > 70%	,0006308	,0141475	-,15923	,22714
Total	-,0098317	-,0024961	-,54938	,99830

ANOVA test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,163	2	,081	17,823	,000
Within Groups	6,091	1335	,005		
Total	6,253	1337			

Multiple Comparisons

(I) Typology based on degree of urbanisatio	(J) Typology based on degree of urbanisatio	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	-,02190014*	,00451086	,000	-,0307493	-,0130510
	Pop 2006 in HDUC > 70%	-,02290255*	,00494833	,000	-,0326099	-,0131952
Pop 2006 in HDUC 30%-70%	Pop in HDUC 2006 < 30%	,02190014*	,00451086	,000	,0130510	,0307493
	Pop 2006 in HDUC > 70%	-,00100242	,00575373	,862	-,0122898	,0102849
Pop 2006 in HDUC > 70%	Pop in HDUC 2006 < 30%	,02290255*	,00494833	,000	,0131952	,0326099
	Pop 2006 in HDUC 30%-70%	,00100242	,00575373	,862	-,0102849	,0122898

*. The mean difference is significant at the 0.05 level.

Table A13 – Statistical analytics: Predominant settlement type in terms of population hosted * p.c. GDP growth in NUTS3 regions as deviation from EU average

Deviation of per capita GDP growth rates from EU-27 average

	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound		
Pop in HDUC 2006 < 30%	,2874065	,3468089	-,22658	3,18747
Pop 2006 in HDUC 30%-70%	,2744701	,3826848	-,22130	2,61671
Pop 2006 in HDUC > 70%	,0718684	,1517982	-,33615	2,64671
Total	,2591908	,3052499	-,33615	3,18747

ANOVA test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8,737	2	4,368	24,524	,000
Within Groups	237,797	1335	,178		
Total	246,534	1337			

Multiple Comparisons

(I) Typology based on degree of urbanisatio	(J) Typology based on degree of urbanisatio	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	-,01146978	,02818564	,684	-,0667627	,0438232
	Pop 2006 in HDUC > 70%	,20527433*	,03091917	,000	,1446189	,2659298
Pop 2006 in HDUC 30%-70%	Pop in HDUC 2006 < 30%	,01146978	,02818564	,684	-,0438232	,0667627
	Pop 2006 in HDUC > 70%	,21674411*	,03595163	,000	,1462163	,2872719
Pop 2006 in HDUC > 70%	Pop in HDUC 2006 < 30%	-,20527433*	,03091917	,000	-,2659298	-,1446189
	Pop 2006 in HDUC 30%-70%	-,21674411*	,03595163	,000	-,2872719	-,1462163

*. The mean difference is significant at the 0.05 level.

Table A14 – Statistical analytics: Predominant settlement type in terms of population hosted * p.c. GDP growth in NUTS3 regions as deviation from national average

Deviation of per capita GDP growth rates from national average

	95% Confidence Interval for Mean		Minimum	Maximum
	Lower Bound	Upper Bound		
Pop in HDUC 2006 < 30%	-,0002862	,0279321	-,65172	2,47315
Pop 2006 in HDUC 30%-70%	-,0095327	,0320381	-,55648	1,13114
Pop 2006 in HDUC > 70%	-,0529811	-,0074961	-1,05048	1,52946
Total	-,0052849	,0155845	-1,05048	2,47315

ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	,377	2	,189	5,010	,007
Within Groups	50,236	1335	,038		
Total	50,613	1337			

Multiple Comparisons

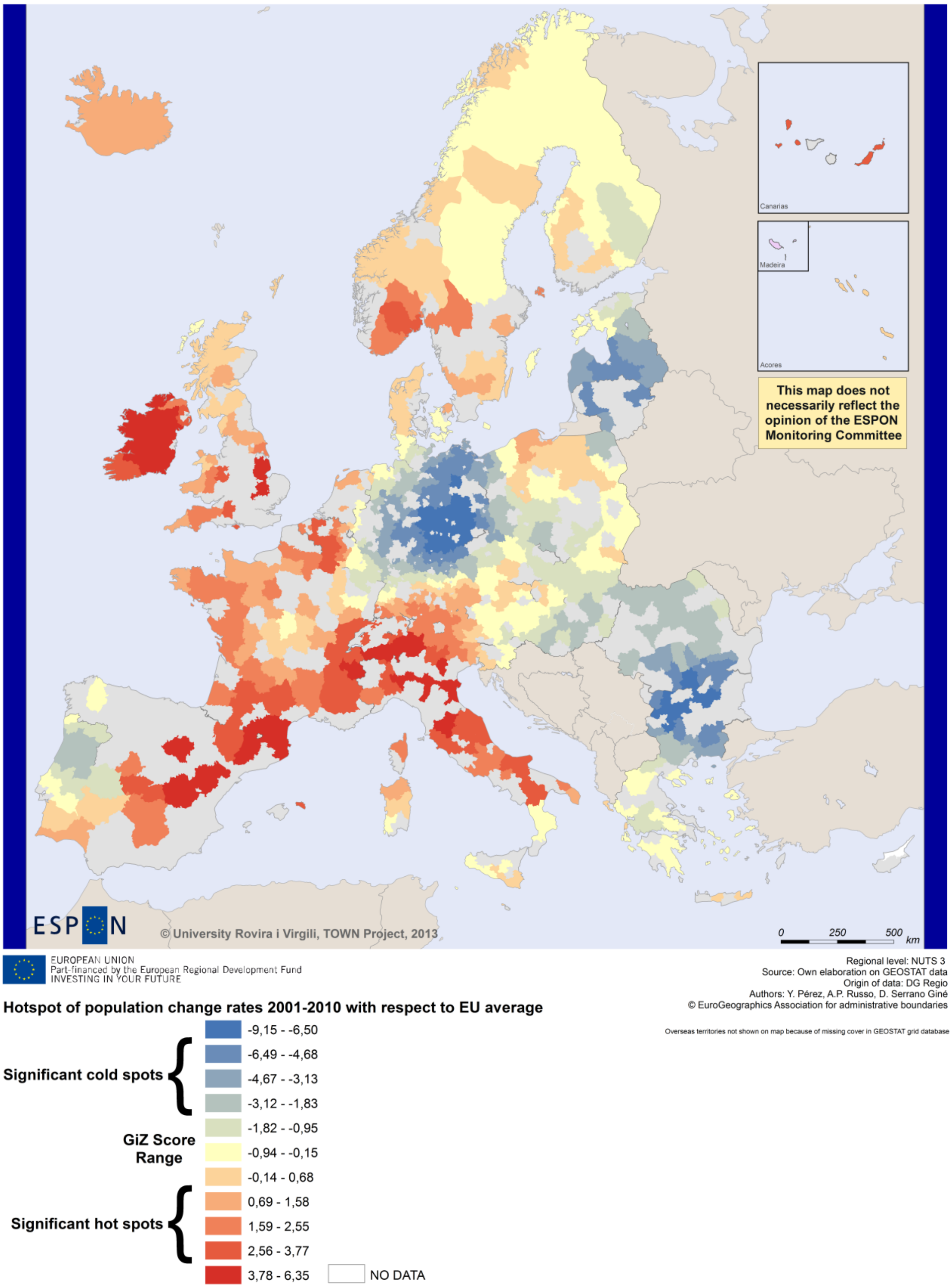
(I) Typology based on degree of urbanisation	(J) Typology based on degree of urbanisation	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Pop in HDUC 2006 < 30%	Pop 2006 in HDUC 30%-70%	,00257028	,01295488	,843	-,0228438	,0279844
	Pop 2006 in HDUC > 70%	,04406156*	,01421128	,002	,0161827	,0719404
Pop 2006 in HDUC 30%-70%	Pop in HDUC 2006 < 30%	-,00257028	,01295488	,843	-,0279844	,0228438
	Pop 2006 in HDUC > 70%	,04149128*	,01652433	,012	,0090748	,0739078
Pop 2006 in HDUC > 70%	Pop in HDUC 2006 < 30%	-,04406156*	,01421128	,002	-,0719404	-,0161827
	Pop 2006 in HDUC 30%-70%	-,04149128*	,01652433	,012	-,0739078	-,0090748

*. The mean difference is significant at the 0.05 level.

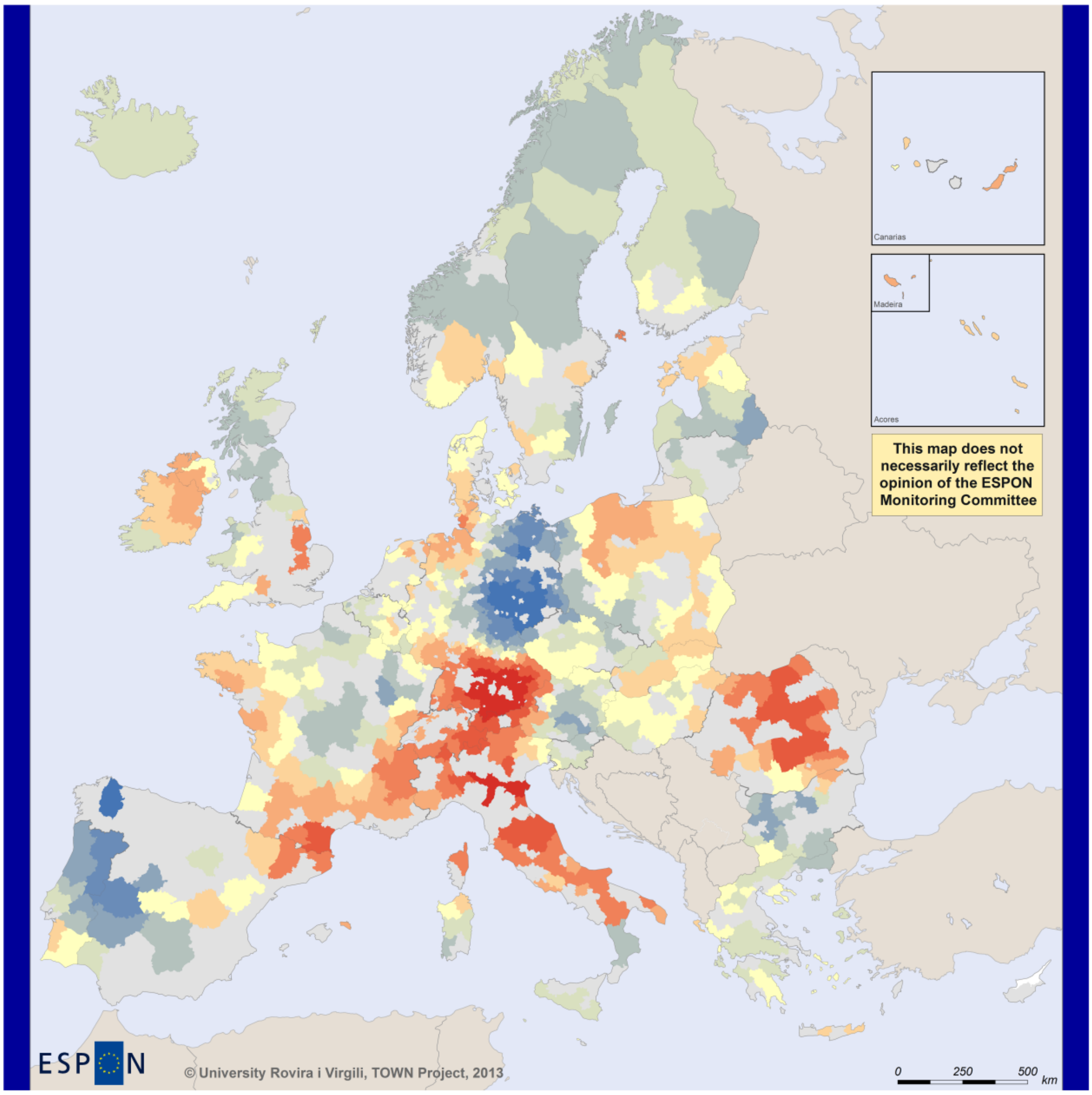
ANNEX 2

Hotspot maps of the performances of regions characterised by a lower degree of urbanisation

Map A1 – Hot and cold spots of population change (as dev. from EU average) for regions characterised by a lower degree of urbanisation



Map A2 – Hot and cold spots of population change (as dev. from national average) for regions characterised by a lower degree of urbanisation



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Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: Y. Pérez, A.P. Russo, D. Serrano Giné
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Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Hotspot of population change rates 2001-2010 with respect to national average

GiZ Score Range

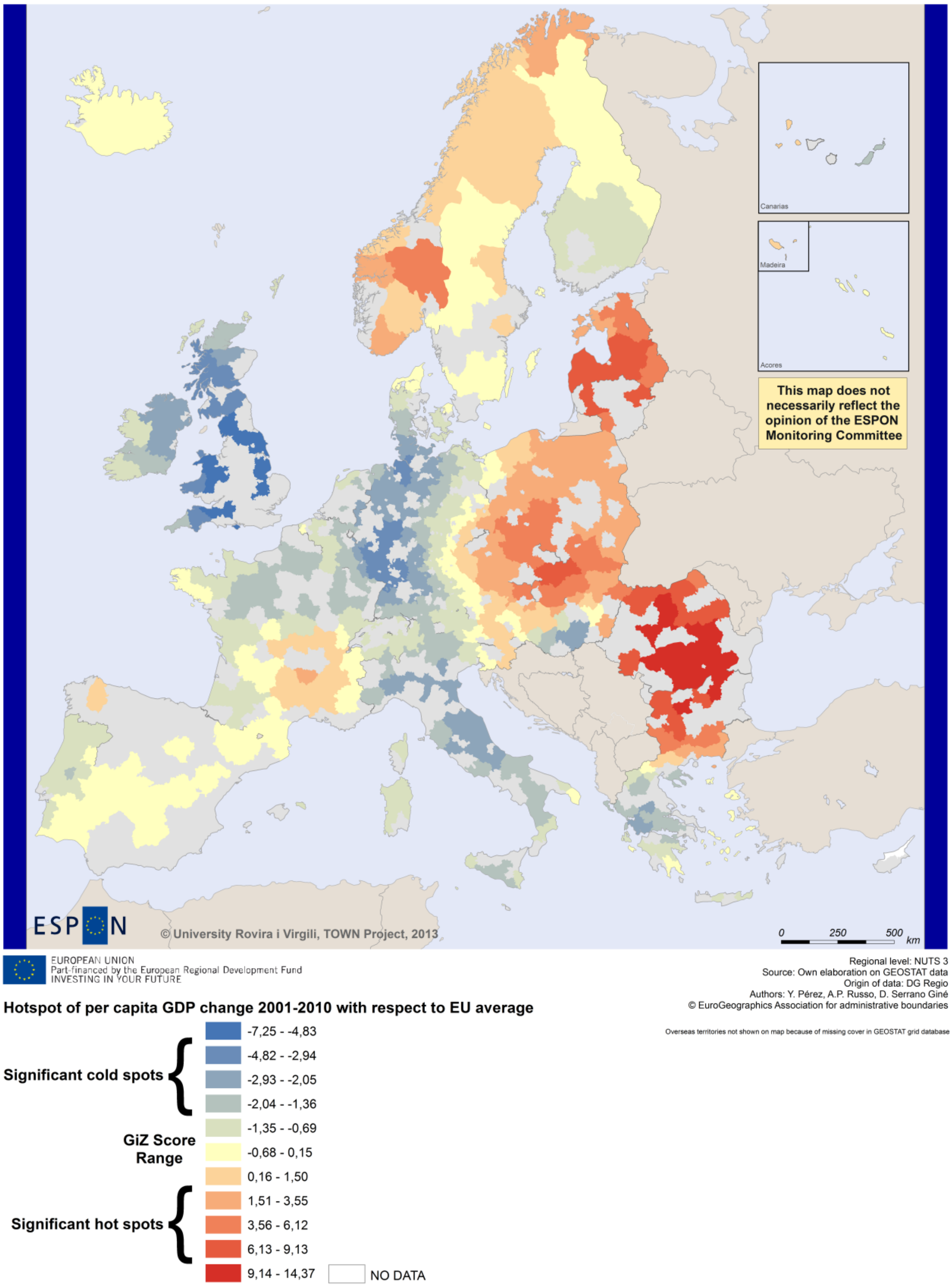
Significant cold spots:
- -7,67 - -5,31
- -5,30 - -3,55
- -3,54 - -2,20
- -2,19 - -1,17

- -1,16 - -0,40
- -0,39 - 0,33
- 0,34 - 1,10

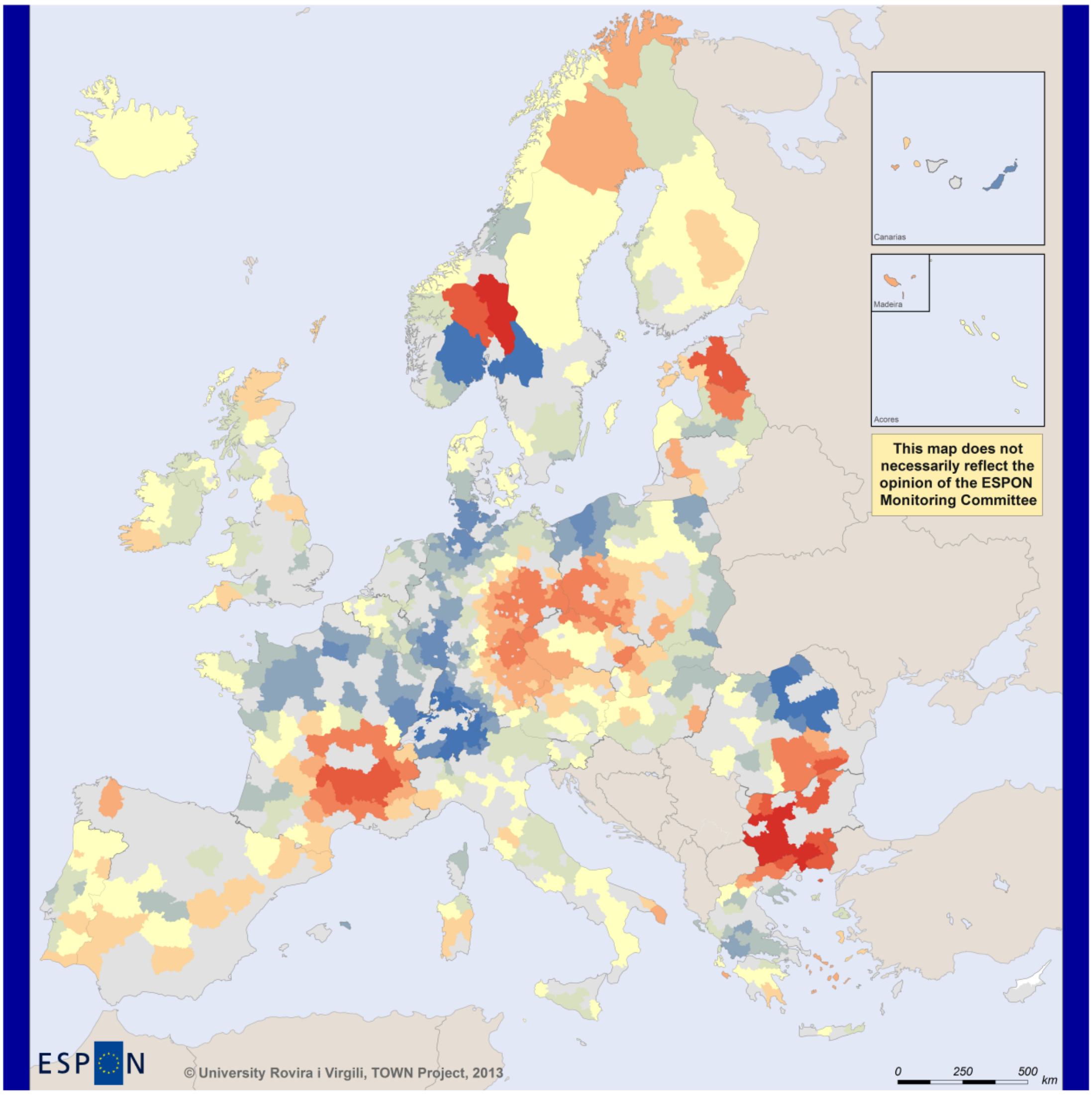
Significant hot spots:
- 1,11 - 1,94
- 1,95 - 2,89
- 2,90 - 4,03
- 4,04 - 5,50

NO DATA

Map A3 – Hot and cold spots of p.c. GDP change (as dev. from EU average) for regions characterised by a lower degree of urbanisation



Map A4 – Hot and cold spots of p.c. GDP change (as dev. from national average) for regions characterised by a lower degree of urbanisation



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Regional level: NUTS 3
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: Y. Pérez, A.P. Russo, D. Serrano Giné
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Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Hotspot of per capita GDP change 2001-2010 with respect to national average

GiZ Score Range

Significant cold spots:
- -5,01 - -3,26
- -3,25 - -2,11
- -2,10 - -1,40
- -1,39 - -0,76

- -0,75 - -0,27
- -0,26 - 0,26
- 0,27 - 0,98

Significant hot spots:
- 0,99 - 1,89
- 1,90 - 3,43
- 3,44 - 6,20
- 6,21 - 10,57

NO DATA

Chapter 9 – Describing the characteristics of small towns and explaining the determinants of change

Ian Smith

1. Aim and research question(s)

Small towns in a general sense are problematic for not being visible in official data-sets. In earlier chapters (see Chapters 1 and 4 for example) we have established that there are very few common understandings of what a small town is (over and beyond the sense of a small town not being a city). There is equally little consensus in either the policy or the academic community as to what constitutes a small town. The lack of consensus has not prevented researchers researching smaller settlements (and sometimes calling them small towns). It is possible to both point to studies of small towns within specific countries (for example Shepherd 2009, Powe et al 2007, Matlovic and Bernasovsky 2002, Spasic and Petric 2006, Bessy and Sicamois 1998) and to case study work that compares small towns across different countries (for example Courteney et al 2008, Knox and Mayer 2008, van Leeuwen et al 2011), there has been little work that has attempted to systematically compare smaller settlements in terms of quantified attributes across national jurisdictions. This chapter takes these studies further by posing the question of to what degree are small towns alike or dissimilar across national boundaries and to what degree are small towns different from cities (either at the scale of Europe or within national settlement systems).

This project has worked with a number of different conceptualisations for smaller settlements: small towns as morphological contiguous clusters of settlement (Chapter 2); small towns as functional clusters of employment (Chapter 5); and small towns as administrative entities within a local government system (Chapter 4). Each of these conceptualisations implies a slightly different geography of small towns albeit that there is often overlap between the three conceptualisations. This Chapter will build on the conceptualisation of small towns as morphological clusters (following on from Chapters 2 and 3) where we will analyse a database constructed from small area data mapped onto morphological clusters of settlement (see Chapter 3 for the method by which this was achieved). The aim of this Chapter is to analyse the descriptive statistics that arise from the database construction outlined in Chapter 3 and to engage in a regression analysis that associates the characteristics of small towns to measures of change in small towns for the period 2001-11. As such we will use the language and terminology of Chapters 2 and 3.

The research questions are:

- Are SMSTs (small to medium-sized towns as defined within the TOWN database) different from HDUCs (high density urban clusters)? If so, how are they different?
- Are differences between types of settlement (such as SMSTs and HDUCs) more important than the differences between SMSTs in different countries?
- What is the range of characteristics exhibited by SMSTs?
- To what degree are changes in SMSTs over the first decade of the 21st century explicable in terms of the characteristics of those SMSTs or are they mainly explicable in terms of the regional contexts in which those SMSTs are located?

2. Small towns – conceptualising what matters

There is relatively little literature that has compared systematically the attributes of smaller towns across national boundaries. There are clearly conceptual problems (noted above and dealt with elsewhere in this report – see Chapters 1 and 4) about determining a common definition of what constitutes a 'town' (as distinct from a 'city' or a 'village') and this has hampered the possibilities of doing such a comparison.

Building on the literature that claims to be dealing with small towns (albeit without a consensus on what constitutes a small town), this section will consider:

- The characteristics identified in the existing literature that describe small towns (what are the social, environmental and economic characteristics that matter); and,
- The way in which the existing literature conceptualises the factors that predict 'good' and 'bad' outcomes for small towns.

Profiling the characteristics of small towns is problematic (as it is with profiling any territorial entity). Places are multi-facetted and thus can be described in a large number of ways. In policy making contexts such descriptive profiles are often built upon indicators that exist at "an intersection of fact and theory" (Innes de Neufville 1976 cited in Hoenig and Seasons 2005) in order to play instrumental roles in those policy contexts. Thus for the purposes of this applied project we have had to consider the policy contexts in which we expect this research to play a role. We need to consider:

- What is the policy context, in which our profile-descriptions of small towns might be located;
- How have previous researchers profiled small towns (either within ESPON-related projects or similar contexts); and
- What is the likely data availability for constructing any indicators we might deem to be 'useful'.

As an ESPON project, this research work is centred upon questions of territorial cohesion (see chapter 7). As such it is useful to consider structuring our profiles of small towns around the concepts set out in this policy agenda. This suggests that there are three key domains over which it would be useful to establish a description of small towns. These domains are the economy, society and the environment.

The recent INTERCO project (ESPON 2013) has conceptualised six 'high level' themes of territorial cohesion (or 'domains') for which a series of indicators have been suggested:

- Strong local economies ensuring global competitiveness as a theme to be measured in respect to economic wealth generation (GDP PPP) and productivity (value produced per unit input) and the weight placed upon the active economic either by those out of work (unemployment rate) or those who are potentially of pensionable age.
- Innovative territories as a theme to be measured in respect to labour market measures (employment rate and the proportion of the working age population with a degree-level qualification) and expenditure on research and development.
- Fair access to services, market and jobs measured in terms of specific accessibility to public services such as education and health and marketed services (such as food shops) as well as being measured relative to 'potential' closeness to other people (accessibility to population) as a proxy for urbanisation benefits (and the services that are plausibly located in densely populated areas).

- Inclusion and quality of life measured in terms of income, life expectancy, gendered differences in unemployment rates and the age balance of the population.
- Attractive regions of high ecological values and strong territorial capital measured in terms of potential exposure to climate change risks, air pollution and flooding risks of surface water flooding as a result of impermeable surfaces in built up areas and biodiversity.
- Integrated polycentric territorial development measured as net migration rates and potential accessibility.

As a recent study funded by ESPON, this work is a useful benchmark against which to measure the coverage of existing studies on small towns relative to the notion of territorial cohesion. Table 1 uses these six domains to measure the thematic coverage of eight academic studies along with the indicator coverage of the urban audit. Although the urban audit is focused on urban settlements with populations greater than 100,000 residents ('cities'), it is useful to see to what degree indicator coverage in the audit meets the thematic coverage of the territorial cohesion indicators outlined in the INTERCO project. This will give us an early warning as to the feasibility of finding harmonised local scale data to populate an indicator set for smaller towns.

Table 1 Mapping existing quantitative studies of small town attributes and the Urban Audit onto the themes of territorial cohesion (as defined by INTERCO project, (ESPON 2013))

Research on small towns	Country covered by study	Economic competitiveness	Innovation and human capital	Access to services	Inclusion and quality of life measures	Environmental assets	Integrated polycentric development
Matlovic and Bernasovsky (2002)	Slovakia	X					X
Powe et al (2007)	England	X		X	X		
Shepherd (2009)	England	X	X	X	X		
Bessy and Sicamois (1998)	France	X					X
Spasic and Petric (2006)	Serbia	X					X
Soltys (2011)	Poland	X		X			
Webb (1965)	England Wales						X
Smith (1963)	US	X					
The Urban Audit (2003-11)	EU		X		X	X	X

Table 1 reveals the existing research covers the themes of territorial cohesion unevenly in relation either to small towns. For the most part this can be explained by the relative paucity of data availability at the scales appropriate to smaller towns (part of the initial problematic for this project). If we take the Urban Audit as a useful benchmark by which we might gauge the feasibility of populating these domains with small area data, it is notable that even the Urban Audit (of data collected for large cities across Europe) does not cover the full range of domains. The least covered domain relates to the environment where although the Urban Audit has identified an environmental theme, there remains even after ten years of data collection relatively little data on air pollution and environmental conditions at a meaningful and harmonised small area scale across Europe. It is a domain that has not been tackled in any of the eight academic studies on small towns.

From Table 1, for the most part the existing work on small towns focusses on demographic change (relating to integrated polycentric development as net-migration). Demographic change in and of itself is not a concern of territorial cohesion. However in terms of the coverage of existing studies that does map onto the concept of territorial cohesion, it is on issues of employment and qualifications that most neatly fit into this framework (covering economic competitiveness and innovation/human capital domains). Three of the existing studies also include some consideration of accessibility to either services and/or employment.

Table 2 Derived conceptualisation of the 'key dimensions' of small towns from Knox and Mayer 2009

Domain of healthiness	Concepts covered by domain
Equity	Housing affordability Beneficiaries of land use debates Provision of public services/accessibility to public services
Environment	Quality of 'local environment' Perception of the 'health' of 'cultural landscape' (under threat/neglected) Land use pressure/consumption/vacancy
Economy	Industrial mix (growing/declining sectors, reliance on service sector) Diversity of retail offer Entrepreneurship Access to employment (within wider urban system)
Culture and community	Pressure on housing stock Perceptions of threat to a 'sense of place' Community capacity/social capital (bonding/bridging/linking) Capacity to market place identity Tax base (potential/actual) Age profile of population Type of households (families vs single person households) Engagement in local politics/local public debates

Work based on case studies has come to alternative conceptualisations of what constitutes the successful/unsuccessful small town. Knox and Mayer (2009, p13) offer up an implicit set of indicators for small towns in Europe and North America that they relate to the health of the small town (in terms of growth and decline) based on the empirical consideration of small town case studies in Europe and North America. This work conceptualises four key 'domains' covering equity, environment, economy and culture and community. These domains are outlined in Table 2 where the components of each domain are outlined. Thus for Knox and Mayer the notion of the 'economy' is a matter of considering the particular mix of economic activity (by industrial classification), the range of shopping opportunities, the culture of entrepreneurship and accessibility to employment rather than the concerns of economic competitiveness outlined by the INTERCO project indicators. For the most part Knox and Mayer (2009) have concentrated on outlining a plausible set of issues associated with growing and declining small towns but they do not attempt to quantify their concepts.

Once such sets of indicators are constructed, there is an issue of what to do with the data. Some authors use the indicators to construct typologies that summarise the descriptive detail associated with small towns: for example Shepherd 2009 to categorise socio-economic characteristics, Webb 1963 to categorise components of demographic change, Smith 1965 to categorise industrial profiles of economic activity. Webb's typology (1963) is a useful means of summarising the key demographic components of change for small towns: overall population change, demographic change as the result of births and deaths and net migration. Webb's categories are mathematically simple to calculate and easy to interpret. Equally Smith's work (1965) on the functional description of small town economies offers a simple means of categorising employment profiles relative to the median values of employment in the chosen sectors. Smith himself worked with two key sectors: manufacturing and commerce. Thus the existing literature offers some simple and robust instruments for combining multiple measures to describe our small towns.

Thus having proposed a plausible set of dimensions by which to describe small towns, it becomes a question of pose how these dimensions might help us predict either change or a state of 'good health'. Knox and Mayer (2009) in their conceptualisation of growing and declining small towns associate their four principal domains (described in Table 2) with growth and decline although the association is sometimes posited as the outcome of growth/decline rather than the cause of growth/decline (see Table 3). Table 3 illustrates the problematic aspect of Knox and Mayer's indicators in that the individual indicators do not appear to be associated dichotomously with success and decline in the small town case studies covered by their work. Table 3 shows that only five of the dimensions underpinning Knox's and Mayer's domains (out of the 18 identified) are associated both with the success (in one sense) and with the decline of small towns (in an opposite sense).

Thus it is possible to set up a set of indicators (organised into domains) that map onto a particular policy context (in this case we are particularly interested in the notion of territorial cohesion) but any individual indicator may not operate as a simple dichotomous measure of success or decline within a small town. So there is a need to select indicators that both link to the thematic policy area of interest and that are associated with the processes of growth and decline in small towns.

Thus Knox and Mayer (2009) have a series of observations about the characteristics that they associate with successful and less successful small towns. There is however a relative dearth of research that has attempted to explore the performance of small towns through a quantitative lens. There are two particular aspects of small town performance that have been considered (albeit not systematically): the characteristics of the small towns themselves that contribute either to success or to decline; and the characteristics of the context for small towns that are associated with decline or success.

Table 3 **Knox and Mayer's conceptualisation of the symptoms of success and failure in small towns**

Domain of small town health	Concepts covered by domain	in successful towns	in 'failing' towns
Equity	Housing affordability	Problem	:
	Beneficiaries of land use debates	Contested	:
	Provision of public services/accessibility to public services	:	Declining
Environment	Quality of 'local environment'	Degraded	:
	Perception of the 'health' of 'cultural landscape' (under threat/neglected)	Degraded	Neglected
	Land use pressure/consumption/vacancy	High pressure	High vacancy
Economy	Industrial mix (growing/declining sectors, reliance on service sector)	Service sector important	Resource-based and declining
	Diversity of retail offer	Homogenising	:
	Entrepreneurship	:	Absent
	Access to employment (within wider urban system)	Accessibility good	:
Culture and community	Pressure on housing stock	High pressure	Vacant housing
	Perceptions of threat to a 'sense of place'	Threatened	:
	Community capacity/social capital (bonding/bridging/linking)	Increasing	Absent
	Capacity to market place identity	Yes	:
	Tax base (potential/actual)	:	Diminishing
	Age profile of population	:	Aging
	Type of households (families vs single person households)	:	Isolated and single person
	Engagement in local politics/local public debates	Contested	Absent

In their review of small town development in Asia, Africa and Central America Hinderink and Titus (2002, p384) observed that small town development is more dependent upon their national and regional economic and policy contexts than on the characteristics of the towns themselves. Specifically they relate small town performance to the availability of resources, population density and market accessibility as proxies for their regional context. This context dependence may be a function of a series of processes that frame the trajectories of small towns. Champion and Shepherd (2006) link the demographic dynamic of areas with small towns in them (rural areas) to processes of counter-urbanisation in England. Thus small towns in rural areas are part of a broader circuit of movement whereby working households with adults in their 40s and older look to move to rural locations (including smaller towns) replacing adults in the 20s leaving rural areas to look for education and jobs. Population growth associated with small towns in peri-urban locations has also been explored by Renaud-Hellier (2002) for Dijon (France) and Airola and Parker (1983) in New Jersey in the US.

Hall and Hay (1980) have described urbanisation taking place in different phases of growth and decline of central urban versus peripheral areas (where small towns are associated with the hinterland to large cities), then counter-urbanisation can be associated with the later phases of urban development (assuming a linear progression of phases). However the primary phase of urbanisation also implicates a particular context for small towns whereby they de-populate in favour of 'urban centres' (ie central cities). In this phase younger adults also seek employment and educational opportunities within larger cities but there is not the associated return migration of older workers to replace them. Thus it is not surprising to think of the development of small towns as bound up with broader regional processes of urban development in which they are located.

