Looking for PeripheRurality

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Work Package 504
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Socio-economic Sciences and Humanities Europe moving towards a new path of economic growth and social development - Collaborative project

Looking for PeripheRurality

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Abstract

Rural areas still play a major role within the EU, as Europe is still a fairly rural continent. Moreover, EU rural areas are going through greater challenges and major transformations. After the Eastern enlargements of the EU (in 2004 and 2007), they are getting more and more heterogeneous, in terms of their main socio-economic features as well as of agricultural activities. According to this increasing heterogeneity, the traditional urban-rural divide can be now considered almost outdated (OECD, 2006). Indeed, a multidimensional approach is crucial in order to catch all the different features affecting trends and development of rural areas. For example, central rural regions in Continental countries sharply differ from more peripheral rural areas still facing major development issues. This research has highlighted the main dimensions affecting EU rural areas. First, some considerations on the main drivers of EU territorial development have been analysed. Then, throughout cluster analysis, specific typologies of EU rural areas have been identified. According to this classification, clear territorial patterns emerge. Actually, clusters of more central and more accessible regions are quite different from those clusters composed by more peripheral and lagging behind regions. Thus, geography still affects deeply both the economic performance of regions and their main socio-demographic trends (both in urban and rural areas). Moreover, by computing a comprehensive PeripheRurality (PR) Index, the existence of a more complex geography at the EU scale emerges. National approaches to rural and peripheral areas should be substituted by broader approaches, encompassing all the different territorial level of the analysis.

Contribution to the Project

This report aims at summarising the main features of EU rural areas, by linking together both an economic perspective and a more geographical one. It sheds lights on the different typologies of EU rural areas, by suggesting the existence of a new geography across Europe.

Keywords: Economic growth path, EU integration, rural development, regional policy

Jel codes: O18, R11, R58, Q01

Content

1. Introduction and main objectives

MS104 aims at describing rural areas across Europe, defining the degree of rurality of EU NUTS 3 regions. The main idea behind this work is that the degree of rurality, although it is unobservable, shows multidimensional features, encompassing different thematic areas (from the economic dimension to the geographical one). According to these dimensions, a great heterogeneity is observed across Europe. Thus, this analysis is aimed at summarizing those different dimensions within a univariate indicator: the PeripheRurality Indicator (PRI).

According to this framework, MS 104 shows a twofold purpose.

First, harmonized and comparable regional data on the EU-27 scale are collected, by creating a comprehensive dataset, organized in different thematic areas. The dataset includes demographic variables, economic indicators and other land use variables. It shows innovative features, too: actually the dataset also includes some geography-related variables, which are aimed at measuring the extent of peripherality of the EU regions. Accessibility indexes and the distance from major urban areas are included within the dataset. According to this set of variables, it is possible to perform quantitative analysis on the EU rural areas, in order to identify a univariate indicator of rurality. In particular, MS104 deals with rural areas at an appropriate *territorial scale* (i.e., the level 3 within the NUTS classification) assuring an appropriate *time coverage* (generally, the last decade). Moreover, in order to assess a full comparability in the obtained results, the same time/space coverage is provided across all EU-27 Members States.

Moving from the data collection, the second and major purpose of MS104 is the identification of the main territorial patterns affecting rural areas within the EU-27 Member States. Moving from the definition of the main characteristics of these areas, the work is also aimed at describing the major spatial (and regional) development patterns, which have taken place during the last decade. Although the focus of this analysis is mainly on rural and peripheral regions, also urban-rural links are integrated within this analysis. Meanwhile, a specific focus is devoted to the spatial analysis of the main patterns which have emerged from the quantitative analysis. The main idea is that geography still matters in defining and analysing the EU rural areas.

The approach of this analysis is mainly quantitative. In particular, multivariate statistical techniques are applied (principal component analysis and cluster analysis) in order to highlight territorial patterns within the EU rural areas. Moreover, a multidimensional approach is followed. According to the main literature (Copus *et al.*, 2008), rural areas are analysed according to a large variety of indicators (e.g., socio-demographic issues, economic characteristics, relevance of the agricultural sector). Moving from these approaches, the analysis also focuses on a more geographical dimension, thus including variables which are related to the degree of remoteness / inaccessibility of regions. The work provides a new representation of the EU spatial development, which takes into account both the features linked with rurality and those linked with the main features of remoteness. Thus, an innovative idea behind this work is that the degree of rurality is affected by both economic indicators (e.g., the role of the agricultural sector) and geographical ones (e.g. remoteness and distance from major urban areas). A great emphasis is placed on geographical issues as they have been lately pointed out in literature.

According to the general structure of the project, such a multidimensional representation of rural areas across the EU may represent a major result. Indeed, the identification of the EU rural and peripheral regions can help in deepen the general knowledge about the European space. A more insightful analysis on it helps in highlighting the great heterogeneity still affecting the EU rural areas: those regions largely differ in terms of socio-economic and geographical features (e.g., remoteness and integration with urban areas). Moreover, such a comprehensive analysis at the EU level could be less distorting than specific analyses that are performed at the national level.

Moreover, the main results from MS104 are intended to be strictly linked to the following MSs. Strong links are those from MS104 to MS105 and to MS106. Indeed, in the following MSs the actual spatial allocation of EU main policies (e.g. the second pillar of the Common Agricultural Policy, funded by the European Agricultural Fund for Rural Development, EAFRD) can be analysed, by adopting the territorial structure emerging from this analysis. We are not aimed at performing an *ex-post* analysis of these EU policies. By analysing the spatial allocation of those funds, we try assessing to what extent the declared objectives of these policies match specific characteristics of the EU regions and, in particular, their actual degree of rurality. For example, referring to the second pillar of the Common Agricultural Policy, next milestones will analyse to what extent this policy, which is supposed to be 'rural', actually support rural regions more than urban ones. In order to answer these empirical research questions, a proper definition of 'rurality' represents a preliminary and preparatory conceptual and practical issue.

2. Defining rural areas at the EU level

2.1 The role of density in defining rurality

In spite of a wide debate on the definition of rural areas during the last decades, at the EU level an official and homogeneous definition of rural areas is still lacking (Montresor, 2002; Anania and Tenuta, 2008). Actually, also from an operational perspective, a comparable definition of rural areas, helping in distinguishing them from urban regions, is hard to find at the international level.

The EC, for example, does not define any formal criterion in order to identify those areas where rural development policies can be implemented. Therefore, each Member State is autonomously in charge of defining its own rural areas: EC seems thus suggesting that a plurality of rural areas could co-exist at the EU level. It is clear that different perceptions according to the main features of rurality may hinder the general harmonization process across countries. Moreover, also the existence of wide differences in terms of demographic, socio-economic, environmental conditions across EU rural areas deeply hinders the definition process (European Commission, 2006; Hoggart *et al.*, 1995; Copus *et al.*, 2008). Moreover, also the lack of comparable statistics, at a disaggregated level, is usually underlined as a key obstacle in providing homogenous definitions at the EU level. In particular, this wide variety in definitions of rural areas, differing across Countries (even within the EU), is a major obstacle in providing comparable analysis on rural and urban areas at the EU level (Bertolini *et al.*, 2008; Bertolini and Montanari, 2009). Thus, according to this framework, it is not surprising that both the political and the empirical scenarios are currently oriented to foster the national and local characteristics of rural regions.

In spite of these difficulties in defining rural areas, some efforts in providing a more homogeneous approach have been done. The most widely cited urban-rural typologies are those provided by OECD (1994; 1996; 2006) and the EC and Eurostat (Eurostat, 2010). Both these definitions about rural and urban areas are applied at the international level: following a very simple methodology, they provide a comparable definition of rural areas. In particular, they are both based on just a single indicator: population density[1]. Actually, density has been widely used to distinguish rural areas from cities in many studies on the same topic.

2.1.1 The OECD urban-rural typology

The OECD methodology was first proposed in the middle Nineties, in order to provide homogeneous definitions of urban-rural areas across Countries. The OECD typology (OECD, 1994; 1996; 2006) follows a two steps procedure. First, rural local administrative units level 2 are defined; then, according to the share of the total population living in rural LAU2s, NUTS 3 regions are classified in three different typologies. In the second step, the presence of greater urban areas is taken into account.

Focusing on step 1, LAU 2 regions' classification comes from the population density. A LAU 2 region is classified as rural, if its population density is below 150 inhabitants per km^2. Then, regions are classified as predominantly urban (PU), intermediate (IR) or predominantly rural (PR), according to the share of population which lives in local rural areas, previously identified. In particular, a NUTS 3 region is classified as:

1. predominantly urban (PU), if the share of population living in rural LAU2 is below 15 % out of the total population;
2. intermediate (IR), if the share of population living in rural LAU2 is between 15 % and 50 % out of the total population;
3. predominantly rural (PR), if the share of population living in rural LAU2 is higher than 50 % out of the total population.

In the second step, the OECD methodology takes into account also the size of the urban centres within a given region (the presence of a large metropolitan area in a low-density area, for example, may affect its rural characteristics). In particular:

a. a region which has been classified as predominantly rural by steps 1 and 2 becomes intermediate if it contains an urban centre of more than 200,000 inhabitants, representing at least 25 % of the total regional population;

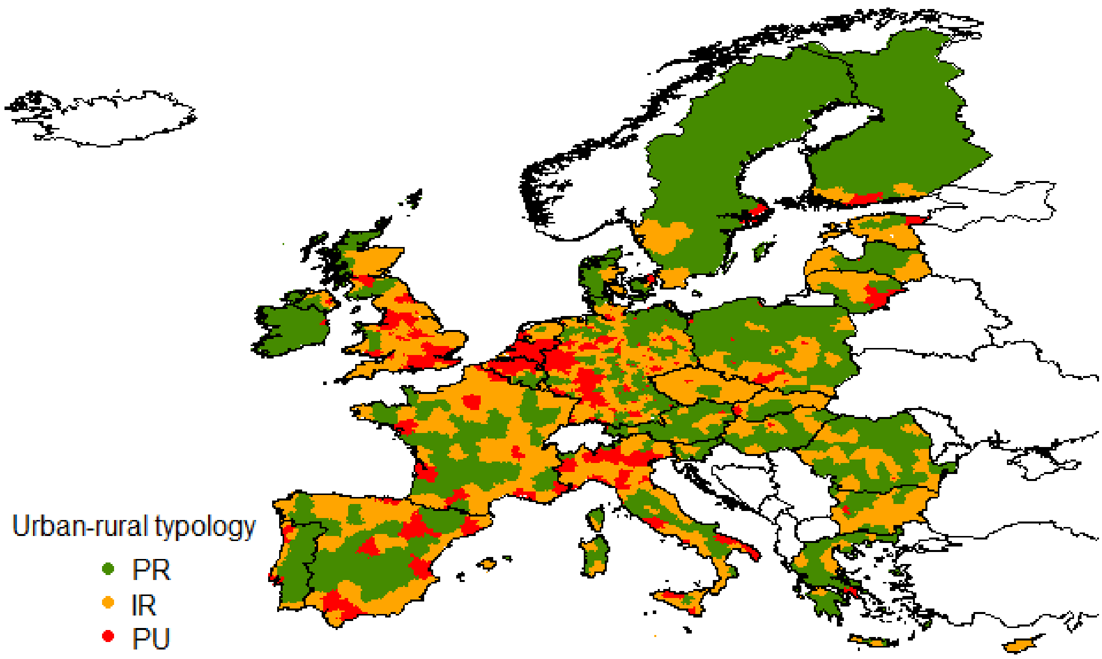
1. An additional demographic indicator (that is, the presence of major urban areas) is then suggested.

b. a region which has been classified as intermediate by steps 1 and 2 becomes predominantly urban if it contains an urban centre of more than 500,000 inhabitants representing at least 25 % of the total regional population.

According to the described methodology, in Figure 1 the territorial distribution of PR, IR and PU regions, across the EU Member States, is shown.

In spite of its great simplicity, the OECD methodology can create two different distortions, when applied at the NUTS 3 regions within the EU-27 Member States. In particular, these distortions may undermine comparability within the EU. In particular, the first distortion is due to the large variation in the area of local administrative units level 2 (LAU2). Therefore, when applying a homogenous density threshold, some LAU2s can be incorrectly classified[2]. A second distortion is due to the large variation in the surface area of the NUTS 3 regions. Moreover, in some countries there is a practice to separate, from an administrative perspective, a small city centre from its surrounding region. The acknowledgement of these distortions has suggested the revision of this methodology by EC and Eurostat (2010).

Figure 1 – The original OECD urban-rural typology applied to EU-27 NUTS 3 regions



Source: own elaboration

2. For example, some small villages, tightly circumscribed by their administrative boundary, may have a sufficiently high density and therefore will be classified as urban despite having a very small total population. On the opposite side, cities or towns that are located in very large LAU2s could be classified as rural due to a low population density, even when the city is fairly large and the vast majority of the population of the LAU2 lives in that city.

2.1.2 The revised urban-rural typology (Eurostat)

Moving from the distortions which affect the OECD methodology in defining urban and rural areas, a new typology was suggested in order to correct them. This revised typology has been provided by the European Union and by Eurostat[3] in 2010: actually, it provides some adjustments to the previous methodology from OECD (Eurostat, 2010).

Also the new typology is based on a two-step approach. First, a population density threshold (300 inhabitants per km^2) is applied to grid cells of 1 km^2. Then, a minimum size threshold (5,000 inhabitants) is applied to grouped grid cells which are above the density threshold. Then, the population living in rural areas is computed as the total population living outside the urban areas identified according to this method. In particular, in order to determine the population size, the grid cells are grouped according to a contiguity approach that also includes diagonals. Unfortunately, the 1 km^2 grid is already available just for Denmark, Sweden, Finland, Austria and the Netherlands. For the remaining Member States, the new typology relies on the population disaggregation grid created by the JRC (version 5)[4] that is based on LAU2 population and CORINE land cover. However, the 1 km^2 grid is likely to become the future standard. In particular, it has one major benefit: it can easily be reproduced also in non-EU Countries (Eurostat, 2010).

Then, the share of population living in rural areas is computed by going straight from the grid to the regional level: according to this procedure, the distortion of the variable size of the LAU2s is thus circumvented. The revised typology uses the same threshold (50%) in order to define a predominantly rural (PR) NUTS 3 region (the population share of rural grid cells and not rural LAU2s is used). However, to ensure that the population share in predominantly urban regions does not differ too much from the original OECD classification applied to NUTS 3 regions, the threshold distinguishing predominantly urban from intermediate regions has been adjusted from 15 % to 20 %[5].Moreover, the new revised methodology suggests a different approach to solve the problem of too small NUTS 3 regions. In particular, it combines the NUTS 3 regions which are smaller than 500 km2[6] with their neighbouring NUTS 3 regions. This is an approach which can uniformly be applied to all NUTS 3 regions in the EU. Of the 1,303 NUTS 3 regions, 247 are smaller than 500 km^2 (Eurostat, 2010):

- 142 were combined with their neighbours to ensure that the grouped NUTS 3 regions had a size of at least 500 km^2. In particular: i) 46 small NUTS 3 regions were combined with their only neighbour; ii) 50 small NUTS 3 regions were combined with one or two neighbours with whom they shared the longest

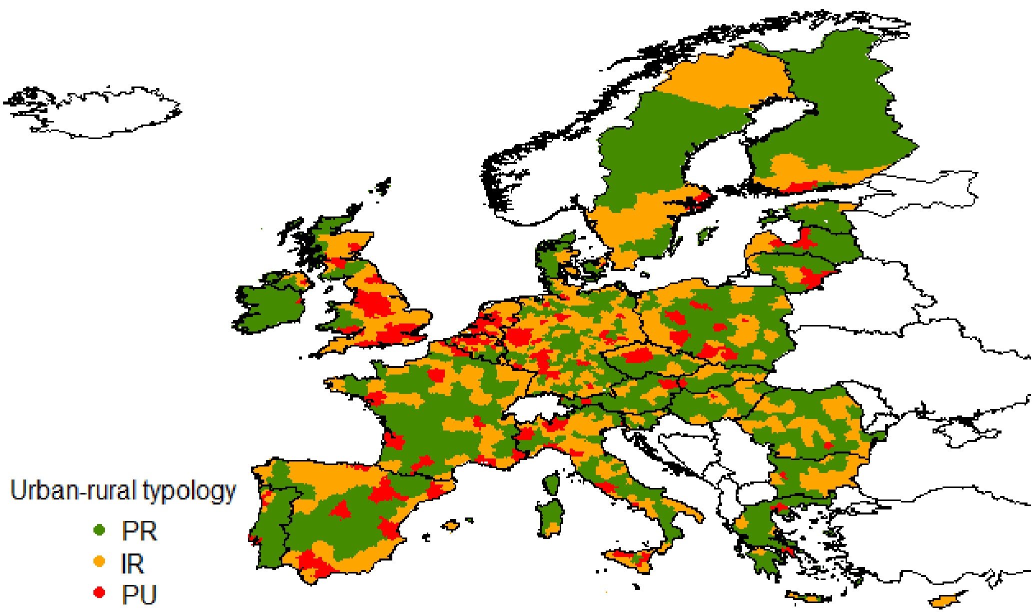
3. This new classification has been developed jointly by the following four different Directorates-General within the European Commission: the Directorate-General for Agriculture and Rural Development, Eurostat, the Joint Research Centre (JRC) and the Directorate-General for Regional Policy.
4. For more information see the European Forum for Geo Statistics (EFGS): http://www.efgs.ssb.no/
5. Using 20 % instead of 15 % leads to about another 70 regions to be classified as predominantly urban instead of intermediate. Two thirds of these regions are in Germany and the UK. Increasing this threshold to 25 % would lead to approximately another 50 regions to be classified as predominantly urban. Overall, using 15 % would lead to changing the classification of regions ome to about 25 % of the EU population, while using 20 % only changes it for about 8 % as compared to the OECD classification.
6. The threshold of 500 km^2 was selected to ensure that the most atypically small NUTS 3 regions would be identified. Reducing the threshold to 400 km^2 would reduce the number of small NUTS 3 regions by 35 and increasing the threshold to 600 km^2 would increase the number by 39.

border; iii) for 18 small NUTS 3 regions the border length did not allow a clear distinction between neighbours; in this situation they were combined with all neighbours; iv) 28 small NUTS 3 regions were combined with other small NUTS 3 regions and a few main neighbours.

- 105 NUTS 3 small regions were not grouped: i) 9 are island regions; ii) 43 NUTS 3 regions have the same classification as all their neighbours and therefore combining them would not make a difference to their classification; iii) 41 NUTS 3 regions are adjacent to a group of NUTS 3 regions with the same classification; iv) for 12 Belgian NUTS 3 regions, mostly in West-Vlaanderen, there was no obvious way of grouping as most of the regions fell below the threshold. They were not grouped to maintain diversity in a region with a high overall population density.

According to this methodology, 142 NUTS 3 regions have been grouped into 114 NUTS 3 groupings. The goal of these groupings is purely to facilitate a more comparable classification within the EU[7]. As a result, the outcome is a classification for each individual NUTS 3 region. Then, also the revised methodology from Eurostat takes into account the presence of cities in exactly the same way as the OECD methodology did[8]. This leads to seven NUTS 3 groupings moving from predominantly rural to intermediate due to the presence of a city of over 200,000 inhabitants. Due to the presence of a city of over 500,000 inhabitants, 16 NUTS 3 regions move from intermediate to predominantly urban. The final results of this revised approach are shown in Figure 2.

Figure 2 – The new urban-rural typology for NUTS 3 regions proposed by the EC and Eurostat



Source: own elaboration

7. Thus, these groupings are not used for any other purpose.
8. The population figures are based on the census data for the year 2001 from the Urban Audit cities.

As already observed, both classifications are based on density and other demographic issues. However, the general outcome of the two classifications shows a slightly different pattern: in particular, the distribution of land area and population in each given typology change (at the EU level) when moving from the OECD to the Eurostat typology. In Table 1, the number of NUTS 3 regions classified as PR, IR and PU in both classifications is shown[9]. According to these results, however, 72% of NUTS 3 regions are classified in the same way in both methodologies.

Table 1 – Classification of NUTS 3 regions according to the two selected methodologies

		OECD Classification			
		PR	IR	PU	Total
OECD Classification	PR	357	127	13	**497**
	IR	51	307	133	**491**
	PU	4	25	271	**300**
	Total	**412**	**459**	**417**	**1288**

Source: own elaboration

2.2 Multi-dimensional approaches to define rurality

Both the urban-rural typologies from OECD (1994; 1996; 2006) and from Eurostat (2010) suffer from some major drawbacks.

First, they are just based on a single indicator: both these typologies are simply based on population density. Therefore, such a simple definition cannot reflect all the possible characteristics affecting EU rural areas. But another major drawback is identified. Both typologies provide dichotomised output. The introduction of the intermediate regions (IR) category does not really remove the dichotomy in the approach to the analysis of urban-rural areas. However, such dichotomies are largely outdated in the current EU rural framework. In particular, it is easy to observe that rural areas are getting more and more diversified. Meanwhile, also the concept of rurality has widely changed. Since the end of WWII, linkages between rural areas and agricultural activities have radically changed and deep transformations have interested the structure of the local economies within rural areas.

Focusing on these main changes, Sotte *et al.* (2012) have suggested an evolutionary pattern affecting the definitions of rural areas. In the 50s, EU rural areas were characterized by the 'Agrarian Rurality' model: when European Common Agricultural Policy (CAP) was first introduced, agriculture in rural areas had a so overbearing role that it affected the overall social-economic dynamic of these areas. Moreover, the agrarian rurality was characterized by a clear separation between rural territories and urban ones. In the 70s, the model of the 'Industrial Rurality' started spreading across

9. Total number of NUTS 3 regions considered is 1,288, as NUTS 3 regions located out of the EU Continent are not considered.

Europe. In all rural areas the weight of rural agriculture decreased quickly, but most of them were stimulated by a set of exogenous factors, giving them the opportunity to start a new growing path. In particular, consumers demand shifted from standardized products to a diversified range of personalized products and some technological transformations allowed small and medium enterprises to reach (by external network economies) competitive levels that before only big firms were able to realize. In Italy, many scholars focused on these transformations, by stressing the growth of the industrial districts within Italian rural regions (Brusco, 1999; Brusco *et al.*, 2007; Paci, 1978; Beccatini, 1989; Beccatini and Rullani, 1993). Then, in the late 90s a new paradigm started emerging: the so-called 'post-industrial rurality' model. This change was due to the new role that society was demanding to rural areas. In particular, the concerns about environmental protection and safeguarding now overtake those related to food supply. Such a change is also due to technological progress (for example, progresses in the transportation and communication systems). Within this new model, two main features become relevant. First, the territorial (no more sectoral) dimension of rurality is stressed and the distinctive character of rural areas becomes the integration of different perspectives (e.g., the integration among different economic activities, the integration among rural territories and urban territories…). Moreover, a second central aspect of the 'post-industrial rurality' model is diversity, which represents a keyword for rural development. In fact, rural regions constitute a natural reserve of biodiversity, landscape, historical capital, and agricultural traditions. In this scenario, even the role of agriculture is re-defined: the "European model of agriculture" is clearly oriented toward a multifunctional agriculture (Sotte *et al.*, 2012).Such a polymorphic character affecting the "post-industrial rurality" model implies the choice of new measurement for rural areas. In particular, the emergence of this model of rurality makes the abovementioned measure of rurality (proposed by OECD and just based on density) largely outdated[10]. Within the same OECD, and recently FAO, a new research line was opened, focusing on the identification of new measures of rurality no longer based on just one indicator, but rather on a qualified set of variables (FAO-OECD Report, 2007; The Wye Group, 2007).