There has however been little attempt to test these propositions quantitatively. Only in the case of UWE and Roger Tym & Partners (2004) has been an attempt to explore potential relationships between changes in small towns and the characteristics of smaller towns in terms of a regression analysis. This work considered small towns (1-30,000 population) in rural Wales and rural England and considered economic changes in the late 1990s.

Table 4 Correlations between economic outcomes and predictors of change in English and Welsh small towns 1995-02 (after UWE and Roger Tym & Partners 2004)

	Positively associated with:	Negatively associated with:
Growth in employment 1995-2000	Regional location, highly qualified residents, net in-migration, growth in housing, small business structure and rates of self-employment	Proportion of employment in private sector services and in tourism-related sectors
Decrease in unemployment 1996-2002	Tourism-related employment, highly qualified residents, in-migration	
Change in housing numbers 1991-2000	High employment rates, higher proportions of pensioners	Coastal town, expensive housing stock, employment in primary sector and utilities and public services, income-related poverty

Thus the challenge for the work of TOWN is to conceptualise a set of domains that are linked to the policy theme of territorial cohesion that is underpinned by indicators that tell us something about the success and/or decline of small towns. Cross-tabulating the six domains of territorial indicators of Table 1 with Knox and Mayer's conceptualisation of the factors that underpin healthy small towns (four domains) we have derived a schema of indicators for five domains to be covered by small town indicators for this project. This derivation is based on achieving as great a coverage as the INTERCO domains but with an eye as to data availability (the schema needs to be practical rather than aspirational) and an eye of incorporating the issues raised by Knox and Mayer (based on plausible qualitative work on the health of small towns). Table 5 outlines the five domains for the quantitative work of this project. In this table there is both the domain heading as well as some of the measures that contribute to an understanding of the domain.

Table 5 **Five domains for understanding small town performance and territorial cohesion**

Domain heading	Indicators that might underpin an understanding of performance relative to the domain
Domain 1: Economic Competitiveness	measured by reference to industrial sector (as a proxy for GDP potential and economic vitality in the base/nonbase economy – see Courtney et al 2008) and also in reference to levels of unemployment (see also equity) and the proportion of pensionable adults to the total population
Domain 2: Economic Innovation	measured by reference to labour market characteristics (employment and self-employment rates), the educational attainment of the adult working age population) and the business environment (as businesses per capita)
Domain 3: Accessibility	measured principally in terms of access to job opportunities and commuting patterns but could be conceptualised also as the concentration of services in a town
Domain 4: Equity	measured in terms of unemployment
Domain 5: Culture and Community	measured in terms of age profiles, lifetime migration (indicated by being born in/outside of country), demographic change and pressure on the housing stock (measured as occupancy).

These observations point to the multi-faceted potential impacts of some aspects of small town economies. Thus employment in tourism-related sectors is positively associated with lowering the number of unemployed, it is also negatively associated with overall employment growth. However both having a highly qualified working age population and experiencing in-migration are positively associated with growth in employment and decreasing unemployment. So we are left with a potential framework for describing our small towns in relation to five principal domains (that can be in turn linked to the policy conceptualisation of territorial cohesion) and a strong notion that in analysing the statistical relationship between change and attributes, we need to explore both the characteristics of the towns themselves (based on our profile) but also the characteristics of the regions in which the towns are located.

3. SMSTs – operationalising what counts

Chapter 3 outlines the process by which attribute values for areal data might be estimated for the morphological units of interest in this chapter. However we are still left with the question of what data is out there available at small area level can be used to populate the indicator system outlined in Table 5.

Table 6 Indicators of small town health (applied to SMST morphological units)

Domain	indicator	BE	CY	CZ	ES	FR	IT	PL	SE	SI	UK	Total (N of SMST)
1	percentage of employment in industrial activities in base/end year	X				X	X	X	X	X	X	1969
	percentage of employment in private marketed services in base/end year	X				X	X	X	X	X	X	1969
	percentage of employment in public sector services in base/end year	X				X	X	X	X	X	X	1969
	percentage of employment in tourism-related services in base year	X					X		X	X	X	1087
	percentage of people of pensionable age in total population in base year	X		X	X	X	X	X	X	X	X	2299
2	proportion of working age adults with ISCED 5-6 qualifications in base year	X		X	X	X	X	X	X	X	X	2299
	Economic activity rate amongst 15-64 year olds in base year	X			X	X	X	X	X		X	2031
	Employment rate amongst 15-64 year olds in base year	X		X	X	X	X	X	X	X	X	2250
	number of business units per 10000 head of population	X			X	X	X			X	X	1993
	Self-employment rate amongst 15-64 year olds in base year	X		X	X		X			X	X	1333
3	proportion of employment in retail sector (NACE rev1.1 G)	X					X		X		X	1087
	proportion of residents in employment who live and work in local municipality base year	X		X	X		X			X	X	1284
	proportion of residents in employment who work at home in base year	X									X	702
	ratio of work-based employment to resident employment (no self-employment) in base year	X		X		X	X		X	X	X	2142
	ratio of work-based employment to resident employment in base year	X		X			X			X	X	1219
4	Unemployment rate amongst 15-64 year olds in base year	X		X		X	X	X		X	X	2193
5	percentage of children under 15 years in total population in base year	X		X	X	X	X	X	X	X	X	2299
	percentage of people born in country to total population in base year	X			X		X		X	X	X	1152
	Percentage of dwellings that are occupied in base year			X	X	X	X	X		X	X	2081
	Percentage of dwellings that are second homes or holiday lets in base year			X	X	X				X	X	1721

The research team reviewed small area data availability against a number of sources as part of the TOWN project. These sources included the research teams from the constituent countries of the consortium, a review of data sources from ESPON and through Eurostat as well as reviewing the web sites for the National Statistics Institutes of the countries covered by the consortium. As a result of this review the research team establish data availability by indicator and by domain as revealed in Table 6. Table 6 lists 20 indicators that are grouped under the five domains outlined in Table 5 (the domain is indicated by number in the left hand column): economic competitiveness (domain 1); economic innovation (domain 2); accessibility (domain 3); equity (domain 4); and, culture and community (domain 5). Data availability against each indicator is marked within each of the member-states covered by the research team consortium by either an X. The right hand column indicates the total number of SMST morphological settlements within the TOWN database that have an attribute value for each indicator. Thus for demographic attributes such as the proportion of the population aged under 15 years, there are 2299 SMSTs with an attribute value in the database whilst we only have an attribute value for the proportion of employment within the SMST made up by tourism-related sectors (restaurants and accommodation) for 1087 out of 2299 SMSTs within the TOWN study area. Over and beyond the simplest of demographic measures (total populations and births/deaths) there is not a single measure that is collected for all countries at the small area scale.

Table 7 **Measures of change applied to small towns (SMST morphological units)**

domain	indicator	BE	CY	CZ	ES5	FR	ITC	PL1	SE3	SI	UK	Total (N)
1	annualised percentage change in the population in employment				X	X			X	X	X	1605
	annualised percentage change in workplace-based employment	X		X		X			X	X	X	1887
4	annualised change in the number of unemployed	X				X				X	X	1666
5	annualised percentage change as a result of net migration over whole period	X		X	X	X	X	X	X	X	X	2299
	annualised percentage change in population due to natural change	X		X	X	X	X	X	X	X	X	2299
	annualised percentage change in raw population	X		X	X	X	X	X	X	X	X	2299
	annualised percentage change in the working age population (15-64 years old)	X			X	X				X	X	1692

Table 7 gives the indicators for which the team was able to establish a value for two years (one a base year and the second an end year). Thus Table 7 indicates the available change measures for SMSTs country by country and for the total number of SMST units within the town database. Again the left hand column gives the domain against which we have the change measure (see Table 5). Thus we have most change measures that relate to the Culture and Community domain (5) because these are mainly based upon demographic data that is generally available for small areas across Europe.

The national coverage of data relating to these measures (all taken from a base year between 1999 and 2004) ranges from 18 (England and Wales) to 6 (Central Poland). These measures are most significant for picking out differences between SMSTs and HDUCs in the case of England and Wales (12 measures are significant in picking out differences) with 8 measures picking out significant differences for North West Italy and France. However these measures only pick out significant differences between SMST and HDUC settlements on two measures for Slovenia and Belgium and on three measures for Catalonia and Central Poland.

4. SMSTs: describing the differences

We can use the indicators of SMST characteristics from Table 6 and the change indicators of Table 7 to test the degree to which SMSTs are different to HDUCs. The research team constructed a database for all SMSTs and all HDUCs in France, Belgium, the Czech Republic, Slovenia and England and Wales and for all SMSTs and HDUCs in the regions of Catalonia, North West Italy, Northern Sweden and Mazovia. Thus we can systematically compare and contrast the characteristics of SMSTs and HDUCs in the same region. The issue of variability between SMSTs in different regional/national contexts is illustrated in Figure 1. Figure 1 shows a box plot of the proportion of people aged 65 years and above in each SMSTs grouped by nation/region. It illustrates that the average proportion (and the central range of values indicated by the box) for North West Italy is statistically significantly different from the average of the proportion of 65 years olds and older for the Czech Republic, Slovenia and for Mazovia. These differences cannot be accounted for only by statistical variability, there must be some other explanation for the difference in the averages.

Figure 1: Variation in the proportion of adults of pensionable age by country/region for SMSTS in database

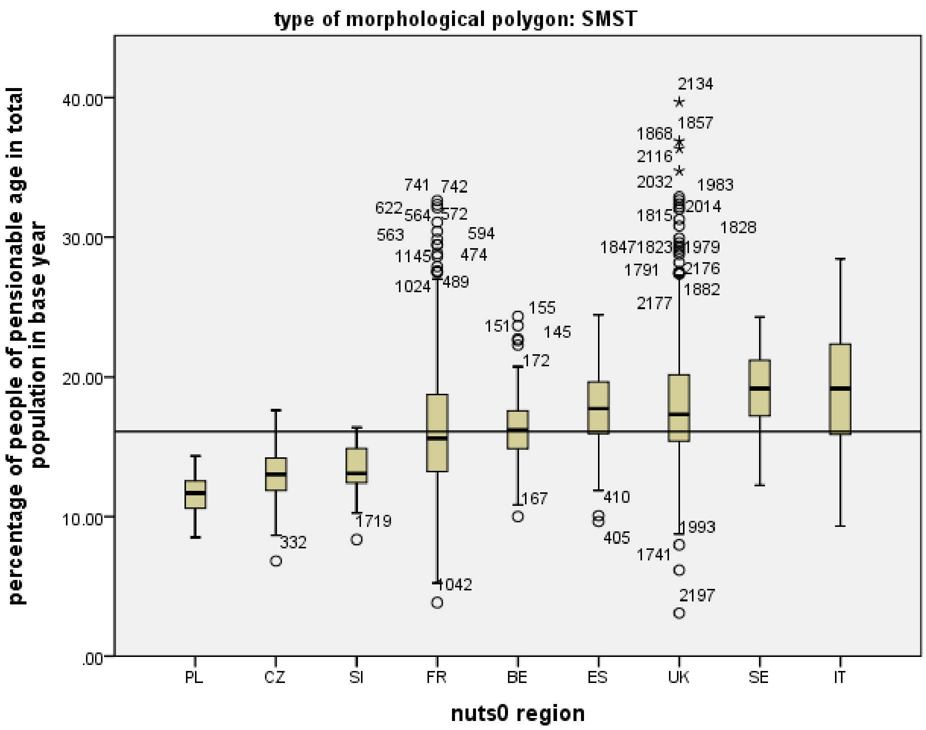


Table 8 One-way ANOVA results on 19 key attributes for small towns (SMSTs) in base year

Domain	measure	BE	CY	CZ	ES5	FR	ITC	PL1	SE3	SI	UK
1	percentage of employment in industrial activities in base/end year	0				> (**)	> (**)		0	0	> (**)
	percentage of employment in private marketed services in base/end year	0				< (**)	< (**)		< (**)	0	0
	percentage of employment in public sector services in base/end year	0				< (**)	< (**)		0	0	< (**)
	percentage of employment in tourism-related services in base year	0					0		0	0	> (**)
	percentage of people of pensionable age in total population in base year	0		0	> (**)	0	< (**)	0	> (**)	0	> (**)
2	proportion of working age adults with ISCED 5-6 qualifications in base year	0		< (**)	< (**)	< (**)	< (**)	< (**)	< (**)	< (**)	> (*)
	Economic activity rate amongst 15-64 year olds in base year	0			0	> (**)	0	> (**)	0		> (**)
	Employment rate amongst 15-64 year olds in base year	0		0	0	> (**)	0	0	0	0	0
	number of business units per 10000 head of population	0			0	0	0			0	> (**)
	Self-employment rate amongst 15-64 year olds in base year	0		0	> (**)		0			0	> (**)
3	proportion of employment in retail sector (NACE rev1.1 G)	0					< (*)		< (*)		< (*)
	proportion of residents in employment who live and work in local municipality base year	< (*)		< (**)	0		< (**)			< (*)	0
	proportion of residents in employment who work at home in base year	0									> (**)
	ratio of work-based employment to resident employment (no self-employment) in base year	< (**)		0		< (**)	< (**)		< (**)	< (**)	< (**)
4	Unemployment rate amongst 15-64 year olds in base year	0		< (**)		< (**)	< (**)	0		0	< (**)
5	percentage of children under 15 years in total population in base year	0		> (**)	0	> (**)	> (**)	> (**)	0	0	< (*)
	percentage of people born in country to total population in base year	> (**)			0		0		0	0	> (**)
	Percentage of dwellings that are occupied in base year			> (**)	0	0	0	< (*)		0	< (*)
	Percentage of dwellings that are second homes or holiday lets in base year			> (**)	0	> (*)				> (*)	> (**)
	number of measures for which we have data	17	0	10	11	13	17	7	12	14	19
	significant differences (5% confidence)	2		6	3	9	9	3	4	2	12
	significant differences (10-5% confidence)	1		0	0	1	1	1	1	2	4

Notes: > indicates small town average values are statistically greater than average HDUC values, < indicates small towns average values are statistically less than HDUC average values, 0 indicates that there was no significant difference in average values, (**) indicates significance to 95% whilst (*) indicates significance to 90%.

Table 8 using a one-way analysis of variance (ANOVA) to test whether the differences in average values between SMSTs and HDUCs within the same region/nation across the 20 indicators outlined in Table 6 can be explained in terms of likely variability (the difference in averages would not be statistically significant) or whether the differences in average within the same nation/region might be indicative of something more ‘significant’. Thus Table 8 shows the result of many ANOVA tests by indicators and by nation/region. A single asterisk marks a 90% confidence level of the differences being significant whilst a double asterisk marks a 95% confidence level on the difference being significant. Where the ANOVA result is deemed to be significant, this suggests that the difference between average values for that indicator in that nation/region is greater than can be explained by ‘natural’ variability alone. The table also indicates the sign of the differences between the averages such that > indicates SMSTs average values are higher than those of HDUC polygons and < indicates that the SMST average is less than the average for HDUCs in that country (according to our database).

Domain 1 measures all relate to the domain of economic competitiveness where we are using the industrial sector as a proxy for the degree to which economic activity is locally embedded and the degree to which economic activity is a generator of economic value. The patterns of industrial composition are generally consistent in that where we have a lot of settlements within the data-base (associated with a country) SMSTs generally have higher proportions of employment in manufacturing and associated industrial activities (excluding construction). This is a statistically significant difference in France, North West Italy and England and Wales whereby on average SMSTs have a higher proportion of employment in industrial economic activities than HDUCs in the same countries/regions. In Belgium, Northern Sweden and Slovenia the average proportion of ‘industrial’ employment in SMSTs is greater than that for HDUCs but the difference is not statistically significant when applying the ANOVA test (between SMSTs and HDUCs within the country).

There is a similar consistency in relation to the proportion of jobs in private marketed services and in public services where on average there appears to be a significantly smaller proportion of jobs (on average) in SMSTs in comparison to HDUCs. Broadly this is the pattern of employment that the existing literature would suggest for smaller towns.

In terms of the pensionable age group, SMSTs in Catalunya, Northern Sweden and England and Wales tend to have a larger proportion of adults of pensionable age than their comparable HDUCs. In contrast SMSTs in North West Italy appear to have a smaller proportion of pensionable adults in comparison to HDUCs in North West Italy. This makes it one of four attribute measures where there is a difference in sign (between the average of SMSTs and HDUCs within countries) of the significance across the countries for which we have data.

In relation to innovation and human capital (5 measures) the most significant attribute relates to the qualifications of the resident working age population between SMSTs and HDUCs. In 8 countries, there is a highly significant difference in the average recorded in SMSTs and HDUCs. Generally (in 7 out of 8 cases), there is a smaller proportion of working age residents with ISCED level 5-6 qualifications (degree level and above) on average in SMSTs than in HDUCs in comparable regions/countries. The sole exception to this is England and Wales where there is a significantly higher proportion of residents with ISCED 5-6 qualifications than is the case for HDUCs. Only in Belgium was no significant difference recorded.

On the other measures under Domain 2 (innovation and human capital) where there are significant differences between SMSTs and HDUCs, the sign of the difference is consistent. Thus in France, Central Poland and England and Wales, economic activity rates are statistically significantly higher in SMSTs than in HDUCs. In Catalunya and England and Wales, self-employment rates within SMSTs are significantly higher than in the equivalent HDUCs.

On the matter of accessibility to services and employment (Domain 3), the indications are that employment in the retail sector is significantly lower than HDUCs in Italy, Northern Sweden and England and Wales whilst the proportion of residents in employment who live and work with the same municipality is significantly lower in SMSTS in Belgium, the Czech Republic, North West Italy and Slovenia than for HDUCS. SMSTs in Belgium, France, North West Italy, North Sweden, Slovenia and England and Wales tend to have a lower ratio of jobs to residents in employment. Overall this would indicate that workers in smaller towns may need to commute further afield (where there is an opportunity to do so) for work. We might expect to see variations in these measures in relation to the functional classification of settlements (ranging from autonomous to agglomerated – see Chapter 5).

Unemployment rates in SMSTs tend to be lower than for HDUCs in four of our countries (Czech Republic, France, North West Italy and England and Wales) which implies (in combination with high economic activity rates) that small towns residents in many parts of our studied area were able to find work successfully (in our base year) although this work may not necessarily be within the municipality they live in.

SMSTs can show a statistically significant difference in the proportion of school age children (higher with the exception of England and Wales) and in the proportion of the housing stock accounted for by secondary or holiday homes (Czech Republic, France, Slovenia and England and Wales) where the SMST average is higher than that for the HDUCs.

The pattern evident from Table 8 is that there is a great diversity of characteristics amongst small towns (SMSTs) across the countries for which we have data. This diversity potentially arises from the national contexts in which these SMSTs sit.

Having considered the differences that exist between SMSTs and HDUCs with the descriptive attribute values of these places, we might next consider if there is are statistically significant differences in the 'performance' of these places as measured by the indicators set out in Table 6. Again we have systematically compared the average performance for both SMSTs and HDUCS in the same nation/region and then compared the differences in those averages to see if we can explain them probabilistically or whether the difference is greater than might be accounted for by statistical variability alone.

Table 9 gives the analysis of variance (ANOVA) analyses for the change indicators in Table 6. In five of our cases (Belgium, France, North West Italy, Northern Sweden and England and Wales) the data suggests that SMSTs have a distinctly different dynamic from their equivalent HDUCs as a group. In these cases with the exception of Northern Sweden SMSTs appear to have generally grown faster (on average) in total population in comparison to HDUCs and that is it the net migration rates that are higher for SMSTs on average than for HDUCs (and with lower rates of natural change). The SMSTs in Northern Sweden are distinct in that they are the group of small towns that are doing less well than their equivalent HDUCs: overall population decline, lower change rates due to births and deaths and lower net migration rates). In relation to changes in the working age and working populations, there did not seem to be consistent patterns of change between SMSTs and HDUCs across the ten case study areas.

Table 9 Significance results for one-way ANOVA tests on changes in demographic/labour market characteristics between SMST and HDUC settlements

	BE	CY	CZ	ES5	FR	ITC	PL1	SE3	SI	UK
annualised percentage change in raw population	> (**)		0	0	> (**)	> (**)	0	< (**)	0	0
annualised percentage change in population due to natural change	0		0	0	< (**)	> (**)	0	< (**)	0	< (**)
annualised percentage change as a result of net migration over whole period	> (**)		0	0	> (**)	> (**)	0	< (**)	0	> (**)
annualised percentage change in the working age population (15-64 years old)	0			> (*)	0				> (**)	< (**)
annualised percentage change in the population in employment				0	0			0	< (**)	0
annualised percentage change in workplace-based employment	0		< (**)		0			0	0	> (*)
annualised percentage change in the number of unemployed	0		0		0			0	0	< (*)

Notes: > indicates small town average values are statistically greater than average HDUC values, < indicates small towns average values are statistically less than HDUC average values, 0 indicates that there was no significant difference in average values, (**) indicates significance to 95% whilst (*) indicates significance to 90%.

Overall we can observe that there are a bundle of characteristics that tend to define small towns as different from large cities in the countries and regions covered by the database. Thus in most contexts small towns:

- Have a greater proportion of industrial employment and a smaller proportion of service sector employment (differences in relation to economic competitiveness);
- Have higher economic activity rates;
- Have a higher proportion of pensionable adults (unless in NW Italy) and more children (unless in England and Wales) (differences in relation to the Domain of culture and community);
- Have a lower proportion of working age adults with a degree (unless in England and Wales) (differences in relation to economic innovativeness);
- Have a lower proportion of who live and work in them than the HDUCs that are located in the same regions and countries (differences in relation to implied accessibility of employment).

There is a great deal of variation although on all the 19 measures of the small town profile, there were significant differences between the national contexts. However the descriptive analysis alone does not give us any sense of how the attribute values of SMSTs relate to the changes they have experienced in the first decade of the 21st Century. We will consider this part of the analysis in the regression analysis in Section 6.

5. Synthetic typologies of SMSTs

The descriptive analysis has considered difference between different types of morphological settlement and also between the same type of morphological settlements in different countries. It has however relied on 20 indicators. This section will be dedicated to outlining two simple typologies that build in the differing demographic and economic competitiveness characteristics of SMSTs. In Section 2 we outlined the work of Webb (1965) in creating a simple robust typology of places (such as SMSTs) based on the natural demographic change rate, the overall demographic change rate and the net migration rate.

Webb's typology indicates where the locality sits in relation to the interplay of these three measures. Thus a category A locality is one where there is net out-migration and more births than deaths but where the natural increase in population is greater than the loss from migration. The seven other categories display variations on this theme. Figure 2 plots all the SMSTs in the database on two axes: the annualised percentage change due to natural population change (x-axis) and the annualised percentage change in population due to net migration (y-axis). The diagonal lines are where the absolute value of natural change equals the absolute value of change through net migration. Each of the Webb categories is indicated by a letter on the figure. Thus in Webb categories B and C, both net migration and natural change are growing within the SMST. However above the diagonal line (class B) net migration is greater than the increase due to natural change and below the diagonal (class C) the change due to natural change is larger than the change due to net migration.

Table 10 is a cross tabulation of the Webb category of demographic change against country where the most frequently populated categories are: category C where there is net in-migration and natural increase but where net-migration is more important than natural change; category D where there is net in-migration but a natural demographic decline and overall there is still overall population increase; and finally category H where there is net out-migration combined with natural population increase but where out-migration is more significant than the natural change component (leading to overall population decline).

In the Czech Republic SMSTs are 4.6 times more likely to be located in Category H than any other category in comparison with all other SMSTs. Thus SMSTs in the Czech Republic are more likely to have experienced a combination of net-outmigration and population decline than other SMSTs in the database. On the flip side SMSTs in Catalonia are 22 times more likely to be in category C than other SMSTs. Thus Catalonia SMSTs are likely to have experienced net migration and natural population increase but net-migration is likely to be been more important numerically than natural change. Belgians SMSTs are 5 times more likely to be in category C. In the case of North West Italy and England and Wales SMSTs are most likely to be located in category D (net in-migration combined with natural decline). SMSTs are 3.6 and 2.8 times more likely to be classified as category D in North West Italy and England and Wales respectively than SMSTs from other places (in the database).

Figure 2: Webb categories of demographic change

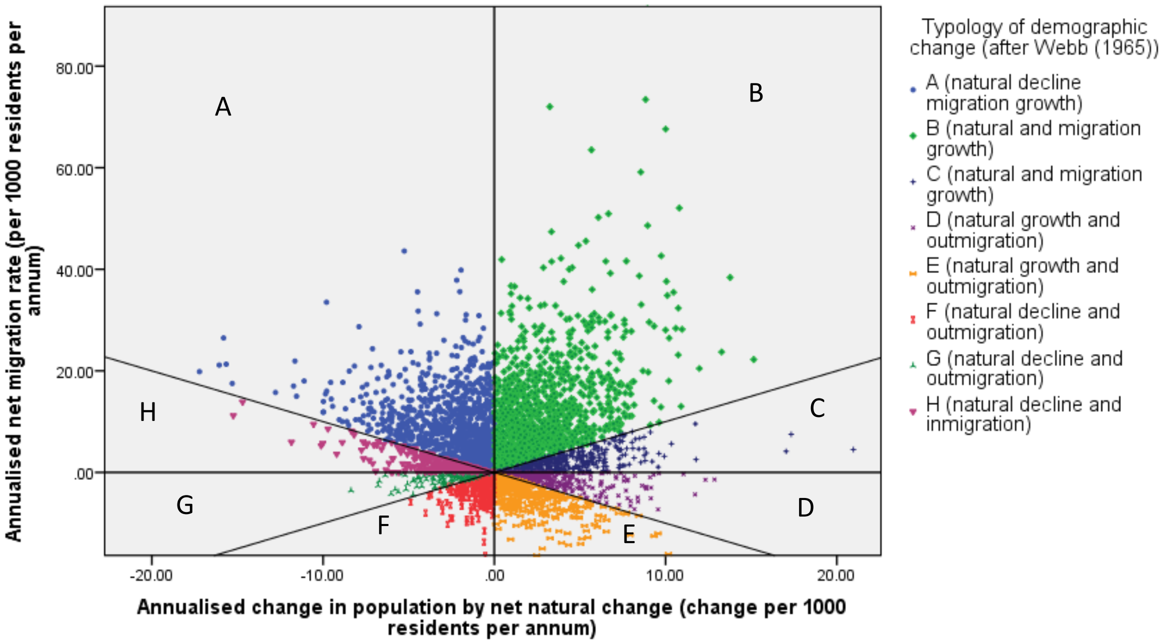


Table 10 Classification of database SMSTs against Webb typology of demographic change

	Webb Category (after Webb 1965)								
	A: population increase, natural gain exceeds migration loss	B: population increase, natural gain exceeds migration gain	C: population increase, migration gain exceeds natural gain	D: population increase, migration gain exceeds natural loss	E: population loss, natural loss exceeds migration gain	F: population loss, natural loss exceeds migration loss	G: population loss, migration loss exceeds natural loss	H: population loss, migration loss exceeds natural gain	Total N
Belgium	3.4%	9.6%	70.1%	15.3%	1.7%	0.0%	0.0%	0.0%	177
Czech Republic	4.1%	4.1%	15.8%	14.9%	5.0%	5.9%	17.1%	33.3%	222
Catalunya	0.0%	0.0%	89.2%	9.2%	0.0%	1.5%	0.0%	0.0%	65
France	12.5%	16.3%	28.6%	14.4%	2.7%	1.7%	5.2%	18.6%	882
North West Italy	0.4%	1.2%	41.3%	51.2%	5.2%	0.8%	0.0%	0.0%	252
Central Poland	16.3%	18.6%	30.2%	14.0%	2.3%	2.3%	7.0%	9.3%	43
Northern Sweden	0.0%	9.8%	19.5%	9.8%	26.8%	22.0%	4.9%	7.3%	41
Slovenia	2.3%	7.0%	23.3%	32.6%	14.0%	11.6%	2.3%	7.0%	43
England and Wales	6.1%	8.5%	30.3%	41.5%	5.4%	1.7%	1.9%	4.5%	574
Total	7.4%	10.3%	33.8%	25.4%	4.3%	2.4%	4.4%	11.9%	2299

Source: TOWN database

Figure 3: Webb categories for SMSTs in eight countries (fewer than 50000 population)

Figure 2 illustrates the distributions of SMSTs by Webb categories of demographic change for the Czech Republic, England and Wales, Northern Sweden and Masovia in Poland. In each of these cases a different Webb category dominates as might be expected as in the cases of Northern Sweden and Masovia, we are seeing a specific tranche of the Swedish and Polish urban systems. Masovia is the wider capital city region for Poland whilst Northern Sweden is a sparsely populated wilderness area of Sweden. We might expect to see a different SMST set in these two very different contexts. Whereas in the case of the Czech Republic or England and Wales we are seeing either all or most of the urban system within the nation state.

Figures 4 and 5 map out the Webb categorisation of settlements (HDUC and SMST) within a 100 km radius of both London and Prague. On the whole in the case of London, there are very few SMSTs falling into the category of 'dying towns' (Webb categories F and G). Instead we see SMSTs that are growing (Webb categories B and C in blue) although there is also a clear ring of coastal settlements that are acting as 'exporters of labour' (in shades of purple – Webb categories D and E) or as places of migration-enhanced aging (in shades of orange – Webb categories A and H). It is possible to hypothesise that there may be a process of regional re-distribution of population created through counter-urbanisation whereby younger adults are leaving the SMSTs in categories D and E for the opportunities of the metropolitan centre of London displacing older adults who are seeking the SMSTs in categories A and H to live in.

Figure 4: Webb categorisation of morphological settlements within 100km of London

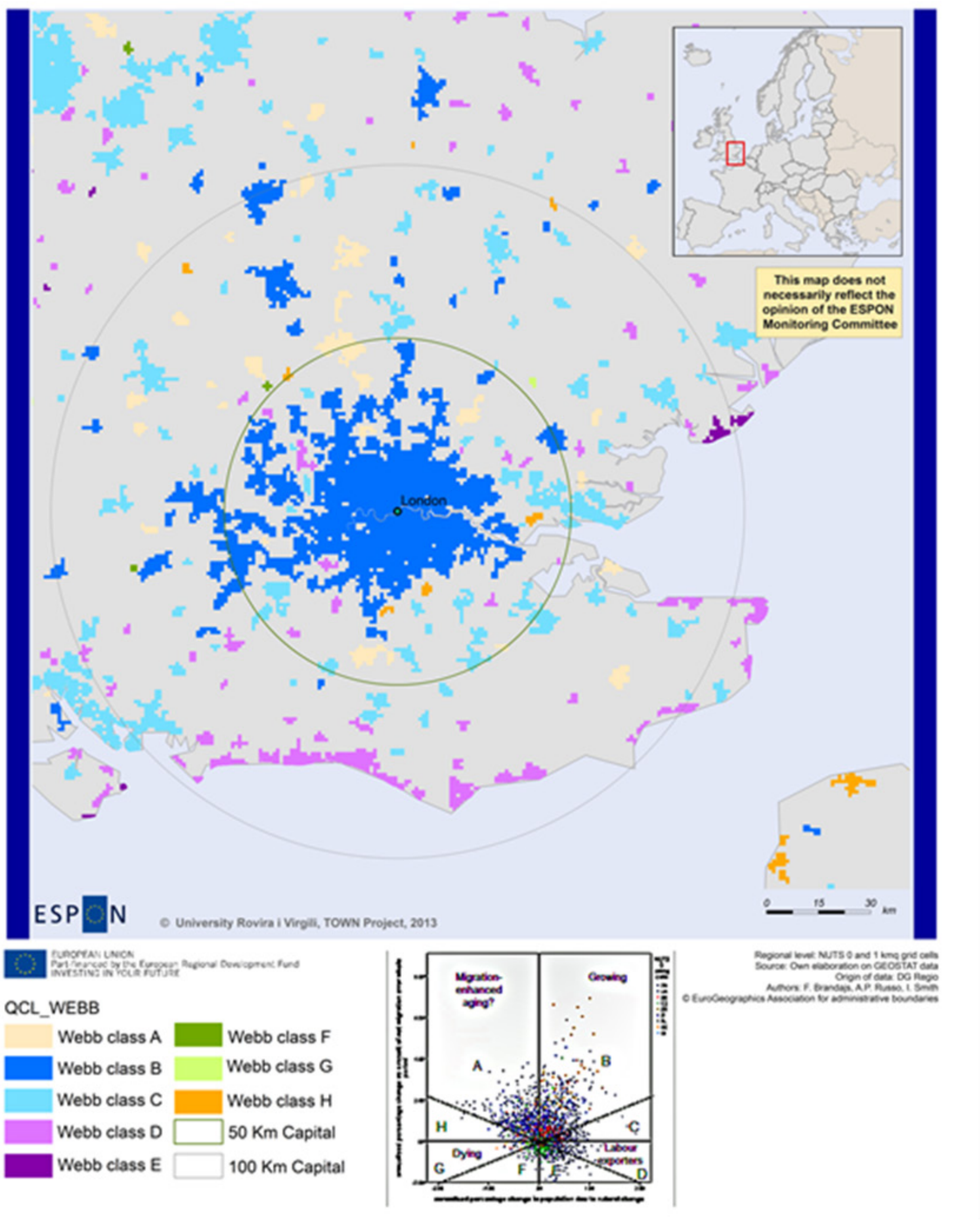


Figure 5: Webb categorisation of morphological settlements within 100km of Prague

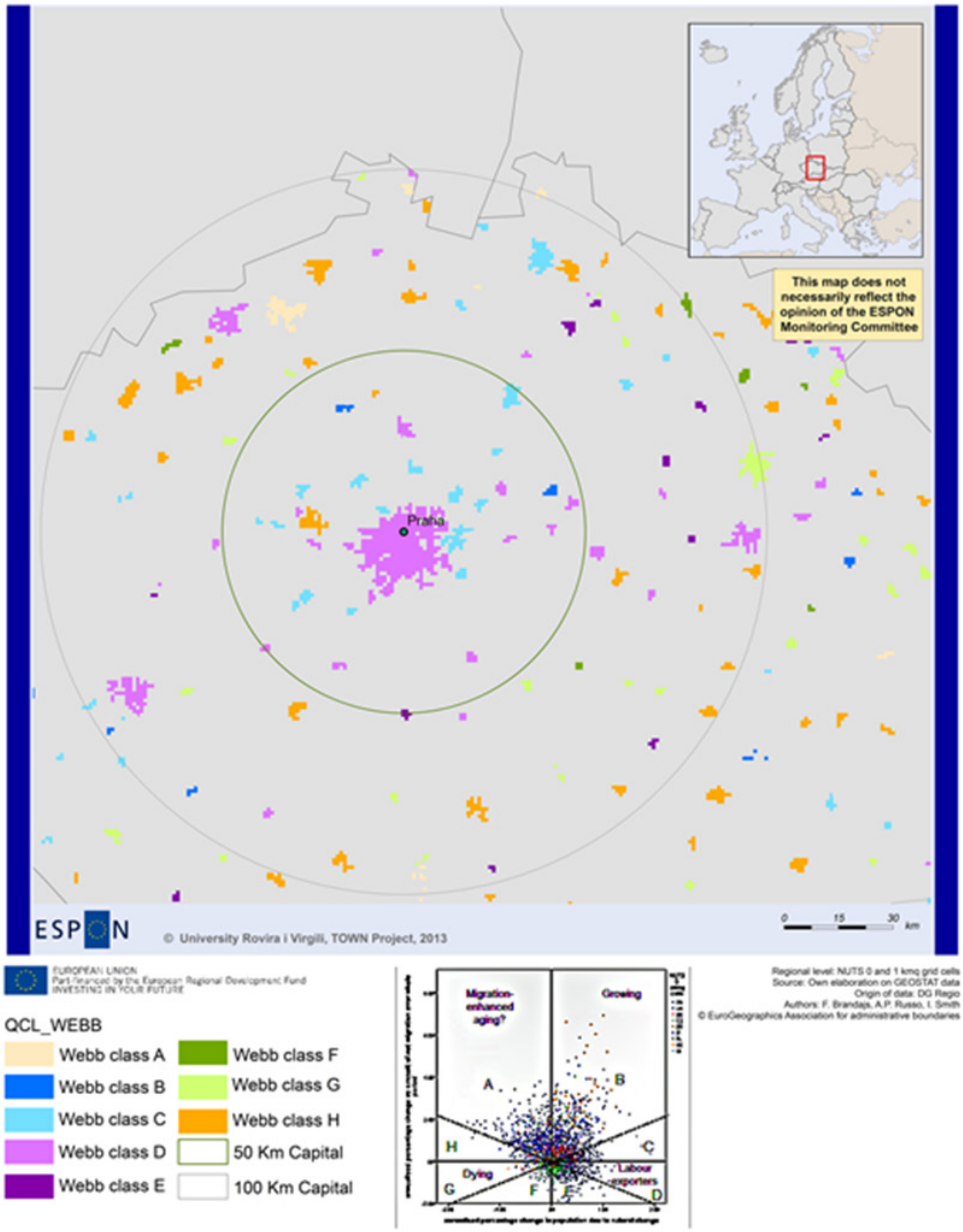


Figure 5 for the wider Prague region suggests a variation on this aggregate pattern. In the Czech Capital region system, the data suggests that there are fewer ‘growing’ settlements and that there are more ‘dying’ settlements. However there is also an interesting balance of ‘labour exporting’ settlements (in shades of purple) and a series of migration-enhanced aging settlements in shades of orange. Again SMSTs may be part of a wider geographic pattern of population redistribution in this capital region.

In general, every region has different socio-spatial dynamics and specific relations between main urban areas and smaller settlements. The different spatial distributions of settlements characterised by the Webb typology sampled in nine regions is shown in figure 6 and figure 7.

Figure 6: Spatial distribution of settlements categorised according to the Webb typology.

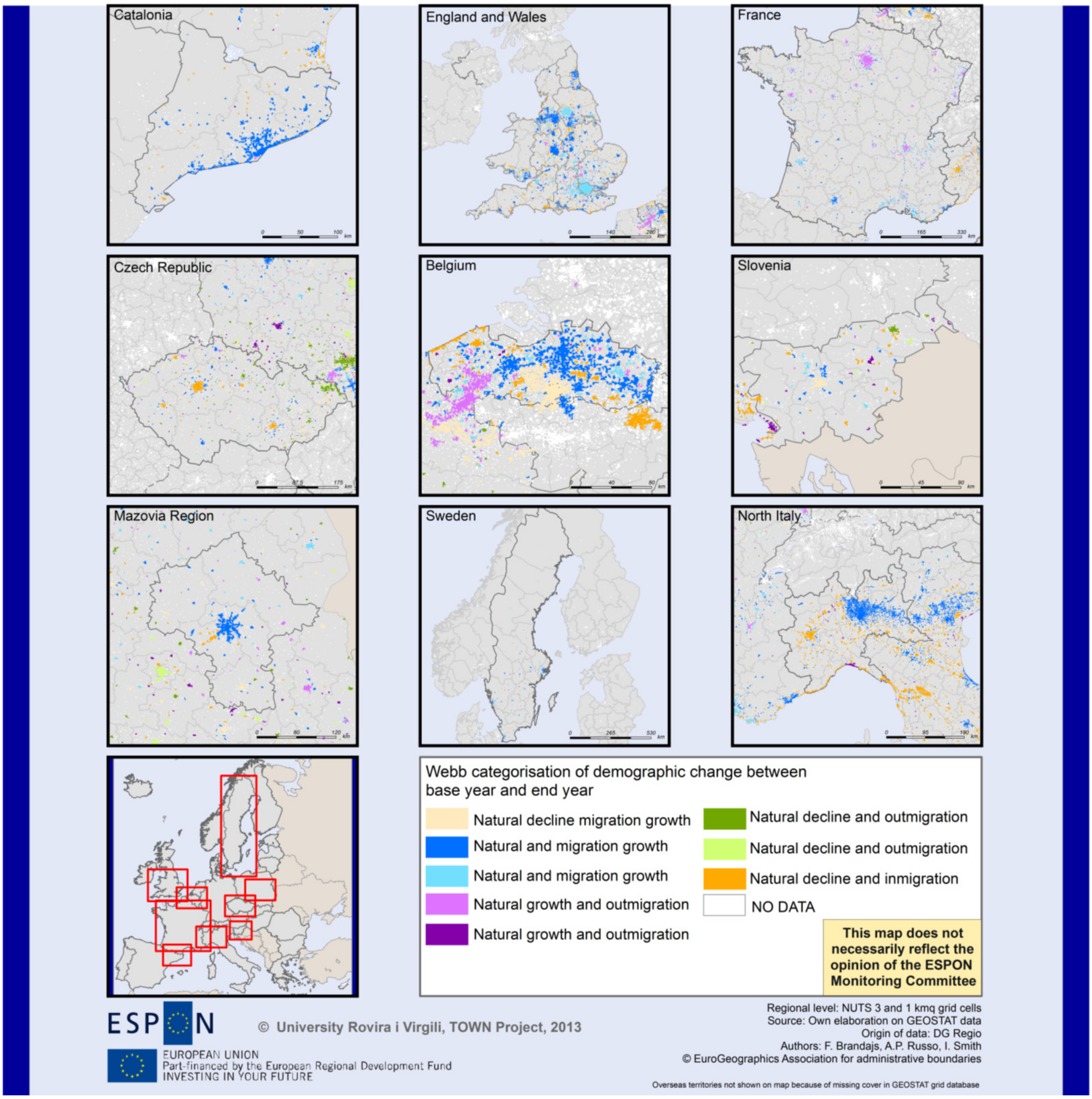
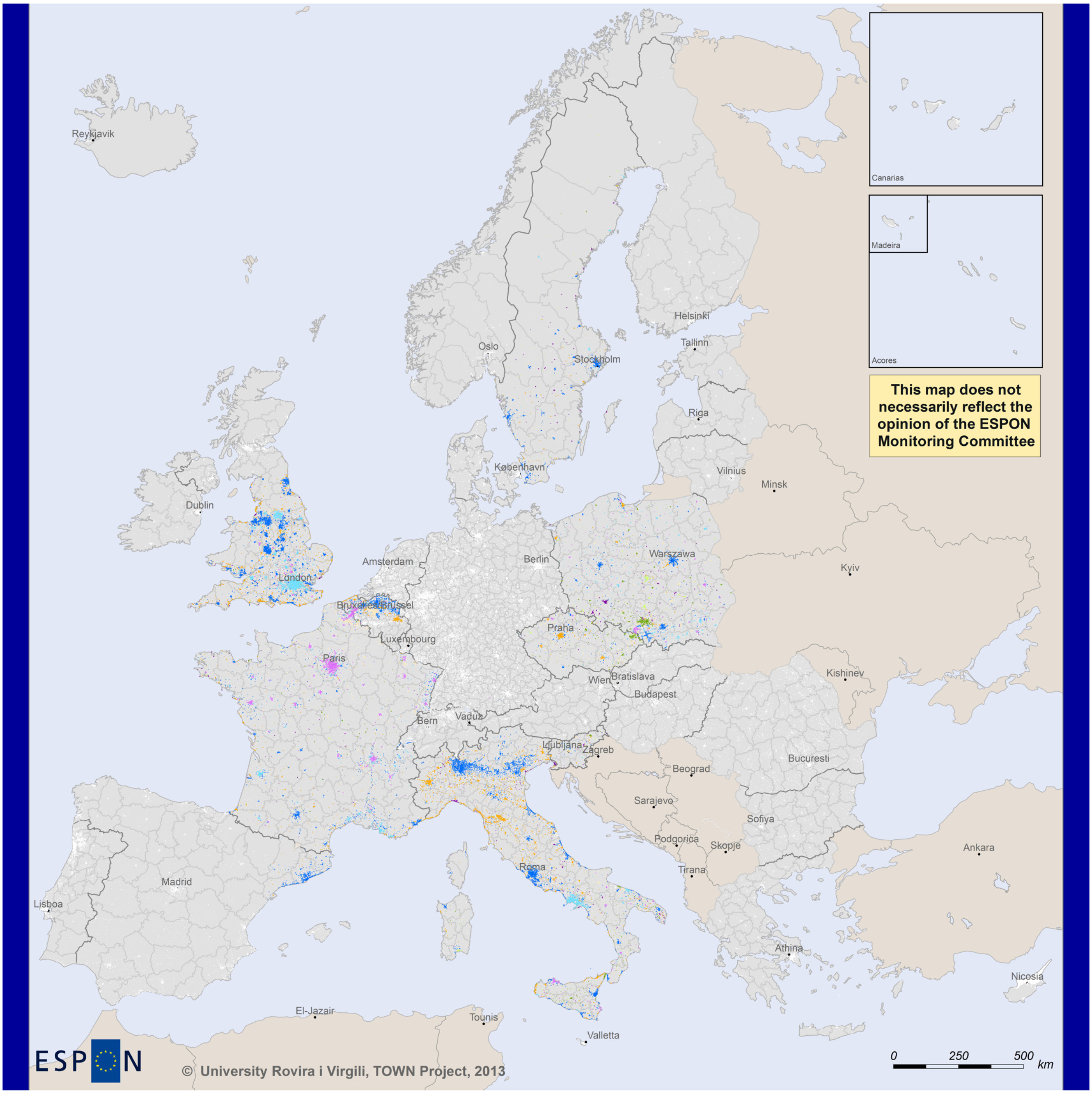


Figure 7: Spatial distribution of settlements categorised according to the Webb typology (EU map).



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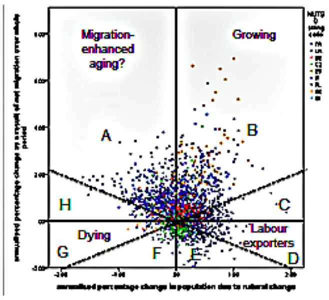
Regional level: NUTS 3 and 1 kmq grid cells
Source: Own elaboration on GEOSTAT data
Origin of data: DG Regio
Authors: F. Brandajs, A.P. Russo, D. Serrano Giné
© EuroGeographics Association for administrative boundaries

Overseas territories not shown on map because of missing cover in GEOSTAT grid database

Webb categorisation of demographic change between base year and end year

- Natural decline migration growth
- Natural and migration growth
- Natural and migration growth
- Natural growth and outmigration
- Natural growth and outmigration
- Natural decline and outmigration
- Natural decline and outmigration
- Natural decline and inmigration
- NO DATA



However we can also consider the potential profiles of SMSTs in relation to economic activity by a consideration of employment statistics following the work of Smith (1965). We can use the median proportion of employment across all SMSTs in the database to establish whether any given SMST has an estimated proportion of employment relative to industrial production (base economy), private marketed services (a mix of non-base and base economic activities) and public sector employment (tendency towards being a non-base economic activity). We can use these three dummy variables relating the proportion of employment to the median to generate eight categories of industrial profile. The membership of SMSTs to the following eight categories (see Table 11):

- Category A of economic activity where employment industrial, private sector and public sector services are all above the database median value:
- Category B of economic activity where employment in industrial and public sector are above the database median value:
- Category C where employment in public sector services is above the database median value;
- Category D where employment in industrial and private sector services are both above the database median value:
- Category E where employment in industrial activities is above the database median value;
- Category F where employment in private and public services is above the database median value;
- Category G where employment in private sector services only is above the database median value: and,
- Category H where employment in not one of industrial, private sector services or public sector services are above the database median value.

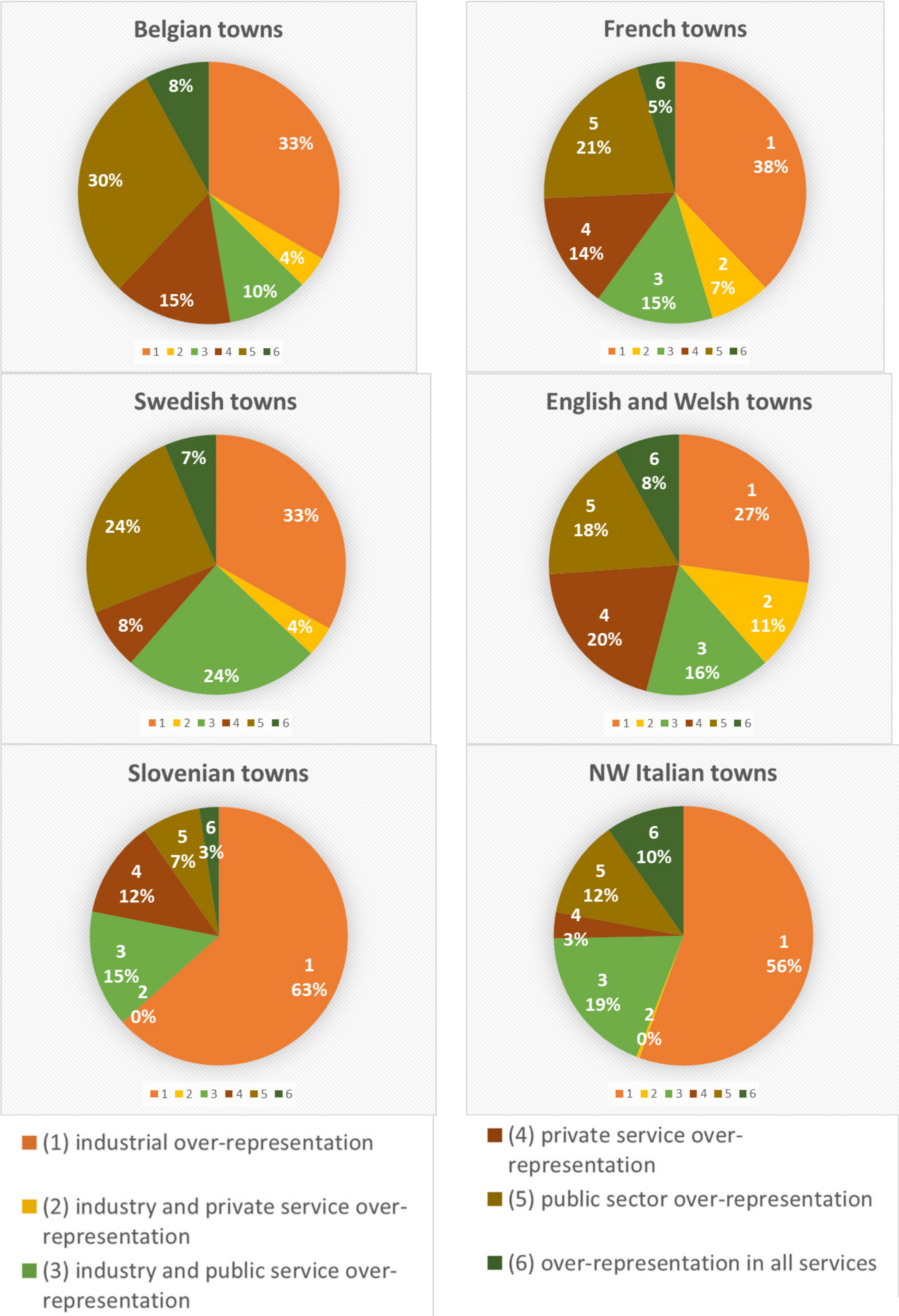
Table 11 Proportion of SMSTs (under 50,000 population) categorised by industrial profile (based on location quotients) in base year (derived from Smith 1965)

	Relative location quotient relative to the rest of the urban system (settlements > 2,500 persons) in:							total number of observa-tions
	1. industrial LQ>100	2. industry and private service LQ>100	3. industry and public service LQ>100	4. public sector LQ>100	5. private service LQ>100	6. LQ>100 all services	other combinations	
Belgium	31.6%	3.8%	9.5%	28.5%	13.9%	7.6%	5.1%	158
France	35.7%	7.1%	13.7%	19.7%	13.5%	4.5%	5.8%	851
North West Italy	54.4%	.4%	18.4%	12.0%	3.2%	9.6%	2.0%	250
Sweden	32.3%	3.7%	23.8%	23.8%	7.4%	6.3%	2.6%	189
Slovenia	63.4%	0.0%	14.6%	7.3%	12.2%	2.4%	0.0%	41
England and Wales	26.5%	11.0%	15.1%	17.6%	19.3%	7.9%	2.6%	581

There are clear national differences in relation to the proportion of employment in these three aggregated sectors. Table 11 outlines the industrial structure of employment within our SMSTs. A location quotient for employment in industrial employment and in employment within public and private (residential) services for the SMSTs and this proportion was compared to the proportion of employment within the same aggregated sectors within the urban system within each NUTS2 region. This was the total employment by broad sector for all settlements with a population greater than 2,500 population within the NUTS2 region. This calculation produced a relative location quotient that was then used to calculate cluster membership within Table 11 where a relative location quotient in any of the three employment categories of greater than 100 was taken as an 'over-representation' of employment within that sector in the SMST. In this way we could identify SMSTs with a relative over-representation of industrial and service sector employment (and with combinations of over-representation).

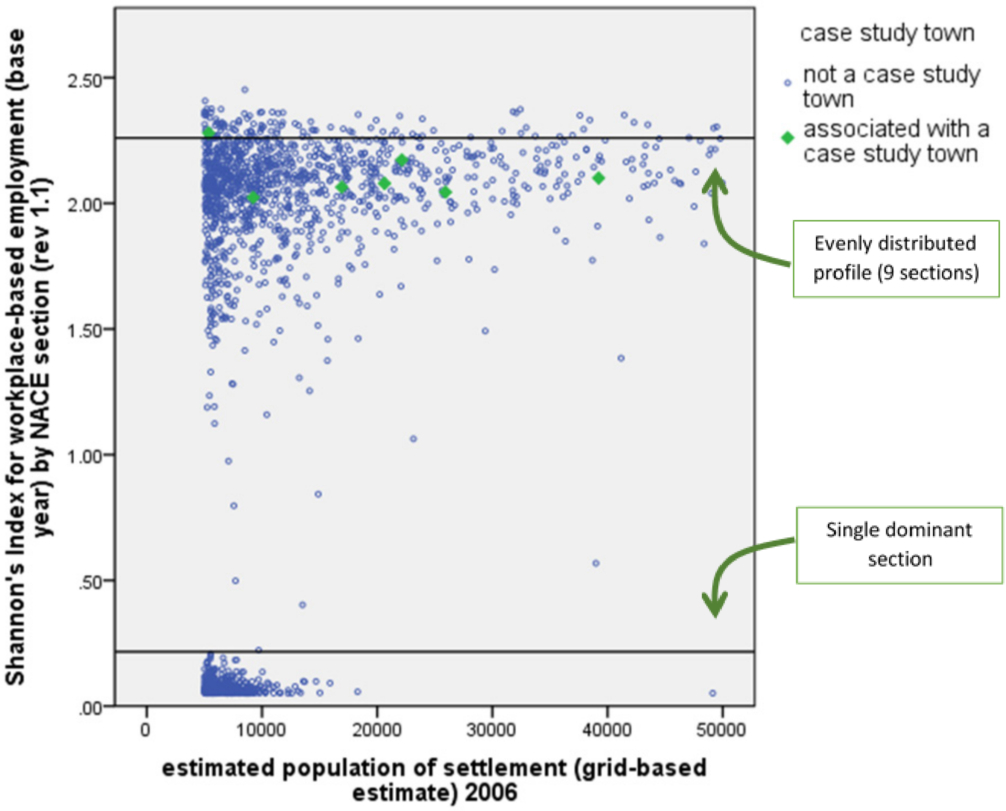
Looking at the classification of Table 11 (Figure 8 takes the same data and represents the data through pie charts). Based on this data it is clear that SMSTs are most likely to have relative concentrations of employment in one or both of industrial or public sector service employment. This is consistent with an older process of the rural-urban shift in industrial employment (dating from the 1980s) but also suggests that public policies on the provision and funding of public services (through either local or national agencies) will have an important impact on the economic health of SMSTs. On aggregate only 13% of the total number of observed SMSTs had a location quotient of greater than 100 in private sector services alone (covering retail, tourism and hospitality, business, professional and financial services) within a further 13% of observed SMSTs combining an over-representation of private services with one over-representation in either public services or industry. This compares to over 50% if observed SMSTs having an over-representation in industrial employment and around 40% of SMSTs having an over-representation of public services. There are some variations from country/region to country/region but this pattern of relative concentration is repeating across all the six places for which we have data.

Figure 8: Relative location quotient classification (relative to other settlements in region/nation in base year) of employment classification for towns (fewer than 50000 population)



The data for SMSTs also allows us to consider the degree to which employment within observed SMSTs is diversified across different sectors. Using the broad NACE categories a Shannon Index can be calculated to measure the degree to which employment within the SMST is distributed evenly across many sectors or alternatively the degree to which employment is concentrated within a single (or few) sectors. This exercise has been calculated for the 17 NACE sections identified in the revision 1.1 of the NACE classification system. In general the Shannon Index increases as employment becomes more diversified over a wider range of sectors. Figure 9 plots the Shannon Index for SMSTs (with fewer than 50,000 population) on the y-axis with population size on the x-axis. It shows that employment diversity tends to increase as SMSTs become larger (and the number of jobs/businesses increase). Figure 9 also gives the theoretical Shannon Indices for two ideal type employment profiles. The lower horizontal line marks the ideal Shannon Index for a town with all employment concentrated within a single sector. This reveals that there is quite a cluster of towns that are, to all intents and purposed, dominated by a single sector of employment (although not necessarily a single employer). The upper horizontal line marks the ideal case of a town where all employment is evenly distributed across nine sectors (representing the case of a 'balanced' local economy).

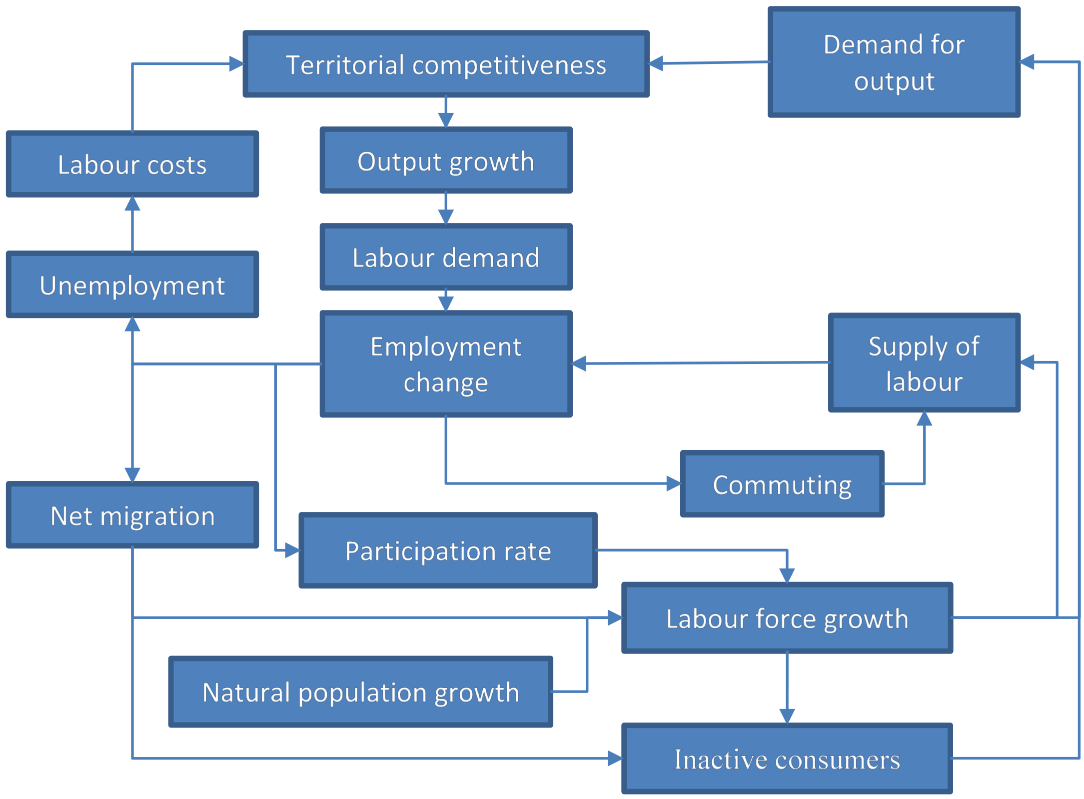
Figure 9: Shannon Index of employment (workplace-based) profile for towns in base year.



6. Analysing the determinants of change in small towns

Given that this research is not based on the analysis of primary data generated through a survey, the analysis is restricted to that which can be observed using harmonised small area data across the 10 countries included in the study. The existing literature points to the importance of regional context for smaller towns (see Section 2) whilst the empirical investigation of the smaller town indicators suggested that there are statistically significant differences in the values of our indictors between national contexts. The basic conceptual map that will be examined is outlined in Figure 10 where the local system of growth and change relates changes in employment, changes in the demography of the town and changes in the labour market supply within the town.

Figure 10: Conceptualisation of local milieu/territorial growth (after Terluin 2003)



In order to capture this multi-level dimension of context and characteristics of small towns, the regression analysis will use regional measures estimated at the level of NUTS2 regions. The use of NUTS2 regions allows the analysis to capture the variable sized case study regions incorporating the additional regions for which we have constructed morphological settlement indicators.

The two principal types of change that this analysis will explore relates to changes in population and changes in the number of jobs located within the settlement. Hinderink and Titus (2002) indicated the importance of 'resources, population density and market accessibility' whilst counter-urbanisation theories (such as Champion and Shepherd 2006) suggest the importance of being part of a broader urban system (potentially linked to metropolitan areas). Reviewing data availability the regional indicator shown in Table 12 have been constructed. An initial analysis of variance in the outcome variables to be analysed at SMST level (change in population and change in jobs) suggests that variance between settlements in different NUTS2 regions (calculated as a variance partition coefficient) accounts for about 31% of variance for demographic change but only about 20% of change in jobs. This confirms the value of a multi-level approach that can deal with each of these components of analysis (intra and inter-regional variance).

In practice this model of Figure 10 and the issue of regional context have been operationalised through the indicators in Table 12 (town-level indicators) and Table 13 (regional-level indicators). Table 13 outlines the issue of data availability for these variables.

Table 12 Town-level indicators for regression analysis

Indicators calculated at town (SMST) level for data base coverage	Rationale for inclusion of variable(s)
Proportion of population aged under 15 years and proportion of population aged 65 years and over in base year	Demographic profile and measure of 'dependent' population
Proportion of population aged 15 to 64 years who are economically active and the proportion of the population aged 15 to 64 years who are unemployed in base year	Labour market supply characteristics of town
Distance of town from nearest HDUC (city)	Market accessibility/ metropolitan proximity
Location of town on coast	Amenity value of environment
Proportion of employment (workplace-based) as 'industrial'/ 'public services'/ 'private services in base year	Labour market demand conditions of town
Proportion of dwellings that are registered as 'second homes'/ proportion of dwellings are occupied as primary residences in base year	Housing market conditions
Number of businesses per 10,000 residents	Measure of enterpreneurship
Proportion of working age adults with ISCED5-6/ ISCED 3-4 level qualifications	Human capital of town

Table 13 Regional indicators for town performance

Indicators calculated at NUTS2 level for data base coverage	Rationale for inclusion of variable(s)
Annualised percentage change in population 2002-10 **Annualised percentage change in jobs 2001-10** **Change in real GDP (payment power standard) 2001-08**	Measures of regional change
Real GDP (PPS) per capita, 2001 (potential spend) **Nominal GDP per job, 2001 (productivity)**	Economic wealth of region
Average difference in the Average Tourism Climate Index (TCI) for the warm and cold seasons	Associated with inter-regional migration (source: ESPON ATTREG project)
Location within capital city NUTS2 region, proportion of NUTS2 area accounted for by HDUC polygon	Market accessibility

Table 14 Data availability country by country for regression work on population change

variable description	label	BE	CY	CZ	ES5	FR	ITC	PL1	SE3	SI	UK
annualised percentage change in raw population		X		X	X	X	X	X	X	X	X
Employment rate amongst 15-64 year olds in base year	EMPRATEBASE	X		X	X	X	X	X	X	X	X
percentage of children under 15 years in total population in base year	CHILDBASE	X		X	X	X	X	X	X	X	X
Percentage of dwellings that are occupied in base year	HOUSEOCCBASE			X	X	X	X	X		X	X
percentage of people of pensionable age in total population in base year	PENSIONBASE	X		X	X	X	X	X	X	X	X
ratio of workbase-based employment to resident employment (no self-employment) in base year	JOBRATE2	X		X		X	X		X	X	X
Zscore: total population in base year, (aggregated from small area fragments)	ZPOPBASETOT	X		X	X	X	X	X	X	X	X
Annualised percentage changes in NUTS2 population 2002-10	POPCHANGE	X		X	X	X	X	X	X	X	X
difference between WARM and COLD averaged at NUTS2 level	TCIDIFF	X		X	X	X	X	X	X	X	X
Proportion of NUTS2 population in HDUC polygons	HDUCPROP	X		X	X	X	X	X	X	X	X

Table 15 Descriptive statistics for settlement-level variables used in regression work on population change

	population change model variables			housing market model variables		
	N	mean	CoV	N	mean	CoV
annualised percentage population change (base to end year)	4367	0.92	1.74	3502	1.06	1.62
distance (in km) of settlement centroid to nearest HDUC polygon (equals 0 for HDUC)	4514	23.52	1.09	3648	22.57	1.01
Economic activity rate for 15 to 64 year olds in base year	4368	68.94	0.16	3503	69.86	0.17
Proportion of population aged under 15 years in base year	4367	17.20	0.18	3502	16.79	0.19
Proportion of population aged 65 years and older in base year	4367	16.33	0.27	3502	16.99	0.26
proportion of 15 to 64 year old population who are recorded as unemployed	4514	6.79	0.76	3648	5.84	0.76
proportion of dwellings recorded as 'vacant' in base year	:	:	:	3502	12.01	0.96
listwise number of towns for analysis	4366	:	:	3501	:	:
Listwise number including regional indicators	3846			3002		

Table 16 **Descriptive statistics for regional-level variables used in regression work on population change**

	N	mean	CoV
Population change per NUTS2 region 2001-11	128	5.01	1.10
Proportion of NUTS2 area covered by HDUC polygons	122	5.76	2.20
Number of SMT polygons per million residents in NUTS2 region	126	17.80	0.39
Gross Fixed Capital Formation (household accounts), per capita, 2001 (Euros)	128	3875.46	0.40
GDP per capita (nominal), Euros, 2001	137	19154.01	0.42
Difference in TCI index of climate summer to winter	139	22.04	0.25
listwise number of NUTS2 regions included	119	:	:

Table 15 outlines the descriptive statistics for the variables that may be linked to population change at the level of the settlement. The first three columns represent the descriptive statistics for the 4366 towns that are covered by nine countries whilst the last three columns represent the average values for these same statistics for the 3500 towns for which we have statistics on the state of the housing occupancy for the base year of our study period. Thus the ‘housing market’ analysis does not cover Poland, Belgium or Sweden where small area housing occupancy data was not available. Thus we can see that towns included in the housing market model tend to have a slightly higher average growth rate (1.06% per annum) than for the ‘full’ model (0.92% per annum) but that both for the ‘full’ and the ‘housing market’ models there is a relative high level of dispersion of growth rates across the towns captured in the dataset (the standard deviation is 1.74 and 1.62 times the mean growth rate respectively).

Table 16 gives the regional level variables for the areas for which we have town-level data. It is notable that the variability of regional growth rates is a lot less than we see as the variability of growth rates at town level. Combining towns for which we have data with NUTS2 regions for which we have data leaves us with 3846 towns (data points) for the full regression model and 3002 towns in the case of the housing market model.

We hypothesise that total population change in SMSTs (within the database) is likely to vary in relation to labour market buoyancy (high economic activity rate but low unemployment rate), demographic profile (the proportion of children under 15 years and the proportion of adults 65 years and older indicating levels of ‘non-economically active’ population), housing market structure (the proportion of vacant housing) and the geographic context for the town (distance from a larger city and location near the coast) and population size at the level of the SMST. In addition we were able to control for regional growth rates, climate (see Russo et al. 2012) and the proportion of the regional population in HDUC (as a proxy for metropolitan proximity). Where settlement level variables might be missing, we have used NUTS2 levels as the ‘missing’ value (in the case of unemployment rates).

Figure 11: Form of regression model for estimating population change in SMSTs

$$\begin{aligned} \mathit{Annual\ population\ growth\ rate}ij &= \beta 0ij(cons) + \textstyle\sum \beta 1\,(NUTS2\ variables)i \\ &\quad + \textstyle\sum \beta 2\,(town\ variables)ij\ (1) \end{aligned}$$

Where $\beta_{0ij} = \beta_0 + u_{0j} + e_{0ij}$

$[u_{0j}] \sim N(0, \Omega_u) : \Omega_u = [\sigma^2_{u0}]$

$[e_{0ij}] \sim N(0, \Omega_e) : \Omega_e = [\sigma^2_{e0}]$

Figure 11 outlines the form of the multi-level regression equation (including the housing vacancy variable) where i indicates the SMST level and j indicates the regional level. Thus the equation attempts to predict the total population change for a SMST i in NUTS2 region j. The model takes a random intercept (a fixed effects model) in that we are expecting the coefficients of the variables to be constant across the different NUTS2 regions but the model allows the constant term β_0 to vary NUTS2 region by NUTS2 region.

Table 17 outlines the full regression model on the annualised population change for towns in nine countries. Overall Table 15 indicates that the use of the multi-level model reduces the variation generated by regional context through the coefficient of partition. Thus in the model where no explanatory variables are used around 36% of the variance in the data might be explained by something that is measured at regional level. Specifying regional indicators in the model thus reducing the unexplained variance at regional level to 9% of the variance in the regional model and to around 12% in the final model. This indicates that the multi-level model allows us to capture of regional influence within this statistical model.

At the level of the region, the model suggests that our case studies are not exceptional since the case study dummy variable comes to be insignificant. However the regional population growth is significantly linked to town population growth suggesting that each 1% in regional population growth over the period 2001-11 is associated with around 0.13% population growth per annum in towns. This is the single most important regional explanatory variable. However there still appears to be an effect for climate such that towns in places with low seasonal variation between winter and summer on average are growing faster controlling for the other variables in the model. At the level of the settlement, population growth is associated with towns that have higher levels of economic activity amongst the 15 to 64 year old group and lower levels of unemployment in the same age group. In terms of demographic characteristics, the regression model suggests that smaller towns have grown faster than larger ones and that towns with lower proportions of their population over 65 years of age have grown faster than towns with larger proportions of adults of pensionable age. However the single most significant factor is being located within 5km of the coast once the other modelled factors are taken into account. Thus for two towns with the same labour market and demographic characteristics it is the town on the coast that will have grown faster on average. This location on the coast is balanced by the town's distance from a large city since the regression model suggests that annual population growth in towns tends to decline as distance from a large city increases. The implication of this model is that coastal towns that are relatively close to a larger city in an area of mild climate and where the overall labour market conditions are good (low unemployment and high economic activity) are the towns that have grown faster through the 2000s.