Moreover, the current coexistence of different models of rurality (i.e., the agrarian, the industrial and the post-industrial model) within the EU-27 Member States implies the application of a broader and more multivariate analysis. Thus, multi-dimensional approaches are usually preferred to one-dimensional and dichotomous approaches. As suggested also by the FAO-OECD Report (2007) and by The Wye Group (2007), a larger set of variables has to be taken into account in the definition of rural areas: e.g., socio-economic and demographic variables, as well as data about agricultural holdings and the use of land. Moreover, when considering rural areas according to the post-industrial model, the territorial dimension becomes more and more important: the abovementioned integration among urban and rural areas makes the inclusion of geographical and spatial indicators crucial.

According to this general framework, the debate about rural areas across Europe has lately increased, due to the fact that EC has funded many projects aimed at providing

10. For example, a depopulated region, with an extensive overspecialized agriculture, substantially speculative, where even farmers could not be residents and would prefer to be commuters from distant major metropolitan areas, could appear highly rural using the demographic density indicator, although any kind of rural society or institutions would actually lack. A desert, ultimately, is not more rural than many other territorial contexts where rurality is expressed by social-economic integrated activities.

better analysis on EU rural regions[11]. Within this very general framework, a review of the most important studies suggesting multidimensional approaches to the analysis of rural areas is provided by Copus *et al.* (2008). In a study for the *Joint Research Centre*, the authors recall the most relevant methodologies applying those multidimensional approaches according to a list of socio-economic indicators in order to identify main typologies of rural areas. Most of these works apply quantitative methodologies aimed at reducing the variable dimension (e.g., factor analysis, principal component analysis and cluster analysis).

Among the whole set of collected studies on rural areas, two different approaches can be highlighted.

The first set of analyses mainly focuses on single EU Member States. For example, Auber *et al.* (2006) analyse rural France; Buesa *et al.* (2006) focus on Spanish regions; Kawka (2007) provides an in-depth analysis on Germany; Lowe and Ward (2009) focuses on the United Kingdom. Merlo and Zaccherini (1992) focused on Italian rural areas. Anania and Tenuta (2008) analyse the extent of rurality for the Italian municipalities. Other similar studies focus on couples of EU Member States: for example, the work of Barjak (2001) analyses rurality across Germany and Poland; Psaltopoulos *et al.* (2006) analyze rural areas in Greece, the United Kingdom and Finland.

Other more complex analyses focus on the rural areas belonging to the whole EU.

Terluin *et al.* (1995) analyse *less-favoured areas* in the EU-12. In particular, per capita GDP and FNVA per AWU are analysed across 87 different FADN regions.

Copus (1996) analyses NUTS 3 regions in the EU-12, by comparing different methodologies. A wide variety of socio-economic indicators (more than 45) is used. First, a factor analysis is performed (6 factors are obtained, followed by a K-means cluster analysis. According to these methodologies, 15 different cluster typologies are obtained.

Ballas *et al.* (2003) suggest an aggregative methodology (factor analysis and cluster analysis in order to reduce the number of relevant variables), to be applied to NUTS 3 regions in the EU-27. The suggested methodology combines both agglomerative and non-agglomerative techniques, by selecting socio-economic indicators (e.g., unemployment rate, GDP, share of employment in services and manufacturing, population density…). Authors also suggest a sort of peripherality index, by assessing the travel time to nearest of the 52 important international agglomeration centres. According to this methodology, 25 clusters are identified (24 rural typologies and 1 urban typology). Unfortunately, the great complexity of the suggested typologies hinders the dissemination of these results.

A different study (Bollman *et al.*, 2005) moves from the original OECD urban-rural typology. Then, it suggests an additional subdivision within the group of rural areas, by applying three different categories to the OECD urban-rural typologies (*leading, middle, lagging regions*). Specific thresholds in the observed socio-economic variables are then applied.

11. Among some 6 FP projects that have been financed on rural issues, it is possible to list the project TERA (Territorial Aspects of Enterprise Development in Remote Rural Areas) and the project SCARLED (Structural Change in Agriculture and Rural Livelihoods).

Vidal *et al*. (2005) analyze the spatial features of rural areas in the EU-12. Some demographic, economic, labour market variables are collected at the level 3 of the NUTS classification. Also some agricultural variables (farm labour force, agricultural land use…) are collected. In particular, a PCA is carried out for each thematic field; then, a cluster analysis highlights 13 different rural typologies. For the first time, this taxonomy provides a greater attention to agricultural holdings' features.

3. Enhancing multidimensionality in urban-rural typologies

3.1 Geographical approaches in defining urban-rural typologies

In section 2, the major changes in the definition of rurality have been shown. In spite of these wide changes, strong efforts have been made in order to provide more homogeneous and comparable taxonomies about rural areas at the EU level. However, a concrete convergence among major definitions of rural areas across Europe is still lacking.

Moving from these critical issues, which may also hinder the effectiveness of the rural development policy (RDP) across EU regions, the current work is aimed at analysing EU rural areas following a broader multidimensional approach. As already stressed, within the 'post-industrial rurality' model (Sotte *et al.*, 2012), rurality shows multidimensional features: thus, the urban-rural typologies from OECD (2006) and Eurostat (2010) can be largely improved. Actually, it is hard to properly define rural areas just considering a single indicator (e.g., population density). Moreover, both the sectoral and the territorial dimensions are crucial elements in order to define the degree of rurality of a given region. According to this theoretical perspective, and in order to overcome those approaches which just provide 'measurements of rurality without any theory', in this work, EU rural areas are defined according to a more complex set of indicators, which cover both socio-economic and geographical features.

In particular, an innovative issue in this kind of analysis – that follows from the work of Sotte *et al.* (2012) – is the idea that geography matters in defining rural characteristics. Moreover, geography can also have deep impacts on rural development, as it is strictly related to the urban-rural linkages. The idea of the relevance of geographical issues was first stressed by Tobler, in its First Law of Geography (Tobler, 1970, pp. 236):

"Everything is related to everything else, but near things are more related than distant things"

According to this idea, the current analysis is intended to mix together both the economic and the geographical features of rurality. Such a methodological framework can be considered quite innovative, as, up to now, just few researches made the link between economic and geographical features explicit in the definition of the EU rural areas (Ballas *et al.*, 2003).

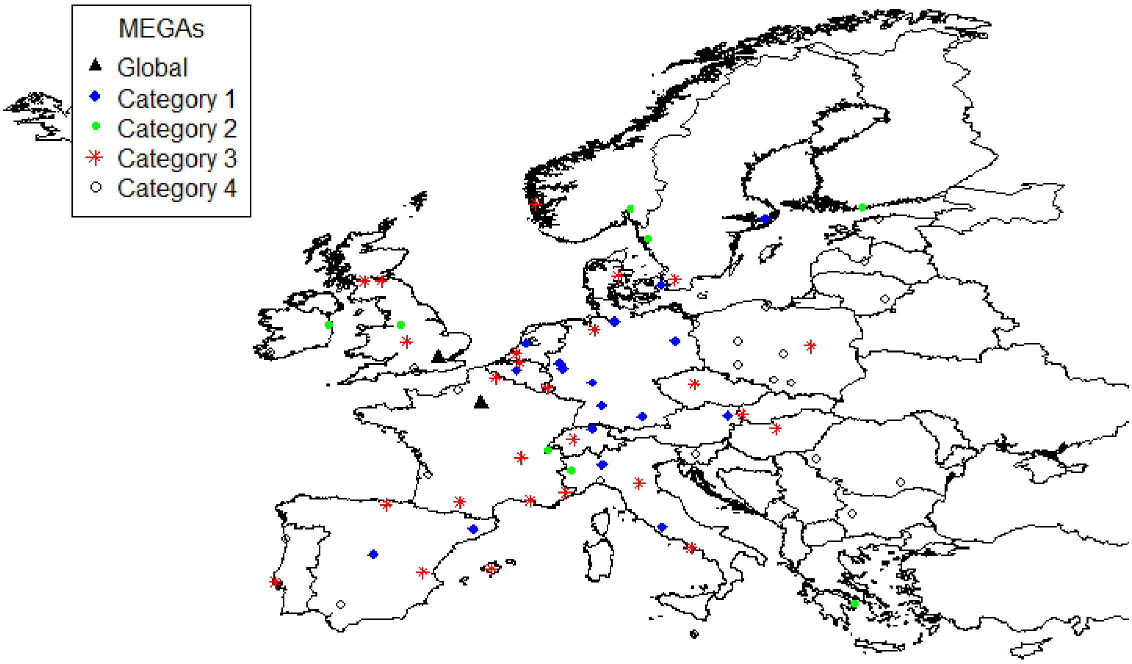
3.2 The role of space and accessibility in defining regional differences

As already observed, the geographical approach which is included in the analysis of EU rural areas can be considered an innovative issue. Geographical issues can be included within the analysis of EU rurality according to two different approaches: i) the role of geographical distance in defining peripheries; ii) a more multidimensional concept, i.e. regional accessibility.

The very first way to compute remoteness is the analysis of the geographical distances. A distance matrix between the centroids of the EU regions can be computed, thus defining the distances between each region and any other regions in Europe[12]. However, this very large distance matrix does not solve the problem of defining remoteness. Actually remoteness usually refers to the distance between a region and some specific centres. In this work, the distance of each area from major urban areas has been computed. In particular, distances from MEGAs have been considered. The acronym MEGA stands for 'Metropolitan Economic Growth Area' and the concept was first developed by ESPON (ESPON – Project 1.1.1, 2005). It is aimed at identifying the most important urban areas within the set of European FUAs (Functional Urban Areas). MEGAs are identified according to population, transport, tourism, industry, knowledge economy, decision-making and public administration. In the EU-27, 76 FUAs with the highest average score have been labelled as Metropolitan European Growth Areas (MEGAs). Moreover, MEGAs have been compared to each other and then they have been divided into five sorted groups: global nodes, Category 1 MEGAs, Category 2 MEGAs, Category 3 MEGA and Category 4 MEGAs. Their distribution across EU is shown in Figure 3. In Table 2, the list of the whole set of MEGAs is shown. Unfortunately, the definition of the MEGAs suffers from an European-centred perspective: just cities belonging to the EU-27 Member States are taken into account, whereas megalopolis such as Istanbul and Moscow are ignored. Therefore, in this analysis, also the definition of remoteness is computed according to a rather European-centred perspective.

12. EPSG: 3035 - ETRS89 / ETRS-LAEA (Lambert Azimuthal Equal Area) projections have been used.

Figure 3 – EU MEGAs



Source: own elaboration on ESPON – Project 1.1.1 (2005)

Table 2 – List of MEGAs

Map 1 Category Map 2	Number	Cities
Global Nodes	2	Paris, London
Category 1 MEGAs	17	Munich, Frankfurt, Madrid, Milan, Rome, Hamburg, Brussels, Copenhagen, Zurich, Amsterdam, Berlin, Barcelona, Stuttgart, Stockholm, Düsseldorf, Vienna and Cologne
Category 2 MEGAs	8	Athens, Dublin, Geneva, Gothenburg, Helsinki, Manchester, Oslo and Torino
Category 3 MEGAs	26	Prague, Warsaw, Budapest, Bratislava, Bern, Luxembourg, Lisbon, Lyon, Antwerp, Rotterdam, Aarhus, Malmö, Marseille, Nice, Bremen, Toulouse, Lille, Bergen, Edinburgh, Glasgow, Birmingham, Palma de Mallorca, Bologna, Bilbao, Valencia, Naples
Category 4 MEGAs	23	Bucharest, Tallinn, Sofia, Ljubljana, Katowice, Vilnius, Krakow, Riga, Lodz,Poznan, Szczecin, Gdansk-Gdynia, Wroklaw, Timisoara, Valetta, Cork, Le Havre, Southampton, Turku, Bordeaux, Seville, Porto, Genoa

Source: own elaboration on ESPON – Project 1.1.1 (2005)

A second way to compute regional remoteness refers to the analysis of multimodal potential accessibility. This measure provides a more refined analysis of periherality, as it also takes into account the presence of infrastructures connecting regions. The main reference is the ESPON Project 1.1.1 (ESPON, 2005), which provides different measurements to compute potential accessibility. These indicators simply measure how easy people living in one region can reach people located in other regions. Thus, according to this model, potential accessibility is based on two different elements: i) population living in EU regions and ii) the effort in terms of time to reach them.

In this analysis, both the multimodal accessibility index (measuring the minimum travel time between two regions by combining road, rail and air networks) and the air accessibility index (taking into account just the air network) are considered[13] (ESPON – Project 1.1.1, 2005).

According to this methodological approach, it is easy to observe that potential accessibility takes geography into account in a more complex way. This indicator sheds light on the relevance of infrastructures, whose role cannot be considered in analyzing remoteness of rural areas when just observing the geographical distances from major urban areas. According to that, both these elements are included into the analysis in order to stress geographical perspectives.

3.3 Looking for a new measure of rurality: the PRI

The present paper moves along the abovementioned multidimensional approach to define and analyze the EU rural areas. Actually, it suggests some further improvements in this direction. According to these key ideas, the current work is aimed at adding a geographical approach to a more conventional analysis of rurality. These different dimensions are linked together by computing a composite and comprehensive PeripheRurality Indicator (PRI). This indicator expresses the idea that rural areas can be defined according to conventional features, like population density and the role of agriculture, as well as according to their remoteness and their level of integration with respect to the urban space. Actually, when computing the PRI, three main thematic areas are thus considered:

1. Socio-economic indicatords and role of the agricultural sector (*economy-based approach*);
2. Land use and landscape features, e.g., share of agricultural areas or forests on the total surface compared to share of artificial areas (*territorial approach*);
3. Accessibility/remoteness, according to different territorial scales, e.g. the EU level, the national level, the sub-national level (*geographical approach*)

In particular, regional accessibility is a key indicator here. In spite of the increase in the use of the Information and Communication Technologies (ICT), remoteness still represents a major feature of many EU rural regions. On the contrary, other regions, though rural according to a traditional economy-based approach are tightly integrated with the surrounding urban regions. Thus, according to this framework, both the territorial and the geographical dimensions have to be considered when analysing rural regions across Europe.

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13. In in order to avoid “edge” effects, European regions just outside the territory covered by ESPON are also included in computing the index. A particular attention goes to people living in other Eastern European regions and in the Western Balkan.

Clearly, the PRI just represents a first effort in defining a single and univariate indicator for rurality. In the following sections, when describing the methodology behind the PRI, its major limits as well as some further improvements will be pointed out.

4. Dataset and Methodology

4.1 The set of defined variables

According to the main literature in the analysis of rural areas, this study follows a multidimensional approach. As stressed in section 3, both an economic and a more geographical analysis will be performed in the following sections. However, the first aim of this work is the collection of a comprehensive and harmonized dataset, describing main rural and peripheral features at the regional level. Thus, the present paper uses 24 variables to identify and measure the degree of rurality of EU regions. They refer to four different thematic areas:

- socio-demographic features (7 indicators) focus on the demographic structure (total population, density, age structure) as well as major demographic trends (e.g., crude migration rate, annual population variation);
- structure of the economy (7 indicators) mainly refers to a sector-based analysis (share of agricultural activities, manufacturing sectors and services on total economy, per capita GDP…). Moreover a specific focus is devoted to the structure of agricultural holdings (e.g., the average farm size, expressed both in physical and in economic terms);
- land use (3 indicators) takes into account the physical landscape, and in particular the relevance of the agricultural areas, forests and the artificial areas;
- geographical dimension (7 indicators) takes into account both the distance from MEGAs and the potential accessibility (according to the definitions provided in section 3.2).

In Table 3, the whole list of the 24 variables is shown. Both the reference year and the main statistical source are described.

In the Annex A: The dataset, a more detailed definition of each variable is provided, together with some descriptive statistics, according to the whole set of observation. Moreover, average values for each urban-rural typology suggested by Eurostat (Predominantly Rural, Intermediate and Predominantly Urban regions) are also shown.

Table 3 – List of original variables, according to the different thematic areas

	Variable	Definition	Year	Source
Socio-Demographic features	Population	Resident Population (000)	2010	Eurostat
	Population Growth	Average Annual Variation of the resident population	2000-2010	Eurostat
	Net Migration Rate	Ratio of the difference between immigrants and emigrants to the average population, including statistical adjustments	2010	Eurostat
	Density	Ratio of the resident population on the total surface of a given area (in km^2)	2010	Eurostat
	Unemployment Rate	Unemployed person(aged 15-74) as % of the total economically active population	2009	Eurostat
	Young-age dependency ratio	Ratio of the number of people aged 0-14 to the number of people aged 15-64	2010	Eurostat
	Aged dependency ratio	Ratio of the number of people aged 65+ to the number of people aged 15-64	2010	Eurostat
Structure of the economy	GVA Agriculture (%)	Share of GVA from sector A (NACE classification rev. 2) on the total	2009	Eurostat
	Employment Agriculture (%)	Share of employment in sector A (NACE classification rev. 2) on the total	2009	Eurostat
	Employment Manufacturing (%)	Share of employment in sectors B-E(NACE classification rev. 2) on the total	2009	Eurostat
	Employment Services (%)	Share of employment in sectors G-U(NACE classification rev. 2) on the total	2009	Eurostat
	Per capita GDP	GDP in Euro per inhabitant (PPS)	2009	Eurostat
	Average farm size	Average agricultural area (in ha.) per agricultural holding	2007	Farm Structure Survey (Eurostat)
	Average SGM	Average Standard Gross Margin (in ESU) per agricultural holding	2007	Farm Structure Survey (Eurostat)
Land Use	Artificial areas (%)	Share of total surface which is covered by artificial areas (urban fabric, industrial and commercial units…)	2006	CORINE-Eurostat
	Agricultural areas (%)	Share of total surface which is covered by agricultural areas	2006	CORINE-Eurostat
	Forests (%)	Share of total surface which is covered by forests and other semi-natural areas	2006	CORINE-Eurostat
Spatial dimension	Air Accessibility	The index is calculated by summing up the population in all other EU NUTS 3 regions, weighted by the travel time to go there by air. Values are standardised with the EU average (EU27=100).	2006	ESPON Project 1.1.1
	Multimodal Accessibility	The index is calculated by summing up the population in all other EU NUTS 3 regions, weighted by the travel time to go there by road, rail and air. Values are standardised with the EU average (EU27=100).	2006	ESPON Project 1.1.1
	Multimodal Accessibility Change	Relative change of the Multimodal Accessibility Index in percentage (2001-2006).	2001-2006	ESPON Project 1.1.1
	Distance from MEGA1	Distance from closest MEGA1 (centroid)	-	own elaboration
	Distance from MEGA2	Distance from closest MEGA2 (centroid)	-	own elaboration
	Distance from MEGA3	Distance from closest MEGA3 (centroid)	-	own elaboration
	Distance from MEGA4	Distance from closest MEGA4 (centroid)	-	own elaboration

Source: own elaboration

4.2 Geographical coverage: why NUTS 3?

In order to provide a comprehensive analysis of the EU rural areas, the variables listed in Table 3 have been collected for the whole set of EU-27 Member States at a disaggregated territorial level. In order to properly compute peripherurality and its main features, data actually refer to the level 3 of the NUTS classification for the EU-27 Member States.

The NUTS (*Nomenclature of territorial units for statistics*) classification is a hierarchical system for dividing up the territory of the EU at a sub-national level. Even though the NUTS 2010 classification is currently adopted (Commission Regulation (EC) No 105/2007), the NUTS 2006 classification is used for the purpose of this work (Commission Regulation (EC) No 1059/2003): this classification was operating for three years, from 2008 to 2011, and most of information at the regional level, included into the Eurostat dataset, are still provided according to this classification[14].

At the sub-national level, NUTS classification is based on the administrative divisions, which are applied in each Member State[15]. The three levels in the NUTS classification are hierarchically ordered, according to a demographic criterion: the NUTS regulation defines minimum and maximum population thresholds for the size of the NUTS 1, NUTS 2 and NUTS 3 regions. The application of demographic criteria to the administrative divisions within EU MSs yields to a large heterogeneity in NUTS size across Europe. In particular the number of territorial units (especially at the NUTS 2 and NUTS 3 level) deeply varies across Member States. For example, more than 400 NUTS 3 areas out of 1303 within the EU-27 MS are located in Germany (Table 4).

14. The NUTS classification was originally based on Regulation 1059/2003 on the establishment of a common classification of territorial units for statistics. This regulation was first approved in 2003 and then it was amended in 2006, by Regulation 105/2007. Two further amending Regulations 1888/2005 and 176/2008 extended the NUTS classification both to the 10 MS that joined the EU in 2004 and to Bulgaria and Romania.

15. Usually, two main regional levels are comprised within the administrative framework at national level. As the NUTS classification adopts three different levels, the third one is created by aggregating administrative units.