Table 17 Multi-level regression coefficients for demographic model for towns (under 50000 population).

Response variable: average annual population growth between base and end year		Model with regional variables only		Model with regional and settlement variables		
cons	:	0.084	0.086	0.259	0.103	**
case study region dummy	NUTS2	-0.086	0.108	-0.115	0.122	
proportion of NUTS2 area covered by city (HDUC)	NUTS2	0.706	0.223	-0.012	0.007	
capital city region dummy	NUTS2	-0.006	0.006	0.274	0.241	
regional population change	NUTS2	0.14	0.01	0.129	0.012	**
inter-seasonal TCI	NUTS2	-0.017	0.01	-0.026	0.011	**
coastal town dummy	town	:	:	0.603	0.06	**
distance to city	town	:	:	-0.007	0.001	**
proportion of children under 15 years	town	:	:	-0.011	0.014	
proportion of older adults 65 years and older	town	:	:	-0.11	0.008	**
economic activity rate for 15-64 year olds	town	:	:	0.005	0.003	
proportion of working age adults who are unemployed	town	:	:	-0.022	0.007	**
population size of town (standardised)	town			-1.225	0.402	**
Level: 2 (regional) cons/cons	:	0.165	0.03	0.202	0.034	:
Level: 1 (settlement) cons/cons	:	1.622	0.037	1.425	0.033	:
-2*loglikelihood:	:	13065.59		12418.51		:
Units: idcodenuts2	:	122		117		:
Units: OBJECTID	:	3886		3833		:
coefficient of partition	:	9.2%		12.4%		:

Notes: ** indicates coefficient significantly non-zero at 5% degree of confidence

We extended this 'full' model to one that includes a measure of the housing market. In six countries we had data on the occupancy of the housing stock by settlement (excluding Belgium, Sweden and Poland). Table 18 outlines the regression analysis results on 3000 towns. This analysis suggests that towns that grow fastest tend to have a degree of vacancy in their housing stock. Thus for towns to grow, there is a need to have housing to accommodate that growth whether it be through natural growth and indigenous household formation or whether it be as a result of in-migration. The TOWN database suggests that town growth is more likely to be fuelled by net migration than by natural population growth comparing town growth rates to city growth rates.

Table 18 Multi-level regression coefficients for demographic model for towns (under 50000 population) with housing variable.

		population change model without housing variable			population change model with housing variable		
Fixed Part							
Cons	:	0.30	0.14	**	0.30	0.14	**
case study region dummy	region	-0.22	0.16		-0.22	0.16	
proportion of NUTS2 area covered by city (HDUC)	region	-0.01	0.01		-0.01	0.01	
capital city region dummy	region	0.55	0.33	*	0.51	0.32	
regional population change	region	0.13	0.01	**	0.13	0.01	**
inter-seasonal TCI	region	-0.04	0.02	**	-0.02	0.02	
coastal town dummy	town	0.66	0.07	**	0.63	0.07	**
distance to city	town	-0.01	0.00	**	-0.01	0.00	**
proportion of children under 15 years	town	-0.03	0.02	*	-0.03	0.02	
proportion of older adults 65 years and older	town	-0.12	0.01	**	-0.12	0.01	**
economic activity rate for 15-64 year olds	town	0.01	0.00	*	0.01	0.00	**
proportion of working age adults who are unemployed	town	-0.02	0.01	**	-0.03	0.01	**
population size of town (standardised)	town	-1.46	0.51	**	-1.36	0.51	**
proportion of dwelling stock registered as vacant in base year	town	:	:		0.01	0.00	**
Random Part							
Level: 2 (regional) cons/cons	:	0.23	0.05	**	0.21	0.04	**
Level: 1 (town) cons/cons	:	1.76	0.05	**	1.75	0.05	**
-2*loglikelihood:	:	10282.18			10269.60		
Units: NUTS2 region	:	86			86		
Units: towns	:	2985			2985		
coefficient of partition	:	11.5%:			10.7%:		

Notes: ** indicates coefficient significantly non-zero at 5% degree of confidence

The findings from the multi-level regression model are given in Table 19. This suggests that the model is able to statistically explain a fair degree of the variation in population growth within SMSTs across the five countries for which we have a full data set to run the model. Thus the most important factor in being able to predict population change in SMSTs is to know the regional population growth rate. This significance is both statistical and numeric in the model. Thus for each 1% change in regional population for the period 2001-10, there is a 0.13 percentage point change in the annual growth rate at the SMST level (taking all other variables into consideration). At the regional level the climate has a relatively large statistical effect on predicting population change in SMSTs mirroring the findings of the ATTREG project (see Russo et al 2012) although this effect disappears once vacancy in the housing stock is taken into consideration. Thus SMSTs in regions with a smaller difference between the average summer and winter conditions grew faster taking other factors into consideration but these areas are also ones that record relatively high levels of housing vacancy (and the presence of holiday homes). However proximity to larger urban areas (the HDUC) seemed to be less important when taken at the NUTS2 area controlling for the other factors in the model. Thus the proportion of a NUTS2 population living in a HDUC seemed to have no statistical impact on population growth albeit that distance from a HDUC was significant (and negatively correlated).

Table 19 Multi-level regression coefficients for total population change, net migration and natural population change for towns (under 50000 population).

Response	Annualised total population change			Annualised net migration rate (per 1000)			Annualised natural population change (per1000)		
	coeff	Stnd error	sig	coeff	Stnd error	sig	coeff	Stnd error	sig
Fixed Part									
cons	0.187	0.107		2.484	0.777	**	-0.366	0.27	
case study region dummy	-0.115	0.122		0.999	0.84		0.062	0.294	
proportion of NUTS2 area covered by city (HDUC)	0.274	0.241		-0.082	1.811		-0.223	0.649	
capital city region dummy	-0.012	0.007		-0.073	0.041		-0.002	0.013	
regional population change	0.129	0.012	**	0.684	0.107	**	0.287	0.038	**
inter-seasonal TCI	-0.026	0.011	**	-0.121	0.089		-0.105	0.032	**
coastal town dummy	0.603	0.06	**	3.19	0.373	**	-0.026	0.092	
distance to city	-0.007	0.001	**	-0.054	0.006	**	-0.004	0.002	**
proportion of children under 15 years	-0.011	0.014		0.109	0.091		0.363	0.023	**
proportion of older adults 65 years and older	-0.11	0.008	**	0.228	0.054	**	-0.639	0.014	**
economic activity rate for 15-64 year olds	0.005	0.003		0.021	0.015		0.007	0.004	
proportion of working age adults who are unemployed	-0.022	0.007	**	-0.246	0.045	**	0.002	0.012	
population size of town (standardised)	-1.225	0.402	**	-9.255	2.412	**	4.296	0.59	**
Random Part									
cons/cons NUTS2 level	0.202	0.034		10.301	1.732		1.501	0.23	
cons/cons town level	1.425	0.033		42.444	1.082		2.509	0.064	
-2*loglikelihood:	12418.51			21102.07			12204.71		
Units: NUTS2 regions	117			101			101		
Units: towns	3833			3174			3174		

Table 19 compares regression analysis results for three different response variables (total population change, net migration and natural change in population) against the same group of explanatory variables to explore the degree to which the different fractions of population change are statistically related to the same set of causal factors. These results suggest that net migration rates and natural change rates in town are statistically related in different ways to the base conditions of the town with the exception of the regional population growth rate and the distance from a larger city. Thus net migration rates are positively associated with a coastal location and to having a larger proportion of the existing population in the age group of 65 years and older. However net migration rates are negatively related to population size and higher unemployment rates. In relation to natural population change rates there is a positive association with town size and to the proportion of population accounted for by those under 15 years. Natural change is negatively associated with the proportion of older people in the population. These results suggest that towns may have differing demographic trajectories depending on where they are located and in relation to the socio-economic conditions within the two. Thus larger towns with a higher proportion of resident children are likely to attract households earlier in their family cycle whilst smaller coastal towns may be experiencing a process of migration-enhanced aging. Surprising the variable capturing mild climate does not seem to be related to higher net-migration rates in this analysis and the coastal variables may be capturing the attractiveness of towns with high environmental value (to in-migrants).

Thus the demographic dynamic of a town appears to be related to the both the regional and geographic contexts of the town as well as to the demographic and labour market characteristics of the town itself in the TOWN dataset. Coastal location is important although only when controlling for labour market conditions. Thus for two towns with the same unemployment rate, the coastal town is predicted to have experienced higher population growth than the non-coastal town. Towns further away from larger cities tend to grow at a slower rate than those closer to larger cities. Overall the growth rate of the region in which the town is located is also an important predictor of town growth all other things held constant.

However growth in population is only one aspect of town performance. The TOWN database also allows us to explore growth in employment. Table 18 sets out the descriptive statistics for towns in the database comparing the averages for all values in the database (up to 4500 towns depending on the variable) and the values for the core set of towns for which we have a full set of variables (1539 towns). It is the pairwise selected towns that are used within the regression analysis. Employment change is a measure of town performance that varies to a greater degree than population change.

The variables that are suspected of being related to employment growth describe the characteristics of human capital within the town (measured in terms of qualifications), the profile of employment in the town by industrial sector (measures of labour demand), and the characteristics of the labour market (characteristics of labour supply). Included with these characterisations the measure of businesses per capita gives a proxy measure of whether the town has a small business context (large numbers of businesses per capita) or depends on larger employers (low number of businesses per capita). The ratio of workplace-based employment to residents in employment gives some measure of whether a town is an employment centre (where the ratio is greater than 1) or a labour dormitory for people who work elsewhere (where this ratio is less than 1).

Table 20 **Descriptive settlement-level statistics for employment change for towns (under 50000 population).**

	full dataset of towns			pairwise selection of towns		
	n	mean	CoV	n	mean	CoV
annualised change in employment	2039	0.93	2.59	1539	1.27	1.87
number of business units per 10,000 residents	1946	419.59	0.61	1539	479.69	0.51
ratio of workplace jobs to residents in employment	2289	107.17	0.62	1539	103.26	0.51
proportion of workplace employment in 'industry'	4087	21.55	0.53	1539	21.32	0.60
proportion of workplace employment in 'public services'	4049	37.76	0.26	1539	42.13	0.28
proportion of working age population with ISCED 5-6 (degree level) qualifications	4367	11.39	0.57	1539	16.10	0.39
proportion of working age population with ISCED 3-4 (secondary education) qualifications	4367	32.11	0.51	1539	37.52	0.24
proportion of working age population in unemployment	4514	6.79	0.76	1539	6.57	0.71
proportion of working age population as employees	2834	56.32	0.30	1539	56.32	0.15
economic activity rate for 15-64 year olds in base year	4368	68.94	0.16	1539	72.81	0.17
distance to nearest city (km)	4514	23.52	1.09	1539	18.76	1.04

The regression model follows the same format as the case for the annual population growth regression analysis and is shown in Figure 12.

Figure 12: Form of regression model for estimating employment change in SMSTs

$$\begin{aligned} &Annual\ employment\ (job)\ growth\ rate ij \\ &\qquad = \beta 0ij(cons) + \textstyle\sum \beta 1\ (NUTS2\ variables)i \\ &\qquad + \textstyle\sum \beta 2\ (town\ variables)ij\ (1) \end{aligned}$$

Where $\beta_{0ij} = \beta_0 + u_{0j} + e_{0ij}$

$[u_{0j}] \sim N\ (0, \Omega_u) : \Omega_u = [\sigma^2_{u0}]$

$[e_{0ij}] \sim N\ (0, \Omega_e) : \Omega_e = [\sigma^2_{e0}]$

Table 21 outlines the results of the regression analysis on employment change. This suggests that the key regional variables that help predict employment are regional employment change and the gross fixed capital formation per capita. The first variable clearly indicates the general state of the regional economy. The second regional variable is a measure of how much households (including unincorporated businesses) in the region spend on capital expenditure such as on housing.

Table 21 **Regression analysis for employment change in towns (under 50,000 population)**

	Annual employment model with regional variables only			Annual employment model with regional and town variables			Annual employment model with businesses per capita		
Fixed Part									
cons	0.40	0.23		-0.95	0.43	**	-0.28	0.43	
case study region dummy	-0.31	0.28		0.08	0.40		0.29	0.37	
proportion of NUTS2 area covered by city (HDUC)	-0.02	0.01		-0.04	0.02	**	-0.03	0.02	*
capital city region dummy	0.24	0.59		-1.29	0.88		-1.54	0.88	*
regional change in workplace jobs	0.06	0.03	**	0.10	0.04	**	0.12	0.03	**
inter-seasonal TCI	-0.04	0.03		-0.01	0.05		0.04	0.06	
log transformed gross fixed capital formation per capita	1.66	0.39	**	3.27	0.94	**	1.96	1.02	*
coastal town dummy	:	:		0.10	0.14		0.15	0.16	
distance to city	:	:		-0.01	0.00	**	-0.01	0.00	**
population size of town (standardised)	:	:		-2.49	1.03	**	-2.12	1.12	
proportion of working age adults who are employees	:	:		0.00	0.00		0.04	0.01	**
proportion of working age adults who are unemployed	:	:		-0.04	0.02	**	-0.07	0.02	**
proportion of working age population with ISCED 5-6 level qualifications	:	:		0.02	0.01	**	-0.01	0.01	
proportion of working age population with ISCED 3-4 qualifications	:	:		0.08	0.02	**	0.05	0.02	**
proportion of workplace employment in 'industry'	:	:		-0.03	0.00	**	-0.03	0.01	**
number of business units per 10000 residents	:	:					0.18	0.09	**
Random Part									
Level: 2 (regional) cons/cons	0.68	0.15	**	1.50	0.30	**	0.98	0.22	**
Level: 1 (settlement) cons/cons	4.53	0.15	**	4.09	0.14	**	4.47	0.16	**
-2*loglikelihood:	8703.437			7618.353			6947.802		
Units: NUTS2	73			65			57		
Units: towns	1977			1760			1579		
coefficient of partition	13.0%			26.8%			17.9%		

In terms of the town level variables, the town size and distance from a larger city are significant influences on employment growth. Distance from a larger city is negatively related to employment growth as is population size. Thus smaller towns appear to have experienced greater average growth in employment than larger towns. The sectoral composition of the local economy also seems to be related to economic performance. Towns with a larger proportion of industrial employment at the start of the period tended to do worse that towns with a smaller proportion. However towns with a greater number of businesses per head of population appeared to have grown faster suggesting that towns with a vibrant small business sector have been able to better generate jobs. Comparing the model that includes the business density with the town model that does not include the business density variable infers a relationship between business density and the proportion of working age adults with a degree level qualification. In the model without business density, the data set includes Swedish towns and finds high level qualifications to be positively related to higher employment growth. The inclusion of business density both excludes Swedish towns (no business data) and makes the proportion of working age adults with a degree an insignificant predictor of employment growth in towns although employment rate then becomes an important signifier of growth.

The conditions of the labour market and of human capital within the town also seem to be significant. Towns with lower rates of unemployment grow jobs faster than towns with higher rates of unemployment. Thus jobs are not necessarily generated in the places with the largest army of spare labour. The quality of the resident labour force also appears to be significant. Although the proportion of highly qualified working age adults (when not taking business density into consideration) does not seem to be significantly linked to employment growth, the proportion of working age adults with secondary and post-secondary level qualifications is significantly correlated with employment growth in towns. Thus towns with a moderately qualified workforce do better than towns with a poorly qualified labour force. However as noted above towns that have higher levels of businesses (inferring local entrepreneurship/human capital) or that have higher levels of people with degrees in the absence of the business density variable have also grown relatively strongly.

Finally the data suggests that the sectoral profile is important. The coefficient associated with the proportion of employment associated with industrial activities (manufacturing, primary non-agricultural activities and utilities) in SMSTs is negative. Thus SMSTs that had higher levels of industrial employment at the beginning of the period appear to be associated with lower growth rates through the 2000s.

Table 22 Regression analysis for arts-based employment in towns (under 50,000 population)

	arts-based employment model			arts-based employment model with pensioner variable		
Fixed Part						
cons	1.52	0.25	**	1.33	0.24	**
case study region dummy	-0.24	0.22		-0.19	0.21	
proportion of NUTS2 area covered by city (HDUC)	-0.01	0.01		-0.01	0.01	
capital city region dummy	-0.10	0.47		-0.05	0.44	
regional change in workplace jobs	-0.03	0.02		-0.02	0.02	
inter-seasonal TCI	0.06	0.03	**	0.09	0.03	**
log transformed gross fixed capital formation per capita	-0.04	0.46		0.04	0.45	
coastal town dummy	0.96	0.12	**	0.84	0.12	**
distance to city	0.00	0.00		0.00	0.00	
population size of town (standardised)	-2.17	0.88	**	-1.78	0.88	**
proportion of working age adults who are employees	0.00	0.00		0.00	0.00	
proportion of working age adults who are unemployed	-0.04	0.02	**	-0.04	0.02	**
proportion of working age population with ISCED 5-6 level qualifications	0.04	0.01	**	0.05	0.01	**
proportion of working age population with ISCED 3-4 qualifications	0.03	0.01	**	0.04	0.01	**
proportion of workplace employment in 'industry'	-0.03	0.00	**	-0.03	0.00	**
proportion of population aged 65 years and over				0.06	0.01	**
Random Part						
Level: 2 (regional) cons/cons	0.336	0.084	**	0.274	0.072	**
Level: 1 (settlement) cons/cons	2.925	0.102	**	2.902	0.101	**
-2*loglikelihood:	6802.536			6780.199		
Units: NUTS2	67			67		
Units: towns	1718			1718		
coefficient of partition	10.3%			8.6%		

In the case study chapter it is asserted that culture-based and arts-based activities may be a particular feature of successful town economies. The database does not allow us to explore change in cultural/creative employment in towns but it does allow us to explore the characteristics of towns that are associated with arts-based employment in towns. Table 22 sets out two regression models using the proportion of employment in Arts, entertainment and recreation as the dependent variable (sector R under NACE revision 2 classification). The arts model is based on data from France, England and Wales, Slovenia, Sweden and Poland. The first model is based on the variables used in the model of Table 21 (excluding business density) whilst the second model includes a variable for the proportion of the population aged 65 years and older.

Whereas regional variables (included in this model) are not statistically related to the proportion of arts employment, town level indicators do appear to be related to the proportion of arts-based employment within the local town economy with the exception of the climate variable. The climate variable suggests that employment in the arts, entertainment and recreation is strongest in places with a greater seasonal difference in the climate (inferring northern European towns have a greater proportion of employment in this sector).

In terms of town-level data, the arts employment model suggests that arts-based employment is a greater feature of towns near the coast and there is a negative correlation with the size of town. In contrast with employment change, arts based employment seems to be associated with towns that have lower employment rates (rather than higher employment rates) and with towns that have a greater proportion of working age adults with degrees. This indicates that it is towns with higher earnings potential (indicated by qualifications) have a greater capacity to support arts-based activity and that this is further supported by a visitor economy (that is prevalent in coastal locations). Including the proportion of people aged 65 years and older shows that there is a positive association between arts based employment and an older population. Inclusion of the proportion of older people makes employment rate insignificant. In terms of the regional variables it is notable that towns with the case study regions appear to have significantly less arts-based employment than towns in the countries that are included in the study. Thus arts-based employment is associated with particular types of town although it is worth considering that the proportion of arts-based employment is negatively correlated to the annual growth rate of employment within the towns for which we have data. Thus whereas arts-based employment is associated with towns that are wealthier, they are not associated with towns that are growing fastest in terms of their employment offer.

So in terms of explaining what makes some towns grow faster than others, the picture is complex. This is consistent with Cullinan et al's work (2013) on retail performance in Irish towns where the authors suggest that the relationship between performance outcomes and performance inputs may vary depending on what type of town is being considered. However what we can infer is that town performance is linked to the wider regional and geographic context for a town. Thus regional population and employment growth are strongly positively associated with population and employment growth at the level of a town. In the case of population growth, town performance is strongly associated with regions with milder winters (and temperate summers) and being located on the coast. However this relationship weakens when we take into consideration the degree of vacancy in the housing stock as places with higher vacancy rates (and a greater capacity to accommodate in-comers) is taken into consideration. In the case of employment growth, the regional context of capital investment is important and consistent with aggregate production function associating growth in production (jobs) with a combination of capital investment and the number of hours worked in an area. In both the case of population and employment growth, increasing distance from larger cities was associated with lower growth all other conditions being equal.

Population growth is closely associated both to the labour market conditions within a town and the demographic profile of a town. So towns with an older population tended to grow in population terms slower than ones with a smaller proportion of older people. Equally higher levels of unemployment tended to depress population growth (and employment growth). In this analysis population size tended also to depress population and employment growth with larger towns growing at an average slower rate than smaller towns. So towns with higher levels of unemployment tend not to attract high levels of in-migration and hence are likely to grow less fast. In-migration boosts the value of the local economy and is also positively related to employment growth although the variable has not been included in the employment growth model. So employment growth depends upon the capacity of the town to expand its labour force but does not depend on the availability of existing 'unwanted' labour as well as being influenced by the tendency of households to invest in capital goods (such as housing).

Finally employment in arts, entertainment and recreation has been explored in the case studies as a feature of a vibrant local economy. The TOWN database does not allow us to explore changes in arts-based employment but it does allow us to explore the underlying conditions that might lead to concentrations of arts-based employment. In the dataset we have arts-based employment is not associated with the fastest growing local economies but tends to be associated with towns that are likely to be wealthy (in terms of household expenditure/income), and older and more qualified in terms of the adults who live in the town. However the presence of arts-based employment is strongly associated with smaller towns, with a lower dependence on industrial employment and with the presence of higher levels of human capital (as a proxy for potential income). These are factors in common with employment growth in general. However arts-based employment is also associated with towns with an older demographic profile and in general terms towns with an older demographic profile have grown in population terms less fast.

7. Concluding points: are small towns different or just more diverse?

The analysis in this chapter points to a delicate balance that small towns have needed to maintain in the first decade of the 21st century in order to maintain a healthy population and a healthy local economy. Overall it is difficult for small towns to thrive if they are not located in a region that is thriving since the regional dynamics of population and job growth are such powerful predictors of small town performance.

The data suggests that the characteristics of the morphological SMSTs are statistically difference from the characteristics of larger cities (identified here as HDUCs). However SMSTs from individual countries and regions are statistically different from SMSTs in other countries and regions pointing to the issue that small towns are significantly influenced by the context in which they are located. Commonly (but not universally) SMSTs tend to have a profile of economic activity that is higher in industrial activities and lower in service employment (both private sector marketed services and in public sector services). They tend to have a greater proportion of older adults (of pensionable age) as well as a greater proportion of children and a smaller proportion of residents have high level qualifications but economic activity or employment rates tend to be higher than is the case for HDUC settlements. Second homes tend to make up a larger proportion of the housing stock in SMSTs. This all implies the need for a differentiated bundle of services for small towns that might be different in emphasis from larger cities albeit that this is high degree of variation at the level of individual towns.

It is also worth pointing out that SMSTs are not always different in the same kind of way relative to large cities across all contexts. Thus SMSTs in England and Wales on average have fewer children and a greater proportion of adults with a degree level qualification than HDUCs in England and Wales. However in the rest of Europe (following the coverage of the database) SMSTs in other countries tend to have more children (as a proportion of the population) and a smaller proportion of working age adults with a degree than is the case in their equivalent HDUCs. This points to the need for a place-based approach to understanding SMSTs.

Clearly the issue of large numbers comes into play. The analysis in this chapter has been focused on the average characteristics of small towns. This has involved comparing (and partitioning) the characteristics of nearly 2300 SMSTs and comparing them to the characteristics of under 300 HDUCs. It is always possible to be an exception (see chapter 7 to see the rich diversity of specific and particular places) but the aim of this analysis is to offer insight into general trends and relationships.

In terms of assessing the conditions for population growth and growth in jobs and controlling for social and economic conditions, larger towns and towns located in regions with a high proportion of population living in HDUC settlements do worse than smaller towns and towns located in regions with less HDUC settlement. SMST settlements that have higher levels of employment relative to residents in employment have done less well implying that the more important an employment centre the SMST is the less well the town has done through the 2000s. Equally towns with higher levels of industrial employment at the start of our observation period, have also performed less well than towns that depended less upon industrial activities. The inference is that whereas historically small towns have had some level of competitive advantage in industrial employment, this relative advantage may now be problematic as industrial employment (manufacturing especially) has been subject to global competition.

Based on the regression analysis it is clear that small towns have some very delicate balances to strike. Towns with more children, with higher employment rates and with a greater proportion of qualified working age adults on average do better than towns that have fewer children and fewer qualified workers. However success comes to those towns that have more second homes and a milder regional climate: these are characteristics that – as shown in other works (see Russo et al 2012) - tend to attract older workers and might be seen as part of a counter-urbanisation process. Whereas policy makers can do little about the climate and having a coastal location, policy makers can think about the public services and the spatial policy that can attract and retain families that might be seeking a different way of life to that in larger cities. Alternatively policy-makers might need to think about how to bring back young people who might either leave to go to university (elsewhere) or leave to get their first footing in their chosen labour market when they are older. Towns that do not manage to achieve a demographic balance potentially end up with an aging and elderly population that is associated with demographic decline in this dataset.

In terms of economic development the regression analysis offers relatively positive direction. However towns that continue to rely on industrial employment (in manufacturing, extractive or energy-related sectors) face a problematic future as higher proportions of employment in industrial activities is associated with poorer job growth. The relative competitive advantage of lower wages and more passive workers may be insufficient in contemporary Europe. However there is no consistent pattern with success based on the data we have. The presence of cultural employment appears to be associated with towns with older populations that opens up the possibility that it is associated with a stronger residential economy and retirement migration but we have been unable to test this specific assertion in this analysis. The more important employment centres have done less well but having a larger number of businesses per head of population appears to be a positive factor. Thus towns need lots of small and micro businesses to generate job growth but the resident population needs to grow in proportion as well. Thus net (in) migration is a positive predictor of job growth.

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Chapter 10 – Synthesising the evidence on towns, their functions and their performance

Ian Smith

1. Aim and research question(s)

This chapter will synthesise the evidence on small towns based on the substantive work carried out the TOWN research team and outlined in the preceding chapters of this Scientific Report. The report to date has considered a number of issues. Chapter 2 analysed a population surface dataset based on 1km grid to produce a set of morphological settlement areas classified in relation to total aggregated population and population density. Chapter 5 used the concept of employment and the networks of commuting flows to define employment centres and their networked relationships. Chapter 6 focused on the narratives of development in 30 towns on which the research teams carried out a case study. Chapter 8 outlined the way in which regional change captured at NUTS3 level is statistically related to the ways in which population is grouped into settlements whilst Chapter 9 looked at changes to settlements defined as aggregation of population relate to the characteristics of those clusters. The aim of this chapter is to tease out the ways in which these different evidence streams that relate to different units of analyse complement each other and combine to offer insight into the role and performance of smaller towns.

The chapter brings together the evidence from these different streams in order to respond to the following questions:

- What difference does the method of identification make to the number and character of the towns identified?
- What do the findings tell us about the role and function of towns in Europe?
- What do the findings tell us about the potential for and the barriers to development for towns in Europe?

The chapter will explore the synthesis of the evidence on towns in four sections. The first section summarises the scope and characteristics of analysis in the four evidence streams. The second section considers the ways in which different methods of identification identify similar or dissimilar urban entities that leads us to the need for including both morphological and functional dimensions to identifying small towns. The third section addresses the question on the role and functions of towns whilst the fourth section offers insights into the potentials for and barriers to development for towns in Europe. The chapter only deals with the empirical evidence on the state of and changes in towns in Europe, the issues relating to the impact of and the potential for policy interventions/recommendations are left to Chapter 11.

2. Units of analysis and scope of analysis by evidence stream

This scientific report has offered evidence on towns that comes from five different evidence streams within the project. We have used these five different streams to draw a range of insights as to the health and the state of European small towns in the early 2000s. The conceptualisation of the TOWN project is based on the notion that there are multiple ways of defining a small town: approaches based on the morphology of built up areas; approaches based on identifying the functions of places; and approaches that are based on the formal administrative roles of local government. All these approaches have been included within the TOWN project. However in order to understand the synthesis of our findings, it is necessary to set out how each of the evidence streams has taken a slightly different unit of analysis and has adopted a different methodology in deriving the insights that are offered. In order to create this synthesis of findings it is useful context to outline how each evidence stream conceptualise the object of its research.

Table 1 Scope and units of analysis for the TOWN evidence streams

Stream of evidence	Principal units of analysis	Scope/geographic extent of analysis	Principal type of analysis
Chapter 2: morphological analysis	Aggregations of population defined by population threshold and population density criteria (rasterised population surface)	ESPON area	Geomatic/ Quantitative
Chapter 5: functional analysis	Municipalities as employment centres and their employment micro-regions	10 case study regions	Quantitative
Chapter 6: case study analysis	Towns as localities as defined by policy/economic respondents	31 case study towns in 10 case study regions	Qualitative
Chapter 8: regional analysis	NUTS3 regions	EU27 member-states	Quantitative
Chapter 9: settlement analysis	Aggregations of population defined by population threshold and population density criteria	6 case study countries* plus 4 case study regions	Quantitative

*Notes: * in the case of the United Kingdom, Northern Ireland and Scotland have not been included as 'national' statistics in these cases are produced/published by devolved National Statistics Agencies to England and Wales.*

Table 1 outlines the similarities and differences in approach in relation to: the principal units of analysis (how a town is defined); the geographic scope of its research; and, finally the main type of data analysis performed within each of the evidence streams.

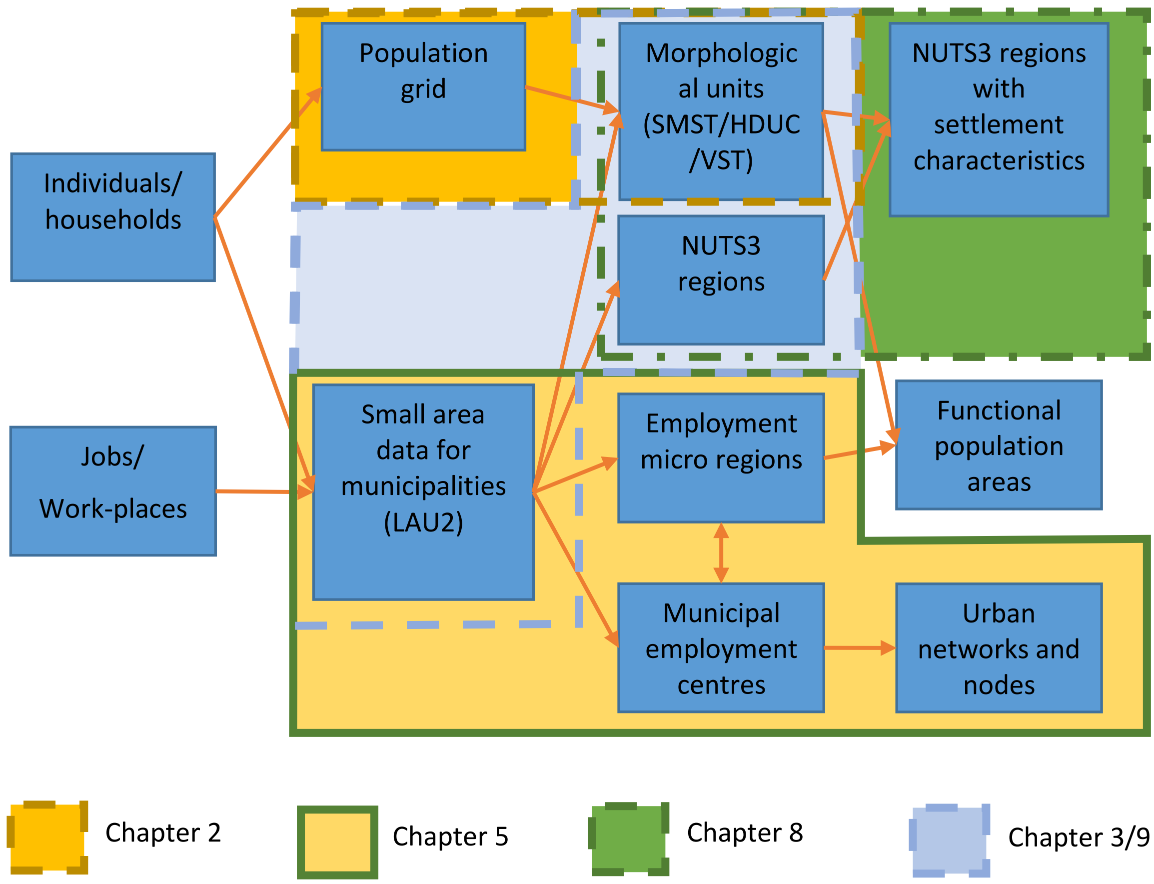
The functional analysis focussed on defining small and medium sized towns areas (generally but not exclusively municipalities or areal units associated with the lowest tier of local government) as employment centres and has then analysed. The functional analysis outlined in Chapter 5 has identified municipalities associated with functionally significant small towns and has analysing commuting flows assigned each centre an employment micro-region characteristic relating to its employment function. Chapter 6 has focused on identifying small towns relative to the units that 'make sense' to the respondents engaged in the case study work and has used mainly forms of qualitative analysis to tell stories about the 31 case study towns.

The regional analysis outlined in Chapter 8 has analysed the degree to which regional development outcomes (population and GDP changes) are statistically related to the aggregate urban settlement structure of NUTS3 regions. Thus, for example the urban structure of a region is represented in terms of the percentage of the regional population who live in either HDUC or SMST morphological clusters (identified in Chapter 2). Thus chapter 8 explores to what degree aggregate urban structure is related to broad regional characteristics. This analysis has been carried out at the level of Europe as a whole.

Finally Chapter 9 works with attribute data assembled at the level of morphological settlements (the unit of analysis). The analysis has been extended beyond the ten case study regions (covering 720 SMSTs) to a wider area covering 2300 SMSTs. This analysis has focused both on comparing statistical differences and on statistical explanations of population and employment change in these SMSTs units.

Figure 1 relates the different geographic units of analysis (for small towns) (see also Figure 14 in Chapter 2). All the secondary data used in this project relates in some way to basic micro-data based either on where people live (or households) or where people work (workplace-based data). These micro-data are conventionally aggregated to areal units (generally local government and then published for those areal units). As outlined in Chapter 2, data on population has been converted to a raster-based population surface (of 1km grids) the grid squares of which have been aggregated together in this project to give us morphological clusters of population (SMSTs, HDUCs and VSTs). These morphological units were then linked to small area data units (see Chapter 3), which have allowed the research team to carry out the analysis of Chapter 9. These grid squares have also been aggregated within NUTS3 territorial units to provide the dataset that underpins the analysis of Chapter 8.