Table 4 – NUTS classification national structures

NUTS 0	NUTS 1		NUTS 2		NUTS 3	
Belgium (BE)	Gewesten/ Régions	3	Provincies/ Provinces	11	Arrondissementen/ Arrondissements	**44**
Bulgaria (BG)	Rajoni	2	Rajoni za planirane	6	Oblasti	**28**
Czech Republic (CZ)	—	1	Oblasti	8	Kraje	**14**
Denmark (DK)	—	1	Regioner	5	Landsdeler	**11**
Germany (DE)	Länder	16	Regierungsbezirke	39	Kreise	**429**
Estonia (EE)	—	1	—	1	Groups of Maakond	**5**
Ireland (IE)	—	1	Regions	2	Regional Authority Regions	**8**
Greece (GR)	Groups of development regions	4	Periferies	13	Nomoi	**51**
Spain (ES)	Agrupacion de comunidades Autonomas	7	Comunidades y ciudades Autonomas	19	Provincias + islas + Ceuta, Melilla	**59**
France (FR)	Z.E.A.T.+DOM	9	Régions+DOM	26	Départements+DOM	**100**
Italy (IT)	Gruppi di regioni	5	Regioni	21	Province	**107**
Cyprus (CY)	—	1	—	1	—	**1**
Latvia (LV)	—	1	—	1	Reģioni	**6**
Lithuania (LT)	—	1	—	1	Apskritys	**10**
Luxembourg (LU)	—	1	—	1	—	**1**
Hungary (HU)	Statisztikai nagyregiok	3	Tervezesi-statisztikai regiok	7	Megyek + Budapest	**20**
Malta (MT)	—	1	—	1	Gzejjer	**2**
Netherlands (NL)	Landsdelen	4	Provincies	12	COROP regio's	**40**
Austria (AT)	Gruppen von Bundeslandern	3	Bundesländer	9	Gruppen von politischen Bezirken	**35**
Poland (PL)	Regiony	6	Wojewodztwa	16	Podregiony	**66**
Portugal (PT)	Continente + Regioes autonomas	3	Comissaoes de Coordenacao regional + Regioes autonomas	7	Grupos de Concelhos	**30**
Romania (RO)	Macroregiuni	4	Regiuni	8	Judet + Bucuresti	**42**
Slovenia (SI)	—	1	Kohezijske regije	2	Statistične regije	**12**
Slovakia (SK)	—	1	Oblasti	4	Kraje	**8**
Finland (FI)	Manner-Suomi, Ahvenananmaa / Fasta Finland, Aland	2	Suuralueet / Storomraden	5	Maakunnat / Landskap	**20**
Sweden (SE)	Grupper av riksomraden	3	Riksomraden	8	Län	**21**
United Kingdom (UK)	Government Office Regions; Country	12	Counties (some grouped); Inner/ Outer London; Groups of unitary authorities	37	Upper tier authorities / groups of lower tier authorities	**133**
UE-27		97		271		**1303**

Source: Eurostat (2013), http://epp.eurostat.ec.europa.eu/portal/page/portal/nuts_nomenclature/correspondence_tables/national_structures_eu

According to this classification, NUTS 3 regions across Europe are more than 1,300. However, for the purpose of the current work, some regions have been dropped out from the analysis, due to the lack of territorial contiguity with the European continent. Therefore, the following regions are not included into the analysis:

- The French DOM (*Departements d'outre-Mer*): Guadeloupe (FR910), Martinique (FR920), Guyane (FR930), Réunion (FR940);
- The Archipelago of the Azores (Região Autónoma dos Açores – PT200) and the Archipelago of Madeira (Região Autónoma da Madeira – PT300), both belonging to Portugal, but located in the Atlantic Ocean;
- Seven NUTS 3 regions composing the Canary Islands (Spain): El Hierro (ES703), Fuerteventura (ES704) , Gran Canaria (ES705), La Gomera (ES706), La Palma (ES707), Lanzarote (ES708), Tenerife (ES709);
- Two Spanish cities (Ceuta – ES630 and Melilla – ES640), which are exclaves located on the Northern coast of Africa (Morocco).

Thus, the final set of observation is composed by 1,288 NUTS 3 regions.

The selected territorial level (NUTS 3) allows a detailed representation of the EU rural space. Previously, many studies focused on the NUTS 2 level (see, for instance, Shucksmith *et al.,* 2005) which is, actually, a too large scale wide to be representative in terms or rural features: most NUTS 2 regions usually include both the urban and the rural space. An even smaller scale (e.g., the LAU level) could improve the analysis further but it is unfeasible given the current data availability across all EU Member States. Moreover, when selecting such a local level in analysing rural areas, a two-steps procedure is usually adopted (e.g., the OECD and the Eurostat urban-rural typologies).

Nonetheless, working at the NUTS 3 level may still incur practical problems.

Firstly, some of the adopted variables are not available at the NUTS 3 level for all EU countries. Even when available in principle, for several variables the dataset still presents missing values. All these missing observations have been replaced with data observed at the closest higher territorial aggregation that is either the NUTS 2 or the NUTS 1/NUTS 0 level.

In particular, the following missing values are observed (refer to Appendix A for a complete list of missing values):

- Socio-demographic features:
  - Annual population variation: data are not available for NUTS3 regions in Sachsen-Anhalt (replaced with the average regional value), in Denmark and Malta (replaced with the average national value);
  - Unemployment rate: 325 missing values are observed (mainly across Austria, Belgium, Germany, France, Malta and Portugal) and replaced with NUTS 2 data;
- Structure of the economy:
  - % of GVA Agriculture: Nace Rev. 1.1 instead of Nace Rev. 2 is adopted for Germany and Luxembourg;
  - % of employment in Agriculture/Manufacturing/Services: Nace Rev. 1.1 instead of Nace Rev. 2 is adopted for Germany and Luxembourg; 2006

  - data based on NACE Rev. 1.1 are adopted for NUTS 3 regions in France and Italy; NUTS 1 data are adopted for Northern Ireland (UKN0);
  - Per capita GDP: NUTS 2 data are used for most NUTS 3 regions in Spain;
  - Average farm size/Average economic farm size: more than 500 missing values (the whole set of NUTS 3 regions in Austria and Germany; many areas in Italy and Poland) have been replaced with NUTS 2 data;
- Land use: CORINE 2000 (CLC-2000) data instead of CORINE 2006 are used for Greece and the United Kingdom.

A second issue concerns the wide size heterogeneity across NUTS 3 regions in the EU-27. In fact, NUTS 3 regions in peripheral and more sparsely-populated countries tend to be larger than NUTS 3 regions in more central areas.

A final issue about the NUTS 3 territorial scale has to do with its appropriateness for policy analysis. In particular, within the next steps of the project we may wonder whether this scale is appropriate to analyze funds allocation for those policies whose decisions are taken at a higher level (e.g., EU or country level). For example, this is the case of the second pillar of the Common Agricultural Policy (RDP).

However, despite the abovementioned issues, working at the NUTS 3 level in analysing EU rural areas may represent an important advancement in the field. According to available data, this is the most disaggregated territorial level that allows a comparable analysis on EU rural areas. Moreover, specific differences in the degree and in the main features of rurality can be highlighted at such a territorial level.

4.3 Time coverage

The analysis is mainly focused on the last decade (2000-2010). However, due to a sever lack of available data, referring to most of the over mentioned years, such a comprehensive analysis is hard to perform. Therefore, most of the quantitative analysis in the next sections is carried on according to the last available figures: they generally refer to the years 2007 – 2010. The authors are aware that most of the selected variables are structural ones, so they are not really influenced by the economic trends (e.g., the share of GVA produced by agricultural sectors, the share of either agricultural areas or forests). However, other variables (e.g., the unemployment rate, per capita GDP…) may be affected by the economic trend. Therefore, it would be useful to use more robust indicators, covering a wider temporal range. Unfortunately, these data are not always available at the selected territorial disaggregation (the level 3 in the NUTS classification).

In particular, demographic variables usually refer to 2010 (resident population; density; crude rate of net migration; aged dependency index; young-age dependency index). Both economic variable (per capita GDP; share of GVA from agricultural sectors; share of employment in agriculture; share of employment in manufacturing; share of employment in services) as well as unemployment rate and land use variables (share of artificial areas, agricultural areas and forests) refer to 2009. Two variables referring to agricultural holdings (average farm size and average SGM) refer to the farm structure survey held in 2007. Moreover, those variables referring to accessibility (air and multimodal accessibility) date back to 2006.

Then, two variables are intended to consider somehow the decennial dynamic. First, the average annual variation of the total resident population is computed for the whole 2000-2010 period. Then, also the relative change of the Multimodal Accessibility Index in percentage is included into the dataset. This variable refers to the period 2001 to 2006 and it represents a good proxy of the improvement in the infrastructural system at the NUTS 3 level.

4.4 Defining rural areas' features: a Principal Component Analysis (PCA)

Moving from the collected dataset, a principal component analysis (PCA) has been performed on the list of variables shown in the previous section, in order to analyse the main features of peripherurality across Europe. The selected methodology belongs to multivariate statistics. It is a variable reduction technique that helps in maximizing the amount of variance accounted for in the observed variables by a smaller group of variables, called principal components (PCs). Thus, this technique helps in reducing the number of variables of a system while preserving the most of the information. Information is mainly represented by the total variance.

In particular, PCA is predominantly used in an exploratory way, as it is not concerned with modelling a specific factor structure. No strong assumptions on the model itself are requested. PCA is just aimed at reducing the number of original variables, maximizing the variance accounted for in them[16]. Meanwhile, PCA can deal with not optimal quality of data and indicators. The first formulation of PCA is due to Hotelling (1933), while the methodology refers to Pearson (1901). In literature, this kind of analysis has already been applied referring to the analysis of rural areas in the EU and in other European Countries (Nordregio *et al.*, 2007; NUI Maynooth, 2000; Ocana-Riola and Sánchez-Cantalejo, 2005; Vidal *et al.*, 2005; Bogdanov *et al.*, 2007; Monasterolo and Coppola, 2010).

The basic aim of PCA is to describe variation in a set of correlated variables (x_1, x_2, …, x_q), which are observed on a group of *n* statistical units, in terms of a new set of uncorrelated variables (y_1, y_2, …, y_q), each of which is a linear combination of the *x* original variables. In particular, the new variables are derived in decreasing order of 'importance': y_1 accounts for as much of the variation in the original data amongst all linear combinations of x_1, x_2, …, x_q. Then y_2 is chosen to account for as much as possible of the remaining variation, subject to being uncorrelated with y_1 – and so on, i.e., forming an orthogonal coordinate system.

16. Commonly, but very confusingly, PCA is called exploratory factor analysis (EFA). Here, the word factor is inappropriate. Indeed, factor analysis is usually adopted to confirm a latent factor structure for a group of measured variables. Therefore, factor analysis is a model based technique and it is concerned with modeling the relationships between measured variables, latent factors, and errors. Moreover, factor analysis assumes that the covariation in the observed variables is due to the presence of one or more latent variables, exerting causal influence on the observed variables. The choice of which is used should be driven by the goals of the analyst.

The new variables defined by this process are the so-called principal components (PCs). The general hope of PCA is that the first few PCs will account for a substantial proportion of the variation in the original variables, thus providing a convenient lower-dimensional summary of these variables that might prove useful for a variety of reasons. Thus, the loss of information is mostly avoided. Moreover, whereas the original indicators are highly correlated, the variables that are obtained are uncorrelated (Everitt and Hothorn, 2010).

When the original variables are on very different scales, standardizing them is suggested, thus avoiding the distorting influence which may come from those indicators that show a higher variance. Therefore, PCA is carried out on the correlation matrix rather than the covariance matrix.

The k principal components (where $k < p$, as already observed) come from the following linear combinations, expressed as a matrix:

$$\mathbf{Y} = \mathbf{X}\,\mathbf{A} \qquad (1)$$

Where: **Y** is the (n x k) matrix of the scores of the n statistical units for the k components; **X** is the (n x q) matrix of the original standardized variables; **A** is the (p x k) matrix of the normalized coefficients, linking the extracted PCs to the original variables.

Moreover, in order to simplify the interpretation of factor loadings, principal components can be orthogonally rotated, so maintaining the uncorrelation among the components (e.g., through the VARIMAX technique). However, rotation determines a general reduction in the explained variance.

After having extracted the PCs, it is possible to compute the respective scores for the whole set of statistical units (i.e., for each of the 1,288 EU NUTS 3 region under study). On a standardized scale, each observation is assigned a score according to each extracted PC.

4.5 A "PeripheRurality Indicator" from PCs

The PCs scores summarize the multidimensionality of rurality, coming from the original 24 variables. Nonetheless, each region is still represented by a (reduced) set of variables (the selected PCs). A univariate measure of rurality is still lacking. Thus, moving from the extracted PCs, a comprehensive "PeripheRurality Indicator" (PRI) can be computed. In particular, the following methodology is proposed.

First, an ideal region, which is characterized by very urban features, is identified. This ideal region represents a benchmark for urbanity across Europe and it helps us in defining what is not rural. In particular, this ideal area is represented by the EU global MEGAs, which are Paris and London (ESPON 1.1.1, 2005). The suggested methodology is really intuitive. The core areas of the two megalopolises are described by the following NUTS 3 regions: Paris (FR101), Inner London West (UKI11) and Inner

London East (UKI12). Thus, for each selected PC, the average value of the scores obtained by the three selected areas is taken into account[17].

Then, the distance between all NUTS 3 areas and this ideal urban benchmark can be computed. The Euclidean distance for a generic *n*-dimensional space is thus assessed. Indeed, the distance is computed according to the selected PCs, as they represent specific features of both rurality and remoteness in both a socio-economic and a geographical way. Therefore, the comprehensive PeripheRurality Indicator can be computed as follows:

$$PRI_i = \sqrt{\sum_p (x_{ip} - x_{ubp})^2} \; \forall \; i = 1, \dots, n \text{ and } \forall \; p = 1, \dots, k \qquad (2)$$

where y_{ip} represents the *i*-th region's score for the *p*-th PC and y_{ubp} represents the urban benchmark's score for the *p*-th PC[18].

Although a geographical benchmark is adopted, the PRI still represents a statistical distance (and not just a geographical one): PRI captures all those features expressed in the original 24 variables making a generic EU region different from the ideal urban benchmark. Actually, the PRI just measures the statistical distance from what is certainly not rural. Actually, as the indicator in (2) expresses both socio-economic and geographical (spatial) "distance" from "urbanity", it is here called the PeripheRurality Indicator.

As already stressed, the PRI may suffer from some drawbacks: in particular, it is just a synthetic measure of rurality, based on the available data at the NUTS 3 level. As it represents a first effort in the field, the indicator can be largely improved and refined.

4.6 Defining different rural typologies: a Cluster Analysis (CA)

The comprehensive PeripheRurality Indicator (PRI) summarizes, within a single measure, both rurality and peripherality (remoteness) features. However, the multidimensional features of EU rural areas are still relevant: thus, together with the univariate synthesis provided by the PRI, it seem useful to accompany the extraction of the PCs with a Cluster Analysis (CA).Indeed, one of the main aims of the current work is the proper identification of different typologies of rural areas in Europe. They can be characterised by a composite mix of features. The main aim of CA is making clear the wide variety lying within the EU regions. Among multivariate statistical techniques, CA is actually adopted to deal with classification issues. It helps in identifying units which share similar features. The analysis was introduced in the late '30s by Tryon (1939) and it was considered as an alternative compared to the factor analysis. Cluster analysis provides a good synthesis of the structure of a dissimilarity matrix among observations (Johnson, 1967), thus preserving the most of the original information.

17. The choice of getting together two different urban areas helps in finding more robust results. Indeed, when just considering a unique NUTS 3 region as an urban benchmark, too extreme values are observed. Moreover, the reference to the classification from ESPON (ESPON – Project 1.1.1, 2005) provides a more comparable definition of urban areas.

18 .According to (2), in computing the PRI, all PCs implicitly share the same weight. It follows that the first PCs (i.e, those having the larger variance) will play a greater role in the definition of the PRI. However, this approach allows no further hypotheses in the analysis.

According to these main properties, cluster analysis has been widely used in social sciences, in urban planning analysis and in land management issues.

From a more methodological perspective, CA belongs to the unsupervised learning approaches, as it helps in finding hidden structures within unlabeled data. In particular, through cluster analysis, a set of objects is grouped according to *p* measurable characteristics in such a way that objects in the same group (*i.e.*, a cluster) are more similar to each other than to those belonging to other clusters. Thus, the analysis is based on the key concepts of 'distance' and 'similarity'[19]. Different kinds of distance can be used in the social sciences: the Minkowski distance, the Manhattan distance, the Euclidean distance.

According to a chosen distance, it is possible to convert a $n \times p$ data matrix into a $n \times n$ distance matrix. This matrix contains the distances, taken pairwise, of a set of points. Each element of the matrix d_{ij} is then the expression of the distance between the vectors considering all the *p* variables.

Moreover, clustering algorithms can be categorized, according to their cluster models. In particular, two alternative approaches may be distinguished:

- Hierarchical approaches are based on the core idea of building a whole hierarchy of clusters. Strategies for hierarchical clustering usually fall into two opposite types: i) agglomerative clustering is a “bottom up” approach, as each observation starts in its own cluster, and pairs of clusters are then merged as one moves up the hierarchy; ii) divisive clustering is a “top down” approach, as all observations start in one cluster, and then splits are performed recursively as one moves down the hierarchy. In both cases, the final output of the analysis can be graphically presented throughout a bi-dimensional diagram, known as dendrogram (Kaufmann and Rousseeuw, 1990);

- Partitioning approaches are aimed at partitioning *n* observations into *k* non-overlapping cluster. These approaches are mainly based on iterative algorithms: each observation belongs to the cluster with the nearest mean (centroids). Usually, a specific objective-function is minimized throughout this allocation. K-means clustering (MacQueen, 1967) and k-medoids clustering techniques (Kaufman and Rousseeuw, 1990) are generally used, among partitioning approaches.

There are no objectively right clustering algorithms: both approaches share positive and negative features. In hierarchical methods, for example, it is not possible to reallocate an observation after the identification of a given group. On the opposite side, partitioning approaches are iterative ones. Moreover, partitioning approaches can handle larger dataset, even though they cannot managed outliers (observations that are numerically distant from the rest of the dataset) in a proper way. The main drawback in partitioning methods deals with the need for an *ex ante* specification of the number (*k*) of clusters to be extracted. Usually, this number is empirically identified. On the opposite side, hierarchical methods do not require any *ex ante* definition of the number *k*.

19. The two concepts clearly share an inverse relation.

Referring to the analysis of the urban-rural typologies, both the methodologies are suggested: Copus (1996) and Vidal *et al.* (2005) applied k-means cluster analyses; on the other side, Buesa et al. (2006) as well as Dimara *et al.* (1996) referred to aggregative (hierarchical) cluster analysis.

According to this specific dataset and problem, a hierarchical cluster analysis is applied to the extracted PCs.

5. Main results: EU rural areas under major changes

5.1 PCA main results

Some preliminary analyses on the dataset suggest the existence of different measurements of units among variables belonging to the dataset. Therefore, standardizing is performed and a correlation matrix is then computed, in order to highlight relationships among variables and groups of variables[20].

Due to the presence of high correlation rates among variables, the Kaiser-Meyer-Olkin test (or KMO test) is first applied to the selected variables. KMO's sampling adequacy criteria can test the ratio of item-correlations to partial item correlations. If the partials are similar to the raw correlations, items do not share much variance with other items. The KMO test ranges from 0.0 to 1.0, whereas desired values are greater than 0.5[21]. According to the selected variables test KMO is satisfactory (0.7375).

After having extracted the whole set of uncorrelated PCs (as shown in Table 5), there are different methods which are generally used in order to establish the number of PCs to choose: both the Guttman-Kaiser criterion[22], the analysis of the eigenvalues greater than 1 and analysis of the *elbow* in the scree plot are considered. According to these three criteria, 6 PCs should be taken: indeed, the analysis of the *elbow* in the scree plot supports this choice (Figure 4). However, both the 5th and 6th components are very contiguous, showing very similar eigenvalues. Moreover, the latter is not so easily identifiable, according to the set of original variables: thus, in order to make the interpretation easier, just the first 5 PCs are selected. These PCs account for 67.46% of cumulative variance and each of them shows an eigenvalue greater than 1.5 (Table 5).

20. Correlation coefficients are computed from the 1,288 observations collected at the NUTS 3 level.

21. According to Kaiser (1974), scores lower than 0.5 are unacceptable; [0.5, 0.6) are miserable, [0.6, 0.7) are mediocre, [0.7, 0.8) are middling, [0.8, 0.9) are meritorious, [0.9, 1.0) are marvellous.

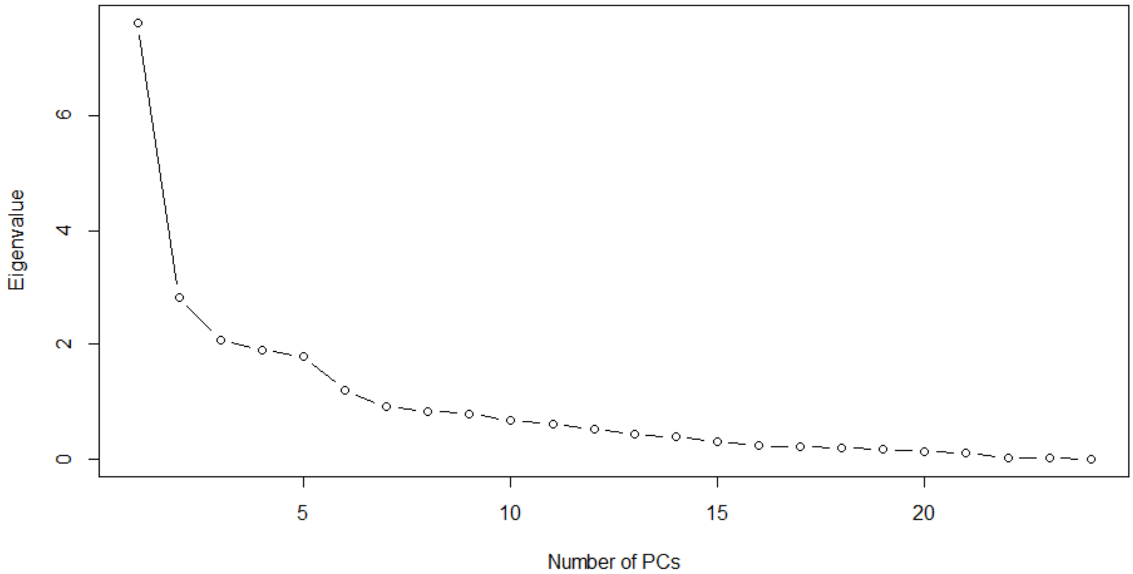
22. The Guttman-Kaiser criterion states to choose those principal components which are able to explain at least 70-80% of the cumulative variance.

Table 5 – PC extraction: eigenvalues and variance explained

Component	Eigenvalues	% of variance	cumulative % of variance
1	7.61	31.71	31.71
2	2.82	11.74	43.45
3	2.08	8.66	52.11
4	1.90	7.92	60.03
5	1.78	7.44	67.46
6	1.20	4.99	72.46
7	0.91	3.79	76.24
8	0.84	3.50	79.74
9	0.79	3.28	83.02
10	0.68	2.84	85.86
11	0.62	2.58	88.44
12	0.52	2.16	90.59
13	0.44	1.82	92.41
14	0.39	1.62	94.03
15	0.32	1.32	95.34
16	0.24	0.98	96.33
17	0.22	0.91	97.24
18	0.20	0.81	98.06
19	0.17	0.72	98.77
20	0.14	0.57	99.34
21	0.11	0.45	99.79
22	0.02	0.10	99.89
23	0.02	0.07	99.96
24	0.01	0.04	100.00

Source: own elaboration

Figure 4 – PCA: scree plot



Source: own elaboration

In order to move on with the interpretation of the extracted PCs, the analysis of the factor loadings is shown in Table 6. Factor loadings which are smaller than |.15| are not shown in the table, just to make this interpretation clearer. In order to preserve most of information, no rotation of factor loadings is performed. According to the figures shown in table, it is possible to identify and give a broader interpretation to the extracted PCs.

Table 6 – PCA Factor loadings (only significant values, ≥ $|.15|$, are reported)

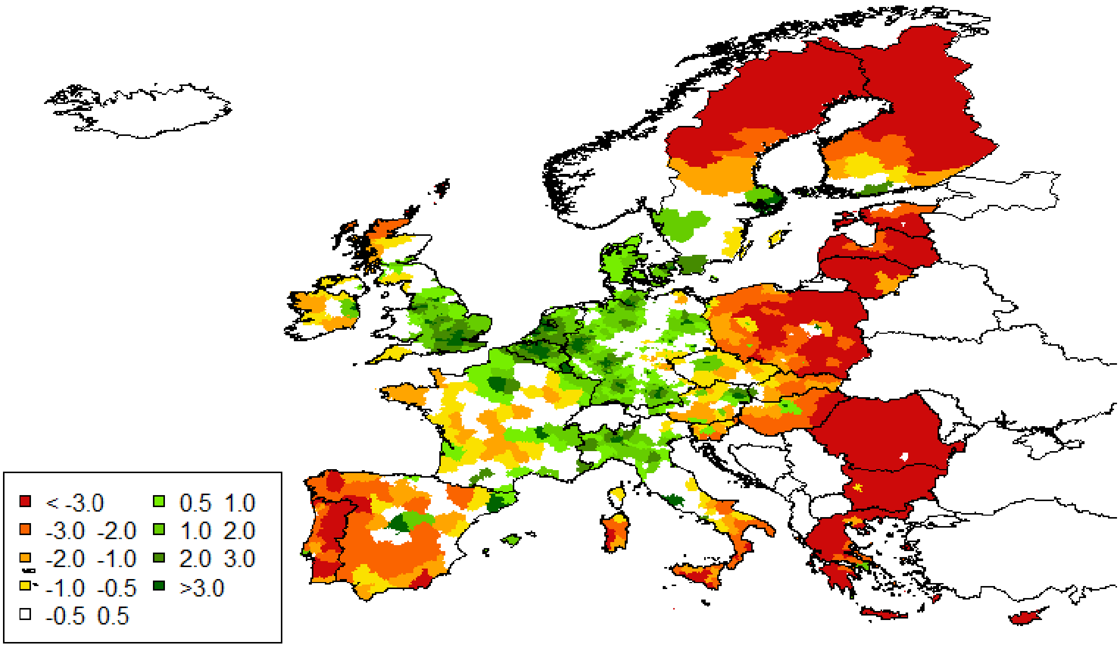
	Variable	PC1	PC2	PC3	PC4	PC5
Socio-Demographic features	Population		-0.302		-0.175	
	Population Growth		-0.348			-0.401
	Net Migration Rate		-0.201			-0.327
	Density	0.176	-0.237	-0.317		0.35
	Unemployment Rate			-0.346	-0.231	
	Young-age dependency ratio		-0.27	0.199	-0.234	-0.286
	Aged dependency ratio		0.388		0.194	
Structure of th e economy	GVA Agriculture (%)	-0.287				
	Employment Agriculture (%)	-0.29				
	Employment Manufacturing (%)			0.381	0.274	0.326
	Employment Services (%)	0.272		-0.29		-0.268
	Per capita GDP	0.248			0.165	
	Average farm size		0.412	-0.201	-0.214	
	Average SGM		0.383		-0.283	
Land Use	Artificial areas (%)	0.217	-0.186	-0.301		0.343
	Agricultural areas (%)			0.403	-0.479	
	Forests (%)				0.541	-0.229
Spatial dimension	Air Accessibility	0.314				
	Multimodal Accessibility	0.322				0.151
	Multimodal Accessibility Change					0.162
	Distance from MEGA1	-0.28	-0.168	-0.183		
	Distance from MEGA2	-0.296				
	Distance from MEGA3	-0.293		-0.157		
	Distance from MEGA4	-0.209		-0.226		-0.229
	% of variance	31.71	11.74	8.66	7.92	7.44
	Cumulative variance (%)	31.71	43.45	52.11	60.03	67.46

Source: own elaboration

PC1 – Economic and geographical centrality (31.71% of total variance)

This component explains more than 30% of the original variance. It is mainly related to the geographical (spatial) dimension and to the structure of the economy. Indeed, this component is positively related both to the two accessibility indexes (Air Accessibility and Multimodal Accessibility) and to the share of the employment in services. Also per capita GDP, the share of artificial areas and the general population density show a positive relation with PC1. On the opposite side, the component is negatively related to the distance from MEGAs and to the relevance of the agricultural sector (both in terms of share of employment and in terms of share of GVA). According to this definition, PC1 sums up most of the characteristics of "urbanity" in tersm of both economic centrality and accessibility. Thus, rural areas as well as more peripheral regions usually show negative values according to this component. On the opposite side, capital cities and larger urban areas share high and positive scores (Figure 5).

Figure 5 – PC1: Economic and geographical centrality

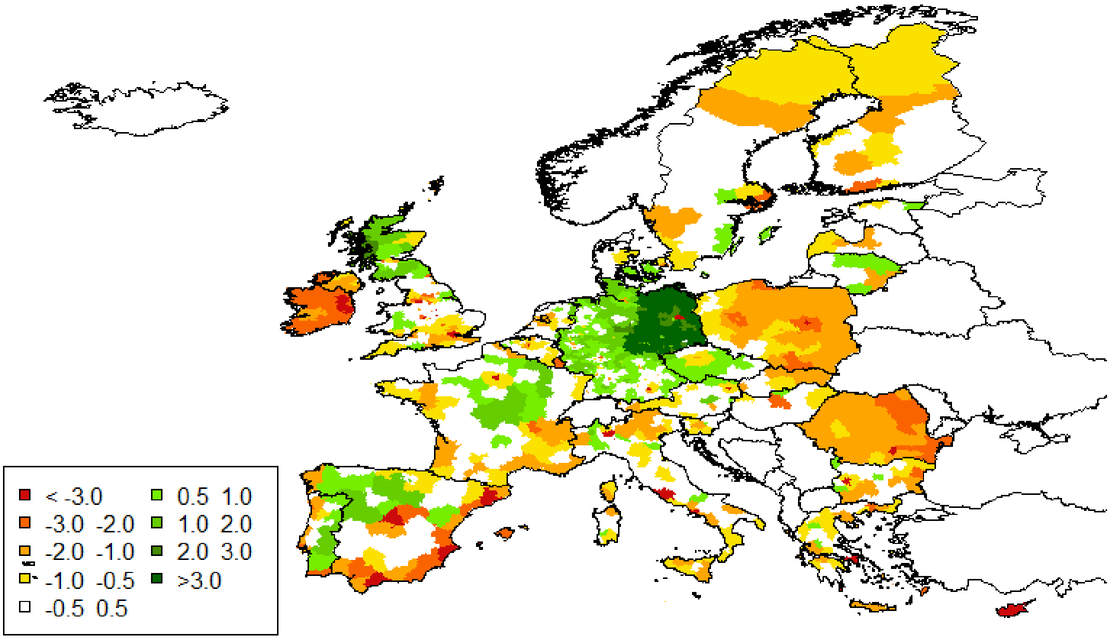


Source: own elaboration

PC2 – Demographic shrinking and ageing (11.74% of total variance)

The second PC mainly refers to socio-demographic features. It is positively related to the aged dependency ratio, whereas it is negatively related to the annual population variation, to the young-aged dependency ratio and to the net migration rate. Other variables which are related to this component are population and density (higher scores of the component are usually associated with low-density and smaller areas). Referring to the average farm size and the average SGM, these variables are positively linked to this component. Thus, according to all these characteristics, the component sums up two interrelated social phenomena: demographic shrinking and population ageing. The geographical distribution of this component seems confirming that these issues deeply affect specific regions across Europe and mostly: Eastern Germany Länder, rural areas in Central France, NUTS 3 regions in Scotland. On the opposite side, both capital cities and Eastern and Southern NUTS 3 regions are not affected by these demographic trends. The same is true for Ireland: in spite of the strong out-migration flows in its history, it is still a young country, not affected by ageing population (Figure 6).

Figure 6 – PC2: Demographic shrinking and ageing

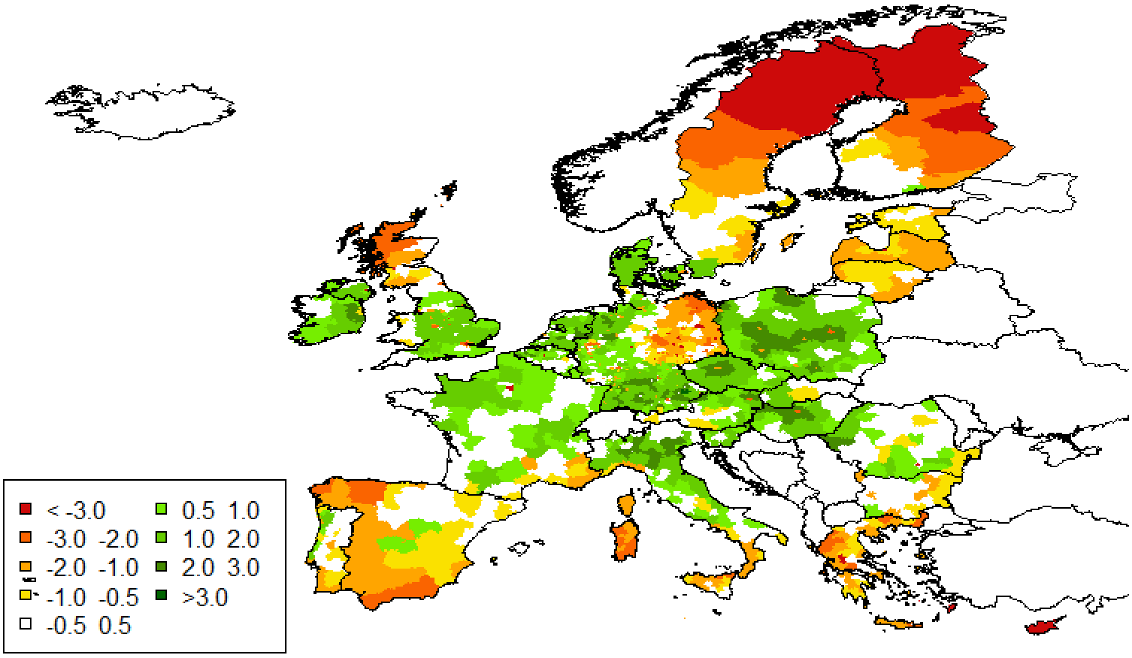


Source: own elaboration

PC3 – Manufacturing in rural areas with well-performing labour market (8.66% of total variance)

PC3 accounts for a lower share of the original variance (less than 10%). It focuses on the relevance of industrial and other manufacturing activities within rural areas. Indeed, a positive value of the component is generally associated with larger shares of the employment in manufacturing activities as well as with larger shares of agricultural areas on the total. Also the young-age dependency ratio is positively related to this component. On the opposite side, PC3 is negatively related to the unemployment rate: actually, more manufacturing regions across Europe share a better performing labour market. Moreover, the negative relation between the PC and the distance from MEGAs seems suggesting that manufacturing areas are usually quite close to greater urban areas. In Figure 7, the territorial distribution of manufacturing areas is quite clear: most of regions in Western Germany, Northern Italy, Poland, Czech Republic and Austria share the highest score when considering PC3.

Figure 7 – PC3: Manufacturing in rural areas with well-performing labour market

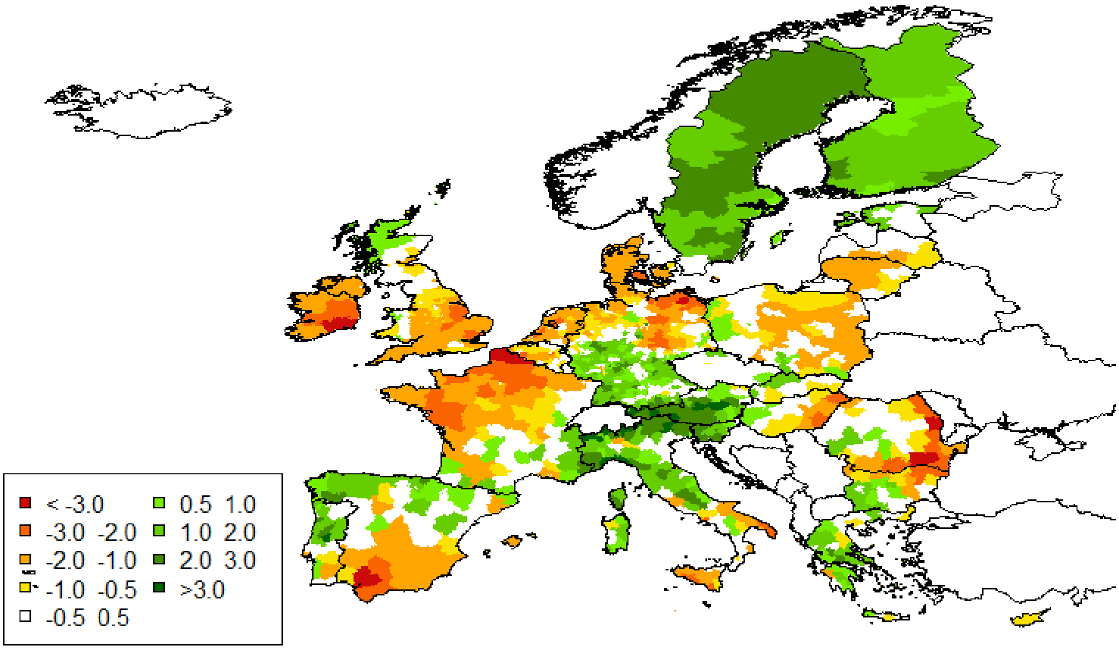


Source: own elaboration

PC4 – Land Use: forests vs. agricultural areas (7.92% of total variance)

PC4 focuses on land use. In particular, it is a typical dichotomous PC, which enables to distinguish more agricultural regions from regions covered by forests and other semi-natural landscapes. The former group of regions is characterised by negative values according to this component, whereas the latter group is characterised by positive values. Recalling the factor loadings, PC4 is positively related to the share of forests and other semi-natural areas, whereas it is negatively related to the share of agricultural areas on the total. Moreover, the average farm dimensions (expressed both in physical and in economical terms) are negatively related with the PC. Moreover, positive values of the component are associated with a larger share of the employment in manufacturing activities, while negative values are associated with higher unemployment rates. According to these characteristics, regions showing the highest values are typical mountain regions (the Alps, the Pyrenean region, Northern Scandinavia…). On the opposite side, the lowest values for the component are observed among the plain areas in North-western Europe (Northern France, the UK, Northern Germany) as well as by regions in Southern Spain (e.g., the Andalusia region) and in Romania (Figure 8).

Figure 8 – PC4: Land Use (forests vs. agricultural areas)

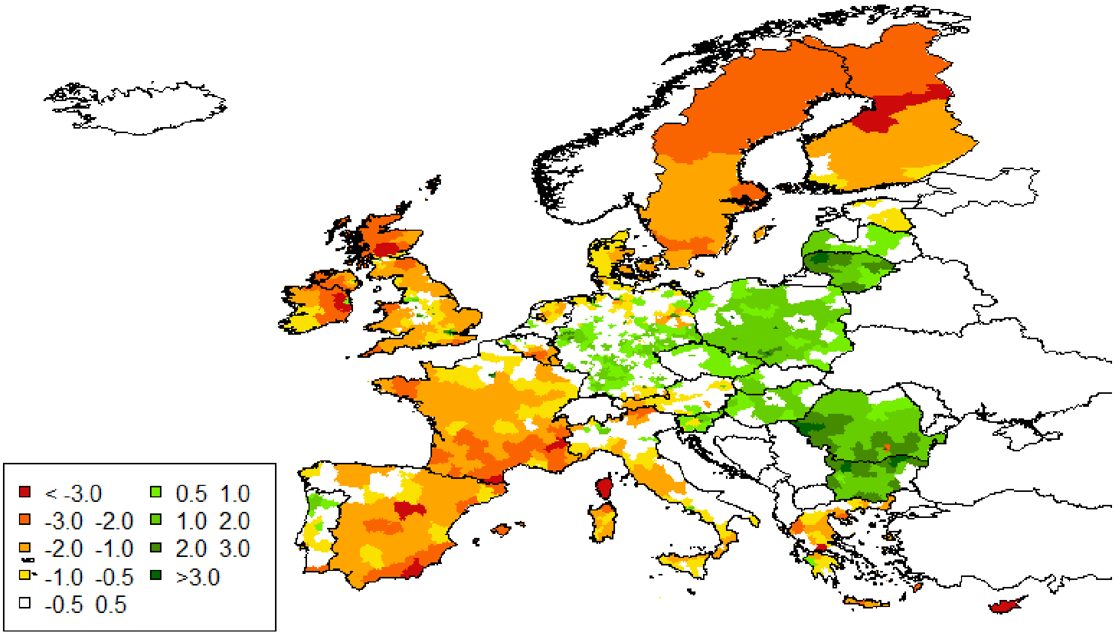


Source: own elaboration

PC5 – Urban dispersion (7.44% of total variance)

The fifth PC is the last component which has been extracted: it accounts for less than 7.5% of the total variance within the original dataset. According to the factor loadings matrix, the component is positively related to the population density, the share of artificial areas on the total and the share of the employment in manufacturing activities. Also the accessibility indexes are positively linked with this PC (even though factor loadings are close to .15). According to these loadings, positive values for this component are usually achieved by urban and densely populated areas, which are characterised by a large industrial sector. However, compared to PC1, PC5 is negatively related to the annual population variation and to the net migration rate. Also the young-age dependency ratio is negatively related to the PC. Thus, PC5 summarises very different features than a generic economic centrality of a given area (as PC1 does): it captures a sort of declining "urbanity", or urban dispersion associated to industrial decline. In Figure 9, it is easy to observe that the regions which are affected by the greatest urban dispersion are those in Eastern Europe (e.g., urban areas in Baltic States and Romania).

Figure 9 – PC5: Urban dispersion



Source: own elaboration

5.2 Computing the PeripheRurality Indicator

According to the selected PCs, encompassing both economic and geographical characteristics, the comprehensive "PeripheRurality Indicator" (PRI) is then computed, following (2). As already stressed, the first step refers to the definition of an urban benchmark. The global MEGAs (London and Paris, according to the classification from ESPON Project 1.1.1, 2005) are considered. In Table 7, the average scores observed in the urban benchmark for each PC are shown. From the table, it is possible to see that for most PCs the most extreme values are registered within the inner urban area of Paris. However, the choice of weighted these scores with those observed in Inner London is aimed at having a more robust definition of the PeripheRurality Indicator.

Table 7 – Defining the urban benchmark

		Economic / geograph. centrality	Demogr. shrinking / ageing	Manufact. in rural areas	Land Use: Forests vs. Agric. areas	Urban dispersi on
FR101	Paris	10.03	-8.55	-9.08	-0.91	9.30
UKI12	Inner London - East	6.92	-6.24	-4.86	-1.49	4.62
UKI11	Inner London - West	9.88	-6.97	-6.29	1.16	4.82
Average value		**8.94**	**-7.25**	**-6.74**	**-0.42**	**6.25**

Source: own elaboration

After having identified the main characteristics of this urban benchmark, the PRIis computed for the whole set of EU NUTS 3 regions. The index is just provided by the Euclidean distance from each region in Europe to this urban benchmark. By construction, the greater the PRI is, the more rural and/or peripheral a given region is[23]. In Table 8, the main descriptive statistics on the PRI are shown. These statistics are based on the whole set of observations across the 27-EU MSs (1,288 NUTS 3 regions).

Table 8 – PRI: descriptive statistics

	PRI
Mean	**15.13**
Sd.	**2.11**
Min.	**2.38**
1st Qu.	**14.35**
Median	**15.43**
3rd Qu.	**16.31**
Max.	**20.50**

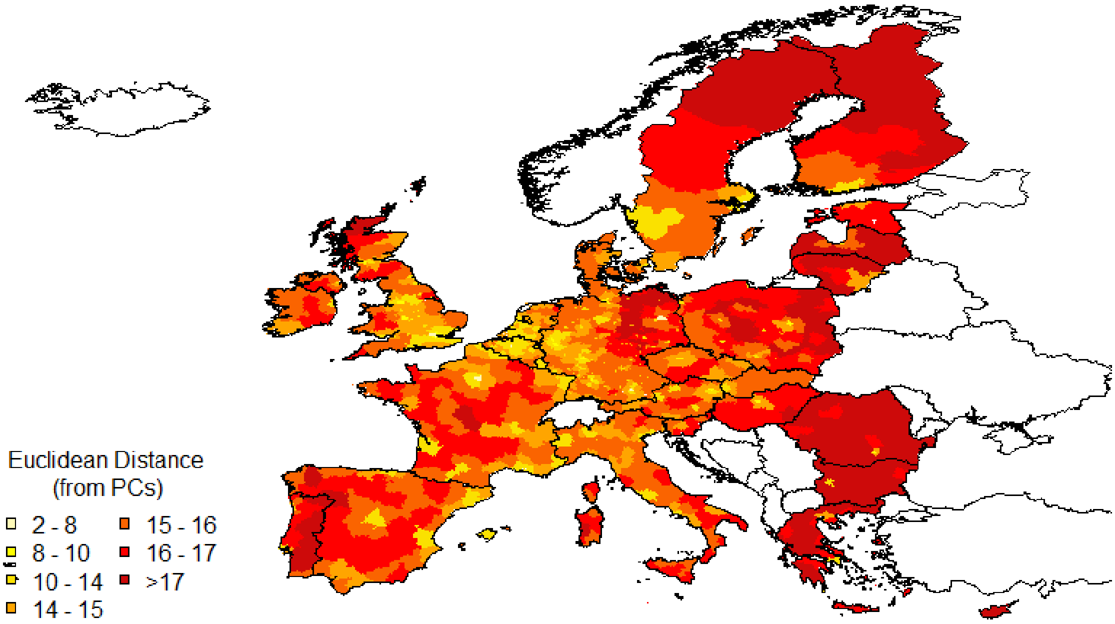
Source: own elaboration

In Figure 10, the values of the PRI computed for the 1,288 NUTS 3 regions are mapped. According to the map, values largely confirm most of the latest analyses on rural areas. As expected, the lowest values are observed in capital cities and more generally in the EU urban space: these regions are characterised by strong urbanisation, presence of infrastructure and high accessibility. On the contrary, the highest values are observed in Mediterranean regions and in most regions located in Central-Eastern Europe and in Northern Scandinavia. According to this measure, it is possible to define a range of context varying from the very urban contexts (e.g., EU capital cities) to deep rural and remote conditions (the more peripheral EU areas).