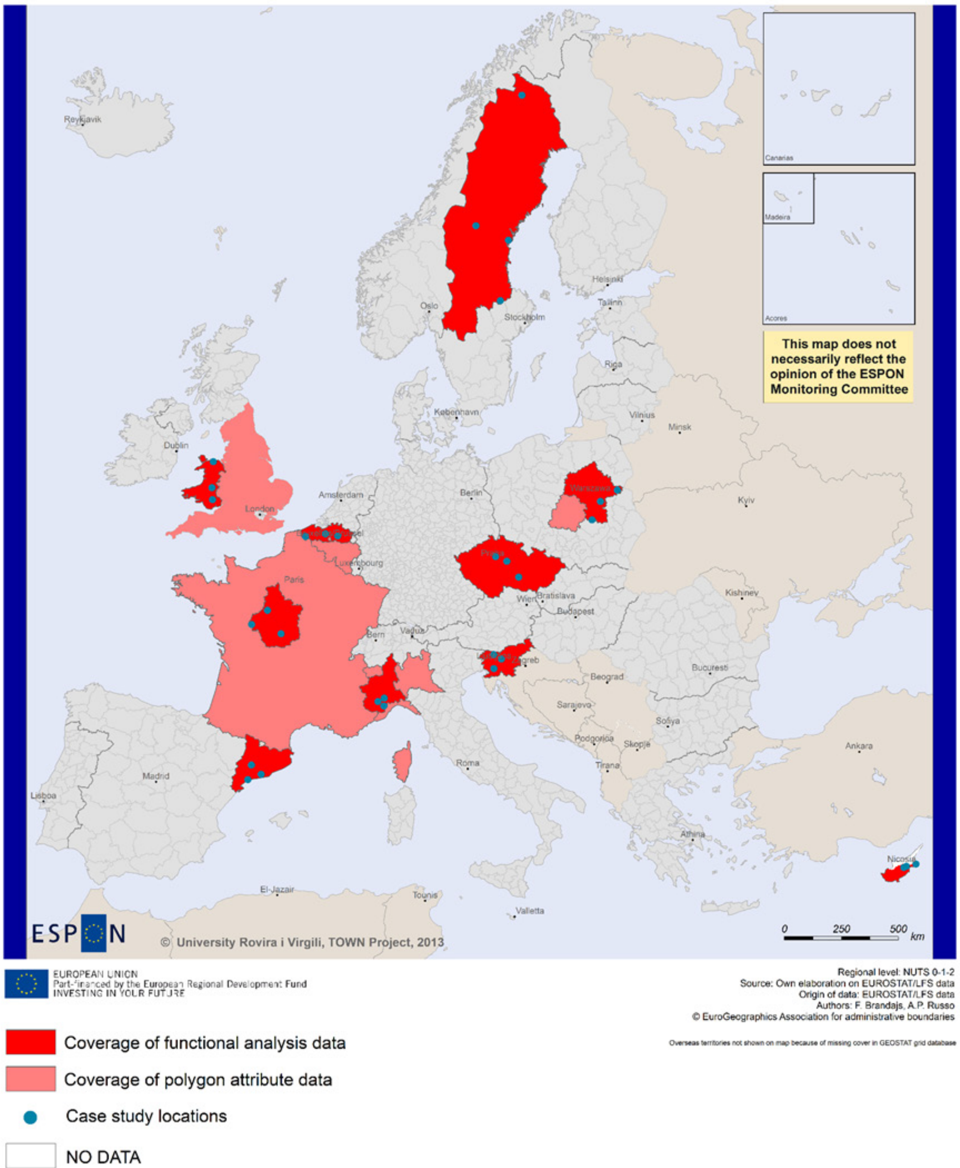
Figure 1: Relating the different units of analysis used in the evidence streams



The functional analysis has been underpinned by a different logic. In the functional analysis, small area interaction data (commuting flows) between small areas and attribute data of the small areas themselves has been used to identify municipal employment centres and employment micro-regions (a form of local labour market area) associated with primary employment centres. The functional analysis is also different from the morphological analysis is that it is primarily based on the geography of employment (where jobs are located) rather than on the geography of where people are living (that underpin the population grid). The analysis of small area employment data has then been used to analyse the position of the municipal employment ('urban') nodes and commuting flows (between nodes), defining therefore whether a given employment centre is an autonomous, agglomerated or networked centre. The employment micro-region data has then been used in combination with the morphological data to outline a series of functional-morphological areal units.

In practice the process of identifying places led to a spatial coverage of evidence indicated in Map 1. This map identifies the extent of the full data set for the quantitative analysis as well as the NUTS2 regional scope for more detailed analysis. It also marks the locations of the 31 case study towns.

Map 1: Spatial coverage of evidence for TOWN project



3. Identifying towns: does the method of identification matter?

The TOWN project has used two basic methods for identifying places that might be labelled as 'towns': the morphological and the functional approaches. Chapter 3 clearly identifies that intersecting the grid-based geographies (the basis of the morphological approach) and the use of small areal units (mostly municipalities and the basic of unit of analysis for the functional analysis) can be problematic. We must expect some degree of calculation error to creep in, in the linkage of these two types of geography.

Both the functional method and the morphological method choose certain places that meet 'town' criteria. Table 2 illustrates the process with the functional method in the case study regions/nations. Thus starting from the total number of areal units, it is possible to identify all areal units (mainly municipalities) that meet a harmonized 'size' criterion of 1000 jobs. Taking figures from Chapter 5, the table then gives the number of employment centres identified by each of the case study teams once they had adapted the size threshold and then applied initial commuting criteria (see Table 5.6 for details). The initial employment centres are further reduced down to the identification of a primary employment centre within an employment micro region (or local labour market). In five case studies regions for which we have data (out of seven), this process labels 40-50% of initial potential centres (areal units with more than 1000 jobs) to be primary employment centres. It is this group of primary centres that are subject to further analysis as to their position within networks of inter-centre commuting flows.

Table 2 Functional analysis and the selection of primary employment centres.

Case study 'region'/nation	Type of areal unit	no. areal units		no. employ-ment centres	no. micro-regions (prim. centres)	% of primary employ-ment centres
		Total	More than 1000 jobs			
Flanders (BE2)	municipalities	306	276	149	128	46.4%
Cyprus (CY0)	municipalities	388	34	19	7	20.5%
Czech Republic (CZ0)	municipalities	6249	493	367	260	52.7%
Catalunya (ES51)	municipalities	946	348	118	66	19.0%
Central Region (FR24)	municipalities	1842	146			
	Urban units	131	95	20	20	21.1%
North West Italy (ITC)	municipalities	2694	838	268	112	13.4%
Mazovia (PL12)	municipalities	313	73	35	29	39.7%
Northern Sweden (SE3)	municipalities	85	84	41	41	48.8%
Slovenia (SI0)	municipalities	210	109	59	50	45.9%
Wales (UKL)	municipalities	22	22			
	Wards	868	306		75	24.5%

Table 3 compares how the functional analysis and the morphological analysis have identified places as potential 'towns' and cities. For each of the case study regions/nations, Table 3 identifies the number of HDUCs and SMSTs identified by the morphological analysis (all morphological settlements with an estimated population greater than 5000 people). The third columns reiterates the data from the functional analysis in terms of how many employment centres were identified in each of the case study areas (both in terms of total number of employment centres using region-specific criteria and in terms of the number of primary employment centres for each micro-region). Generally each approach in each case study region identifies a similar number of potential towns and cities.

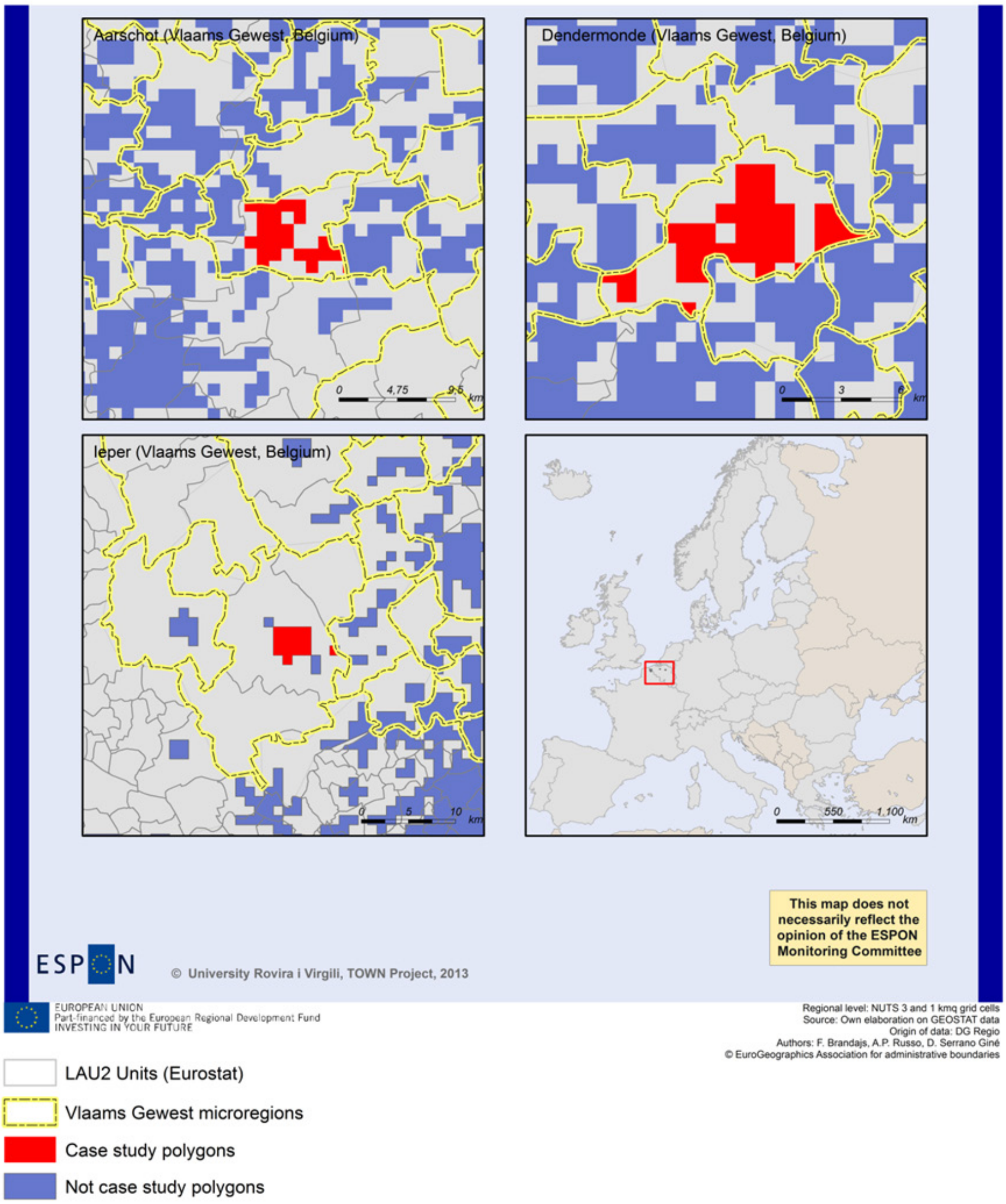
Table 3 Identification of towns by morphological and functional approaches

Case study 'region'/nation	Number of morpholog-ical units identified	Number of functional population areas	No. of employment centres		Micro-regions with no morphological units	
			All	Prim'y	no	%
Flanders (BE2)	133	279	149	128	6	4.7%
Cyprus (CY0)	.	.	19	7	0	0.0%
Czech Republic (CZ0)	244	264	367	260	59	22.7%
Catalunya (ES51)	79	98	118	66	10	15.2%
Central Region (FR24)	43	70	20	20	1	5.0%
North West Italy (ITC)	269	308	268	112	21	18.8%
Mazovia (PL12)	47	50	35	29		
Northern Sweden (SE3)	44	44	41	41	19	46.3%
Slovenia (SI0)	48	51	59	50	17	34.0%
Wales (UKL)	64	112	75	75	14	18.7%

However Table 3 also outlines the problematic intersection of these two methods. The final columns give the number of micro-regions identified in relation to the geography of employment that have neither a SMST nor a HDUC polygon identified within them. These are areas that seem to be important enough to be locations for at least 1000 jobs and for which there is some evidence of commuting between municipalities but for which there does not appear to be a SMST (of 5000 inhabitants). In the regions where we have been able to carry out this analysis, up to 50% of micro-regions are without at least a SMST. The position is particularly marked in Northern Sweden where the population is sparse and where there is a great reliance on mining (leaving potential clusters of jobs without clusters of permanent settlement). However in four other regions somewhere between 19 and 35% of micro-regions are not associated with either a SMST or a HDUC.

We have also used the geography of micro-regions to subdivide the morphological units. The second column in Table 3 indicates the number of functional population areas (see Figure 1) that are obtained by intersecting the geography of morphological units with that of the micro-regions. Table 4 in Chapter 3 demonstrated that at least 50% of SMSTs are associated with a single micro-region although it was possible for SMSTs to be associated with as many as three employment micro regions. This is much more prevalent in the sprawling HDUCs. It is thus not a surprise that the micro-regions generate 'more' units when they intersect with the morphological units. In most of the case study regions/nations, this process plausibly increases the number of urban units. However it is a process that works least well in the case of Belgium where we have demonstrated that the 1km 'grain' of the population surface grid is most problematic given both the 'grain' of both the settlement pattern and the municipal areal units.

Figure 2: Case study towns in Flanders



The problematic aspect of Flanders and the capacity of the spatial units we have to pick out plausible places is illustrated in the maps of the case study towns (see Figure 2). The cases of Aarschot and Dendermonde illustrate that the morphological areas within these municipal areas also include parts of other settlements encroaching from the surrounding area. This encroachment makes it extremely problematic to estimate the characteristics of the central built up area on the basis of areal data for the municipality. In both cases Aarschot and Dendermonde) these towns are not identified as separate spatial units by the morphological analysis but instead are associated with wider sprawling HDUCs of Antwerp and Brussels respectively. Where the settlement structure is less congested (Iepers in Figure 2), the issue of estimating town characteristics from municipal data is simpler.

Thus both methods are problematic. The morphological approach identifies a wider range of places but the 1km grain lacks resolution in densely populated regions (South Wales and Flanders for example) to separate out places that might be regarded on the ground as distinct. The current criteria for SMSTs fails to identify potentially important employment centres in the more rural and peripheral areas of our case study regions/nations albeit that case study teams were able to manually identify VSTs as the primary 'towns' of the micro-regions without SMSTs. By contrast the functional approach was able to identify very small but important towns and was able to help the research team sensibly 'break down' larger morphological units into plausible urban units. However the functional approach as deployed in TOWN concentrated analytical efforts only into primary employment centres leaving out a range of towns whose functional role and identity may be different.

The morphological approach did allow the research team to create aggregate indicators for how the population within NUTS regions are split between different types of morphological settlements. These descriptive findings were outlined in Chapter 8. The overview of the pattern of morphological settlement allows us to identify of densely packed SMSTs that runs from the south of England through the Benelux countries and western Germany down to the north of Italy. Other places where there appears to be a concentration of SMSTs include the industrial belt of south-east Germany and Poland and the western Mediterranean arc (Spain to Italy).

Overall it is possible to identify three types of 'national urban system' across Europe:

- Countries where there is a marked proportion of population in HDUCs such as Belgium, Switzerland, Greece, the Netherlands, Spain and the United Kingdom as well as the smaller island states such as Malta and Cyprus;
- Countries where there is a balance of population between HDUCs and SMSTs that include Austria, Bulgaria, the Czech Republic, Denmark, Estonia, Latvia, Poland, Portugal, Romania, Sweden and Slovenia; and, finally
- Countries that have a marked 'over-'representation of the population living in SMSTs such as France, Ireland, Lithuania, Norway and Slovakia.

Thus the method adopted for the identification of towns does matter in that morphological analysis may fail to identify towns that 'fight above their weight' in rural/sparsely populated areas. Functional analysis when focused only on one urban function may fail to identify a wider range of places that their residents would identify as 'towns' but that play different functions to a resident/wider population. Thus the TOWN project would argue that these approaches need to be combined. The process of producing a synthetic geography is problematic in terms of automation especially in places such as Flanders. However problematic, the morphological approach does allow the relatively simple construction of indicators of urbanisation at regional level albeit that these need to be read with caution in the case of the more sparsely populated regions of Europe.

4. What do the findings tell us about the function and role of European towns?

The issue of exploring the function and role of towns was carried out in a number of the evidence streams. We have seen already in section 3 from the functional analysis that the use of functional criteria (in our case commuting flows and a workplace-based employment threshold) reduces the number of settlements that can be considered as ‘functioning employment centres’ (see Table 2) within their regional/national contexts. The functional analysis has also revealed that settlements not identified using only morphological criteria may also be playing very significant functional roles in the more sparsely populated areas of our case study regions/nations.

The work of Chapter 9 explored the degree to which SMSTs are statistically different from HDUCs as a proxy for comparing small towns and larger cities. Reflecting the different national contexts for SMSTs across the case study areas (regions/nations), this analysis of differences was carried out for each case study area. Relating these differences to the five main domains set out in Chapter 9 (economic competitiveness, economic innovation, accessibility, equity and culture and community), the data suggested (for SMSTs as a group of places):

- For Domain 1 (economic competitiveness)
    - SMSTs have a greater proportion of industrial employment and a smaller proportion of service sector employment than their comparator HDUCs albeit that generally the proportion of industrial employment is less than the proportion of employment in the service sectors in absolute terms;
    - SMSTs have a significantly smaller proportion of jobs (on average) in private marketed services and in public services in SMSTs in comparison to HDUCs.
    - SMSTs have higher average economic activity rates;
    - SMSTs have a higher proportion of pensionable adults (unless in NW Italy) and more children (unless in England and Wales);
- For Domain 2 (economic innovation)
    - SMSTs have a lower proportion of working age adults with a degree-level qualification (unless in England and Wales);
    - In France, Central Poland and England and Wales, economic activity rates are statistically significantly higher in SMSTs than in HDUCs. In Catalunya and England and Wales, self-employment rates within SMSTs are significantly higher than in the equivalent HDUCs.
- For Domain 3 (accessibility to services and employment)
    - Employment in the retail sector in SMSTs is significantly lower than HDUCs in Italy, Northern Sweden and England and Wales.
    - SMSTs have a lower proportion of who live and work in them than the HDUCs that are located in the same regions and countries (differences in relation to implied accessibility of employment).
    - Overall this would indicate that workers in SMSTs may need to commute further afield (where there is an opportunity to do so) for work. We might expect to see variations in these measures in relation to the functional classification of settlements.

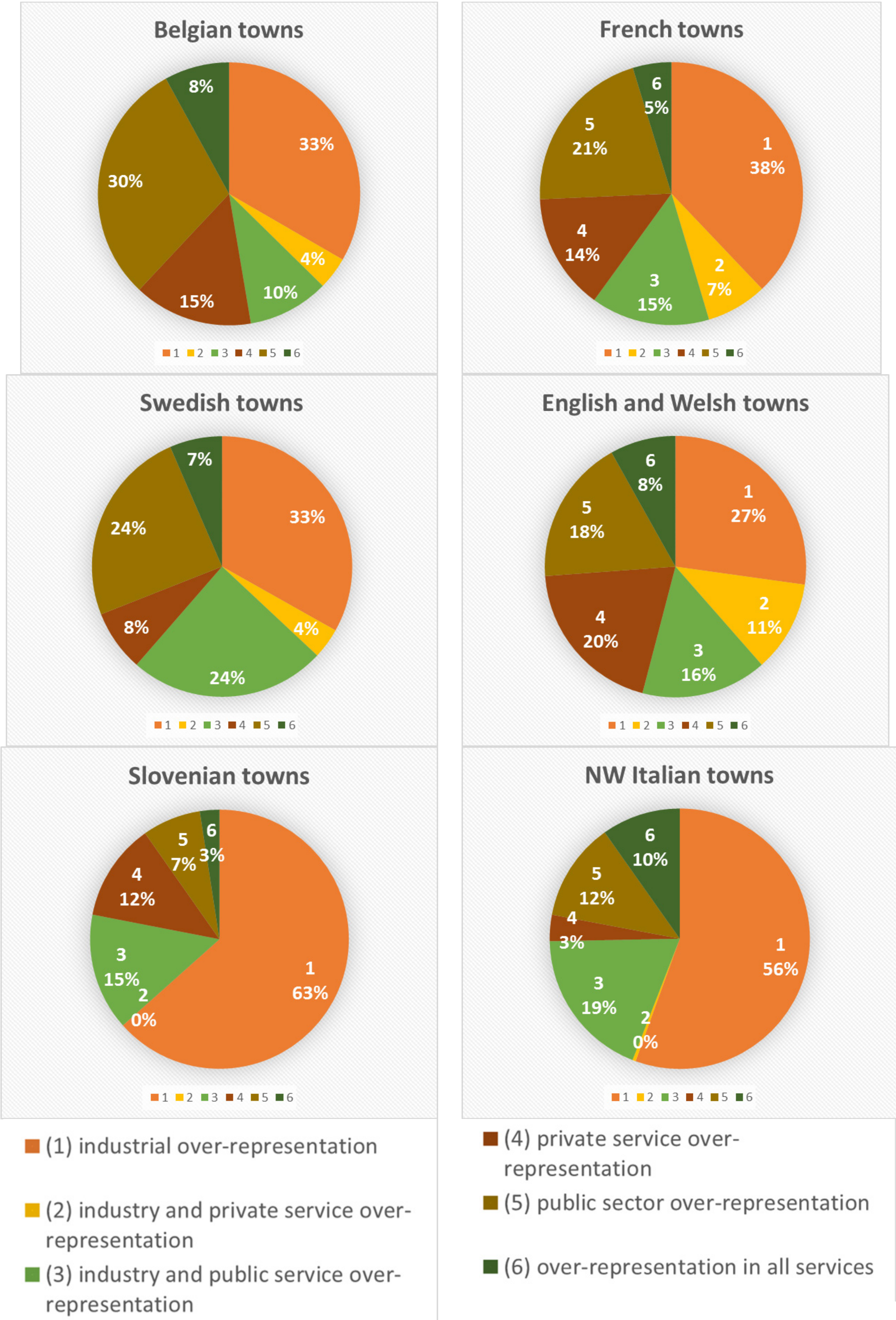
- Distance from HDUC impacts negatively on both employment and population growth in SMSTs whilst location on the coast is a positive factor for population growth in SMSTs.

- For Domain 4 (equity)
    - Unemployment rates in SMSTs tend to be lower than for HDUCs in four of our countries (Czech Republic, France, North West Italy and England and Wales) which implies (in combination with high economic activity rates) that small towns residents in many parts of our studied area were able to find work successfully (in our base year) although this work may not necessarily be within the municipality they live in (or unemployed persons move to bigger urban areas)
- Domain 5 (culture and community)
    - SMSTs can show a statistically significant difference in the proportion of school age children (higher with the exception of England and Wales)
    - Concerning housing stock accounted for by secondary or holiday homes (Czech Republic, France, Slovenia and England and Wales) the SMST average proportion of second homes is higher than that for the HDUCs. This has the perverse effect of suggesting that SMSTs with lower occupancy rates (the proportion of dwellings permanently occupied) performed better than SMSTs with higher occupancy rates.

Thus SMSTs are very diverse as a group, there are statistically significant differences between SMSTs in different countries, but SMSTs also differ significantly as a group from HDUCs in the same regions/nations. It is important to recall that these insights are about the average characteristics of a group of places. We always have to remember that there is a great diversity of SMSTs that vary both within a national urban system and well as varying greatly between national urban systems. Place-based approaches to individual SMSTs would always require profiling the specific place (or groups of places) before outlining a set of policy interventions (see Chapter 11).

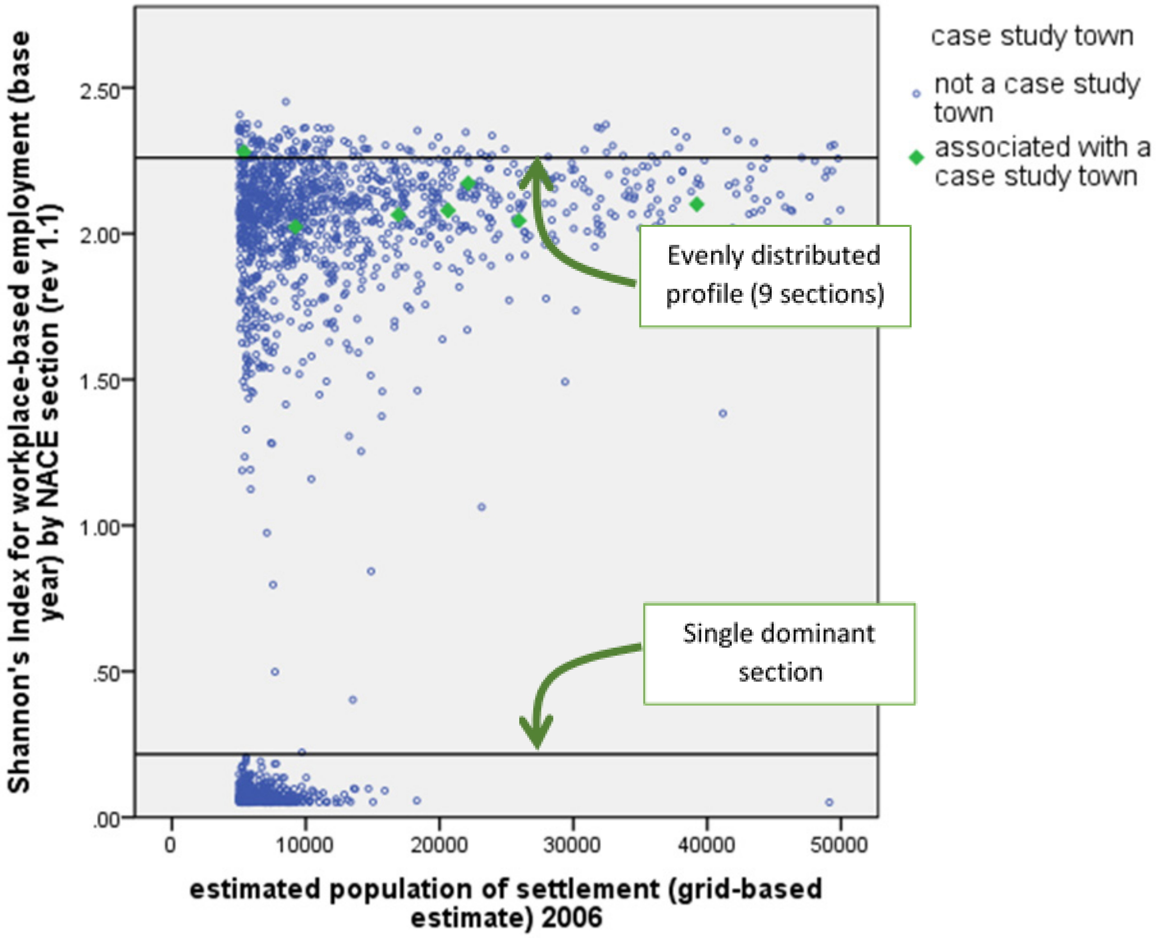
The diversity of potential outcomes is revealed in the use of simple typologies bringing together different characteristics. For example the pie charts that classify towns in relation to sectoral definitions of economic activity reveal the issue of diverse economic profiles (not all towns are dominated by industrial employment – see also section 5.3). Figure 3 outlines pie charts of SMSTs classified their relatively dominant economic sector(s). The classification of economic activity profile is based on aggregating the standard NACE classification by section into three aggregate classes (industrial, private sector services, public sector services) and then classifying SMSTs on the basis of having below or above the median proportion (relative to the database sample of SMSTs) of employment in each of these aggregate sectors.

Figure 3: Relative location quotient classification (relative to other settlements in region/nation in base year) of employment classification for towns (fewer than 50000 population)



Size matters for SMSTs when it comes to economic diversity. Figure 4 plots the Shannon index for employment by broad NACE category against population size. The NACE (revision 1.1) classification classifies employment into 17 standard sections (such as agriculture, manufacturing or 'other community, social and personal service activities) for the case study regions/nations where we had dis-aggregated employment data for a base year. We have used the number of jobs by standard section to calculate a Shannon Index that becomes an effective measure of how distributed employment is across these 15 categories. Generally the larger the Shannon Index the more evenly distributed employment is across the 15 sections whereas a lower Shannon Index suggests a more specialised employment profile. Thus we can see from Figure 4 that as towns get larger, their employment profiles tend to become more diverse relative to the standard NACE sections. Smaller towns tend to have (on average) more specialised employment profiles.

Figure 4: Shannon Index of employment (workplace-based) profile for towns in base year.



5. What do the findings tell us about the potentials for and the barriers against development in European towns?

Within the evidence-based chapters it is possible to discern three explanatory frameworks for predicting the development path of European towns. These explanatory frameworks are:

- Town performance is related to the location of towns within commuting networks;
- Town performance is related to the performance of the region in which the town is located; and, finally
- Town performance is related to the mix of economic activities (the mix of sectors) located within the town.

Each of these associations will be explored in turn below.

5.1 Evidence associating performance and position in the urban system

The relationship between development outcome in small towns and functional position was explored in two of the evidence streams: in the functional analysis (chapter 5), the analysis focused on primary municipal employment centres (effectively town centres) and sought to typologies these centres in terms of their employment size and position in a network of commuting flows with other employment centres; secondly the regression analysis (chapter 9) focussed on morphological SMSTs and used proxy indicators to model aspects of metropolitan proximity and autonomy of employment function.

The functional analysis of municipal employment centres (Chapter 5) suggests that the functional role of an employment centre within its wider network of commuting flows (as autonomous, agglomerated or networked) makes no significant difference in relation to changes in population and jobs for small towns. This analysis focuses on around 460 municipal employment centres in the Czech Republic, Slovenia, the Centre region of France and Flanders. However this analysis did suggest that size mattered in that the larger employment centres (mostly cities with population over 50,000) out of these 460 employment centres when it came to employment growth. For the Czech Republic, Slovenia and the Centre regions larger employment centres grew jobs faster than smaller centres. Finally, the functional analysis pointed to the high variability among small and medium sized employment centres with many cases performing both worse and much better than large employment centres. This shows that small and medium sized employment centres are both more vulnerable to change as well as can more dynamically reflect utilisation of development and growth opportunities.

The regression analysis of Chapter 9 was unable to directly use the functional analysis classifications as a dummy variable. The regression analysis thus relied on proxy variables to take into account the impact of the functional role of the morphological settlement. In particular the regression analysis used the ratio of workplace-based jobs to the number of working age adults who were resident and in employment as a measure of employment autonomy. This autonomy variable should equal one when there is no net inward commuting (although there may be a lot of actual commuting). The second proxy variable was the proportion of the regional population (for the NUTS2 region in which the SMST was located) that lived in a HDUC. Clearly the assumption for this variable was that the higher the proportion the closer the SMST was to a metropolitan area.

Using these proxy variables the regression analysis suggested (for 2100 SMSTs on population change and nearly 1800 SMSTs for job change) that employment autonomy was a negative influence on small town job growth and population growth controlling for socio-economic conditions in the SMST. The proximity of a HDUC in the region, was also a negative influence on job growth albeit that the effect was neutral on population growth in SMSTs.

In relation to 'size' of settlement the streams of evidence have contrasting conclusions. The functional analysis of municipal employment centres suggests that size matters (see above) within the four case study regions/nations where analysis was carried out. The regression analysis of aggregated population areas (for a larger set of towns) however suggests that size is negatively related to growth once one has controlled for labour market and social characteristics of the town across a wider sample of smaller towns only (no larger cities were included in this analysis). This can be explained by reference to the different sets of towns considered in these two exercises. Selecting only the 575 morphological settlements for the same set of places as the functional analysis (Czech Republic, Slovenia, Centre Region in France and Flanders) there is a marked difference in employment growth between HDUCs (0.47% per annum) and SMSTs (0.00% per annum) whereas there was no noticeable difference in demographic change. Thus the differences in findings can be accounted for by the regions selected for analysis.

Comparing the performance of SMST settlements and HDUC settlements at the national/regional level for the five countries and one region for which we have data, suggests that there is not a consistent pattern country by country. In England and Wales SMSTs tend to have an average employment growth rate higher than that for HDUCs for the period 2003-10 whilst in the Czech Republic employment growth rates for SMSTs are lower than for the HDUCs (for 2001-11). In the other countries there is not clear or statistically significant difference in the employment growth rates.

In terms of population growth, SMSTs in Belgium, France and North West Italy are growing on average faster than their equivalent HDUCs. In the cases of France and Belgium the driving force for population growth is net migration whilst in the case of England and Wales net migration into SMSTs is balancing the effects of demographic decline through natural decline. Within the East-Central European case regions/nations (Mazovia, Czech Republic and Slovenia) the demographic dynamic of SMSTs is not distinguishable from that of their equivalent HDUCs.

Case study evidence (chapter 6) has related performance in terms of job and population growth to the position of the case study towns in their respective urban systems. However it has to be remembered that the 31 case study towns are not (and were not intended to be) a representative sample of smaller towns. But within the purposive sample of towns we find that agglomerated towns were 1.6 times more likely to be 'dynamic' towns than other types of town whilst networked towns in the sample were 1.5 times more likely to be dynamic. By contrast autonomous towns were 6 times more likely not to be dynamic (in comparison to the other types of towns from the functional form criterion).

So in summary position within the urban system is not a clear predictor of growth or decline in small towns based on the evidence we have gathered. An autonomous employment function, being located close to a metropolitan area (potentially agglomerated) and large size may all have negative influences on growth rates for small towns. However (some) small towns do appear to be doing relatively well in relation to employment growth and in their ability to attract net migration. This may point to a greater capacity to mobilise the assets of a town as a distinguishing feature of towns that have done well. We will return to the issues of governance in Chapter 11.

5.2 Evidence associating performance and regional characteristics

The issue of linking the 'performance' of towns with their regional context has been carried out in two ways:

- Chapter 9 deployed a multi-level regression analysis to consider the association between changes at the level of the SMST and changes at NUTS2 level responding to the question of whether regional performance helps predict town level changes in population and the number of jobs;
- Chapter 8 posed the question in a different way in that it explored whether the urban structure of a region (using aggregate morphological structure indicators) is a useful predictor of regional performance.

The regression analysis outlined in Chapter 9 specifically uses a multi-level design (at NUTS2 level and settlement level) allowing for variation in the constant factor (a fixed effects model) to better model the influence of regional context on SMST change. This analysis indicated that the use of NUTS2 level indicators allow the regression model to better predict changes in population and jobs knowing the predictor variables in the model. Overall these regression models suggested that patterns of regional change (at NUTS2 level) are very influential predictors of changes in SMSTs both statistically and economically. In demographic change, a 1% change in regional population leads to a 0.8% change in town level population (all other factors remaining constant). The regional effect of job change (at NUTS2 level) was equally marked in that a 1% change in regional employment led to an average change of 0.5% in settlement level employment. Within the regression models, these were both the most significant numerical influences on settlement level change (within the purposive sample of SMSTs in the database).

Chapter 8 took a different perspective on the regional issue. Chapter 8 used aggregate urbanisation indicators based on the proportion of population living in SMSTs and HDUCs to see whether there was a statistical relationship between the type of dominant urbanisation and regional performance. This was an analysis carried out at the level of Europe as a whole.

The descriptive analysis suggests that regions dominated by SMST-based population performed better to on the North West Fringe of Europe (Atlantic coasts of France, the UK, Ireland and Belgium), a Mediterranean arc (Southern France, the Alpine France, Central Italy, Alpine central Europe) whereas regions dominated by SMSTs in MittelEuropa and Black Sea countries have grown least. This is not a radically different story to the general pattern of demographic growth over this period.

5.3 Evidence associating performance and economic mix

Evidence on the relationship between the mix of economic activities in a town and the 'performance' of the town come from two evidence streams:

- Chapter 9 uses indicators of economic activity by sector in the regression analysis looking at job growth using the standard NACE section classifications; whilst
- The case study analysis (from Chapter 6) deploys qualitative analysis to look at the interweaving of the mix of economic activity and economic development for the 31 case study towns using a developing categorisation of economic activity (residential, productive and creative).

Multi-level analysis suggests that settlements with a larger proportion of industrial employment in the base year generated a lower growth rate in jobs than towns with a greater dependence upon industrial employment taking the socio-economic profile of the SMST into consideration. Service sector jobs (aggregated either as public sector or as private marketed) did not seem to have an influence on employment growth in SMSTs (according to the regression model). Thus the regression model offers no insight into the 'ideal mix' of economic activity that is associated with positive growth. It is notable however that the SMSTs in the database demonstrate very different mixes of employment as evidenced in Figure 5 in Chapter 9 where SMSTs have been classified according to their mix of industrial and service sector employment.

We have already demonstrated in Figure 4 that employment diversity (by NACE section) tends to decline with settlement size. We have also seen that SMSTs tend to have a greater proportion of employment in industrial activities than HDUCs. However it was the case study analysis that allowed the research team to explore some of the complexities of how the economies of small towns have been changing through the 2000s. Clearly it is problematic to generalise from a group of 31 case study towns but the issues raised in the case studies are indicative of the context in which small towns find themselves.

The case study team conceptualised their aggregate classifications of employment differently. The concepts the teams were exploring related to three aggregate sectors: residential employment (mainly public sector, proximity retail and personal services), productive employment (roughly equivalent to industrial employment) and creative and knowledge-related employment (professional services and the creative economy).

Table 4 Change in profiles in case studies over a 10-year period (Chapter 6).

Trajectory of employment change	Changes in dominant employment sector		Case study towns
	Base year	**End year**	
Maintaining profile	residential	residential	Östersund, Ieper, Dendermonde, Cambrils, Ceva, Paralimni
	productive	productive	Vendôme, Issoudun, Domžale, Postojna, Radovljica, Vilafranca, Alba, Dali, Athienou
Switching profiles	residential	more productive	Kiruna
	residential	more creative	*Cambrils*
	productive	more residential	Chinon, Tarrega, Fossano, Aarschot
	productive	more creative	*Vilafranca, Athineou*
Focussing profiles	mixed profile	more productive and creative	Timra
	mixed profile	more residential and creative	Garwolin

Notes:
1. Available data on the sectoral structure of jobs in base and end years allow for the assessment of profile evolution in only 22 cases of 31.
2. Some towns may appear in two categories of change in profile as their evolution can entail evolution toward more than one direction (e.g. from productive to more residential and more creative, or from residential to more productive and more creative, etc.). Such towns appear in italics in the table.

The case study evidence suggests that the profile of employment across the 31 different case study towns had changed over the past 10 years. Table 4 (taken from Table 2 in Chapter 6) outlines the trajectories in the cases of 22 of these case study towns. The table groups the economic development trajectories into three classes: towns where the employment profile appears to have remained the same (15 cases); towns where there is some evidence of a changing employment profile (8 incidences) and towns where there is evidence of a greater focus or specialisation of employment (2 incidences). Under this scheme case study towns can appear under more than one heading. This illustrates the complexities of what is going on in these towns.

The case study evidence suggests that those towns that diversified their sectoral mix of employment did better through the 2000s than those with a high level of dependence on any single 'sector' (albeit that we have used highly aggregated sectors in this analysis). In terms of the case study towns it was the agglomerated and networked towns that were more dynamic that the autonomous towns. This supports the earlier observation of the regression analysis that suggested that the more autonomous a town (in terms of its net employment function), the less well the towns did through the 2000s.

In practice the narratives of development in the case study towns illustrate the many ways in which a town develops. However it is important to consider the complicated relationship between town growth and the tourist industry. The regression analysis of SMSTs suggested that SMSTs with a higher proportion of second homes grew faster in terms of their population than SMSTs with a smaller proportion. There was also a strong correlation with a mild climate. Thus SMSTs that can attract second home-owners have been able to attract people (and retain them) but this is in part down to attributes (such as the climate) that cannot be manipulated. In the case studies it is also clear that the most dynamic towns are also ones that are aesthetically attractive. The four iconic dynamic towns (Alba, Tarrega, Radovljica and Colwyn Bay) have all managed to combine development with high amenity value.

Reviewing the evidence of dynamism against employment profile, it is possible to consider the general pattern of influence in the database of SMSTs (from Chapter 9). Table 5 gives the average rate of annualised employment growth for each 'type' of economic activity profile for the database SMSTs (see also pie charts in Figure 3). This clearly suggests that employment growth rates (workplace-based estimates) were higher for SMSTs that were less dependent on industrial employment (manufacturing and energy/resource processing correlating to the 'productive' sector of Table 4). SMSTs that had a more prominent service sector at the beginning of our period tended to generate higher growth rates. SMSTs that had a profile based on a combination of industrial and private sector services performed well with high employment rates and low unemployment rates in the base year of observation. This suggests that certain combinations of industrial and private sector service employment (a wider definition of 'productive' sector) might be associated with strong economic performance.

Chapter 9 considered the characteristics of SMSTs that are most likely to have prominent concentrations of employment in arts and entertainment-based activities. This suggested that towns on the coastal with a greater proportion of people over 65 years and with a greater proportion of working age adults with higher qualifications tended to have more arts-based employment in the end year of our analysis. Thus it is clear from the quantitative work that arts-based employment is likely to be associated with places with higher incomes (indicated by qualifications) and an older population. It is not clear from the regression analyses however whether the arts-based employment is associated with development-related outcomes in these towns. It is equally plausible from the regression analysis that arts-based employment follows the movement of wealthier households to towns.

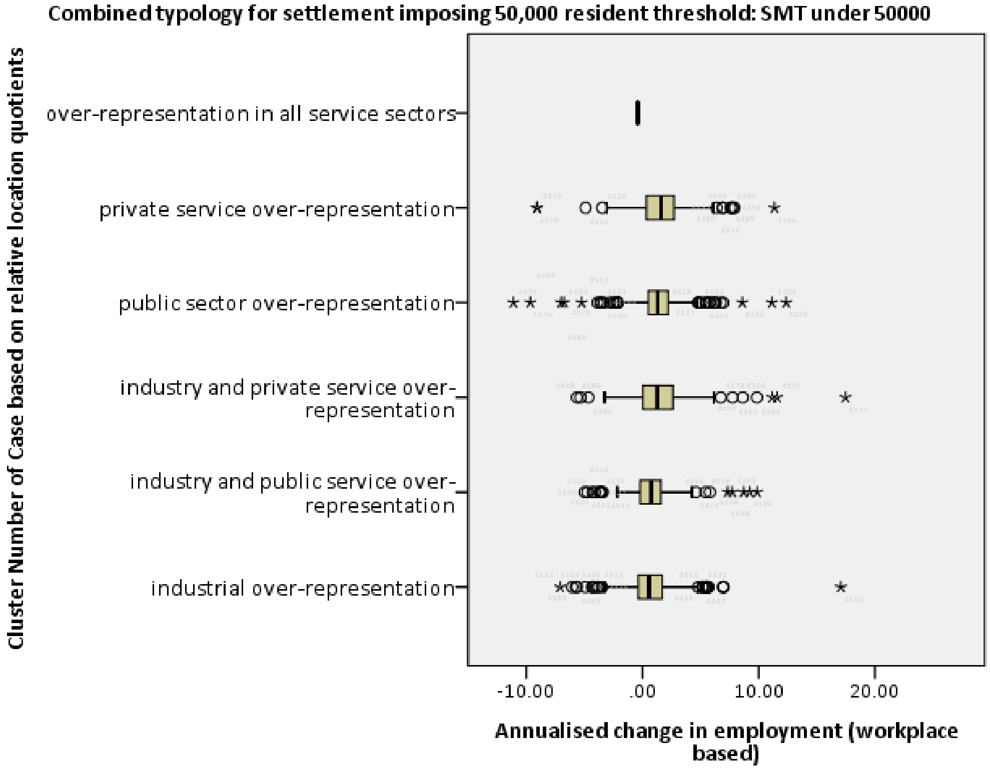
Within Table 5 it is the group of SMSTs dominated by public sector services (the residential economy for the most part) that are interesting. This group of SMSTs performed strongly in terms of job growth but were associated with relatively low employment and high unemployment rates. However SMSTs that combined industrial and public sector employment experienced smaller employment growth rates and more problematic labour market conditions in the base year. It is possible to speculate that industrial (productive) employment has been highly problematic for SMSTs but that public sector employment outside of industrial areas has been able to create some form of growth for SMSTs. Yet SMSTs with a strong association with private sector services (many of which are associated with the 'creative' sector of Table 4) are the SMSTs that combined strong growth with benign starting conditions (high employment and low unemployment rates).

Table 5 **Economic change for observation period and economic profile in base year**

Economic activity profile (by dominant aggregate sector) in base year by location quotient relative to NUTS2 area	no. SMSTs	Mean annualised employ-ment growth (%)	Mean employ-ment rate for 15-64 year olds in base year	Mean proportion of 15-64 year olds in unemploy-ment in base year
1. industrial over-representation	592	0.72	60.61	5.76
2. industry and private service over-representation	137	1.57	59.44	4.81
3. industry and public service over-representation	267	0.82	57.24	7.21
4. public sector over-representation	340	1.36	56.63	6.65
5. private service over-representation	263	1.56	56.46	5.52
6. over-representation in all services	107	1.74	54.23	5.32
total	1782	1.18	58.22	6.04

We always need to refer back to the underlying diversity of the SMST experience in Europe. Figure 5 sets out a box-plot of annualised employment growth for each of the economic activity profiles given in Table 5. Table 5 is concerned with the 'central tendency' of groups of SMSTs. Figure 5 plots out the diversity of performance. There are statistically significant differences between the group performance by economic activity profile but these differences are numerically small (under 0.5% per annum) and secondly there is still wide variation between individual SMSTs in the same category. However even taking into consideration this diversity it is possible to see that it was much more likely for SMSTs dominated by combinations of service sector employment to have performed more strongly than SMSTs associated with industrial employment over the observation period.

Figure 5: Employment change and employment profile box plot



6. Concluding thoughts

So the findings of the project offer us a range of insights into the operationalization of what constitutes a small town as well as in relation to the state of health of European towns in the 2000s. The method by which to identify them does matter. Morphological and functional analyses identify a similar core of towns but they also identify a marginal set of different places. The key methodological insight would be to combine morphological and functional methods for identifying plausible places (as towns).

In terms of offering insight into the role and function of towns, the key message is that towns are different from larger cities in terms of their labour markets, profiles of economic activity and demographic mix. However they are not so radically different that all towns will be different from all cities. It is important to note that there are important differences between national urban systems. Simple contextual variables such as being autonomous, agglomerated or networked are not sufficient to distinguish better or worse performance in small towns albeit that in individual cases, there are plausible arguments why specific towns might be able to benefit from their particular location. This implies that there may be other mobilising variables that are not observed in our regression model that might be important for development in towns.

In terms of general barriers and potentials, it is clear from the case studies that some towns can flourish and from the wider statistical analysis that there is a very wide diversity of outcomes for small towns in the 2000s. The regional context for towns appears to be the most important influence albeit that having a balance of families and residents in employment also matter in terms of making a marginal difference to the position of a small town. In the next chapter we will consider the role of policy and governance in framing the development stories of small towns.

Chapter 11 – Small Towns in Europe: results, trends and options for policy development

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1. Introduction

This final chapter re-examines the questions contained in the project's terms of reference in order to assess our achievements and reflect on the implications of the research. The scientific report has consistently sought to address these research questions by combining and refining a set of methodological tools which allowed us to analyse the current and prospective role of SMSTs in their territorial and functional context. The following summarises the outcomes of the different streams of analysis to build coherent narratives, whilst simultaneously indicating potential contradictions, before finally drawing out a series of policy messages extracted from our research.

First of all we will remind the reader that the project specifications asked for supporting knowledge and evidence for the following three policy questions:

- "What kind of roles and functions do small and medium sized towns perform in the European territorial structure, e.g. as providers of employment, growth and services of general interest, that contribute to the Europe 2020 Strategy for smart, sustainable and inclusive growth?
- What are the potentials and barriers for development of small and medium sized towns in different territorial contexts, and how can policy at different levels unleash the potentials and diminish the barriers in ways that strengthen their functional character?
- What types of governance and cooperation arrangements exist at various levels aiming to support the development of small and medium-sized towns and their territorial context, and how can policy further support these types of arrangements in order to strengthen their contribution to a more balanced territorial development of the European regions?"

(ESPON, 2011: 6)

Based on these questions above and the outcomes of our research streams, this chapter is organised according to four subsequent sections. In section 2, we examine the spatial distribution of SMSTs across the ESPON space. We demonstrate the complexity of towns and the fact that different scales of analysis produce different insights. While 2.1 relies more on the descriptive findings of morphological interpretation (Chapter 2) and correlation with changes in population and GDP at NUTS3 (Chapter 8), section 2.2 provides evidence on socio-economic characteristics at the scale of towns, synthesising the findings from Chapters 6 and 9.

Section 3 reflects on the functional role of towns and the need to understand gravitational areas (functional micro-regionalism) and functional relationships with other settlements within regions; this is structured by the three types developed by the ESPON SMESTO project: (i) autonomous (isolated, self-standing) towns, usually found in peripheral rural regions; (ii) agglomerated towns that are integral parts of poly-nucleated metropolitan areas and conurbations dominated by large cities/major metropolises; and (iii) polycentric networks of towns (ÖIR et al., 2006).

Section 4 explores the socio-economic characteristics of towns and their potentials for local development. It constructs hypothesis and analyses factors influencing change. Section 4.1. combines the results of the regression analysis and qualitative insights from the 31 case studies, whilst accepting that the latter is somewhat more limited in terms of general applicability than the former. Following on from this section 4.2 develops policy recommendations in the economic domain, drawing on our 31 case studies and the results of the wider project.

Finally, section 5 contains the policy recommendations in relation to the relevant potential stakeholders at different scales from the European to the local. This will include consideration of the influence that institutional arrangements have on the capacity of the relevant organisations, at different scales, to bring about change *vis-à-vis* SMSTs.

2. SMST in the EU in the context of multiscalar complexity

2.1. Regional characterisation and socio-economic changes

In the TOWN project one of the key policy questions concerns the variety of roles and functions performed by SMSTs in the European territorial structure in relation to achieving the aims of Europe 2020 and its strategy for smart, sustainable and inclusive growth. This was initially addressed by examining a set of analytical issues:

- How are NUTS3 regions across the European continent characterized according to the dominating type of population settlements?
- What are the main territorial trends related to regions characterised by SMST as prevailing settlements?

We provide answers to these questions in the two subsequent subsections.

2.1.1. NUTS3 region characterization of urban settlement structures across Europe

In Chapter 2 (see also Chapter 8) we carried out a morphological analysis of urban settlements based on the methodology developed by DG Regio – OECD in the document 'The New Degree of Urbanisation'[13]. Using this methodology we derived the subsequent NUTS3-based representation that distinguished three main types of national urban settlement structures:

- Countries with a prevalence of urbanised population, clustered in high-density urban centres, as Belgium, Switzerland, Greece, the Netherlands, Spain, the UK, as well as smaller island states as Malta and Cyprus;

[13] http://ec.europa.eu/eurostat/ramon/miscellaneous/index.cfm?TargetUrl=DSP_DEGURBA

- Countries with a more balanced repartition of population between classes of high-density urban clusters and small and medium towns, like Austria, Bulgaria, the Czech Republic, Denmark, Estonia, Latvia, Poland, Portugal, Romania, Sweden and Slovenia;
- Countries with an overrepresentation of population living in smaller settlements, like France, Ireland, Lithuania, Luxembourg, Norway and Slovakia.

Going beyond the scale of countries, our analysis highlighted that the central region of Europe, partly overlapping with the 'Pentagon' or the 'blue banana', is the most densely populated area of the ESPON space. While this region contains high-density urban clusters (London, Randstadt, Ruhr, Milano…) it also includes a large number of urban settlements that we have classified as SMSTs, throughout an area that stretches from the South of England across the Benelux countries and West of Germany to North-West and North-East Italy (see Chapter 2, Figure 2). Other clusters of SMSTs are to be found in the industrial belt of South-Eastern Germany and Poland, and throughout the Western Mediterranean arc from Spain to Italy, in which coastal sprawl is a relevant issue that has a strong effect on the 'small-and-medium-sized-ness' nature of the urban dimension to be found here. At the same time, it was shown how in the interior of France, North-Eastern Spain, the Alpine arc, and the Eastern side of the Pentagon area, SMSTs are far less prevalent as a 'characteristic' of the prevailing urban structure. The bulk of the population in such areas is somewhat dispersed in 'very small towns' (with less than 5.000-residents, the threshold set in the terms of reference of the project), or in "other settlement types" (mainly in areas characterised by sparse settlements that are under the threshold of 300 inhabitants per km^2).

This diversity of these urbanisation structures has various origins, among which the most obvious ones are:

- Persistent geographical constraints: for instance, the regions across the Alps clearly tend to favour small-scale communities over SMSTs in the valleys, and thus we cannot identify any significant presence of SMSTs across large parts of Switzerland and Austria. On the other hand, the specific nature of islands can lead to the prevalence of high-density urban centres, as in Malta and Cyprus. In this sense our results are consistent with previous findings on the territorial diversity of urbanisation patterns across the European space (Gløersen et al., 2010).
- Different historical urbanisation processes that affected each European country over the last 100-200 years. A range of both country specific factors and more trans-national ones can be cited, such as the nature of industrialisation in the 19th century as well as suburbanisation processes in the 20th century. Moreover, for much of this period settlements located in the proximity of national borders have experienced the effects of a peripheral location.
- At the same time the significance of pre-National State territorial patterns have (re)emerged in recent decades due to the progressive weakening of national borders and the effects of increasing trans-border flows and activities, especially in the central areas of Europe (between France, Belgium and Germany) and in the eastern region through the former border between the EU-15 countries and ECE countries such as the German-Polish border, or in the polycentric systems between Vienna, Bratislava and Brno.

It is important to emphasise that the central region of Europe contains numerous clusters of SMSTs, not only does this area host a large part of the EU population, but it also contributes the largest share of its GDP. This implies *de facto* the importance of settlements of a 'small urban size' that are strongly represented in the core of the European continent. Given this they are crucial to the realisation of the EUs current priorities, not least that of the Europe

2020 Strategy for smart, sustainable and inclusive growth. The human resources that are to be found in such SMSTs make a crucial contribution to production and innovation in Europe. Thus the question needs to be asked: does the Europe 2020 Strategy fully acknowledge this contribution and promote the forms of territorial diversity that would support SMSTs, or does it implicitly favour large-scale human settlements? This question is also valid when examining the policy interventions of the national and sub-national levels of government.

Our results also show that the role of SMSTs is less significant in areas of Europe characterised by a more polarised population structure, where the presence of a few important urban areas is counter-balanced by a diffuse distribution of smaller settlements that constitute the prevailing living environment for a large part of the EU population. This result represents an important finding of the TOWN project, because it indicates that despite the conventional wisdom that there has been an urban shift of the global population (also questioned by Brenner and Schmid, 2013) the situation in Europe is more complex. Our results indicate that almost half of the EU population does not live in a metropolitan urban context, but rather in settlements that are of a smaller urban scale that are linked to and embedded within their local environment and surrounding rural areas. For these areas, the need to adapt the aims of the EU2020 strategy to support smaller urban settlements is crucial to their future development and the well-being of their populations and by extension of a significant percentage of Europe's population. Moreover, it also represents a key component of European territorial, economic and social cohesion and the operationalisation of the notion of 'strength through diversity' (CEC, 2008) and the associated place-based approach (Barca, 2009).

In terms of territorial cohesion, the central EU area represents a striking example of polycentricism based on large urban regions (the largest and the most dynamic ones across Europe). This point can be cautiously extended to all the urban regions in the EU territory, albeit in a manner that recognises the specific nature of their urban/settlement structures and the relations within them.

An initial, and somewhat superficial, observation would suggest that large urban regions are in most cases dominated by one (or a few) large high-density urban clusters. In this regard, our results complement those produced by the OECD (2012) that focussed on functional urban areas with a population of at least 500,000 inhabitants. However, this is a mainstream approach that perpetuates the interpretation of SMSTs as 'living in the shadow' of metropolitan areas. Our results, on the contrary, suggest that SMSTs play a crucial role in the economic growth of functional urban areas, not only through daily migration patterns, but also in terms of the deconcentration/concentration of firms and residents. Therefore, the delineation of SMST characteristics is a necessary first step in the further examination of whether the functions of agglomerated SMSTs are currently weakened, maintained or reinforced by their location and why.

Clearly SMSTs in other urbanisation contexts play different roles in the development trends of their regions. Hence, it is crucial to acknowledge the wide diversity of situations in which SMSTs are located and following on from this the variety of roles they can perform across regions, nations and the whole ESPON space. This is vital if we are to avoid advocating a single policy response (at a regional, national or European level), which in our view would lead to negative consequences (i.e. a 'one-size fits all approach' that is the very negation of the place-based approach).

Looking at the distribution of NUTS3 regions characterised by smaller settlements, we can see that there is a significant overlap with those that are border regions (internal and external), which means that border regions tend to be characterised by a low degree of urbanisation. This result for external-border regions is not surprising as they largely coincide with sparsely population regions especially on the Eastern EU border, but the result for internal-border regions is worth noting. At the same time, with regard to the typology of urban-rural regions, while the association is to some degree built-in to the way our typology has been defined, it is still interesting to note (see Map 8 and Table A9 in Chapter 8) that low degrees of urbanisation are positively associated with all classes of non-urban regions, except that of intermediate regions close to cities.

Interesting insights can be derived from the correlation between regions with low degree of urbanisation and a typology of socio-economic status such as that of regions in industrial transition. Map 9 shows that there is an extensive representation of ‘regions with industrial branches loosing importance’ strongly characterised by smaller settlements. It indicates a general trend that characterises smaller settlements: a diminishing of the productive economy (due to delocalisation or concentration toward bigger urban poles) and an increase in the size and importance of the residential economy. There can be an absolute increase in the residential economy, for various reasons: the ageing phenomenon may generate growth in care and personal services; industrial workers that were made redundant may commute to other places in the region for work, but still spend a large part of their income locally. This shows that the increase in the residential economy is a fact, but not automatically a sign of hope. A similar argument could be developed about the presence of knowledge-based economic activities in towns: the case studies show that such activities can exist but that the knowledge-based economy still remains small and its prospects for growth in the future are unclear.

Some exceptions to the overall tendency of de-industrialisation can be found in the central regions of Spain, in some eastern regions, particularly in Poland (which may an effect of macro-territorial delocalisation), Finland and in the south-west of Ireland (ICT-related innovative branches). By contrast the regions characterised by the widespread presence of smaller settlements that are experiencing industrial transitions are sparsely distributed, with a higher percentage of less-developed regions, in particular in the eastern countries. Nevertheless the proportion of regions with smaller settlements that have ‘industrial branches loosing importance’ is not significantly different from those that are characterised by bigger settlements (as shown in Table A8, Chapter 8). Thus we can identify a worrying trend that indicates the fragility of regions with smaller settlements compared to those with larger urban areas.

2.1.2. Main territorial trends related to regions characterised by smaller settlements

In this section, we will focus on some of the evidence provided by the analysis of NUTS 3 regions characterised by smaller settlements and their changes in population and GDP between 2001 and 2010 (Map 11 and others, Chapter 8).

In terms of population change we can identify the dominance of a general territorial trend characterized by a shift of population shift from the East and the North to the South and the West of Europe (or a high out-migration rate in the former, and a high in-migration rate in the latter) that affects all types of regions. Here the trend previously identified in the ESPON ATTREG project in the period 2000-2006 (Russo et al., 2012) is confirmed, albeit with small variations that indicate a more moderate effect in the latter part of the decade. This may suggest that the financial crisis has had a greater impact on some of the booming – and most attractive – regions and that this has played a role in ‘smoothing down’ this macro-scale trend (see also the recent ESPON Evidence Brief ‘Migration keeps Europe moving’). This movement of population was also articulated with a decrease in the intensity of the exceptional rates of interregional migration within the EU that took place after enlargement in 2004. In this respect it is possible to argue that while a counter migration phenomena has taken place in some ‘overheated’ areas, it is a process that in most of the affected regions has not been able to reverse the overall balance, which is based on the variation between 2001 and 2010.

The general trend of population growth is present in most of the EU-15 countries with a few exceptions such as those areas affected by long-term economic downturn. This is the case in Southern Italy, Greece, most of the Portuguese regions, East Germany, some more remote areas such as the West of Scotland and other internal French and Spanish regions.

This overview of regional population performance changes when the variation of the population is compared to each national average as in Map 11. This perspective takes into account the need for contextualization and it is able to measure in more detail relevant spatial differences.

In some countries, such as Portugal and Spain, there is population growth in or around the capital region (Lisbon, Madrid), but the most important spatial dynamic is taking place in strongly or low-urbanized regions on the coast. This can provide a strong impetus for the development of SMSTs in such regions, but once again with the proviso that population growth requires a corresponding increase in the provision of services of general interest and that this is planned and shared between the relevant planning authorities. At the same time, the management of growth in the coastal areas often coexists with a general depopulation of the central regions, which means that SMSTs located there are declining. This is clearly the case in Portugal, Spain and France, but the trend may be the same in Central European countries, or in islands, as the case studies showed.

The core of Europe, consisting of Belgium, Western Germany and the Italian North-Eastern regions, shows a general growth trend both in the strongly urbanized regions and in those characterized by smaller settlements, with some irregularly distributed exceptions. Here we can assume that the general growing trend and the local suburbanisation processes have particularly affected the regions with smaller settlements. In contrast to this, a strong metropolisation process has taken place in Germany’s Eastern regions, in Austria and the Scandinavian countries, where there has been an important shift of population from regions with smaller settlements toward the capitals and other larger urban areas.

From this vantage point the Eastern European regions present a rather different picture. While we can identify a general declining trend of population, except for the metropolitan areas, the picture of population growth in comparison with national average shows the importance of regions with smaller settlements. Again, there is a general interdependency between metropolitan areas and urban regions (e.g. Riga, Warsaw, Cracow, Prague, Brno, Bratislava, Budapest, Bucharest, Sofia) and their surrounding regions characterised by a lower degree of urbanisation (this represents an extension that goes much beyond what might be termed a functional region). This suggest the presence of ‘saturation effects’ in the relevant metropolitan areas that, together with the enhancement of mobility systems (mainly by road), has determined a delocalization shift of firms and population, and in general terms, of suburbanisation.

SMSTs agglomerated to large cities seem to face problems related to the danger of becoming ‘dormitory towns’. We can even talk of ‘station town’ if they are just a multimodal stop in travel to work journeys, between a suburban very small town providing home and natural amenities and a very large city providing employment, higher education and metropolitan leisure. However, under specific geographical and institutional conditions (a strong local sense of identity and degree of institutional and fiscal decentralisation enabling proactive strategies) it is possible that the activities that have become rooted in such SMSTs have been better able to resist metropolitan dominance by establishing processes of synergetic networking with larger urban areas. This may represent an example of 'borrowing-size' effect (Alonso, 1973; Meijers and Burger, 2010), according to which towns that are close to bigger urban areas are able to realise a 'virtual critical mass' in terms of accessibility to services and other urban characteristics due to this proximity.

In terms of regional GDP growth between 2001 and 2010 one overall result is that the GDP variation of regions compared to the EU average shows a reduction (i.e. a narrowing gap) for the all Eastern countries (with a few exceptions such as in some of the most remote rural areas) and some other objective-1 regions in the EU-15 (e.g. most of the regions in Portugal and in the north of Germany) (Map 12, Chapter 8). On the other hand, many EU-15 regions are characterized by below-average growth. Also the differences across Europe between macro areas are much more significant than those at a lower scale. In the EU-15 regions, however, it is worth noting two phenomena:

- The above average growth of GDP in some sparsely populated regions in Sweden and Finland;
- An erratic pattern of growth in the core EU areas (Belgium, Western Germany and Austria) in regions with a low degree of urbanisation. Here the interesting point to note is that the GDP growth tends to be higher in regions with smaller settlements and below the average in highly urbanized areas. The strength of these regions suggests the importance of a dense system characterized by smaller urban areas and at the same time a possible saturation effect in mature urban areas.

Obviously, the general picture changes significantly when GDP growth is compared to each country average (Map 13, Chapter 8). Here, we can distinguish four distinct territorial trends:

- In the eastern countries the spread between regions with smaller settlements in the proximity of highly urbanized regions and those far from them is evident. This is particularly the case in Poland, Slovakia, Romania, Bulgaria and the Baltic countries, albeit with different specific cases.
- In Scandinavia, there is an inverted trend compared to the population shift: despite having a higher increase in GDP, the less urbanized areas tend to lose population.
- The UK shows a polarization of growth in the extreme opposite regional types, i.e. in both the main urban areas and in the smaller settlements regions, at the expenses of those regions in which the population is evenly distributed in high urban clusters and smaller settlements.
- France presents a patchy picture, in which the second-tiers urban poles appear to play a strong role, confirming the results of Parkinson *et al.* (2012). In Spain, higher growth is registered mainly in the smaller settlement regions at the expenses of inner mixed urbanized regions. Finally, Portugal has a higher growth in most of the smaller-settlement regions.

Moreover, there seems to be is an important message in terms of the EU-15, which has shows a general growth trend in the regions with prevailing prevalence of smaller settlements that were Convergence Regions in the Structural Funds scheme (e.g. the inner Portuguese and Spanish regions, most of the Scottish, Irish, English and Wales regions, Austria and some of the Scandinavian regions). In a sense, this could be interpreted as a good indicator of an on-going rebalancing trend and the effectiveness of Cohesion Policy. The fact that SMSTs appear to benefit from the Structural Funds suggests that they have helped the Convergence Regions to evolve while not significantly altering their urbanisation pattern (which would be the case where there was rural migration to large cities).

All in all, for regions predominantly characterized by smaller settlements, the analysis shows that there is a strong relationship with macro dynamics and macro territorial trends. These regions seem to have experienced less spatial inertia *vis-à-vis* larger-scale phenomena. On this basis we can suggest that the macro-dynamics of population changes tend to prevail in over regional specificities and that territorial characteristics offer limited 'bouncing back' capacities in the face of the macro trends of population dynamics. However, we find more territorial exceptions to this trend in the maps when related to GDP growth.

Together with these macro scale phenomena we need to be aware of the existence of macro/meso regional path dependency that can be seen both in wealthier areas of the central part of Europe ('the polygon') and more generally across Europe. There seems to be evidence of differences between the performance of regions with smaller settlements in the proximity of urban regions and those far from them. However, there are specific national differences, which may indicate that specific urban-systems features and national policies matter.

Another key message, which may appear to run counter to conventional wisdom, is that high per capita GDP growth does not always coincide with population growth. In fact it is more often a case of an inverted relationship: regions with smaller settlements that experienced an increase in population tend to have lower GDP growth and, vice versa, those with higher GDP growth tend to show a decrease in population. However, it is not possible to draw any firm conclusions regarding this phenomenon as there is insufficient reliable evidence available.

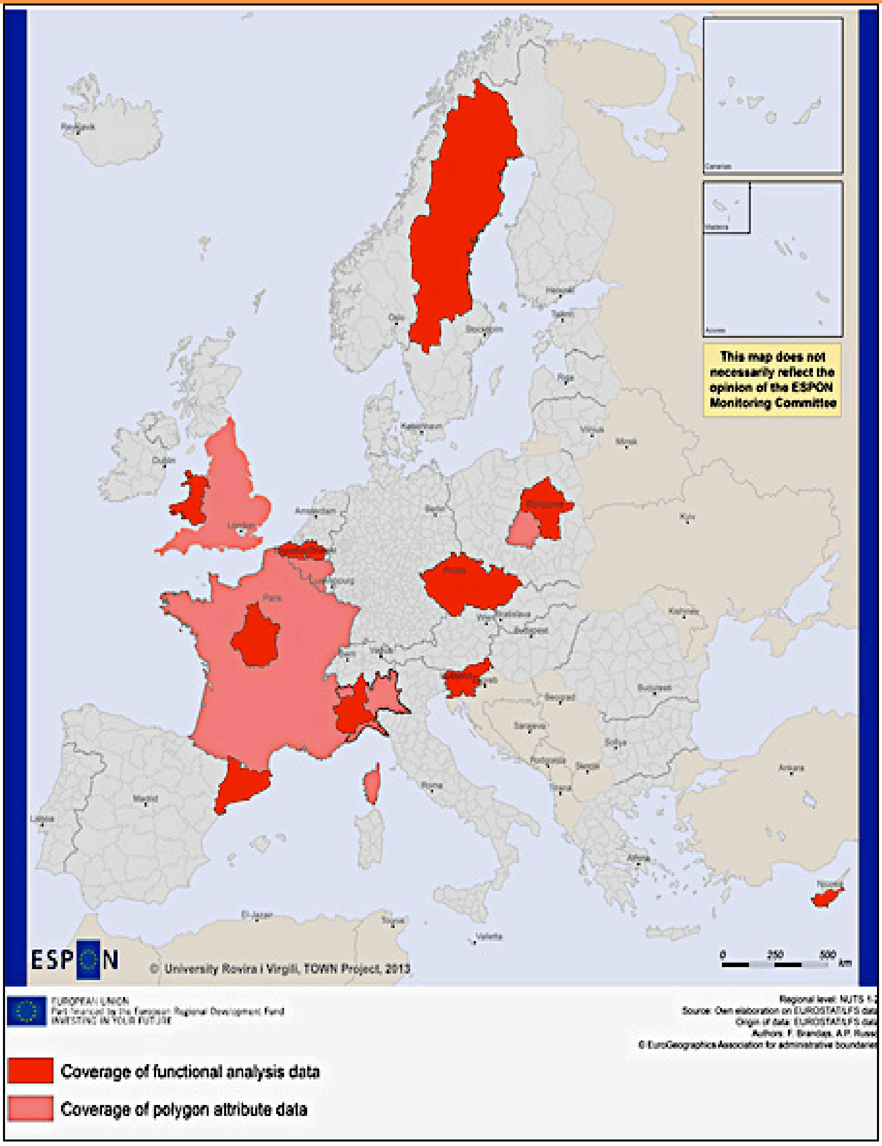
Also, our analyses reveal a general distinction between regions with smaller settlements in remote areas and those close to metropolitan areas/urban regions (the so called intermediate regions: – for the full debate: OECD, 2010; Dijkstra and Ruiz, 2010). While in general the former exhibit negative trends, the latter are characterized by better performances. But, as was said earlier, beyond positive population or GDP growth scores, it is crucial to understand whether such growth maintains (or even reinforces) the functional and territorial role of SMSTs. The possibility exists that agglomerated SMSTs are destabilised by suburbanisation, on the one hand, and by a re-concentration of jobs and services in cities, on the other. As we have noted above this is a crucial issue in some national and regional contexts as it threatens to undermine their existing roles as service and employment centres.