Actually, a new geography of EU regions, based on both rurality and peripherality features, starts emerging. The key idea is providing new information on territorial patterns across Europe, by summing up very different features within an univariate measure. Moreover, such a synthetic indicator can mix together different territorial scales of the analysis: in particular, the EU, the national and the sub-national level of analysis.

23. The Euclidean distance according to the 5 extracted PCs just reflects the conceptual distance of any region from the urban benchmark. Thus, it represent the statistical distance for each given EU region to the urban benchmark. Such a distance just partially reflects the geographical distance from the major EU urban areas (e.g., PC1 – Economic and geographical centrality).

Figure 10 – PRIacross Europe (NUTS 3 regions)



Source: own elaboration

5.3 CA main results

5.3.1 The clustering process

After the identification of the 5 PCs (each of them describing a different dimension of the multidimensional concept of 'peripherurality'), the next step of the study deals with the application of CA on the selected PCs. This step is particularly useful in order to deepen the analysis on the EU spatial development: such an analysis is actually addressed at defining groups of homogeneous regions within the EU space, thus providing a new and even richer geography of the European rural and urban areas.

As already stressed, cluster analysis has been applied on the 5 PCs. The level of the analysis is still the NUTS 3 level (1,288 observations). All methodological details of this analysis are shown in the Annex B: Cluster analysis. Here, just a few very general comments on the selected methodology are shown.

First, the agglomerative algorithm AGNES[24] is adopted. It belongs to the set of hierarchical clustering techniques, thus providing a whole hierarchy of clusters. In particular, according to this nesting procedure, single observations are merged in clusters until only one large cluster remains, containing all the observations. Moreover, the scores of the 5 PCs are not standardized: thus, the different levels of variance

24. The acronym AGNES stands for AGglomerative NESting. This algorithm is included into the 'cluster' package in free Software R (R version 2.15.2 has been used).

among them are voluntarily taken into account (this clearly means that the first PC will affect more the clustering than the fifth PC).

The adopted methodology and the main results from the analysis (i.e., a comprehensive dendrogram and the cluster membership) are shown in Annex B. The choice of the optimal number of clusters strikes a balance between the maximum compression of the data (thus grouping observations within few clusters) and the maximum accuracy (by assigning each observation to its “real” cluster). By analysing the dendrogram (and in particular by looking for the break point in the distances between two merged clusters), seven different clusters are obtained (see Annex B for further details). In order to describe them, the cluster centres, according to the 5 PCs, are shown in Table 9. In table, scores are standardized. In the Annex B, the average values for the whole set of 24 original variables is provided for the seven obtained clusters.

Moreover, just moving from the results which are shown in Table 9, the seven following clusters can be identified: i) Peripheries; ii) Nature-quality regions; iii) Cities; iv) Remote regions; v) Mixed-economy regions; vi) Shrinking regions; vii) Manufacturing regions

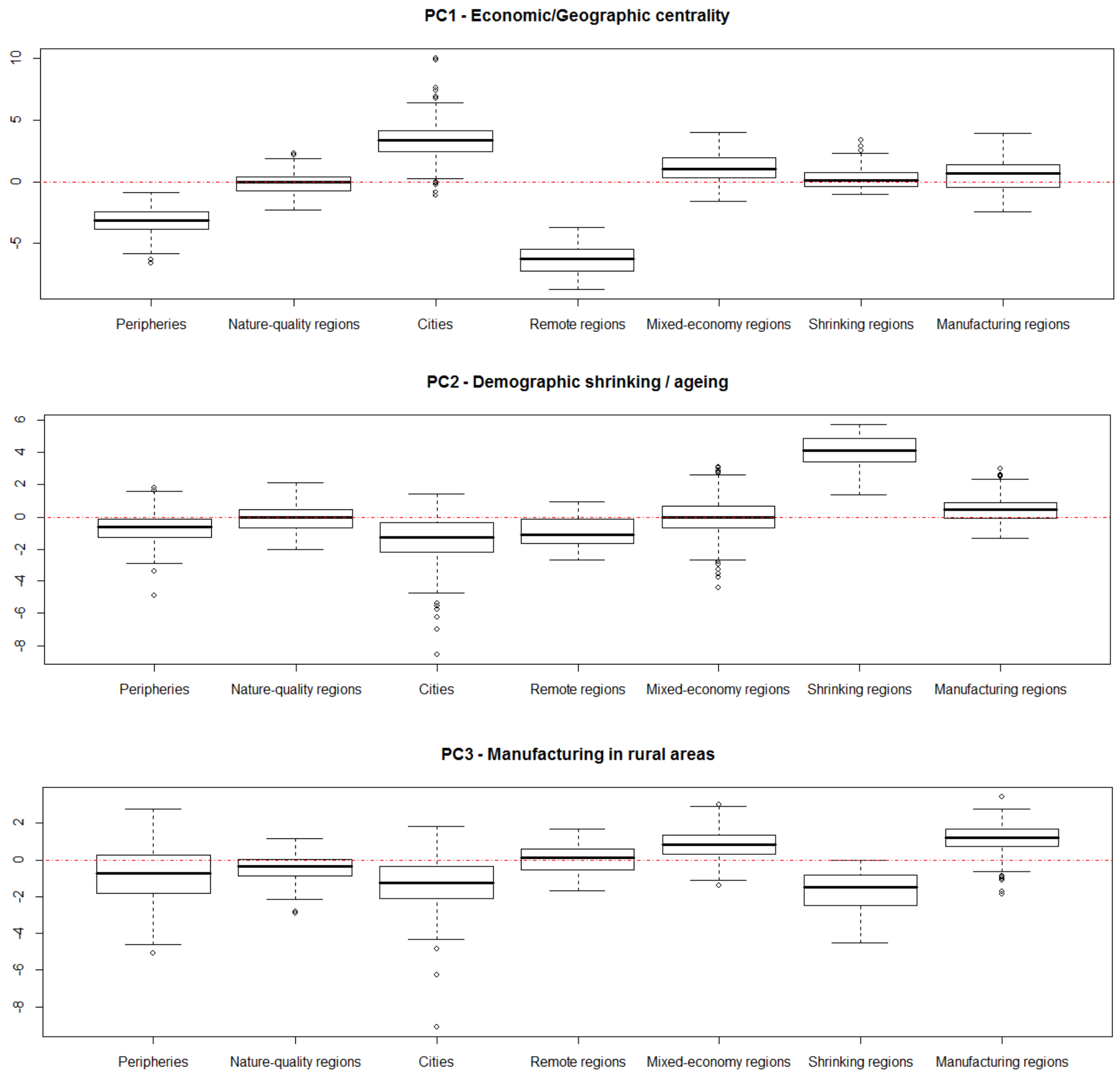
Table 9 – Defining typologies: cluster centres according to the selected PCs (in bold, extreme values)

	Economic and geographical centrality	**Demogr. shrinking and ageing**	**Manufacturing in rural areas**	**Land Use: forests vs. agri. areas**	**Urban dispersion**
Peripheries	**-3.25**	-0.65	**-0.68**	0.08	-0.43
Nature-quality regions	-0.10	-0.07	-0.41	**1.43**	**-1.40**
Cities	**3.42**	**-1.47**	-1.29	-0.15	0.97
Remote regions	**-6.33**	-0.89	0.00	-0.77	**1.89**
Mixed-economy regions	**1.10**	-0.01	0.85	**-1.06**	-0.72
Shrinking regions	0.38	**4.09**	**-1.70**	**-1.10**	0.46
Manufacturing regions	0.54	0.42	**1.16**	1.10	0.53

Source: own elaboration

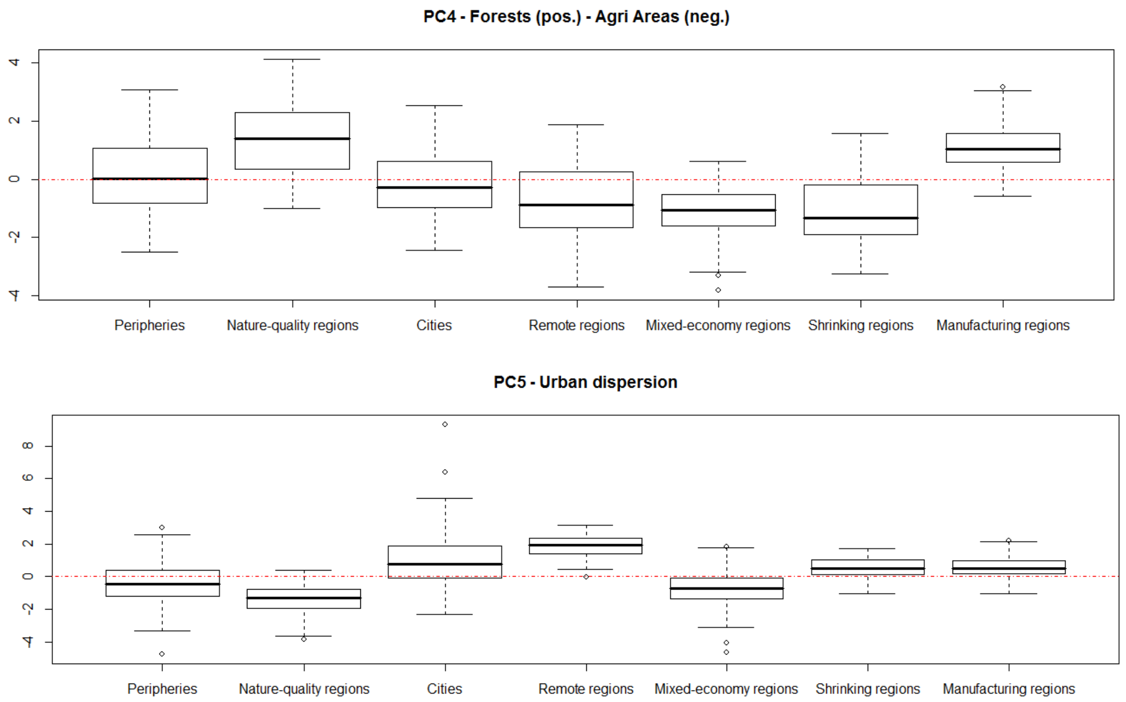
According to the clusters’ centres, which are described in Table 9, it is then possible to observe the entire distribution of the 5 PCs across the seven observed cluster. These distributions are shown, throughout boxplot graphs, in Figure 11 and in Figure 12. Referring to PC1, all the observations in the cluster of cities show scores above the average; on the contrary, the scores observed among the NUTS 3 regions belonging to cluster 1 (peripheries) and cluster 4 (remote areas) are well below the EU average. Demographic shrinking (PC2) mainly affects the cluster of the shrinking regions, whereas all the other clusters show values close to the EU average (with the only exception of cities, which seem to be less affected by this issue). Referring to PC3 (presence of manufacturing activities and well performing labour market), Manufacturing regions generally show higher values, whereas the large majority of cities shows negative values. Referring to the PC4 (land use), forests are particularly widespread across the Nature-quality regions and (more surprisingly) across the Manufacturing regions. Remote regions, Mixed-economy regions and Shrinking regions, on the opposite side, are more agricultural areas. The phenomenon of urban dispersion (PC5) mainly affects remote regions and cities. It is less noticeable within the Nature-quality regions.

Figure 11 – Defining typologies (I): the distribution of the PC1, PC2 and PC3 across clusters



Source: own elaboration (software R)

Figure 12 – Defining typologies (II): the distribution of the PC4 and PC5 across clusters



Source: own elaboration

Before moving to an in-depth analysis of the seven clusters, some additional information about the clustering output can be provided. The output can be considered a well-balanced classification. According to the number of NUTS 3 regions belonging to each cluster, the most representative ones are the Mixed-economy regions (315 regions) and the Manufacturing regions (276 regions). Referring to the resident population, the Cities and the Mixed-economy regions are the two most populous clusters: they account for more than 26% of total population each. On the opposite side, the clusters of the Nature-quality regions, Remote regions and Shrinking regions weight less at the EU scale (less than 10% of total population each). A different picture emerges when considering the area covered by each cluster: according to the geographical parameter, the cluster of Cities accounts for less than 2.75% of the total EU surface. On the opposite side, Peripheries account for more than 35% of the EU total area (Table 10).

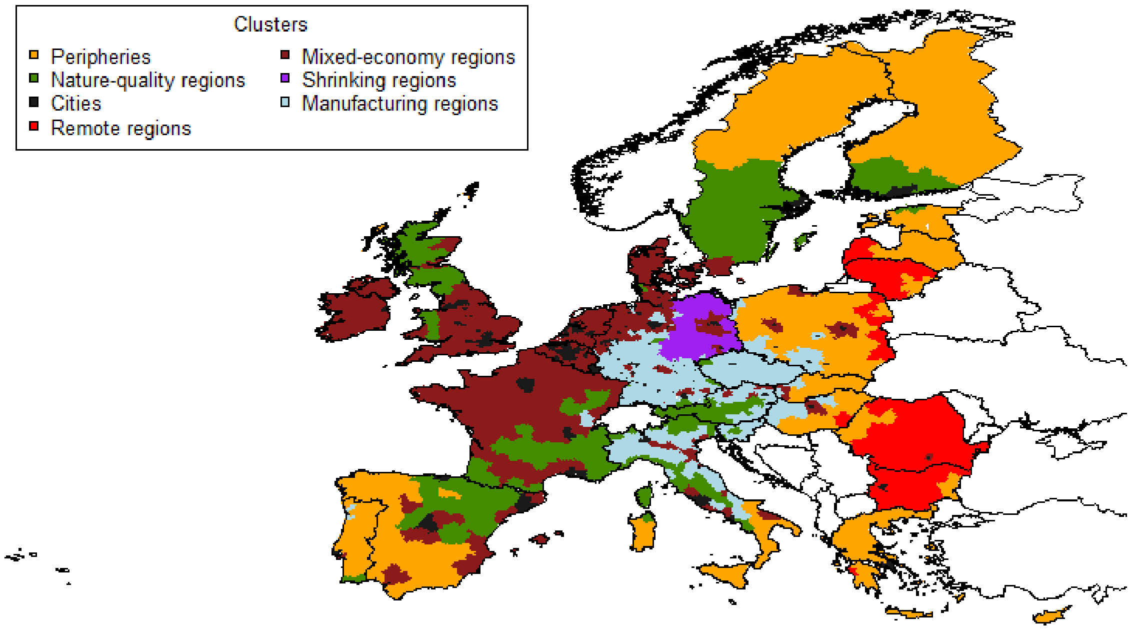
The different relevance of the seven clusters is highlighted by the analysis of their territorial distribution across Europe. In Figure 13, a broad picture of the distribution of the clusters across the EU space is shown.

Table 10 – Clusters' size in terms of number of region, population, total area

	No. NUTS 3 regions	Population (000 inhab.)	Area (km^2)	% NUTS 3 regions	% Population	% Area
Peripheries	204	74,965	1,516,377	15.84	15.08	35.22
Nature-quality regions	140	42,546	774,287	10.87	8.56	17.98
Cities	185	133,075	118,173	14.36	26.77	2.74
Remote regions	77	27,065	411,722	5.98	5.44	9.56
Mixed-economy regions	315	132,382	927,612	24.46	26.63	21.54
Shrinking regions	91	10,774	93,351	7.07	2.17	2.17
Manufacturing regions	276	76,370	463,983	21.43	15.36	10.78
Total	1288	497,177	4,305,504	100.00	100.00	100.00

Source: own elaboration

Figure 13 – Territorial distribution of the seven clusters



Source: own elaboration

5.3.2 An in-depth analysis on the obtained clusters

Moving from the clustering output, a more detailed description about the seven selected clusters can be shown. This analysis is based both on the PCs (adopted in the clustering process) and on the original variables: the latter set of indicators help in refining the description of the clusters (see Referring to each original variables, the number of values that have been replaced with NUTS 2 and NUTS 1/0 data is shown. Moreover, other replacements are listed (e.g. data referring to different years), as well as the geographical distribution of the missing values.

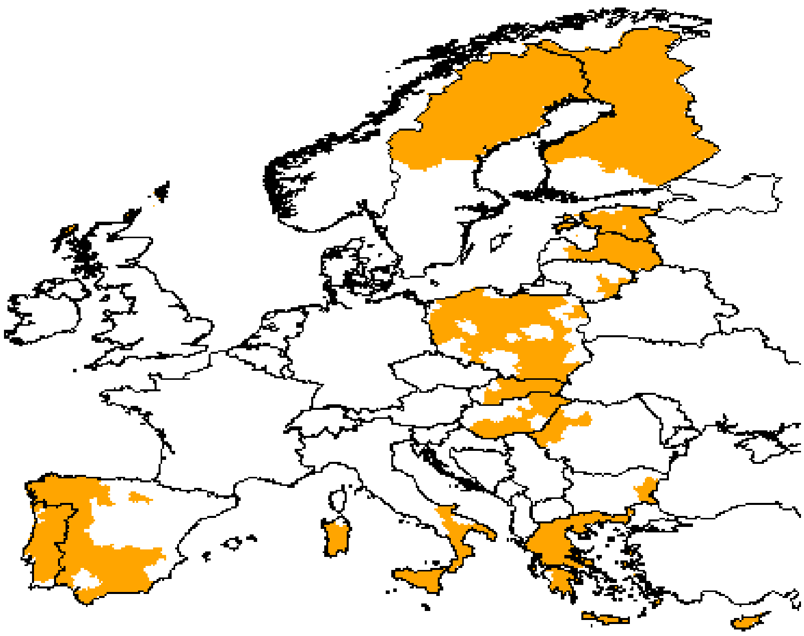
It can be noticed that less than 5% of values has been replaced with regional or national data (NUTS2 / NUTS1-0 data).

Annex B: Cluster analysis for a more detailed analysis of the average values for the original variables across the selected clusters).

Cluster 1 – Peripheries (204 NUTS 3 regions)

The first cluster includes more than 200 NUTS 3 regions. Even though these regions account for about 15% on the total EU population, they cover more than 35% of the EU total area (in particular, more than 1.5 million square kilometres). Most of the regions belonging to this cluster are located in Northern Scandinavia, in the new Central Eastern Europe MSs (mainly across the Baltic States, Poland, Slovakia and Hungary) and in the Mediterranean Countries (Cyprus, Greece, Southern Italy, Spain and Portugal). According to this very specific territorial distribution, the cluster has been labelled as the EU peripheries (Figure 14). These regions actually show negative values for the first PC (which refers both to economic and geographical centrality). The analysis of the cluster's main socio-economic figures confirms these findings: poor economic figures, low levels of population density (especially if compared to more central EU regions) and low accessibility indexes affect these regions. However, from a demographic perspective, these regions are not particularly shrinking.

Figure 14 – Cluster 1: Peripheries

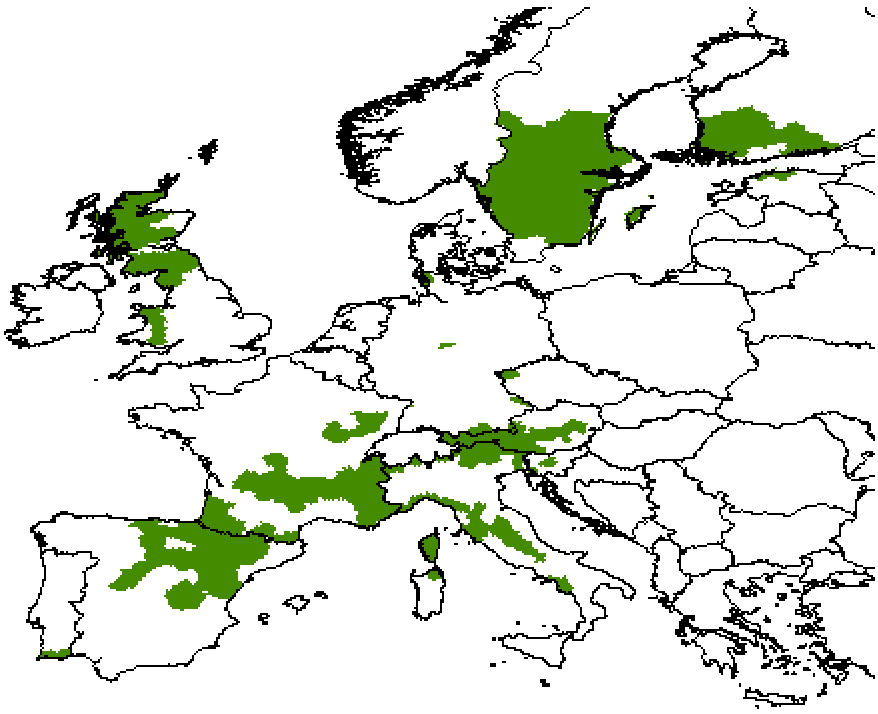


Source: own elaboration

Cluster 2 – Nature-quality regions (140 NUTS 3 regions)

The second cluster can be labelled as Nature-quality regions. Very positive values for PC4 (meaning the widespread diffusion of forests and other semi-natural areas) characterise the regions belonging to this cluster: actually, within these 140 NUTS 3 regions, the share of forests is on average 62% of the total area. The geographical analysis of the cluster strongly confirms these findings: as shown in Figure 15, the Alps and the Pyrenean region, as well as large parts of Scotland, Southern Sweden and Finland are included within the nature-quality regions of the continent. Although these regions are mainly located in mountain areas, it has to be noticed that the whole cluster is not characterised by remoteness or inaccessibility (referring to PC1, the regions belonging to this cluster share values which are close to zero). As a direct consequence, these regions are not experiencing urban dispersion (on the contrary, PC5 is on average quite negative). Also the economic figures (e.g., per capita GDP and unemployment rate) are close to the EU average within this group of regions. Thus, even if they are not particularly densely-populated, these regions seem to be characterised by a positive performance according to both demographic and economic issues. These regions have largely taken advantage from the natural landscape as well as from diversification of economic activity (for example, throughout touristic services).

Figure 15 – Cluster 2: Nature-quality regions



Source: own elaboration

Cluster 3 – Cities (185 NUTS 3 regions)

Cluster 3 includes 185 NUTS 3 regions which are characterised by very large values (+3.0, on average) for PC1 (Economic and geographical centrality). These regions also share the highest level of potential accessibility as well as of economic wealth (average per capita GDP is greater than 30,000€). On the opposite side, these areas are not affected by demographic shrinking (the average value for PC2 is negative): the current net migration rate is actually positive (+3.9%). According to these figures, and looking at the territorial distribution of the cluster (Figure 16), the interpretation of this group is easy. Cluster 3 mainly refers to urban areas: all the EU capital cities as well as large metropolitan areas within Europe are included in it. As expected, the manufacturing sector is scarcely represented (PC3 is negative, whereas the share of employment in service is close to 80%). At the EU level, this cluster is particularly relevant: although it accounts for just 2.7% on total surface, it accounts for more than a quarter of the EU total population.