Finally, the map of population change compared to national average shows that there is an extensive distribution of regions with smaller settlements that have a higher rate of growth than other regions. In general, this result suggests that in central Europe this positive growth is at the expense of mixed and highly urbanized regions. In a way this is a surprising result. Of course it is necessary to also take into consideration the absolute value of GDP, but it may be an important indication of a rebalancing process.

2.2. Qualitative and quantitative insights on socio-economic characteristics

The research team constructed a database for all SMSTs and all HDUCs in France, Belgium, the Czech Republic, Slovenia and England and Wales and for all SMSTs and HDUCs in the regions of Catalonia, North West Italy, Northern Sweden and Mazovia. Given this limited database we can systematically develop a specific pan-European focus on the average characteristics of small towns with the aim of offering insights into general trends and relationships.

Selected case study countries	Selected SMSTs and number of inhabitants



Aarschot (BE): 28,636 inh
Dendermonde (BE): 44,257 inh
Ieper (BE): 22,051 inh

Brandys nad Labem (CZ): 16,247 inh
Pisek (CZ): 27,979 inh
Usti nad Orlici (CZ): 12,457 inh

Cambrils (ES): 34,919 inh
Tarregà (ES): 17,129 inh
Vilafranca del Penedès (ES): 41,322 inh

Chinon (FR): 5,355 inh
Issoudun (FR): 11,965 inh
Vendôme (FR): 8,578 inh

Alba (IT): 25,520 inh
Ceva (IT): 5,056 inh
Fossano (IT): 20,565 inh

Garwolin (PL): 15,478 inh
Łosice (PL): 6,194 inh
Szydlowiec (PL): 10,418 inh

Kiruna (SE): 16,368 inh
Östersund (SE): 39,843 inh
Timrà (SE): 9,268 inh
Avesta (SE): 21,583inh

Domžale (SI): 23,793 inh
Postojna (SI): 7,581 inh
Radovljica (SI): 8,231 inh

Colwyn Bay (UK): 32,895 inh
Llandrindod Wells (UK): 6,450 inh
Tredegar (UK): 15,103 inh

Figure 1. Case study countries and SMSTs covered by this report. (Source: Own elaboration).

Our work involved comparing (and partitioning) the characteristics of nearly 2300 SMSTs and comparing them to the characteristics of under 300 HDUCs. At the same time, 31 urban municipalities in 10 NUTS2 regions were investigated for more specific qualitative insights (see figure 1). Of course, the limitation of the outcomes is that the analysis concerns only a small proportion of the EU territory, i.e. slightly more than 25% of the relevant European settlements (albeit widely distributed to grasp the rich diversity of places). The results are even more limited when referring to the 31 case studies.

Therefore, the following 2 subsections articulate a) the findings of the quantitative inquiry of the polygon-based dataset, and b) the qualitative considerations drawn out of the 31 case studies.

2.2.1. Quantitative insights

In general the data suggests that the characteristics of the morphological SMSTs are statistically different from the characteristics of larger cities (identified here as HDUCs). However SMSTs from individual countries and regions are statistically different from SMSTs in other countries and regions pointing to the fact that small towns are significantly influenced by the context in which they are located.

In line with the ESPON INTERCO project's (2013) conceptualisation of factors that articulate the notion of territorial cohesion and based on a pragmatic overview of available data in the dataset, the characteristics of SMSTs were grouped into five domains. The following domains are to be considered as a framework through which the characteristics of SMSTs reveal the specificities of towns in Europe compared to larger settlements, and for which it is worth thinking about specific tailored strategies: economic competitiveness, economic innovation, accessibility, equity, and culture and community (see Table 25, Chapter 9). Of course the information grouped should be considered as an available proxy for the domain in which are presented.

Overall we can observe that there are a bundle of characteristics that tend to define (small) towns as different from cities in the countries and regions covered by the database. In most contexts SMSTs in comparison to HDUCs present the following characteristics:

Domain 1 (economic competitiveness)

- Industrial employment has a greater proportion of employment while the service sector has a smaller proportion of employment (differences in relation to economic competitiveness);
- On average a significantly smaller proportion of jobs (on average) in private marketed services and in public services in comparison to HDUCs;
- Higher economic activity rates;
- A higher proportion of pensionable adults (unless in NW Italy) and more children (unless in England and Wales) (differences in relation to the Domain of culture and community);

Domain 2 (economic innovation)

- A lower proportion of working age adults with a degree (unless in England and Wales, and equal in Belgium) (differences in relation to economic innovativeness);
- In France, Central Poland and England and Wales, economic activity rates are statistically significantly higher in SMSTs than in HDUCs;
- In Catalonia and England and Wales, self-employment rates within SMSTs are significantly higher than in the equivalent HDUCs. This is not necessarily an indicator of innovation. It may be an indicator of the weakness of the local economy in the sense that there are few jobs and people become self-employed out of necessity and set up the sorts of businesses that are anything but innovatory – e.g. hairdressers, car repair businesses, etc. The people who do this often earn low incomes and the 'product' of the business makes little, if any, contribution to the local economy in terms of GVA. The levels of productivity in such firms are very low. This is certainly the case in the economically weaker regions of the UK – although in Germany this is different especially in those economically stronger regions where there are 'high-tech' and highly skilled SMEs.

Domain 3 (accessibility to services and employment)

- Employment in the retail sector is significantly lower than in HDUCs in Italy, Northern Sweden and England and Wales;
- SMSTs have a lower proportion of who live and work in them than the HDUCs that are located in the same regions and countries (differences in relation to implied accessibility of employment). Overall this would indicate that workers in smaller towns may need to commute further afield (where there is an opportunity to do so) for work. We might expect to see variations in these measures in relation to the functional classification of settlements.

Domain 4 (equity)

- Unemployment rates in SMSTs tend to be lower than for HDUCs in four of our countries (Czech Republic, France, North West Italy and England and Wales) which implies (in combination with high economic activity rates) that small towns residents in many parts of our studied area were able to find work successfully (in our base year) although this work may not necessarily be within the municipality they live in (or unemployed persons move to bigger urban areas)

Domain 5 (culture and community)

- SMSTs can show a statistically significant difference in the proportion of school age children (higher with the exception of England and Wales);
- Concerning housing stock accounted for by secondary or holiday homes (Czech Republic, France, Slovenia and England and Wales) the SMST average is higher than that for the HDUCs.

These characteristics indicate how towns tend to be different on average from cities, but at the same time, how they are extremely different among themselves across Europe, to an extent that it is only in theory a conceptual category characterised by uniformity of problems.

2.2.2. Qualitative insights from the case studies

To support the last point mentioned in the previous section concerning the large variety of cases, we investigated in more depth 31 case studies urban municipalities within ten NUTS2 regions.

The zoom-in on these towns allowed us to carry out a more detailed investigation of their socio-economic characteristics. The general assumption of this analysis is that the capacity to create jobs, to provide services, to attract new population and to engage in inter-territorial and innovation networks is not only the result of a town's geographic proximity to large cities. Such a geographical determinism is contradicted – or at least differentiated – by a complex of factors among which is the socio-economic composition of the settlement itself and their inherent value within wider spatial divisions of labour. At the same time, the smaller size of the working population often leads to specialisation in some activities (manufacturing, tourism, etc.), while their fate is ultimately linked to economic and social change at regional, national or even international level. Therefore, we can assume that the socio-economic performances can be related to a range of factors which are a combination of geographic position, macro/regional trends, historical development and the ways in which these are understood by policy actors (i.e. their 'policy frames').

As regards the main characteristics of the local economy, we argue that different socio-economic profiles can be observed in towns, depending on the key sectors that form the basis of their local economy. Three economic profiles can be detected, which represent a combination of different sectoral specialisations: residential, productive and knowledge-based economies.

Some towns have their local economy oriented to external demand and base their activities on manufacturing, agriculture, business, and traded services. This “productive” economy of towns in developed countries is the result of the fact that they experienced the late phase of the industrialisation cycle during which towns experienced growth of population, industrial development and economic modernization. It was the period where towns were often selected for investment by companies whose rapid expansion was based on the production of standardized goods and services that required cheap and low-skilled workforce. In most European countries, the productive economy based on manufacturing and tertiary production systems was connected to larger cities and metropolises (e.g. Ile-de-France, London, München or Milano). At the same time, there are several towns which based their local economy on the agriculture sector and derived activities, e.g. agro-food, agro-tourism, etc.

According to the overview of 31 case study towns, the local economy of a large majority of them has a dominant productive profile, which is in line with the quantitative findings. On the one hand, the fact that most of these towns have retained their productive economic base demonstrates that production of traded goods and services is a still important for the development strategy of such towns. However, several of our cases were experiencing delocalisation processes and transformation of their main economic drivers. This is also consistent with the perception that a number any of the regions with smaller settlements are characterised by industrial branches losing importance, and confirms the fragility of their local economies and the need for support to develop their local economic base.

Other towns have a local economy that mainly relies on activities and services related to population needs and local demand (housing, public services, etc.; more detail on this in section 2.1 below). As our analysis will suggests, such “residential” local economy may be considered as one the key drivers of town development in various countries (Belgium, France, Germany, The United Kingdom), especially in those regions benefiting from tourism activities (South of Portugal, coastal Catalonia in Spain) and in those in the proximity of urban regions (based on commuting patterns). In the current period of economic crisis, the residential economy may represent a stabilizing factor for towns since it allows them to ‘capture’ income and the jobs it generates are not directly exposed to global competition.

However, only a few of the towns studied had a local economy in which the residential profile was dominant. This might indicate that services to population and residential consumption are still seen in a majority of towns as complementary drivers to the general economy. Nevertheless, it is possible to identify different types of residential towns: those where tourism is the major driver in terms of activity and jobs; those with an over-proportion of elderly people in the population and where personal services and services related to healthcare have an important role for the local economy; and those located at a short distance from large cities that specialize in attracting commuters and their families.

Finally, there are towns whose local economy is either related to residential or external demand, but at least partly based on knowledge, innovation and creative activities such as higher education, design-based activities, etc. Through the implementation of favourable conditions for creative businesses (.e.g. through provision of subsidies or tax incentives) and by improving the quality of life for the population, these towns were able to build on their resources (e.g. quality of place) and talents to attract new investment and new residents. In addition, the “creative and knowledge economy” based on activities such as architecture, design, advertising and software creation may provide innovative inputs for other sectors, namely agriculture, handicrafts, furniture, textiles, tourism and gastronomy.

Towns characterised by a creative and knowledge-based profile have university branches, R&D activities that are promoted either by public institutions or by private investors; they have a highly educated population, and local firms participating in innovative clusters or creative networks. It is unlikely that in the case of such towns the creative and knowledge-based profile can supplant the more “traditional” ones - residential and productive profiles. Nevertheless, it may constitute an important dynamic input for the residential and/or productive economy where it exists in several economic sectors and activities such as creative and cultural industries, high-tech businesses, recurrent cultural events, etc.

Interestingly, when it comes to changes in profiles over a 10-year period, most of our case studies with a dominant productive profile in the past have retained it over the last decade. However, we have observed towns that experienced a shift towards residential and creative and knowledge-based economic activities. In our case study set of 31 towns, over the past decade 10 cases experienced some of change in their profile (from productive to residential/creative; and *vice versa* from residential to productive/creative), which indicates that at least a third of the towns in our case studies are undergoing, to varying degrees, a process of structural change in their local economy. Moreover, in the context of economic downturn, it is possible that this process could continue in the years to come. At the same time, 42% of the sample is experiencing a restructuring process expressed in either growth in population but decline in employment, or growth in employment but decline in population. Finally there are towns that are deliberately attempting to develop a new strategy for local growth and are seeking to bring about change in their local economic profile.

3. The role of towns in functional and territorial terms

Recognising and documenting the complex roles of towns in functional and territorial terms is at the heart of this project. This section will bring together results stemming from several steps of our analytic work, namely the functional approach (Chapter 5), the performance of SMSTs measured in the 31 case studies (Chapter 6) and the regression analysis that was carried out in five countries (Chapter 10). At the beginning of the project, many typologies of towns based on the functions they perform served to stimulate the thinking of the research team (for instance, Bolay and Rabinovich, 2004; Hildreth, 2006; Sýkora and Mulíček, 2009).

Among this body of work the ESPON 1.4.1. project is probably the most relevant here (ÖIR et al., 2006). As was said earlier, that project distinguished (i) isolated towns that serve as 'multi-functional centres' for their hinterlands; (ii) networked towns and (iii) towns that are part of large urban systems. While acknowledging the interest of this typology, to which we will go back later, we stress the complexity of situations of SMST, and subsequently we argue for the need to adopt a territorial and place-based approach that is based on an understanding of regional and sub-regional dynamics. Thus, for the sake of expositional clarity, we will organize the discussion around a multi-level approach, distinguishing two complementary visions of SMSTs: Section 3.1 will deal with SMST as centres that serve their immediate hinterland while section 3.2 will analyse SMST as part of urban systems, exchanging flows with large cities and other SMST.

3.1. SMST as functional centres

Given that most of the research on urban regions, including ESPON projects, focuses on major cities and their metropolitan areas, our starting point, following the terms of reference of the project, was that SMSTs are vital and important socio-economic territorial entities at the European scale. We calculated that there are 173 NUTS3 regions in Europe where the population living in SMSTs is more than 50% of the total population, and only 98 NUTS3 regions that do not include any SMSTs, most of the population living in high density urban clusters, i.e. large cities. But cities and towns should not be placed in opposition to one another: they have in common that they are centres which possess centrality functions that serve their immediate hinterlands, and in the case of large cities wide territories. Through the functional analysis performed in 10 NUTS2 regions, we have been able to identify, among all settlements of small or medium size, these SMSTs which play the role of urban micro-regional centres. It should be remembered that the centrality role performed by SMSTs contributes to territorial cohesion and therefore on this basis alone their role should be more firmly taken into account in EU, national and regional planning and development policies.

There are remarkable differences between our case study regions in terms of the number and share of municipalities that play the role of job centres. The major dividing line is between the highly urbanized regions of Flanders in Belgium with half of municipalities playing the role of job centre and other regions and countries where the share of municipalities performing the role of job centre ranges from 5% in Cyprus to 12 % in Catalonia, with Czechia (6%), North Western Italy (9%) and Poland (11%) in-between. Slovenia with 31% of municipalities having the status of job centre is in an intermediate position, signalling a specific feature of the Slovenian urban system characterized by the dominance of Ljubljana accompanied with high level of polycentricity characterising many other settlements.

Regarding the delimitation of micro-regions and identification of micro-regional centres, there are also quite significant differences between our case study regions in terms of the number of micro-regional centres and the share of all municipalities (or alternatively defined settlements) ranging from 2% in Cyprus to 42% in Flanders. While in some countries the delimitation of micro-regions and selection of micro-regional centres led to only a partial adjustment in the number of urban nodes, there was a remarkable shift in Cyprus and Catalonia. In Cyprus micro-regional centres accounted for only 37% of job centres. Similarly in Catalonia only 56% of job centres had the role of micro-regional centres. In Slovenia, Poland, Belgium and France, the share of micro-regional centres in terms of the total number of job/urban centres was above 80 %.

The functional analysis showed that the number of towns as micro-regional centres, their location and thus their functional and territorial role varies according to the region considered. Nevertheless the hinterland of small towns, which we have termed the functional micro-region, represents the territorial scope within which the daily life of the population takes place without the excessive need to travel for jobs and services to other areas or their urban centres. In policy terms, it seems important to provide support to consolidate the functions of these towns, as they considerably simplify the daily functioning of residents, but also of firms, thus contributing to economic efficiency. In large cities territorial development stemming from agglomeration economies and concentration of population and especially jobs can be effective in economic terms. But it has sustainability implications: it produces longer commuting distances, and reduced accessibility to jobs and services, particularly for less mobile citizens. It also further strengthens concentration effects in major urban areas and the on-going depopulation of rural and peripheral regions thus undermining territorial cohesion and creating new (or reinforcing existing) socio-spatial inequalities. The need for 'balanced development' at European, national and regional levels is widely acknowledged and our results suggest that SMSTs have an important role to play in this process. In terms of territorial, economic and social cohesion, it is vital to support or even enhance the role of towns as employment centres and as providers of a wide range of services of general interest.

Therefore, the identification of functional micro-regions and the potential for developing the reciprocal roles of settlements in these areas is a key issue for a balanced and cohesive territory. Consequently, territorial cohesion can also have a local expression in terms of governance. Appropriate forms of cooperation between local authorities at the scale of the micro region should be encouraged, as they can help to ameliorate wider changes in the spatial distribution of activities and services, this is particularly important at a time when many countries and localities are experiencing significant reductions in public expenditure. National and regional authorities have a role to play and different institutional systems may encourage or discourage collaboration, but as we saw in Chapter 4, one cannot identify any clear relationship between the different institutional systems and the propensity to collaborate. A great deal seems to depend on a 'history of cooperation'. Even though a key characteristic of a town is their role as centres of a micro-region, towns and their micro-regions are different, not only in size and composition, but also in terms of their territorial capital.

3.2. SMST as part of urban systems: connections to other SMST and large cities

In any policy approach, identifying the functional settlement context of an SMST is necessary to explain and to interpret differences in town's the development dynamics and performance of towns. But this analysis cannot, and should, not be restricted to the towns themselves, or even to towns and their hinterland as is too often the case. Hence, an essential element in an understanding of the socio-economic performance and development trajectory of a town is its functional interactions with other urban centres within relevant wider urban and regional systems.

Across our case study countries and regions, we found striking differences. The most exceptional are in Flanders, Belgium, with its highly urbanized landscape of large municipalities of which nearly 42% play the role of urban micro-regional centres, with large centres being decisive in terms of concentrating population, jobs and, especially, bringing into their 'orbit' and linking together neighbouring small and medium sized towns in their proximity. It seems that with evenly distributed growth between large centres, agglomerated and networked towns, all urban places benefit from this polycentric, yet large large-city city-dominated urbanization pattern.

We also found a significant share of municipalities retaining their role as urban micro-regional centres in Slovenia, a country with two key forms of territorial organization operating in a symbiotic manner: with the major role of the capital Ljubljana for the whole country and a polycentric arrangement of small and medium sized towns in the country's local sub-regions. In both Flanders and Slovenia, the large share of urban centres in the total number of municipalities can be partly explained by the existence of larger municipalities that are composed of several settlements. In these municipalities, part of the territorial division between centre and hinterland is already accommodated within municipal boundaries.

Both regions/countries can be seen as good examples of polycentric urban systems with a strong role for large centres. However, Slovenia differs in one substantial aspect which is the large share of population living outside urban micro-regional centres. In this aspect it is more like The Czech Republic, Catalonia or the Mazovian region in Poland. The Czech Republic and Catalonia have developed a range of forms of towns' territorial structures and thus exhibit considerable variation, while the Mazovian area has two mutually distinct forms: that of the large region of the capital city of Warsaw and, on the other hand, a ring of towns in the peripheral part of the region, somewhat squeezed between the large centres and extensive rural settlements. In this regard, there is some similarity with the French Centre Region, where the key role is played by large centres with a substantial share of population living outside of urban micro-regional centres, while the already smaller share of small and medium sized towns' population and jobs continues to shrink. Cyprus is a specific case, with tourist oriented coastal development, Nicosia's role as capital city and rural, sparsely populated areas in the inner parts of island.

Our work has also identified the functional roles of urban areas in a wider territory. Using the results of the ESPON 1.4.1 project, we distinguished three basic types of territorial arrangements:

- Autonomous (isolated, self-standing) towns, usually found in peripheral rural regions;
- Agglomerated towns that are integral parts of poly-nucleated metropolitan areas and conurbations dominated by large cities/major metropolises;
- Polycentric networks of towns.

The key objective here was to identify which type of spatial configuration performs best in population or employment terms. Unsurprisingly, in general large cities perform better compared with small and medium sized towns. The most pronounced difference was observed in the Czech Republic, where the number of jobs in SMSTs declined by 12%, while in large cities it increased by 11%. In England and Wales, such towns performed better than large cities. But there is a high degree of variability among towns, with many performing not only worse but also much better than large cities. Individual towns have a huge variability in their development and performance trajectories, and the performance of the regional economy appears to be a key structural factor influencing performance.

In general terms, we can conclude that there are many factors determining towns and cities development that cannot be grasped by a simple or multivariate analysis. But we were able to correlate the relationship between a low degree of urbanisation and deindustrialization. NUTS3 regions where more than the 70% of the population living in SMSTs, VSTs, or rural areas are 10 times more likely to have lost employment in manufacturing than to have gained it. In regions with a higher degree of urbanisation, the labour market has already shifted to tertiary occupations, in the sense that industrial transition is less visible. With regard to this, the case study evidence shows that towns that have diversified their local economic mix did better through the 2000s than those with a high level of dependence on any single 'sector'. As employment diversity declines on the whole with settlement size, there is therefore a disadvantage of being small.

In our work we also anticipated that whether the town is autonomous, agglomerated or networked would have an influence on the town performance. Where the data was available (Belgium, Czech Republic, France, Slovenia) we have sought to monitor the growth or decline of population and jobs. The main message emerging from this work is that while the distribution of population according to the place of residence was stable, the changes in job distribution were quite significant. In Slovenia there was 13% job growth in large cities, 2% job growth in networked towns, and 4% decline in agglomerated towns. An almost identical change occurred in the French Centre Region, with 7% job growth in large cities, 1% in networked towns and 5% decline in agglomerated towns. Flanders differed with generally overall job growth in the whole region and specifically growing agglomerated towns. Within the Flemish polycentric urban and regional system, this can be related to job de-concentration dynamics.

In policy terms, this means that the attention of local authorities (especially those of agglomerated towns) should not be orientated exclusively towards simply increasing the number of residents (through granting permission for new housing development, for instance), but should try to consolidate the economic base, and more specifically its productive component. Apart from the case of Flanders, another key trend we can identify is competition from large cities vis-à-vis agglomerated towns and the rapid transformation of such towns from places of production and services to more residential suburban nodes. Diversifying the bases of economic development, and not only supporting the rise of the residential economy should be on the agenda. This can take various forms: engaging local firms in innovation clusters and networks, looking for niches of de-concentration of sections of metropolitan firms, identifying and valorising resources linked to the territory (natural and cultural heritage, among others). However, it is important that towns do this in a manner that builds upon/enhances their existing economic base and territorial assets. For agglomerate towns this may require that they cooperate with other similar towns in the area and/or the relevant large urban centre. This in turn will require the development of appropriate forms of governance and associated partnership structures.

In contrast to an optimistic view (Knox and Mayer, 2009), the fact that some towns within metropolitan regions may benefit from the participation of local firms in an innovative cluster, or from the presence of a university branch does not appear to find a clear expression in the employment statistics or in the levels of qualification in our 31 case studies. And the fact that some towns with a beautiful natural environment may attract populations of commuters, second-home owners, or tourists without any disadvantage (i.e. a sharp increase of prices on the housing market) is not guaranteed to work elsewhere. In our view, clear and well defined development strategies are required, with strong support from regional and/or national authorities, as the local government of towns often lacks the necessary expertise and resources to develop and implement such strategies. In many of the case study towns there were issues around the 'capacity to act' (mobilisation). Also some towns demonstrated a much greater propensity to 'innovate' and adapt (e.g. Alba and Athienou) and this was strongly rooted in their local milieu. This does not take place in all SMST – for instance several of the isolated towns are losing young people (brain drain) which may well impact on their capacity to 'innovate' and diversify the local economy.

Even though our results do not show any clear differentiation in performance between autonomous, agglomerated and networked towns, the policy orientations that are developed need to framed in relation to their regional/sub-regional context and based on their existing assets. Regarding agglomerated towns, the conventional wisdom is the following: while economies of agglomeration tend to work against them, they can benefit from being a "cheaper location to live, work and run a business if compared with large cities, because they have shorter commuting and lower land and wage costs" (Hildreth 2006: 16). But this will probably not be sufficient to stimulate sustainable economic development and better performance in the longer term. There will always be the danger that they can be undercut by lower costs (e.g. wages) elsewhere and it is not desirable to have a local economy that is overly reliant on a particular sector and/or firm – in other words diversity is a strength.

Regarding the networks of SMSTs, it is less clear whether they can substitute for agglomeration economies of large cities by borrowing some of the size advantages from large core metropolises, while avoiding their costs. The issue was tested by Meijers and Burger (2010), who came to a pessimistic finding that “a network of geographically proximate smaller cities cannot provide a substitute for the urbanization externalities of a single large city” (Meijers and Burger 2010: 1383).

Regarding autonomous SMST, as we said earlier, consolidating and if possible developing their centrality role should be a priority, in the interest of their existing residents and firms. However, as some of our case study towns suggest (e.g. Alba and Athienou) it is possible for such towns to develop a strong, locally embedded, economy that can grow and adapt to change and is open to the external world.

Overall, whatever the local conditions, there is a shared need for an integrated multi-level approach that situates towns in their regional and sub-regional contexts and takes into account their functional roles. But, depending on the three types, this means thinking quite differently about the relevant spatial planning approach, governance forms and 'policy bundles'.

What also seems to affect the propensity/willingness of SMST to collaborate is 'history' - Flanders with a longer tradition of such collaboration is a good example – here we are back to 'path dependency'. In France the central state has sought to encourage collaboration through the use of financial incentives and there has been varying degrees of success. This signals that a great deal depends on the relevant national and regional authorities and how they understand the role of SMSTs (if at all) and seek to support them. In Chapters 4 and 7, we did not detect a great deal of interest in national terms – only a few countries seem to acknowledge the role of SMSTs and even here it was often particular types (e.g. market towns). We will go back to this question in the last section of this chapter.

4. Socio-economic characteristics and potentialities for local development

This section develops a series of propositions related to SMSTs based on our results and analyses factors influencing socio-economic change in towns. Section 4.1 combines the results of the regression analysis and qualitative insights from the 31 case studies, whilst accepting that the latter is somewhat more limited in terms of general applicability than the former. Section 4.2 develops policy recommendations drawing on our 31 case studies and the results of the wider project.

4.1. Factors of changes – some evidence

The regression analysis performed with the polygon-based dataset associates the characteristics of small towns with measures of change in small towns for the period 2001-11. Here we sought to address two, related, questions: To what degree are changes in SMSTs between 2001 and 2010 explicable in terms of the characteristics of those SMSTs? Or can they mainly be explained in terms of the regional contexts in which SMSTs are located? We did not consider these two questions to be mutually exclusive, indeed our suspicion was that change would be a result of a combination of endogenous (i.e. related to SMST characteristics) and exogenous (i.e. related to the regional context) factors.

The findings from the multi-level regression model are restricted to SMSTs across the five countries for which we have complete data: Belgium, Czech Republic, Italy, France, Slovenia, and UK. An overview of population and employment changes are provided in two subsequent sections, with associated policy reflections. Clearly, given our limited data base, we need to be cautious in terms generalising on the basis of these findings, but they do provide important insights into a cross-section of European SMSTs that illustrate many of the issues/challenges facing SMSTs across Europe.

4.1.1. Population change

An initial analysis of variance in the outcome variables to be analysed at SMST level (change in population and change in jobs) suggests that variance between settlements in different NUTS2 regions (calculated as a variance partition coefficient) accounts for about 31% of variance in demographic change but only about 20% of change in jobs. This confirms the value of a multi-level approach that can deal with each of these components of analysis (intra and inter-regional variance). The findings related to the regional-level variables are threefold:

- First, the most important factor which makes it possible to predict population change in SMST is the regional population growth rate. This significance is both statistical and numeric in the model. For each 1% change in regional population, there is a 0.8 percentage point change at the SMST level (taking all other variables into consideration).
- Second, climate has a relatively large statistical effect on predicting population change in SMSTs mirroring the findings of the ATTREG project (see Russo et al., 2012). Thus SMSTs in regions with a smaller difference between the average summer and winter conditions grew faster in the first decade of the 21st century, taking other factors into consideration.
- Third, proximity to larger urban areas (the HDUC) seemed to be less important when taken at the NUTS2 area level controlling for the other factors in the model. The proportion of a NUTS2 population living in a HDUC seemed to have no statistical impact on population growth. It indicates that several factors influence a town's population growth trend.

By contrast the town level variables have a much smaller effect on predicting population growth numerically but reveal some of the potential complexities that underpin successful SMSTs in the five countries for which we have a full set of data. Three results can be identified:

- First, SMSTs/VSTs that have greater autonomy and weight (e.g. as autonomous employment centres) appear to be doing less well. It confirms the intuitive idea that more isolated settlements are weaker and experience more fragile socio-economic conditions than other towns.
- Second, higher employment rates amongst the adult population and populations with a larger proportion of children (i.e. aged under 15 years) are associated with population growth in SMSTs/VSTs whilst larger proportions of adults of pensionable age are associated with population decline.
- Finally and perhaps counter-intuitively, SMSTs that appear to have more vacant houses seem to be growing faster than SMST with high levels of occupancy. This is probably related to the fact that second houses are located in areas of high environmental quality with associated amenities, which then attract tourism flows and related activities.

4.1.2. Employment growth

Among regional-level variables, the most significant influences in predicting employment growth in SMSTs are the following:

- First, the growth rate of employment in the wider NUTS2 region;
- Second, the net migration rate calculated for the SMST itself (consistent with the earlier work by UWE et al., 2004);
- Third, proximity to a significant HDUC population.

Regarding town-level variables, it appears that:

- Relatively autonomous settlements (in terms of employment function) have performed less well between 2001 and 2010, taking the other variables into account.
- However, towns with higher employment rates and a greater proportion of working age adults with qualifications higher than ISCED level 3 (post 14 qualifications) appear to have performed better (controlling for the other variables in the model) than towns with lower levels of employment and lower levels of skills.
- Equally towns with larger numbers of businesses per head of population are associated with stronger growth than those with fewer businesses. This would imply that towns with an underpinning of small and micro businesses performed better than towns with fewer larger businesses.

Finally, the data suggests that the sectoral profile is important. As already pointed out in the previous sections, historically small towns have had some degree of competitive advantage in industrial employment (Massey, 1984). However, today this relative advantage may be problematic, as industrial employment (especially manufacturing) has become increasingly subject to global competition. All the streams of analysis seem to confirm that those towns with a higher proportion of employment in industrial activities tend to have negative trends. Thus SMSTs that had higher levels of industrial employment at the beginning of the period appear to be associated with lower growth rates through the 2000s.

Combining these results with the analysis of the 31 case studies (Chapter 6), a general worrying message emerges: industrial activities (and especially older plants and/or branch plants) are declining in SMSTs due to international competition, delocalization, concentration toward main urban areas, etc. This constitutes a major potential threat for many SMSTs. In policy terms, this requires a response that in the short to medium-term gives specific attention to developing ways of supporting the existing industrial sector(s) while in the medium to long-term seeks to bring about a change in the territorial roles of relevant SMSTs and a diversification of their economic sectors. Our results suggest that supporting the development of SMEs, based on a town's existing territorial capital, functional role(s) and socio-economic profile, is one way forward. However, in many cases where a SMSTs economy is based on declining productive sectors this is unlikely to be sufficient for the long-term sustainability of a town. This therefore needs to be supplemented by an approach that seeks to create new more innovative activities in existing sectors (e.g. the knowledge based economy, tourism, agriculture) that can enhance both the local economy and attract and the retain relevant populations (e.g. tourists, well qualified workers, young people) necessary for long term development anchored in the wider regional economy.

This is all the more important since the regression analysis cannot offer insights in terms of any positive associations between sectors of economic activity and positive employment growth. There was not a positive association between growth and the proportion of employment either in aggregate private services or with public services. This is consistent with the case study findings in that they did not suggest that any of the particular growth sectors identified in individual case studies were replicated across the case studies as a whole even if within particular case study towns they appear to be part of the explanation for their 'success'. Thus it is not possible to say: 'focus attention on supporting this sector or that sector' and this will lead to long-term sustainable growth in the economy and population. We simply know that having a larger number of businesses per head of population appears to be a positive factor.

The overall results can be summarised in the following points:

- Regional context is the single most important predictor of SMST performance, both in terms of job growth and population growth. The characteristics of the SMST itself can also be statistically significant but the effects are numerically less important than the regional dynamic.
- Population change at SMST level appears to be positively influenced by having higher employment rates, more families with children and being attractive for second home buyers. It appears to be negatively influenced by size, functional autonomy in terms of jobs and the presence of older adults (as a proportion of the population).
- Employment change in SMSTs is positively influenced by higher employment rates, a larger number of businesses per head of population (implying a small and micro-business structure) and a larger proportion of working age adults with better qualifications. On the contrary, autonomy in the employment structure, proximity of metropolitan areas and starting with a greater proportion of employment in industrial economic activities were all negative statistical influences on SMST-level job growth.

Taken together with the statistical evidence, a few fine-grain considerations can be developed based on the case study analysis. Despite noting the importance of regional characteristics and dynamics in influencing economic and social change in small towns, several specific potential factors can be extracted from the analysis. In particular, positive demographic change may be seen in towns with the following characteristics:

- proximity to a large city (market access);
- positive employment rate and housing occupancy.

Furthermore, the rate of job growth in SMSTs is related to the following characteristics:

- positive employment change within their wider region;
- presence of skilled-resident active populations and many existing businesses;
- close proximity to a large city and a local economy that is diversified (not predominantly based on either industrial or public sectors).

4.2. Policy observations for the socio-economic development of towns

The observations made in the previous section allow us to develop some general policy observations on the socio-economic development of SMSTs. Whereas policy makers can do little about the climate, they can think about the public services and spatial policies that can enhance the following aims:

- attract and retain families that might be seeking a different way of life to that in larger cities;
- retain or bring back young people who might either leave to go to elsewhere to university or leave to get their first entry into their chosen labour market when they are older.

Towns that do not manage to achieve a demographic balance potentially end up with an aging and elderly population that is associated with demographic decline in this dataset.

Moreover, other specific aims can be developed at town level or – even better – in articulation with higher scales where there is the potential to build critical mass through territorial cooperation among towns and surrounding areas in order to make them more attractive. Strategies can address the following aims:

- Enhancing quality of the place and its attractiveness (touristic sector);
- Productive economy strategy (protection of local production, supporting innovation, etc.);
- Support of small and diversified businesses and a related development strategy.

Based on the analysis of the economic profiles of our 31 case studies, some more specific tailored recommendations can be proposed. As summarized below (see Table 1.), the three profiles can be differentiated along four key dimensions: (i) the groups of actors targeted; (ii) the factors of attractiveness; (iii) the specific drivers; and (iv) the policy tools developed.