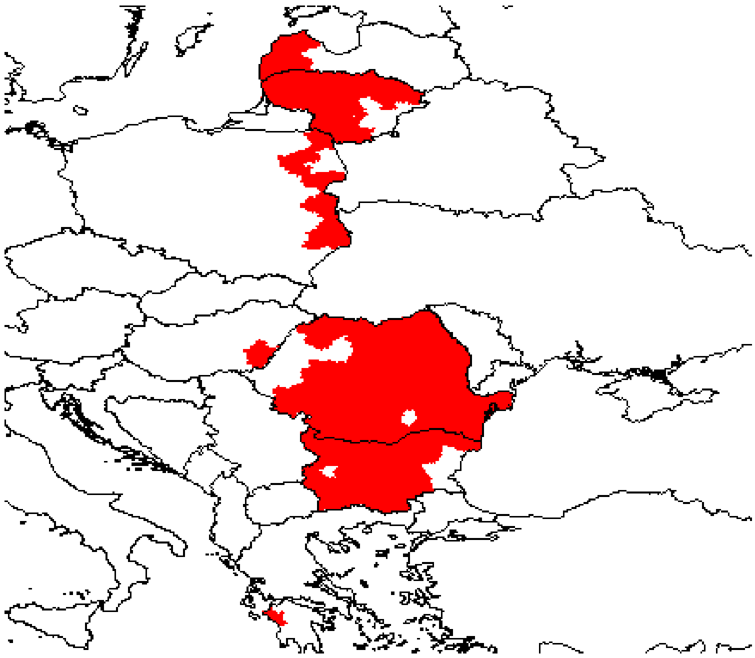
Figure 16 – Cluster 3: Cities

Source: own elaboration

Cluster 4 – Remote regions (77 NUTS 3 regions)

Both the analysis and the interpretation of the fourth cluster are mainly driven by PC1: regions belonging to this cluster share the lowest scores according to it, thus sharing the greatest levels of remoteness across Europe. The remotest regions of the continent are located along the easternmost border of the EU: the vast majority of Romania and Bulgaria as well as Lithuania (with the only exception of its capital cities) belong to the cluster. Other quite remote regions are some Polish NUTS 3 areas, as well as two regions located in Hungary and in Greece (Figure 17). As already pointed out, these regions show the lowest levels of accessibility across Europe: on average, multimodal accessibility index is 38.5% of the EU average. Conversely, average distance to the closest category 1 MEGA is larger than 750km. Geographical remoteness is coupled with quite poor economic figures. The average per capita GDP is just 8,166 €, as the economy of these regions is mainly driven by agriculture. The agricultural sector accounts for more than 10% of total GVA and for more than 30% of total employment. Even though these areas are not demographically shrinking (at least, according to PC2), they are affected by urban dispersion (PC 5 is positive).

Figure 17 – Cluster 4: Remote regions



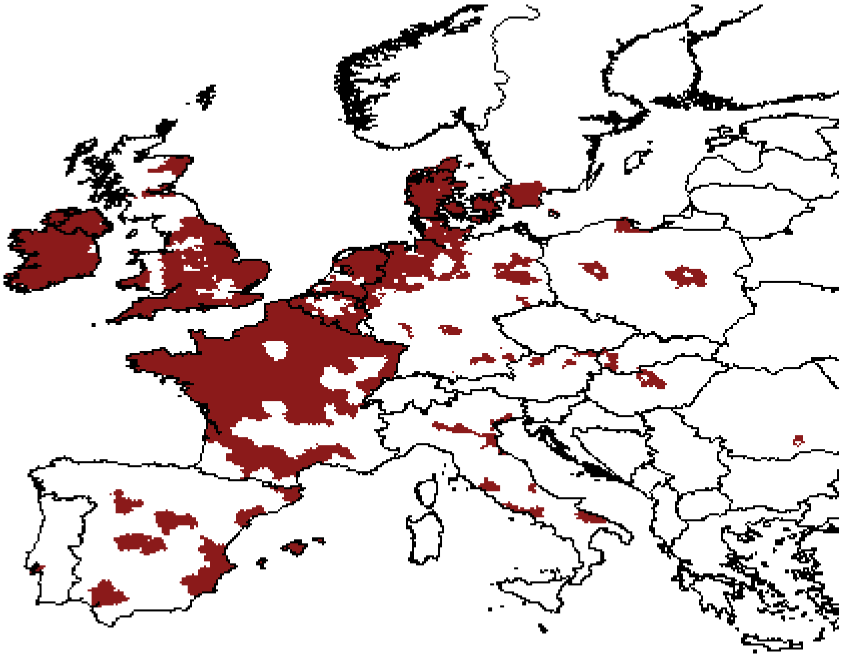
Source: own elaboration

Cluster 5 – Mixed-economy regions (315 NUTS 3 regions)

Cluster 5 is a wide representative cluster within the EU context. Actually, it is composed by more than 300 NUTS 3 regions (out of 1,288). These regions are mainly located in the plain areas in the North-Western part of the EU-15 MSs (Figure 18). Two PCs help in defining the cluster: PC1 is slightly positive (thus suggesting a good centrality of the area), whereas PC4 is negative (thus evoking the large relevance of an agricultural landscape, with a reduced presence of forests). The cluster somehow includes Mixed-economy regions characterised by the relevance of both the agricultural and the industrial sector, located in quite central areas. Due to the presence of flatlands, the relevance of agricultural areas on the total surface is particularly high (69.2%) and also the multimodal accessibility index is above the EU average (107.1).

Referring to the most important economic figures, they are close to the EU average: manufacturing activities account for about 16% on total employment.

Figure18 – Cluster 5: Mixed-economy regions

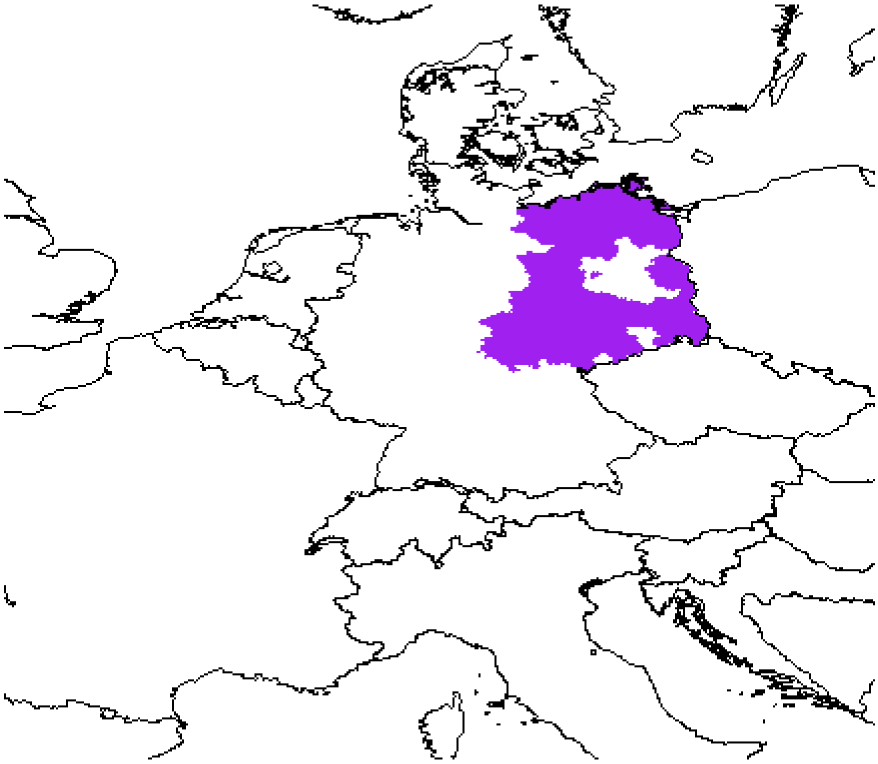


Source: own elaboration

Cluster 6 – Shrinking regions (91 NUTS 3 regions)

About 90 NUTS 3 regions, all located in the Länder belonging to the former Eastern Germany compose cluster 6 (Figure 19). These regions share very positive values for PC2 (Demographic shrinking and ageing), therefore they are characterised by strong out-migration flows (net migration rate is -3,5%) and by a growing share of old people on the total population (about 37 of people aged 65 and more on 100 people aged 15-64). Moreover, these regions are also affected by poor economic figures and by the lack of manufacturing activities (PC3 is negative). On the opposite side shrinking regions are characterised by a stronger relevance of the agricultural areas on the total as well as by a large dimension of agricultural holdings: the average farm size is 183.9 ha. and the average SGM is 138.4 ESU (both these figures are well above the overall EU average). This shrinkage of Eastern German Länder has already been widely analysed in literature (Bontje, 2005; Lötscher *et al.*, 2004; Müller and Siedentop, 2004; Peter, 2004).

Figure 19 – Cluster 6: Shrinking regions



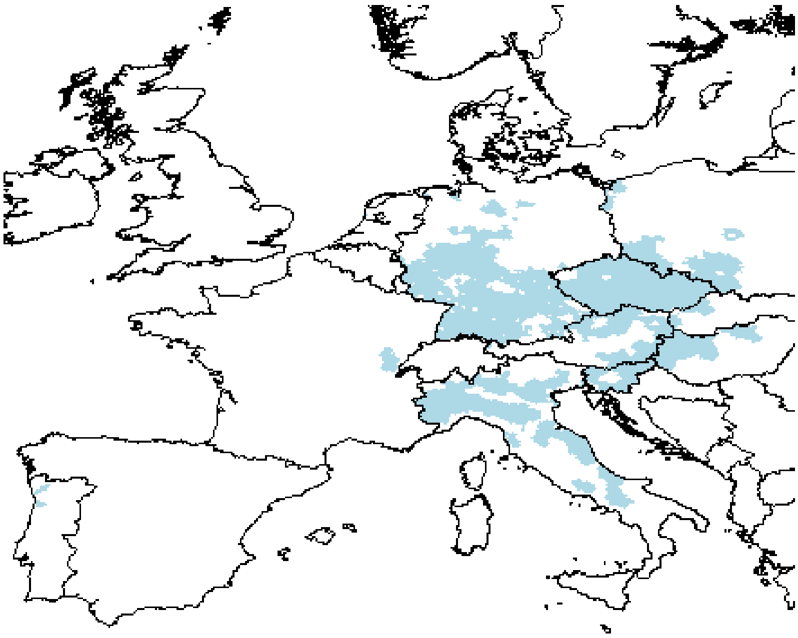
Source: own elaboration

Cluster 7 – Manufacturing regions (276 NUTS 3 regions)

Cluster 7 is composed by more than 270 NUTS 3 regions: they account for about 15% on total EU population and for more than 10% on total EU area. The cluster is characterised by positive values for PC3: actually, the share of employment in manufacturing activities on the total is greater than 27%, on average. According to this figure, the cluster includes more manufacturing regions in the EU. The central position of these regions can be observed in Figure 20 too: the cluster of Manufacturing regions covers most part of Northern and Central Italy[25], Southern Germany and Czech Republic. Other NUTS 3 regions belonging to it are located in Austria, Slovenia and Western Hungary. Moreover, these regions are characterised by well-performing labour markets: the unemployment rate is on average quite low (6%). From a broader demographic perspective, however, these regions seem to be affected by a trend towards the ageing of the population (even though it is not possible to talk about a real shrinking phenomenon within these areas). Moreover, according to the use of land, the cluster is mainly characterised by the presence of rural areas rather than of forests.

25 This area is generally referred to as 'Third Italy', according to the definitions from Bagnasco (1977, 1988). These regions are actually characterised by systems of small and medium enterprises, distributed in industrial districts (Brusco, 1999; 2007; Becattini, 1989).

Figure 20 – Cluster 7: Manufacturing regions



Source: own elaboration

5.4 Linking cluster analysis to the PRI

According to the results from the previous cluster analysis, the existence of different typologies of rural areas within Europe has been largely pointed out. As stressed in the previous pages, these typologies are sharply different both in terms of their main socio-economic features and in terms of territorial distribution. In particular, cluster analysis results strongly confirm the idea that rural areas are getting more and more heterogeneous within the EU. In particular, it is easy to observe that the different rural typologies are characterized by a different mix in terms of rural-peripheral features. Thus, the PeripheRurality Indicator can be used in order to provide a synthetic analysis of the selected clusters. Looking at the average value of the PRI across clusters, it is possible to sort them from the most urban-like clusters, to the most rural and peripheral context.

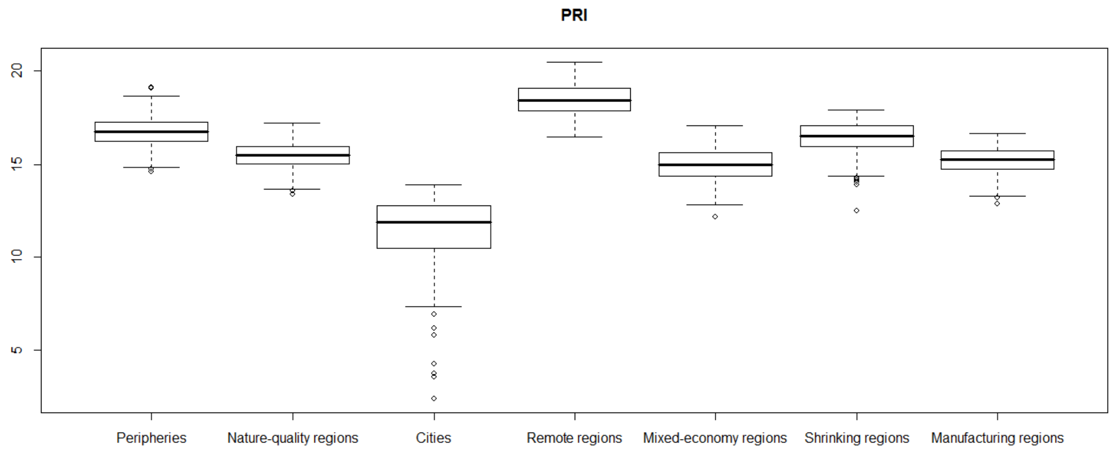
In Table 11, PRI average values are shown for each cluster: on average, it ranges from 11.32 (cluster of Cities) to 18.50 (cluster of Remote regions). In order to have more detailed information about the variation of the PRI across the selected clusters, a boxplot is shown in Figure 21.

Table 11 – PRI across clusters: average values

	PRI	
	Mean	**Sd. Dev.**
Peripheries	16.74	0.78
Nature-quality regions	15.46	0.74
Cities	11.32	2.03
Remote regions	18.50	0.91
Mixed-economy regions	14.99	0.85
Shrinking regions	16.28	1.06
Manufacturing regions	15.18	0.76

Source: own elaboration (R software)

Figure 21 – Distribution of PRI across regions

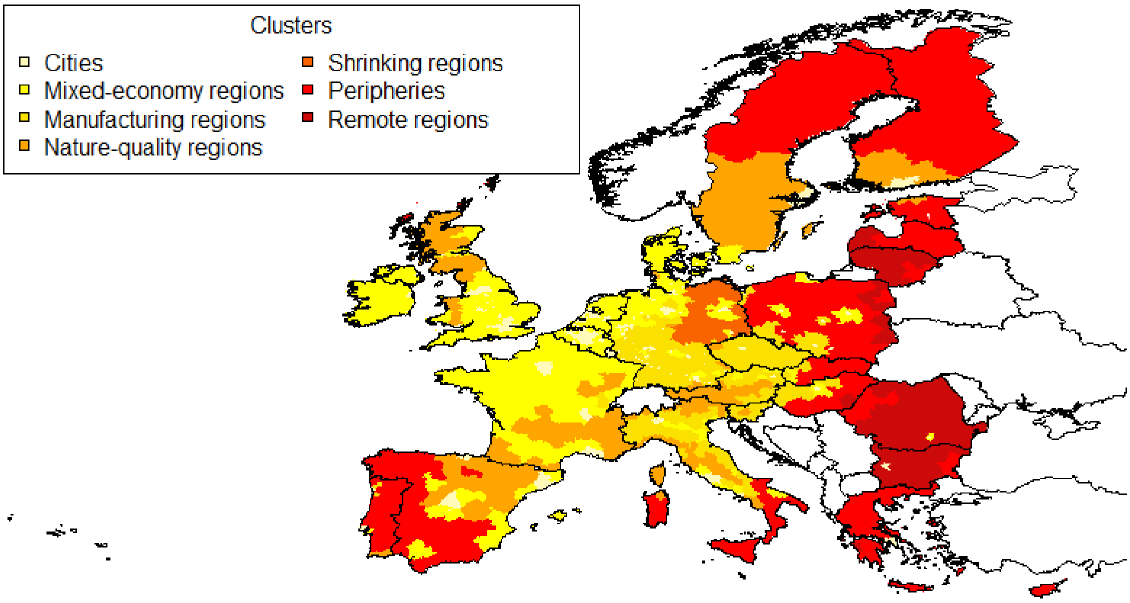


Source: own elaboration

According to the values observed in figure, some clusters are characterised by very similar distribution in the PRI. Therefore, ANOVA (analysis of variance) has been performed. This analysis suggests no statistical differences in the value of the PRI between the Mixed-economy regions and the Manufacturing regions, as well as between the Manufacturing regions and the Nature-quality regions.

In spite of these results, it is however possible to sort the seven clusters according to the PRI. Results are shown in Figure 22. From this map, a clearer picture about peripherurality across Europe emerges. All clusters located along EU borders usually share a higher relevance of both rural and peripheral features. According to this picture at the EU scale, new geographies, within the single national contexts, can emerge. Moreover, these findings will be particularly relevant when considering the territorial distribution of the EU main regional policies and of the CAP.

Figure 22 – Clusters sorted by the PRI



Source: own elaboration

6. Conclusions and next steps

This study sheds new light on rural and peripheral areas across Europe. Actually in literature, a large heterogeneity characterising these regions has been acknowledged. Thus, it is important to catch the multidimensional features that are linked to rurality, going beyond the definition of urban-rural typologies proposed by OECD (1994; 1996; 2006) and Eurostat (2010) and just based on a single indicator (e.g., population density).

In this respect, the research has proposed a multidimensional approach which is able to capture the main and multiple dimensions affecting the EU rural space. Throughout a PCA, some considerations on the main drivers of the EU territorial development have been analysed. In particular, it has been observed that in Europe the economic performance and wealth are still strictly linked with accessibility and urbanity. Remote and rural areas are still among the poorest ones within the EU. Although remoteness may still represent a major weakness for rural regions, there are many examples of rural areas showing high integration with the urban space and good economic and social performances. Moreover, a possible form of diversification for rural economies is represented by the manufacturing activity. Industrial regions within the EU are characterised by a better performing labour market than other EU rural regions. Looking at major issues, the PCA suggested that demographic shrinking and population ageing, although representing some of the most relevant issues for EU rural areas, just affect specific groups of regions. Especially in the Southern peripheries, rural areas are not demographically shrinking at all.

Then, throughout CA, specific EU rural areas typologies have been identified. According to this classification, clear territorial patterns emerge. Actually, clusters of more central and more accessible regions are quite different from those clusters composed by more peripheral and lagging behind regions. Thus, from the analysis, the relevance of the geographical dimension clearly emerges. Geography still affects deeply both the economic performance of regions and their main socio-demographic trends (both in urban and rural areas).

Moving from these different perspectives, a composite and comprehensive indicator (the PeripheRurality Indicator) is here proposed. According to it, the analysis of the degree and characters of rurality suggests a more complex geography at the EU scale. National approaches to rural and peripheral areas should be substituted by broader approaches, which are able to encompass all the different territorial level of the analysis (e.g., the sub-national, the national and the EU level of analysis).

As already stressed, this work is mainly focused on an in-depth analysis of the EU spatial development. This step is both preliminary and preparatory to the next Milestones, which will show specific policy implications. So far, the analysis has aimed at providing a territorial (and geographical) structure, which can help in better defining the EU rural space. Moreover, this analysis provides the main methodological and empirical framework for the next analyses and the following steps within the project.

In next Milestones, we will directly focus on the spatial allocation of EU funds, mainly considering the CAP funds (both pillar I and pillar II). In particular, we will try defining to what extent those policies are really targeted to rural areas (thus matching their specific characteristics. The purpose of the research goes beyond the policy issue of better targeting the rural policy to the rural space. Actually, we are much more interested in possible linkages between the policy support and the degree and the specific nature of rurality.

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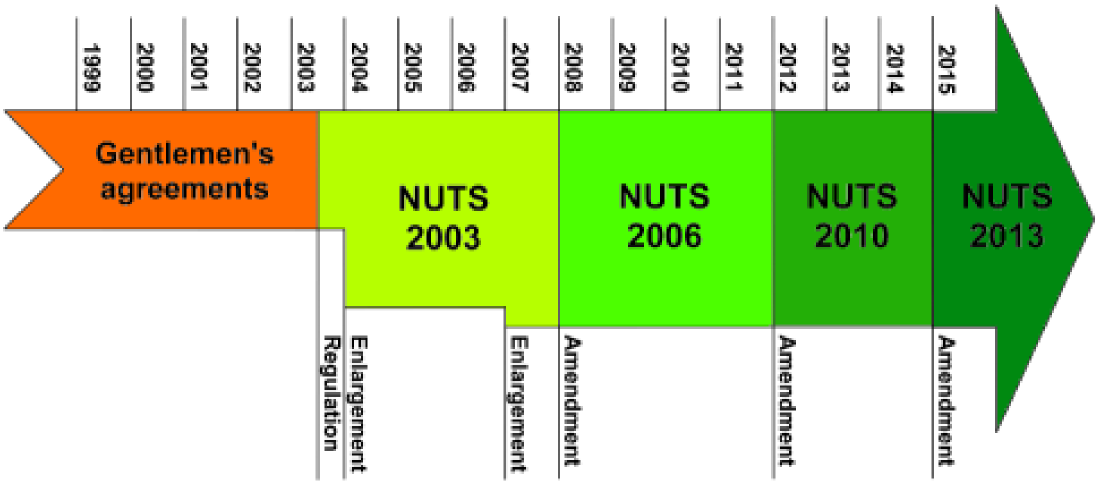
Annex A: The dataset

Collected variables: descriptive statistics

The analyses of the EU rural areas which are presented in the current research have been performed on a comprehensive dataset of 24 variables, which have been collected at the NUTS 3 level. NUTS 2006 classification is adopted (Commission Regulation (EC) No 1059/2003), even though the NUTS 2010 classification is currently adopted (Commission Regulation (EC) No 105/2007): actually the NUTS 2006 classification was operating for three years, from 2008 to 2011 and most of information at the regional level, included into the Eurostat dataset, are still provided according to this classification (Figure 23).

Figure 23 – Evolution of the NUTS classification system



Source: Eurostat (2013).

In the following pages, descriptive statistics for each of the selected variables are shown. Mean and median values, as well as standard deviation are shown for each variable. Moreover, quartiles from the cumulative distribution function for each variables are listed. Then, a map of the EU-27 Member States shows the detailed distribution of the variables within the 1,288 observed EU-27 NUTS 3 regions.

Collected variables are also described according to the main urban-rural typologies from Eurostat (2010). For each variable, an additional table shows the average value which is observed in Predominantly Rural, Intermediate and Predominantly Urban regions.

Variables are listed according to the main thematic areas shown in text.

Socio-demographic features

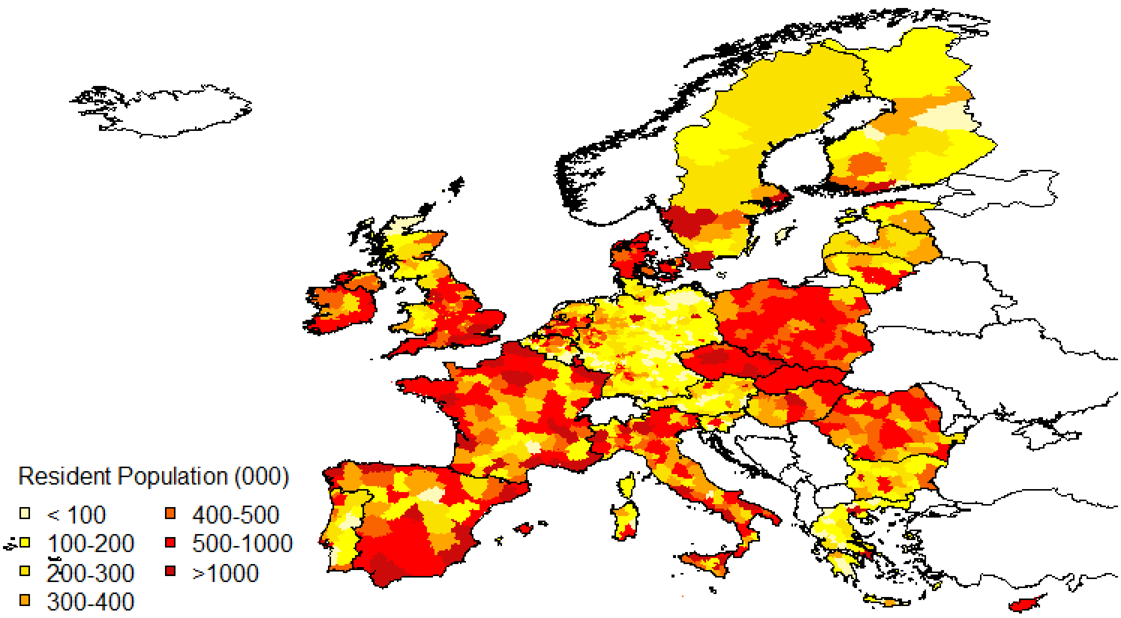
Population

The variable sums up all the resident population in any given NUTS 3 regions. The source of this indicator is Eurostat. The reference year is 2010.

	Population (000)
Mean	386.0
Sd.	462.3
Min.	19.3
1st Qu.	133.8
Median	252.3
3rd Qu.	489.2
Max.	6352.5

	Population (000)
PR	235.9
IR	360.5
PU	676.4

Figure 24 – Resident Population (000) by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

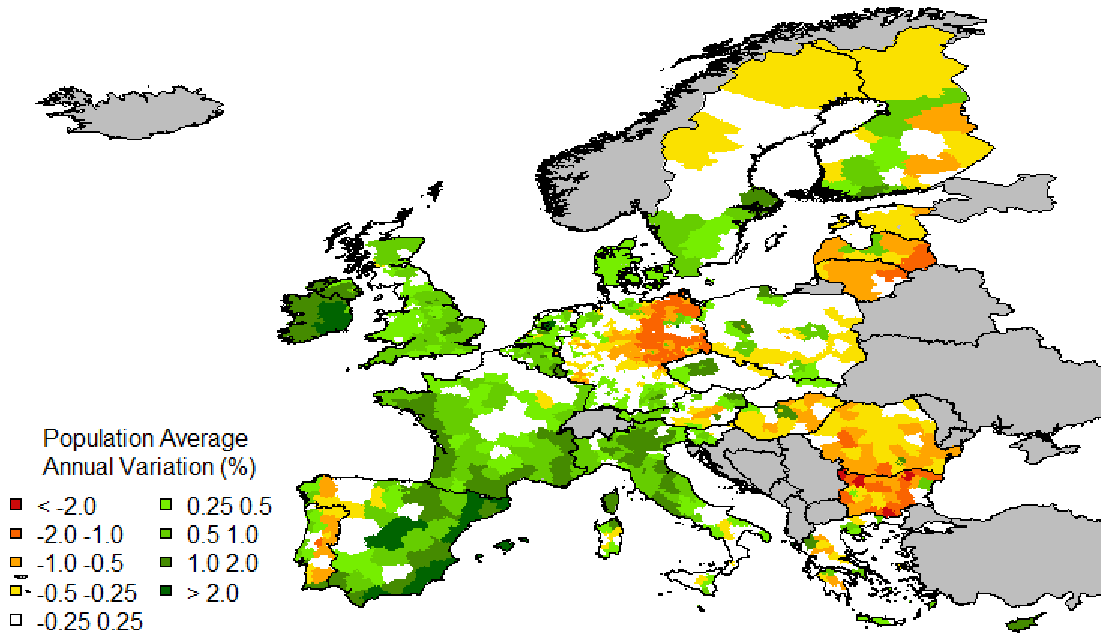
Population Average Annual Variation

The variable is computed by comparing the resident population in 2010 and the resident population in 2000. The total variation is then divided by the number of years. The source of this indicator is Eurostat. The reference period is 2000-2010.

	Population Average Annual Variation (%)
Mean	**0.15**
Sd.	**0.74**
Min.	**-2.62**
1st Qu.	**-0.27**
Median	**0.14**
3rd Qu.	**0.53**
Max.	**4.63**

	Population Average Annual Variation (%)
PR	**-0.01**
IR	**0.19**
PU	**0.35**

Figure 25 – Population average annual variation (%) by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

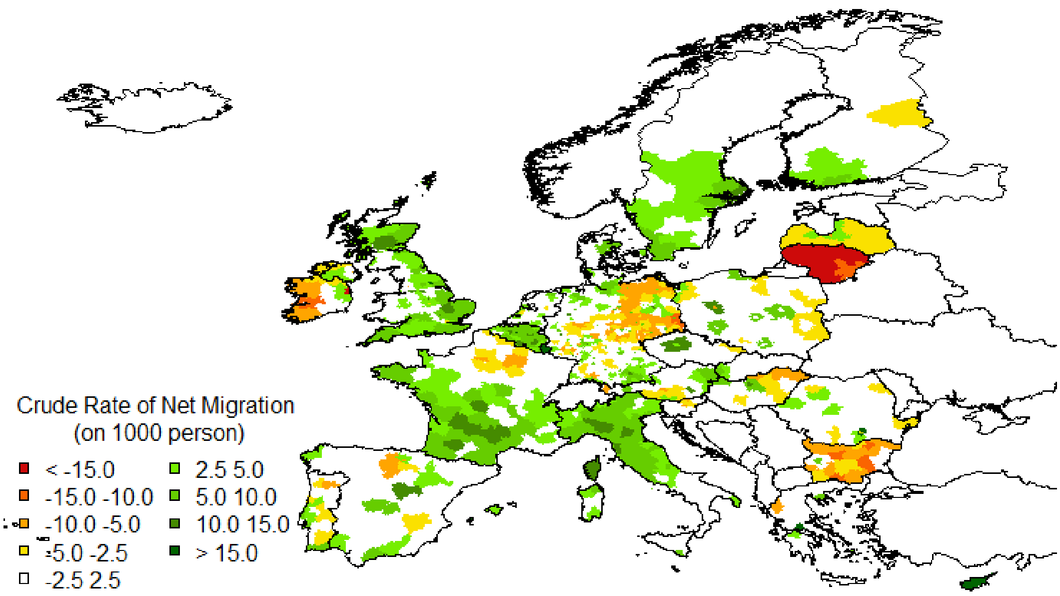
Crude Rate of Net Migration

The crude rate of net migration is the ratio of the net migration (the difference between the number of immigrants and the number emigrants) during the year to the average population in that year (000 persons). Also statistical adjustments are included. The source of the data is Eurostat. Reference year is 2010.

	Crude Rate of Net Migration
Mean	1.2
Sd.	5.36
Min.	-34.1
1st Qu.	-1.5
Median	0.9
3rd Qu.	4.1
Max.	38.6

	Crude Rate of Net Migration
PR	-0.08
IR	1.46
PU	2.96

Figure 26 – Crude rate of net migration by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

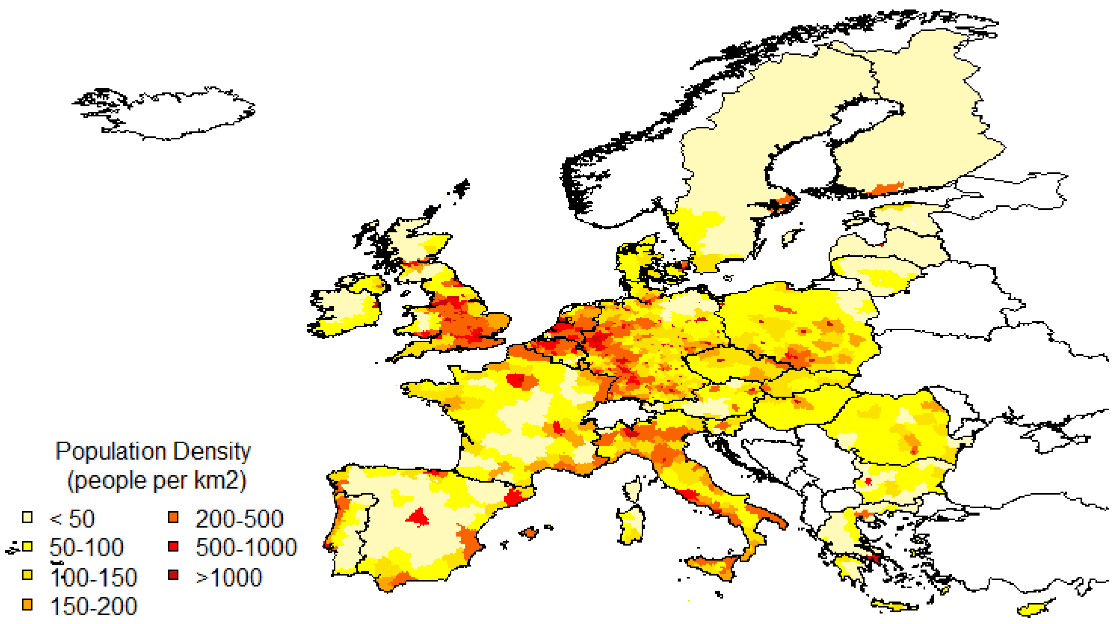
Density

Population density is computed as the ratio of the resident population on the total surface of a given area (in km^2). Source of the variable is Eurostat and the reference year is 2010.

	Density
Mean	456.2
Sd.	1056.7
Min.	1.9
1st Qu.	69.3
Median	137.6
3rd Qu.	356.1
Max.	21347.2

	Density
PR	87.0
IR	282.9
PU	1351.7

Figure 27 – Population Density by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

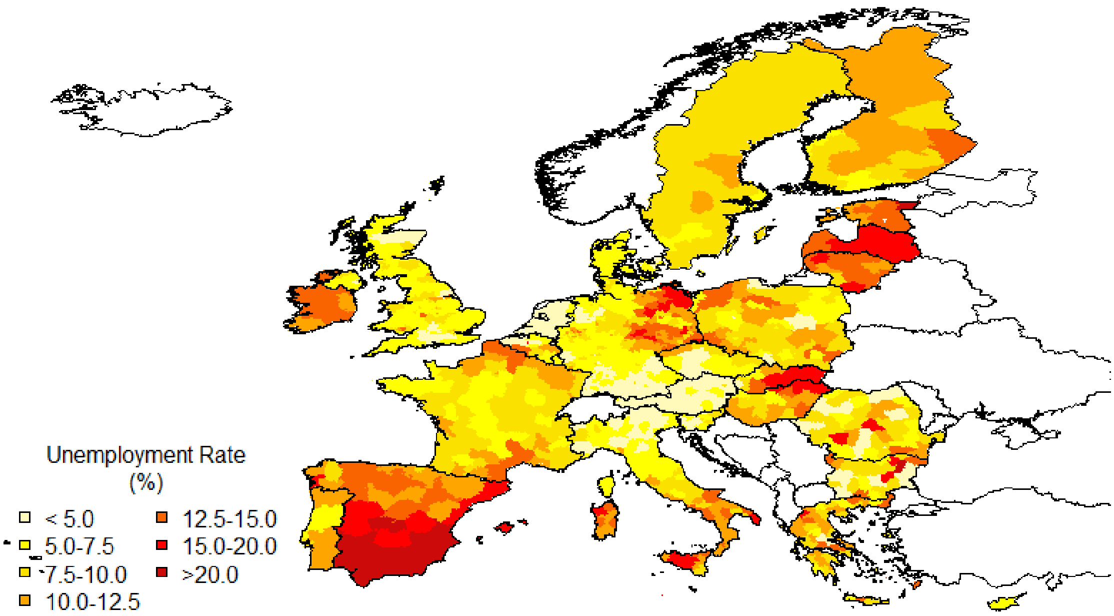
Unemployment rate

The unemployment rate shows unemployed persons as a percentage of the economically active population. Unemployed persons are persons aged 15-74 who were without work during the reference week; available for work at the time and actively seeking work. The source of the data is Eurostat. Reference year is 2009

	Unemployment rate (%)
Mean	8.4
Sd.	3.8
Min.	1.9
1st Qu.	5.6
Median	7.5
3rd Qu.	10.5
Max.	26.9

	Unemployment rate (%)
PR	8.8
IR	8.3
PU	7.8

Figure 28 – Unemployment rate by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

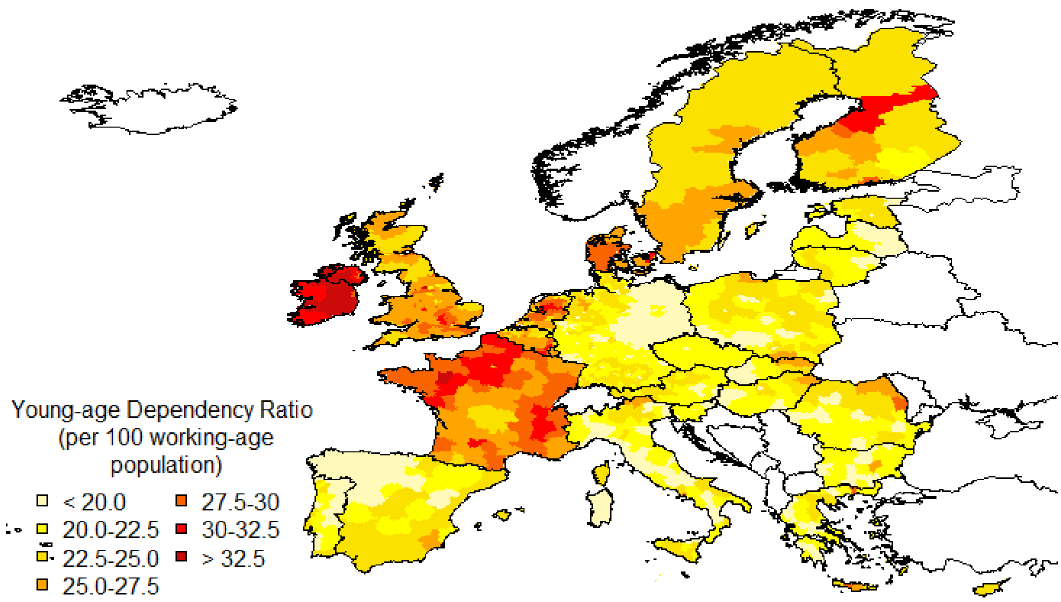
Young-age Dependency Ratio

The young-age dependency ratio is the ratio of the number of people aged 0-14 to the number of people aged 15-64. Data are shown as the proportion of people per 100 working-age population. The source of the data is Eurostat. Reference year is 2010.

	Young-age Dependency Ratio
Mean	**22.45**
Sd.	**3.71**
Min.	**13.47**
1st Qu.	**19.91**
Median	**21.96**
3rd Qu.	**24.61**
Max.	**36.45**

	Young-age Dependency Ratio
PR	**22.39**
IR	**22.03**
PU	**23.25**

Figure 29 – Young-age dependency ratio by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

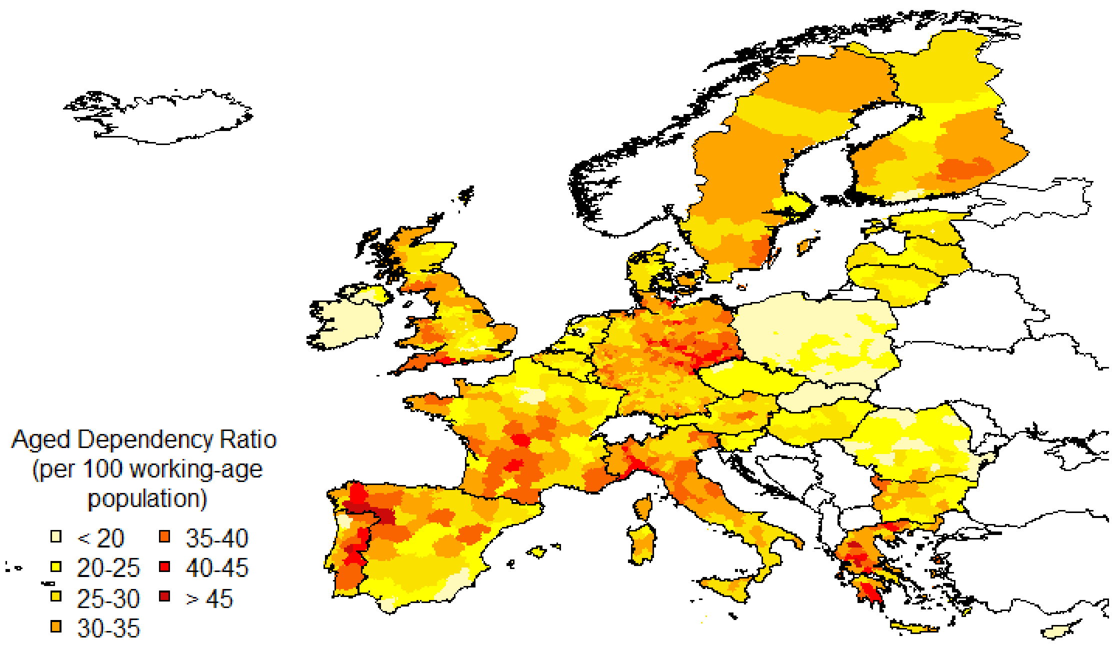
Aged Dependency Ratio

The aged dependency ratio is the ratio of the number of people aged 65 and over to the number of people aged 15-64. Data are shown as the proportion of people per 100 working-age population. The source of the data is Eurostat. Reference year is 2010.

	Aged Dependency Ratio
Mean	**29.02**
Sd.	**6.39**
Min.	**11.52**
1st Qu.	**24.51**
Median	**29.10**
3rd Qu.	**33.30**
Max.	**53.38**

	Aged Dependency Ratio
PR	**30.00**
IR	**29.33**
PU	**26.89**

Figure 30 – Aged dependency ratio by NUTS 3 regions (2010)



Source: own elaboration on Eurostat (2013)

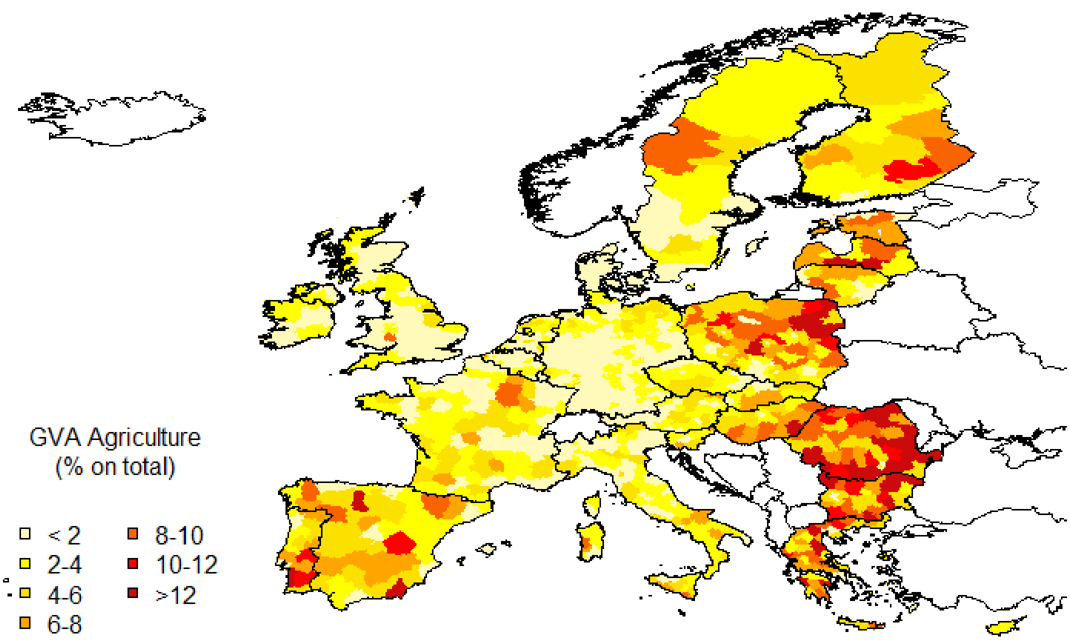
Share of GVA from Agriculture

The GVA from Agriculture is expressed as share of the total GVA. GVA is the net result of output valued at basic prices less intermediate consumption valued at purchasers' prices. Agricultural sectors are computed as sectors A from the NACE classification rev. 2. The source of the data is Eurostat. Reference year is 2009.