	RESIDENTIAL	PRODUCTIVE	CREATIVE-KNOWLEDGE
Target groups	Residents, commuters and tourists	Business actors	'Creative class' and innovative firms
Factors of attractiveness	Good living environment, heritage, quality of provision of services, culture, health and schools, real estate conditions	Competitive business environment, labor skills, availability of premises and of land	Image, Connectivity, Creative environment, quality of provision of services
Specific drivers	Diversity of equipment and amenities, accessibility	Sectoral specialisation, concentration of business activities	Innovation systems and knowledge-based activities, concentration of entrepreneurial activities
Policy tools	Improving public and private services for the population, developing/improving cultural, leisure and touristic infrastructures, investing in transport facilities and green spaces, preserving the environment and the cultural heritage	Creating/improving the quality of business areas, developing supporting services to business, lowering professional taxes, subsidies to targeted businesses	Developing/encouraging clusters, networks and creative "arenas" creating/attracting higher-education and research institutions, developing incentives to entrepreneurship

Table 1. Main characteristics of the three local economy dominant profiles in SMSTs (Source: Own elaboration).

It is important to recognise that the above table provides generic indications of general forms of action that could be pursued in relation to each socio-economic profile. In each instance specific, locally relevant policies/initiatives will need to be developed to address the individual factors of attractiveness in a manner that will support/enhance them and act as a 'driver of local development'. However, we need to bear in mind that in each SMST these profiles are articulated in different ways and the general indications in the table cannot be applied in a 'mechanistic' manner. Attempts to develop policies to support the relevant assets must be carried out on the basis of a clear analysis of these assets and the role they play in each SMST. On this basis, and with appropriate support from higher scales (e.g. in terms of a regional/sub-regional spatial plan), SMSTs can then develop an overarching and integrated strategy within which they can develop particular 'policy bundles' and allocate resources (in other words a place-based approach) taking into account wider spatial and socio-economic relations.

As it is unlikely that the local economies of SMSTs can be self-sustaining they need to be orientated to relevant external markets (in case of productive economy or knowledge-creative based economy), and/or to internal (local) demand (in case of residential economy). A combination of a local and external orientation is likely to be the most sustainable long term approach to developing the economy of an SMST. In the first instance it is important that SMSTs 'recognise what they have' (in terms of identifying existing strengths and weaknesses), build their strategy around developing those place-based resources that are positively correlated with growth as these are likely to be the initial potential key drivers of development, whilst simultaneously addressing weaknesses/deficiencies. In the longer term it will be necessary to develop not only existing assets but also to support the development of new, albeit related, assets that will support a more diversified local economy. In the case where the residential economy is dominant, it is the mix of amenities (e.g. services), the natural and built heritage, and quality of life, which seem to be the keys to development. Whereas in the case of the productive economy specialized skills, know-how and professional skills are strong assets for external investors and markets but will also stimulate the development of related small local businesses anchored in the local economy thus making them potentially more resilient to external shocks. In both cases, social networks (related to both locally embedded knowledge and social cohesion/capital) may help counterbalance the geographical factors which favour large cities by offering alternatives to companies and populations that are seeking to escape the constraints associated with over-concentration and declining quality of life in larger cities. This argument, which has been put forward in the literature (Carrier et al. 2012), is also significant when knowledge-based activities grow in SMSTs.

Finally an in-depth analysis of the local economy provides information on the type of performance sources and of target groups (firms, new entrepreneurs, residents, commuters, tourists, etc.) who contribute to economic development within a SMST context. This must constitute the basis of an integrated strategic approach. In the case of the productive economy, competitiveness is based on human and/or physical capital in relation to external market demand; in the case of residential economy, the advantage of the SMST is in its quality of life and amenities; whereas in the creative-knowledge economy it is the vibrant and creative environment, the connectivity of the town to metropolitan areas, and also the quality of life, which may attract creative people and innovative firms.

In each case a strategy needs to be developed that supports the factors relevant to the local economy and develops them in ways (through various forms of support such as investment in the relevant infrastructure, provision of incentives, collaboration between relevant/complimentary sectors, taking care not to overdevelop in ways that threaten environmental and amenity values, etc.) that are sustainable. This requires not only specific policies (or bundles of policies) to be developed and deployed but also associated forms of governance to be developed that provide a sense of 'local ownership'. At the same time it is necessary to avoid becoming too 'inward looking' and maintain/develop an external orientation.

However, as highlighted in the overview of the institutional contexts (Chapter 4), the capacity to develop and implement strategies that deal with these aims is significantly affected by the type of institutional system and national government policies and regulatory framework in which town's local economy and policies are embedded. The relevance of the institutional system for the performance of towns is related to the distribution of power and resources between the State and sub-national authorities (regions or provinces, counties and urban municipalities). As part of this, specific attention needs to be given to supporting/developing the mobilisation capacity of SMSTs through the provision of resources, technical/administrative support. Such support can where relevant be supplied by a combination of European, national and regional sources.

Of course, geographic factors affecting the development of SMSTs are closely related to the effects of spatial proximity and concentration of socio-economic activities. As towns fulfil diverse functions in the urban hierarchy, their development depends on the exploitation of comparative advantages as well as on the nature of relations with other surrounding urban and rural settlements. This latter point may be of considerable significance for all types of SMSTs in that our case studies revealed a great deal of variation in the capacity/willingness of such towns to engage in collaborative/cooperative actions with other proximate SMSTs in terms of developing common projects (other than for basic services such as waste collection and water) and sharing of services (e.g. education and health care). Generally speaking the collaborative capacity of SMSTs was weak, and where it exists seems to depend on developing shared norms and establishing collective organisations that embody such norms and are articulated both locally at higher scales (as in the case of West Flanders). What tended to be lacking was a wider 'polycentric vision', embedded in the wider region, for the particular sub-regions that could frame a long-term development process that is of benefit to all relevant SMSTs. Developing such a 'vision' will need to be a collaborative venture involving regional and local actors who can work together in partnership (see OECD, 2013; Pucher et al, 2012).

In terms of the above a flexible institutional setting, including patterns of behaviour, the legal framework, power structures, local agents and their modes of interaction, policies and regulations may play a facilitative role in creating an encouraging environment for towns. The inter-connectedness of geographic and institutional factors and their co-evolution in the course of time reflects the complex relationships of mutual influences. SMSTs need to be inserted into these relationships and able to actively play their part in shaping them in the future otherwise their fate will largely lie in the hands of others. However, individual SMSTs are unlikely to be able to directly participate in these debates and therefore it is important that they develop sub-regional organisations that are able to represent their collective interests to higher levels (as we saw in the case of West Flanders).

A final consideration should be given to upper-scale institutions and associated policies. Here it is necessary that a stronger voice in regional debates be given to smaller settlements. It is clear that towns play an important functional role for their territory and that they have factors of attractiveness that differ from those of large cities. In fact, they are often very dynamic in terms of population and employment, thus their fate may be different from the one typically painted for SMSTs of decline and inertia.

In this context the European level can potentially encourage a focus on small towns, but not an exclusive one, within the relevant national/regional contexts, particularly through the

Cohesion Funds (and the integration between these). However, much depends on the 'guidance' contained in the Common Strategic Framework and how this is 'interpreted' by national authorities and included in Partnership Agreements and then utilised by Management Authorities in terms of drawing up Operation Programmes: how SMST feature in these (also the roles assigned to local authorities - for instance are they involved in drawing up the OP or merely 'recipients') and the associated use of new instruments such as Integrated Territorial Investments, integrated sustainable urban development and Community-Led Local Development. Regardless of which specific instruments are utilised they need to be combined into 'coherent packages' relevant to each region/area - a place-based approach that is inclusive and genuinely engages a range of stakeholders.

Therefore, towns should not be excluded from public debate on the future development of the European territory. On the contrary, given their significant and growing share in total European population, they should be considered, seriously, as a key component of the territorial European landscape in terms of employment and population location, and of spatial mobility dynamics and economic development.

5. Policies, Governance and Collaboration: recommendations

In this section we seek to draw out the policy and governance implications of our work for SMST in terms of three levels – European, national and regional/local. It is important to bear in mind that, as we have noted on a number of occasions, the term SMST covers a wide variety of such towns across Europe and even within countries there is considerable variation between them, not least in terms of the types of SMST we analysed through the functional analysis (agglomerated, networked and autonomous/isolated) or in the socio-economic analysis (productive, residential, creative). Therefore it is necessary to once again caution against the adoption of any simplistic 'one-size fits all approach' and to recognise the importance of developing a genuine place-based approach (Barca, 2009) that situates SMST in their local and regional context whilst paying due attention to their relationships and interactions with different scales (national and international).

This approach also requires the development of forms of governance and spatial planning that can facilitate and support the utilisation of a place-based approach that builds upon Europe's rich territorial diversity (CEC, 2008). Moreover, we need to be aware of the importance of ensuring that the approach adopted reflects the key aims of the Europe 2020 (CEC, 2010) strategy (smart, sustainable and inclusive growth) and the associated aims of the Territorial Agenda (Hungarian Presidency, 2011). In relation to this it is essential to take into account the post-2014 Structural Funds, which seek to create an appropriate overarching framework and support the pan-European achievement of the priorities of Europe 2020 in order to bring about greater economic, social and territorial cohesion across the EU and at national and sub-national levels.

Equally importantly we also need to recognise that Member States have a crucial role in this process in terms of 'translating' the guidelines contained in the Common Strategic Framework (CSF) "…into the programming of the CSF Funds in the context of their specific needs, opportunities and challenges." (CEC, 2012a, p3; see also CEC, 2012b). Thus the drawing up by Member States of Partnership Agreements and the National Reform Programmes are of critical importance. This requires engagement with national, regional and local stakeholders in order to identify and operationalise the relevant principles and aims vis-à-vis the partners at national and regional level. In addition it also requires integration with other relevant national funding streams so that they and the CSF funds are utilised in a coordinated and focussed manner to achieve the best possible outcomes.

Given the above there is an important governance dimension to how all of this will be achieved. This requires the existence of appropriate and interconnected governance arrangements in terms of:

- multi-level governance (European, national, regional and local),
- horizontal governance to facilitate coordination and integration at each level, and
- territorial governance to ensure the development of an integrated territorial approach vis-à-vis the use of CSF, national and other funds (e.g. regional and local).

In terms of this general context it is then necessary to focus more directly on SMSTs and on the basis of our work consider their position and role(s) in terms of our basic typology of towns (agglomerated, networked and autonomous/isolated). However, we constantly need to be mindful of the different contexts and the institutional and socio-economic (macro) regional profile within which SMST exist, albeit without assuming that these factors inevitably pre-determine their fate.

This in turn requires that we bear in mind questions such as:

- How can the overarching European and national framework support SMST?
- What role can SMST themselves play in achieving the aims of Europe 2020?
- How can SMST, either individually or in collaboration with other towns and cities, develop responses to their situation by building on and developing their assets?

On the basis of the foregoing we will finally seek to provide more general insights into the possible types of policy approach that can be developed and are potentially generalised to other similar SMST.

In what follows we address the above issues in terms of three levels: European, national and regional/local.

5.1. The European Level

The overarching European framework is provided by Europe 2020 with its focus on smart, sustainable and inclusive growth through achieving its five headline targets (research and innovation, climate change and energy, employment, education and poverty reduction) and the associated Territorial Agenda so as to ensure that economic, social and territorial cohesion is at the core of the approach. Whilst SMST are not referred to in Europe 2020 their role is acknowledged in the accompanying Territorial Agenda in terms of contributing to "…common European territorial priorities. "(Hungarian Presidency, 2011, p5), helping promote polycentric and balanced territorial development particularly at regional level, encouraging integrated development and providing services of general interest in all areas (especially in rural areas).

More specifically the Structural Funds are to be utilised in a manner that will closely support these objectives. Thus the Commission has provided the CSF in order to achieve enhanced coordination between the different funds. The aim of the CSF is to "…increase coherence between policy commitments made in the context of Europe 2020 and investment on the ground. It should encourage integration by setting out how the funds can work together." (CEC, 2012a, p3). In addition new instruments such as Integrated Territorial Investment, integrated sustainable urban development and Community-Led Local Development (CCLD), particularly in association with the general use of the LEADER approach, offer enhanced encouragement for Member States and Managing Authorities to adopt a more integrated and territorially focused approach that has a significant bottom-up' component.

Within this context SMSTs could become part of the focus developed by Member States and relevant regional authorities. Whilst it seems unlikely that the European Commission will single out SMSTs as a policy object at European level it could certainly signal the significance of SMST to territorial cohesion and local development in terms of the negotiations with Member States over Partnership Agreements (on these see Pucher, Naylon and Resch, 2012). This would provide a clear 'steer' to Member States and at least ensure that the roles and functions of SMST in are considered in relation to Operational Programmes and territorial development/cohesion in each country and region.

In terms of the Partnership Agreements (see Pucher, Naylon and Resch, 2012, for a more detailed consideration of their role) it will be crucial to ensure that a range of national, regional and stakeholders are involved in identifying the relevant priorities and ensuring that there is a clear integrated territorial focus and that CCLD is actively promoted as part of a wider territorial strategy. Although a report by CEMR (2013) did note that across Member States while local authorities have had some involvement in developing the Partnership Agreements the level of involvement had varied considerably. The evidence they collected also indicated that the new instruments referred to above seem likely to be used in a 'tentative manner', with many Member States adapting existing delivery instruments to meet requirements for greater (territorial) integration. Whether or not this will surmount longstanding sectoral divides and lead to the development of an integrated territorial focus must remain a moot point for the time being. Furthermore a report for the European Parliament on the legislative proposals for post-2013 Cohesion policy did note the need for the territorial dimension to be more explicitly incorporated into the new provisions governing policy, a failure to clearly define and operationalise territorial cohesion and clarify what an integrated approach to territorial development actually means in practice (see Mendez, Bachtler and Wishlade, 2013).

The Commission has signalled there is an important role for CCLD (for more detail on this instrument see European Commission 2013) in the new programming period and that it is intended as a flexible instrument to be adapted to reflect regional/local conditions. Among the potential forms CCLD could take that are relevant to SMST are new forms of urban-rural partnerships (echoing recommendations in OECD, 2013) and the development of partnerships and strategies involving "Smaller cities, market towns and their surrounding rural areas." (ibid, p12). However, much will depend on the willingness of national and regional authorities to support and trust relevant local organizations and of course on their capacity to engage with the process. Thus as suggested in Chapter 7 there will need to be an ongoing element of technical support and capacity building at local level by national and regional authorities which the European Commission should positively encourage and support.

If these various instruments are to be utilised as part of a strategic and integrated territorial approach it will be vital that full use is made of the place-based approach. However, as was already shown in this report, such an approach cannot simply be focused on a SMST in isolation. Depending on the regional location it needs to be structured around: the relationships with larger urban areas (in contexts where SMST are agglomerated; on clusters of SMST (where they are networked); or on the relationship between an SMST and its rural hinterland (where it is autonomous/isolated). In each case the place-based approach must be utilised in a flexible and creative way that respects the regional and local context, actively involves a wide range of local actors and draws upon local knowledge to develop a strategic and coherent long-term approach (see Zaucha and Świątek, 2013). Such an approach needs to recognise local specificities, including strengths and weaknesses in terms of territorial capital, build upon these and seek to remedy deficiencies whilst simultaneously being outward looking in terms of the wider regional, national and European contexts in order to insert each place into this complex nexus.

What the above indicates is that in terms of developments at European level within the structures and instruments of the new programming period there are potential opportunities for SMST to benefit. The European institutions could perhaps signal more clearly the need to take into consideration the role that SMSTs have in achieving the aims of Europe 2020, territorial development/cohesion. In this report we have seen that SMSTs can play diverse range of roles in different contexts which emphasise and build upon the territorial diversity of the European continent: within the 'pentagon' area they contribute strongly to GDP growth, in several Central European countries SMSTs help to counterbalance the tendency to metropolisation, in crossborder regions they contribute to polycentricity, etc. In addition there is a need to go beyond policies related to the Structural Funds and ensure that other European and national sectoral policies (e.g. employment, transport, services of general interest) are articulated with the territorial approach. Much, however, will depend on how Member State governments and regional authorities react to/interpret these opportunities, and it is to these we now turn.

5.2 The national and regional levels

As we noted in Chapter 7 no country has a specific policy focus on SMST, although in some countries there is a concern with specific types of towns that often include a significant number of SMST. In some countries or regions (e.g. Wales, Catalonia or the French Centre) we were able to see some evidence that relevant authorities recognised that SMSTs do have a significant role to play particularly in relation to their regional context. Nor were we able to identify any clear relationship between a country's institutional structure and the ability of SMSTs to develop their own policy responses. In Chapter 4, following Bobbio (2002)'s conceptualisation of the possible relationships between different layers of government (dependence, separation, cooperation and competition), we stressed that in many countries SMSTs experience a situation of dependence *vis-à-vis* the national level, and possibly the regional one in federal or regionalised states. Lower level governments have reduced competences, legal autonomy and tax-raising powers compared to upper levels. In our case study countries, this takes place typically in unitary states, especially Cyprus, Czech Republic, Poland, or Slovenia, where devolution is a recent process. In Slovenia or in the Czech Republic, the creation of levels of government that would be intermediary between the municipalities and the central state is not a priority. On the other hand, there are several examples of regional or national strategic plans which acknowledge and value the functions played by SMSTS. In the case of Wales, the Welsh National Spatial Plan (Welsh Government, 2008) included a comprehensive identification of all significant settlements in Wales. The fact that rural small towns often 'punch above their weight' (n the sense of carrying out functions usually associated with much larger places) has led to the recognition that smaller towns need to develop collaborative relationships and work together in a complimentary manner if they are to provide a full range of services to the relevant populations. In a different institutional context (substantial devolution but extreme municipal fragmentation), the regional authority of the French Centre Region has identified 16 'poles of centrality', each organised around a municipality of at least 5000 inhabitants and providing a wide range services to a hinterland. For these towns, the strategic plan makes it a priority to "guarantee a high level of superior services" (Région Centre, 2011, p. 119) while cautiously pleading for a progressive reorganisation of supra-municipal cooperation bodies at the level of micro-regions (fr. *bassins de vie*). In sum, much depends on the attitude of national and regional authorities in terms of developing an over arching territorial policy framework that recognises the roles and functions of SMST in their regional context and is sufficiently flexible to accommodate their differences. At the same time, it is simply not possible (nor necessarily desirable) to give the same level of attention to all SMSTs. At a national or regional level, choices have to be made about which SMST to focus on and then how other (proximate) SMST will fit into the strategy. Based on our analysis, we can argue that the focus should logically be on SMSTs that are the economic and functional 'centres' of micro-regions, but also that such towns need to be nested in a wider territorial system.

In terms of the Structural Funds there is a greater likelihood of the European Commission being able to influence a Member State where the importance of EU funds is greater (e.g. the Transition and Less-Developed regions). Even in these cases much will depend on how national governments draw up the Partnership Agreements and decide to address the objectives of Europe 2020 in their particular context. The European Commission can attempt to 'steer' member states in particular directions but experience shows it cannot 'dictate' or 'police' every detail of their actions in relation to European Funds, nor would this necessarily be desirable as Member States need to address the priorities and challenges which they face and see as important. The problem vis-à-vis SMSTs is that we did see some evidence in our case studies that there is an existing tendency to focus on the major urban areas (especially capital cities) as the major drivers of growth and competitiveness and thus a danger that SMSTs will be relatively neglected. Moreover, in some countries there is no, or a limited, tradition of 'bottom-up' activity that does not bode well for CCLD or the development of the involvement of a wider range of stakeholders at national and regional level in drawing up the Partnership Agreements and the Operational Programmes. Much will depend on the prevailing culture of partnership building and who is involved. In part this about openness and transparency but also relates to the 'capacity to participate' and the extent to which this is actively encouraged and supported through capacity building activities.

Nor should we assume that in countries which are largely made up of More Developed regions there are not fruitful interactions with Transition and Less-Developed regions, with both learning from the experiences of each other in terms of regional and local development. Such countries (e.g. France, the UK, and Denmark) have a long tradition of developing national integrated approaches to urban development that includes a significant element of community participation. There are important lessons to learn from these experiences and there is evidence that similar developments have taken place in rural areas. Moreover, there have been on-going arrangements to share experience, knowledge and learning between local authorities and to transmit this to the European level through participation in a range of European networks (e.g. URBACT). Certainly lessons can be learnt from the way in which France, a country with large numbers of small municipalities, has used 'financial incentives' provided by the central state to 'persuade' or induce neighbouring municipalities to work together. In this sense it is possible at the national and regional levels to develop mechanisms that depending on the context encourage SMSTs to work together, cooperate with urban authorities or combine forces with their rural hinterlands.

This also highlights the importance of learning and knowledge exchange both within and between countries. The ways and means by which different forms of knowledge are integrated into the processes we are dealing with is of considerable importance for the development of the territorial and place-based approach. European, national and regional initiatives are important if this is to be encouraged and needs to seen as central to the development of an integrated approach.

5.3 The Local level

The local capacity to act can be understood in terms of various spatial levels. At the European and national level, it is worth noting that that in many countries the institutional structures/administrative boundaries have often 'lagged' behind the urbanisation processes. This has created a certain distortion between stable administrative boundaries and the processes which for a large part of the 20th century favoured the emergence of SMSTs as providers of services of general interest and (local) job opportunities. As we saw in Chapter 4, France, Italy, Spain have very fragmented municipal systems, which go back to the early 19th century, at a time when a majority of the population lived in villages or other rural settlements. In these areas no significant reform of the municipal territorial system has taken place since then. As a result, whatever the region considered, the morphological and functional definitions of the SMST are at odds with the administrative one. At the other extreme, Sweden shows institutional flexibility, where the boundaries and competences of local governments have been reshuffled to reflect wider changes. This was the case for municipalities between 1940 and 1970, and more recently a few counties were merged. We can interpret the Swedish case as an anticipatory move, as compared to policies trying to address territorial problems without changing the prevailing institutional structures. In effect today, whatever the country and its territorial local government system, the centrality role of many SMSTs seems to be being increasingly undermined because of declining and less active populations in less densely urbanised regions, or because they are becoming more and more integrated into wider urban regions offering economies of agglomerations to industries and tertiary activities. In this new context, to which we can add budgetary reforms in the public sector in many countries, the extent to which local institutional structures can help SMSTs to maintain their role of services and jobs providers is an important question. This is not an abstract one, as we can see different socio-administrative institutional frameworks in neighbouring countries, for instance in Germany and Belgium (and its difference between Flanders and Wallonia) at the core of Europe, have been more supportive of the centrality role of SMSTs even though the urbanisation patterns appear to be to a certain extent similar.

Considering local capacity, the point needs to be made that there are a variety of possible paths of development available to an SMST; in part this depends up ‘deliberate choices’ about the appropriate developmental path but it will also reflect a multitude of individual investment decisions (by businesses) and by individuals/families that local administrations can only indirectly influence. This places considerable limitations on what an SMST can actually achieve on its own and emphasises the need to developing an inclusive approach to developing local strategies. In a sense it is unrealistic to see SMSTs as ‘masters of their own destiny’, particularly in the context of the current globalised economy and increased levels of short and long distance mobility. However, this should not be taken as a message of despair. Our case studies do show that SMSTs can grow and adapt to changing external circumstances.

Also, we need to bear in mind that it is often difficult to replicate the conditions for ‘success’ in one place elsewhere as they appear to be deeply rooted in the local society and economy and may also reflect regional location. Indeed our work suggests that the regional context is a significant determinant of the socio-economic situation an SMST faces, while the national context can be crucial in institutional terms; although these are by no means the only factors and should not lead to a passive approach.

As we pointed out in Chapter 7 few of our case towns appear to have developed a ‘meaningful policy’ of their own. However, there were examples that did suggest it is possible for an SMST, or the relevant local authority, to develop a local strategy that attempts to identify local territorial capital, recognise deficiencies in relation to that strategy and address them in a strategic way, although whether or not they have been 'successful' will only become clear over a longer period of time. It was possible to identify a 'driving force behind' these strategies: the public sector, at times in partnership with other sectors, played the leading role in developing and implementing the strategy. In turn this pointed to a worrying weakness in the private sector which may be typical of the situation in many SMST.

The point is that an SMST, and associated governance system, needs to act in a conscious and considered manner to do this. As noted above in most of our cases the public sector played the lead role and did so in partnership with other regional and local stakeholders, drawing on national and European support where available. To do this they developed new, often innovative, forms of formal and informal organisations that cut across traditional administrative and sectoral boundaries to create the necessary means for long term action. A significant part of this has been the inclusion of a wide range of local stakeholders who have been involved in decision making and the delivery of individual, often small scale, projects. In this sense where it is possible new European instruments such as integrated territorial investment, integrated sustainable urban development and CCLD should be fully utilised and combined with other policies/instruments to create a coherent package of policies that will bring about long term and sustainable change based on the strengths (in terms of territorial capital) of an SMST.

From a rather different perspective two of our autonomous case study towns (Alba and Athieniou) did show that it is not always the case that the public sector is the leading force. Here the towns were able to build on their local economy and it in a way that supported local endogenous development. Much of this 'success' seems to have been historically rooted in local social relations and the existence of a high level of social cohesion, trust and local 'know-how' (i.e. the local milieu). What took place was largely endogenously based local growth that exploited key aspects of local territorial capital in a positive manner and was able to adapt to changing external circumstances that overcame any size disadvantages associated with 'being small'. This seems to have been based on emphasising quality and a local economy focussed on traditional sectors that were able to modernise (e.g. in agricultural areas 'smart rural growth' based on linking traditional agricultural forms with modern businesses and other sectors such as tourism to provide new opportunities for cross fertilisation) as well as encouraging small businesses to grow and develop new products for external markets.

In terms of our agglomerated towns several of these appeared to be doing well, although much appeared to depend on their proximity to thriving large urban areas and the associated suburbanisation process. Indeed some of these faced the possibility of becoming 'dormitory towns' and this was often perceived as problem as in the longer term it threatened to undermine local social cohesion and service provision. Once again this should not be taken to imply that even when there is the presence of a dominant metropolitan centre a SMST cannot develop a distinctive approach of its own based on the territorial assets of the town and the surrounding region. If utilised in a constructive manner such a location can be the basis for long term development: for instance agglomerated SMSTs have clear advantage as places of residence compared to cities as they offer cheaper housing prices than at the heart of large cities or even in their immediate suburbs (Demazière et al., 2013). Thus they are highly likely to be affected by population deconcentration, since very small towns and other settlements around them offer even lower housing and land prices, as well as an image of a preserved countryside, which contrasts with the supposed ills of the urban environment conveyed by a SMST. In this context, the orientation of planning documents at a local, regional and national level is a key issue, as well as the fact that planning has been decentralised in some countries, and not in others. For instance in France, as a result of the Gaullist period, the whole of the Ile de France is covered by a regional plan (fr. *Schéma Directeur Régional d'Ile-de-France*) that is able to guide development. However, there is no equivalent plan for the neighbouring regions of the Parisian Basin making it difficult to steer population growth to urban areas (which would be sensible as a full range of services are already available); the situation is further complicated by the fact that many Parisian Basin municipalities under 5.000 inhabitants have no local plan. This reveals the important role that regional authorities have to play in terms of providing an overarching planning framework that can steer development and support SMSTs.

In other countries where the national government has set spatial objectives for housing and jobs (such as the UK and its 'urban renaissance' policy during the 2000s) it is more feasible to orientate population deconcentration towards already existing towns, although even here the long-standing shift of population to rural areas continued suggesting that government has only limited capacity to influence such movement. Furthermore, several of our case studies show that there is strong resistance to the institutionalisation of metropolitan city-regions, in which SMST could play a part. In Italy, as defined by a law in 1990, the metropolitan city includes a large core city and the smaller surrounding towns that are closely related to it with regard to economic activities and essential public services, as well as to cultural relations and to territorial features that form its metropolitan area. But, as of 2013, none of these administrative authorities has been activated, for various reasons: firstly, because of the lack of clear indications that define the legal extent of the areas; secondly, because of the multiple levels involved (Municipalities, Provinces and Region), it was difficult to come to an agreement. Similarly, in Spain the possibility of establishing metropolitan areas is acknowledged in the Regulating Law of Local Regime 7/1985, but this kind of entity has not achieved any relevant institutional recognition (Guttierez and Russo, 2013). Today, the Valencia and Barcelona metropolitan areas are exceptions, though in both cases the entity is in the early stages of development and acts primarily as an agency to promote collaboration between municipal governments and does not have any exclusive competences.

Our networked town case studies also provided us with variation in the capacity of SMSTs to work together in a collaborative manner. What successful examples of collaboration did exist suggest the need for an established culture of regional and inter-municipal cooperation in the region that can be expressed through a variety of forms of organisations/bodies that are able to articulate collective political interests and focus on developing approaches to common problems/issues while supporting individual municipalities. This is not to be taken to mean that there was no competition between individual municipalities, but that when required it was possible to engage in collective action. However, even in the 'best cases' there was no evidence of an overarching 'polycentric vision' for the towns for the region. It is perhaps unfair to expect SMSTs to develop their own 'polycentric vision' and it is more appropriate that this be left to regional authorities, in cooperation with the relevant SMST, to develop such an approach and distribute funding from EU, national and regional sources accordingly to support this vision. What is also important, as the OECD (2013) points out, is it the development of 'models' of governance appropriate to the particular situation.

In relation to a spatial planning approach and the development of suitable 'policy bundles' it is neither possible nor desirable to rigidly prescribe a particular way of doing things because of the wide variety of regional situations and types of SMSTs. Spatial planning has a key role in terms of providing an analysis and framework for the development of a strategic approach to the relevant territory that identifies and comprehends its dynamic and fluid formation and articulation with other territories and thus is not restricted to existing administrative boundaries. Spatial planners need to work with regional and local stakeholders to produce a shared vision of where territorial development is going and then can allocate investment (e.g. in infrastructure) to support that vision. This will need to be a nuanced vision encompassing the territorial as whole but also sub-regions and hierarchies based on the functional complementarities of SMSTs. In order to feel a sense of 'ownership' SMSTs will need to play a role in the production of this vision and framework. Then it will be possible to develop 'policy bundles' (reflecting Table 11.1, Chapter 6) to achieve the desired outcomes at different levels – regional, sub-regional and local. The outcome for the territory as a whole should represent a nested and integrated manner (i.e. in terms of a place-based approach - Barca, 2009).

5.4. Final Thoughts

Overall the there were a number of factors that influenced the development of SMSTs and the capacity to bring about change, there were:

- Attitude of national/regional government. Are SMSTs seen as an issue to be addressed – in some cases they are. In these cases we were able to see examples of action taken to support them, although the extent to which a coherent territorial approach was developed is debatable. The new EU Cohesion Funds allow the European level the opportunity to signal the importance of SMSTs and the need for member states to address their situation in relation to the use of the funds. The new emphasises on integrated territorial development contained in the CSF and associated new instruments (e.g. CCLD, Integrated Territorial Investment) for provide opportunities to develop regional strategies that include SMSTs and recognise their roles at regional and sub-regional level as well as their importance for more balanced territorial development and greater social and economic and territorial cohesion.
- A series of factors that can be included under the general heading of Governance:
    - ➢ Multi-level governance (including EU[where relevant], national and regional/local government). This is particularly important for SMSTs in terms of access to additional resources but also in terms of developing joint projects and sharing services. Can SMST insert themselves into such systems? Do they have the capacity/experience to do this? Only a few of our case study towns seem to be capable of doing this. In this sense it important to provide SMSTs with the necessary technical support and resources to engage in these forms of governance and be represented in the decision making processes that shape regional strategies.
    - ➢ Local capacity to act (mobilisation) and create working relationships (e.g. partnerships) with local stakeholders that are inclusive in order to bring together local knowledge and resources (territorial capital). This requires the creation of a 'development vision' for the area and the involvement of a wider range of stakeholders through the development of appropriate partnership structures to develop and support a long term local development strategy and its implementation. Once again it will be necessary to provide the appropriate level of support and resources.
- Territorial governance. This can be split into two, albeit interrelated, dimensions:

- ➢ The ability to engage with the wider regional/territorial system of governance and to insert themselves into the relevant regional or subregional strategies.
- ➢ Can they collaborate with other proximate towns in ways that build on their individual forms of territorial capital and compliment one another? The case studies suggest there is some evidence of this in terms of common service provision (e.g. garbage and water/sewage projects). Generally it does not seem that they can go beyond more basic projects to engage in concerted actions to support collective local economic development or provision of services that could be used collectively based on an allocation of service functions within a polycentric region. This raises the issue of how to move from governance arrangements (or partnerships) designed for a single-purpose to more holistic or strategic partnerships (see OECD, 2013).

- The level of resources available to SMST that can be deployed – unfortunately we do not have much evidence on this. Although the general impression was that they lacked the resources needed to address their problems and therefore access to resources from higher levels (EU, national and regional) was crucial.
- Appropriate spatial planning approaches and policies that allow for the identification of territorial dynamics and functional relationships, across different spatial and functional scales, whilst seeking to create a shared 'nested vision' for the relevant space (regional, sub-regional and local) which can then be supported through a coherent set of policies. Clearly these will vary depending upon the location of the SMST: for instance those influenced by their location in, or adjacent to, strong metropolitan regions will require a different approach compared to isolated SMST in more rural areas. SMSTs on their own will largely be unable to develop the necessary policies and therefore will need support particularly from the regional level. Our case studies suggest that generally there is an absence of such regional approaches, although in Wales, Flanders, Catalonia and France there is some evidence of the existence of such an approach and associated policies.
- The role of Leadership. This can take the form of dynamic and well connected mayors who are in position for a long period of time and develop a clear long-term agenda and strategy for change (this runs the risk of stagnation and accusations of 'despotism'). But it can also take a more 'collective form' in which a group of people (senior politicians and officers) provide the long-term agenda and strategy. Much seems to depend upon the knowledge/contacts/capacity to access a range of funds and combine them in a focussed manner related to the strategy. But some form of leadership is needed to drive the process.
- The issue of 'local identity'. This is a difficult question, but it does seem that those towns with a strong 'local identity' (or 'sense of community'), and associated social cohesion/capital, are the ones that have been 'more successful' in developing their own strategies, but these may well represent 'unique outliers'. Also it needs to be remembered that such places still need to be 'outward looking' in order to build links with other places.
- Particularly in isolated rural SMST population loss (young people and women) is a real problem as is the aging population that remains. Whereas those located in, or close to, metropolitan regions run the risk of becoming 'suburbs', although some towns seem to benefit from this in terms of firms relocating there. In deindustrialising SMST there was also evidence of some population loss. These issues will need to be addressed through the provision of appropriate employment,

housing and service opportunities in the relevant populations are to be retained and new people attracted.

- Involving the private sector generally seemed to pose particular challenges, in most cases the public sector was the driving force and the private sector played a relatively minor role; in fact in some cases it seems to have been invisible. More generally this problem may reflect the weakness of the private sector and/or its lack of capacity to identify and represent its collective interests. It should be noted that the OECD (2013) noted a similar problem in its case studies of rural-urban partnerships, so this would suggest the issue is not one specific to our work.

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