	GVA Agriculture (%)
Mean	**2.94**
Sd.	**3.36**
Min.	**0.00**
1st Qu.	**0.69**
Median	**1.81**
3rd Qu.	**3.92**
Max.	**23.78**

	GVA Agriculture (%)
PR	**4.91**
IR	**2.31**
PU	**0.72**

Figure 31 – Share of agricultural GVA by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

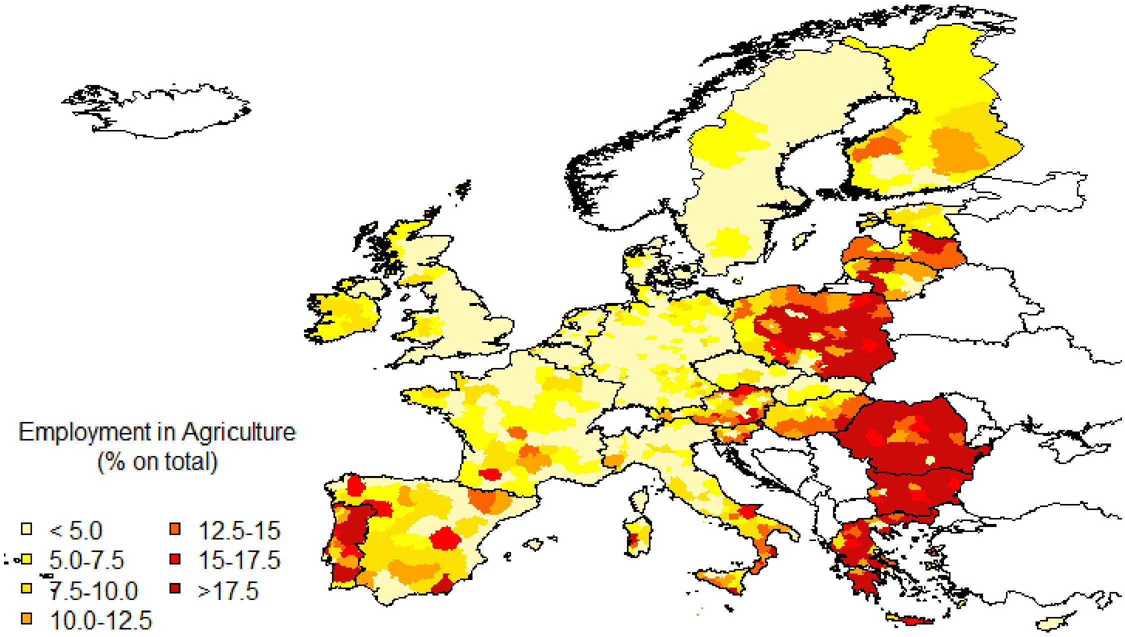
Share of Employment in Agriculture

Employment in Agriculture is expressed as share of the total employment. Agricultural sectors are computed as sector A from the NACE classification rev. 2. The source of the data is Eurostat. Reference year is 2009.

	Employment in Agriculture (%)
Mean	7.22
Sd.	9.43
Min.	0.00
1st Qu.	1.63
Median	4.13
3rd Qu.	7.88
Max.	63.61

	Employment in Agriculture (%)
PR	12.51
IR	5.31
PU	1.59

Figure 32 – Share of employment in agriculture by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

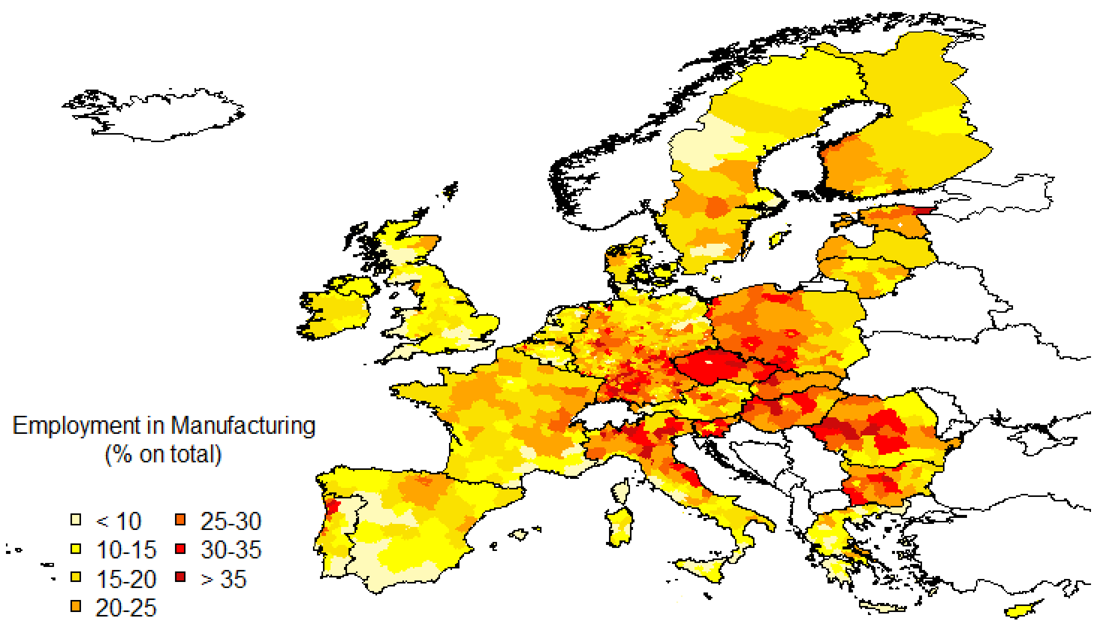
Share of Employment in Manufacturing

Employment in Manufacturing sectors is expressed as share of the total employment. Manufacturing sectors are computed as sectors B-E from the NACE classification rev. 2. The source of the data is Eurostat. Reference year is 2009.

	Employment in Manufacturing (%)
Mean	18.84
Sd.	8.06
Min.	2.88
1st Qu.	12.63
Median	17.90
3rd Qu.	23.85
Max.	52.38

	Employment in Manufacturing (%)
PR	19.24
IR	19.74
PU	16.72

Figure 33 – Share of employment in manufacturing by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

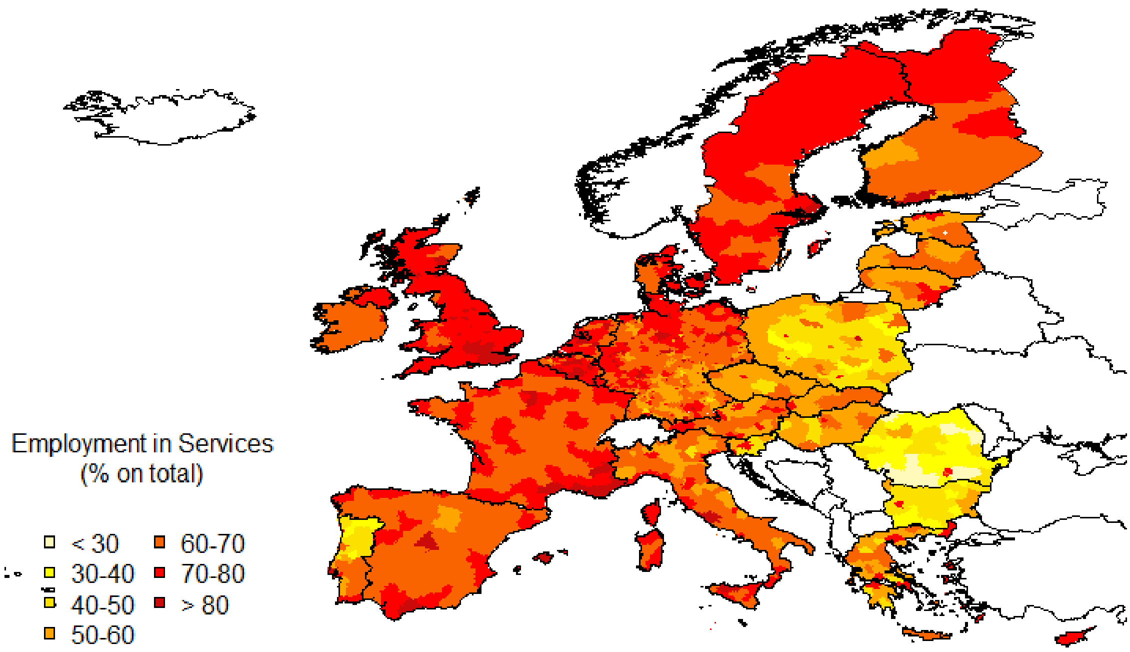
Share of Employment in Services

Employment in Services is expressed as share of the total employment. Services are computed as sectors G-U from the NACE classification rev. 2. The source of the data is Eurostat. Reference year is 2009.

	Employment in Services (%)
Mean	66.43
Sd.	12.36
Min.	21.44
1st Qu.	59.68
Median	67.97
3rd Qu.	75.28
Max.	93.53

	Employment in Services (%)
PR	60.25
IR	67.48
PU	74.95

Figure 34 – Share of employment in services by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

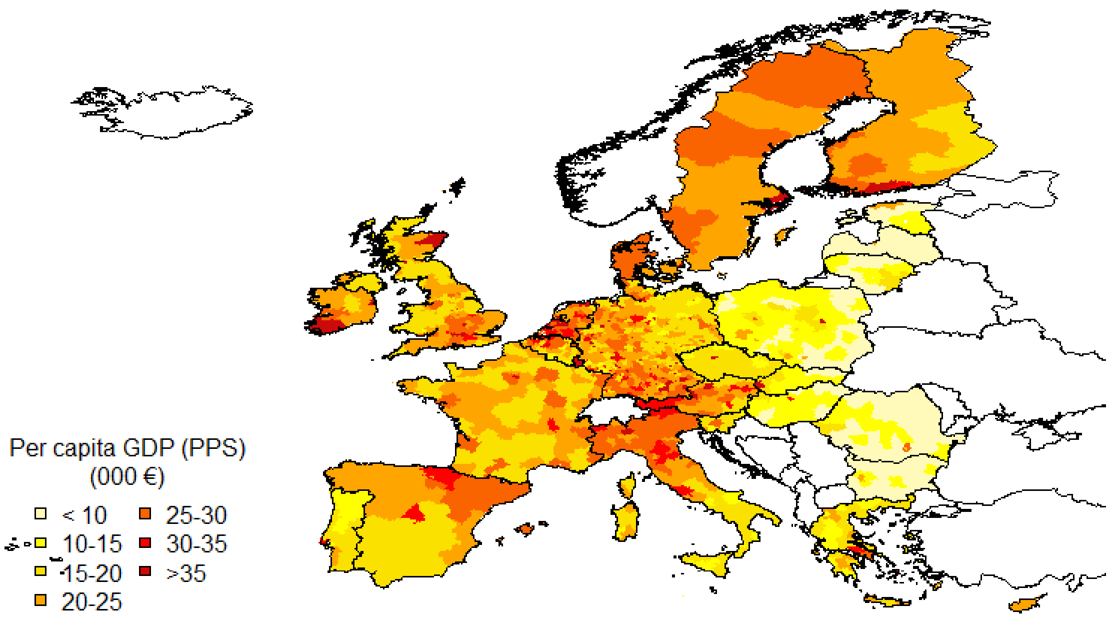
Per capita GDP

Per capita GDP is expressed as Euro per inhabitant (in Purchasing Power Standard).The source of the data is Eurostat. Reference year is 2009.

	Per capita GDP (PPS)
Mean	**21945.0**
Sd.	**9464.7**
Min.	**5100.0**
1st Qu.	**16800.0**
Median	**20900.0**
3rd Qu.	**25825.0**
Max.	**140100.0**

	Per capita GDP (PPS)
PR	**18571.2**
IR	**22211.4**
PU	**27098.0**

Figure 35 – Per capita GDP by NUTS 3 regions (2009)



Source: own elaboration on Eurostat (2013)

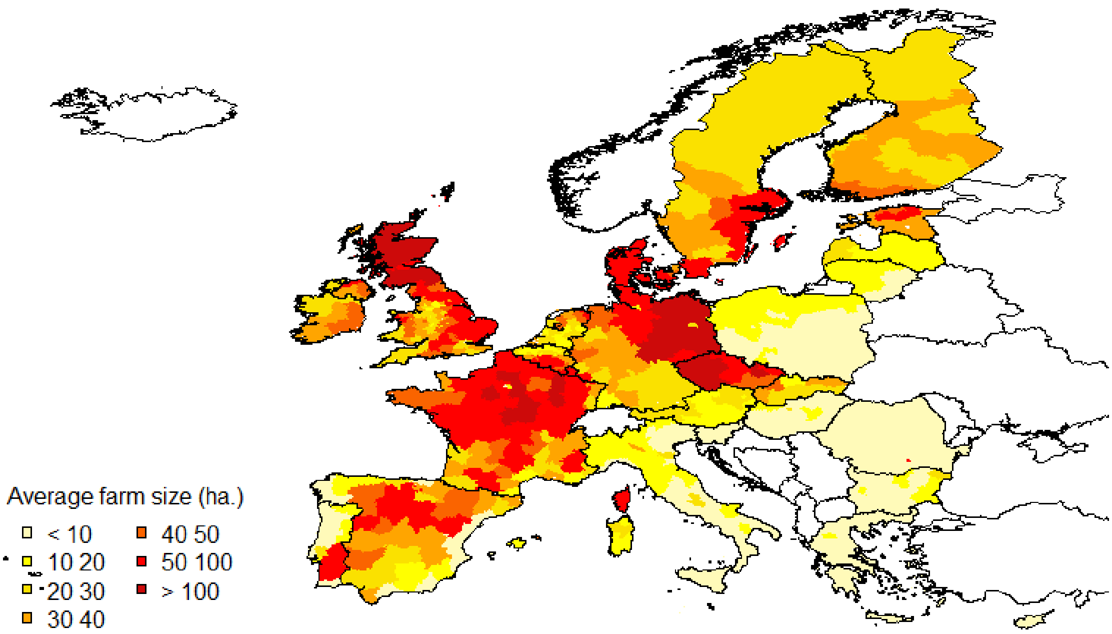
Average size of the agricultural holdings

The indicator is computed by dividing the total agricultural area (in ha.) by the total number of agricultural holdings. The source of the variable is the Farm Structure Survey from Eurostat. The reference year is 2007.

	Average size of the agricultural holdings (ha.)
Mean	**42.74**
Sd.	
Min.	**0.00**
1st Qu.	**11.23**
Median	**27.46**
3rd Qu.	**47.80**
Max.	**349.90**

	Average size of the agricultural holdings (ha.)
PR	**40.89**
IR	**50.87**
PU	**32.52**

Figure 36 – Average size of the agricultural holdings by NUTS 3 region (2006)



Source: own elaboration on ESPON

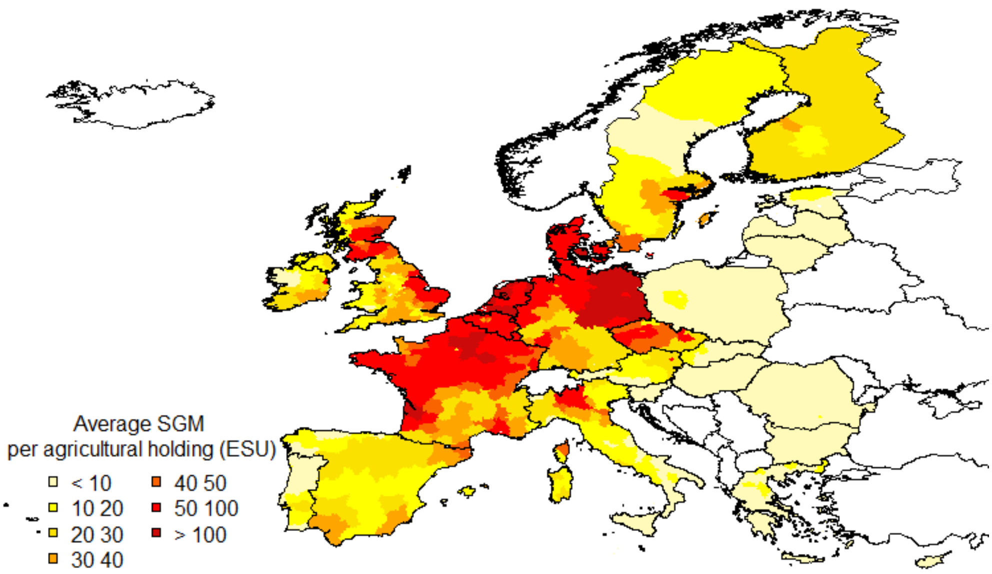
Average SGM per agricultural holding

The indicator is computed by dividing the total standard gross margin (SGM) (in ESU) by the total number of agricultural holdings. SGM is a measure of the production of a given agricultural holding: for each agricultural activity, a SGM is estimated, based on the area or the number of heads (for animal output) and a standardised SGM coefficient (for each type of crop and livestock), calculated separately for different geographical areas to allow for differences in profit. The source of the variable is the Farm Structure Survey from Eurostat. The reference year is 2007.

	Average SGM per agricultural holding (ESU)
Mean	**41.13**
Sd.	**42.13**
Min.	**0.00**
1st Qu.	**9.94**
Median	**28.32**
3rd Qu.	**62.41**
Max.	**421.30**

	Average SGM per agricultural holding (ESU)
PR	**31.94**
IR	**48.00**
PU	**45.09**

Figure 37 – Average SGM per agricultural holding by NUTS 3 region (2007)



Source: own elaboration on ESPON

Land use

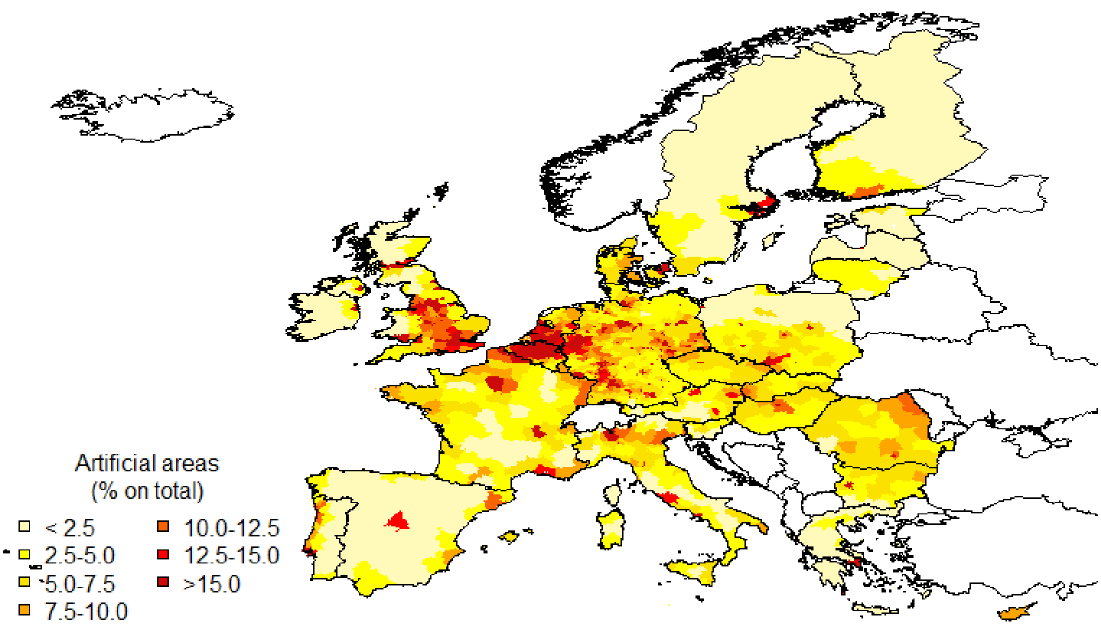
Share of surface covered by artificial areas

The variable refers to the share of total surface covered by artificial areas. Both continuous and discontinuous urban fabric is included, as well as areas covered by industrial or commercial units, road and rail networks, mines and dumps and non-agricultural vegetated areas. The source is Corine-Eurostat; the reference year is 2006.

	Artificial areas
Mean	**12.9**
Sd.	**17.2**
Min.	**0.2**
1st Qu.	**3.5**
Median	**6.1**
3rd Qu.	**13.0**
Max.	**97.7**

	Artificial areas
PR	**4.1**
IR	**10.4**
PU	**31.4**

Figure 38 – Artificial areas as a share of the total surface by NUTS 3 region (2006)



Source: own elaboration on Corine-Eurostat (2013)

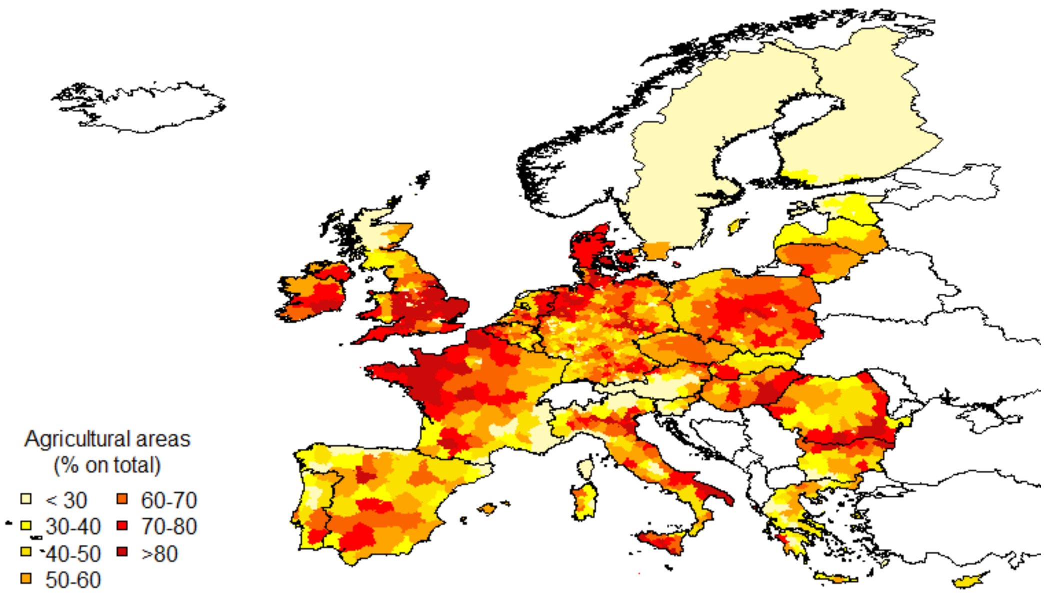
Share of surface covered by agricultural areas

Agricultural areas are composed by arable lands, permanently irrigated lands, rice fields, vineyards, fruit trees and berry plantations, pastures, permanent crops. The indicator provides the share of agricultural areas on total regional surface. The source of this variable is Corine-Eurostat; the reference year is 2006.

	Agricultural areas
Mean	51.3
Sd.	20.7
Min.	0.0
1st Qu.	37.5
Median	52.7
3rd Qu.	67.2
Max.	93.3

	Agricultural areas
PR	52.4
IR	54.6
PU	44.2

Figure 39 – Agricultural areas as a share of the total surface by NUTS 3 region (2006)



Source: own elaboration on Corine-Eurostat (2013)

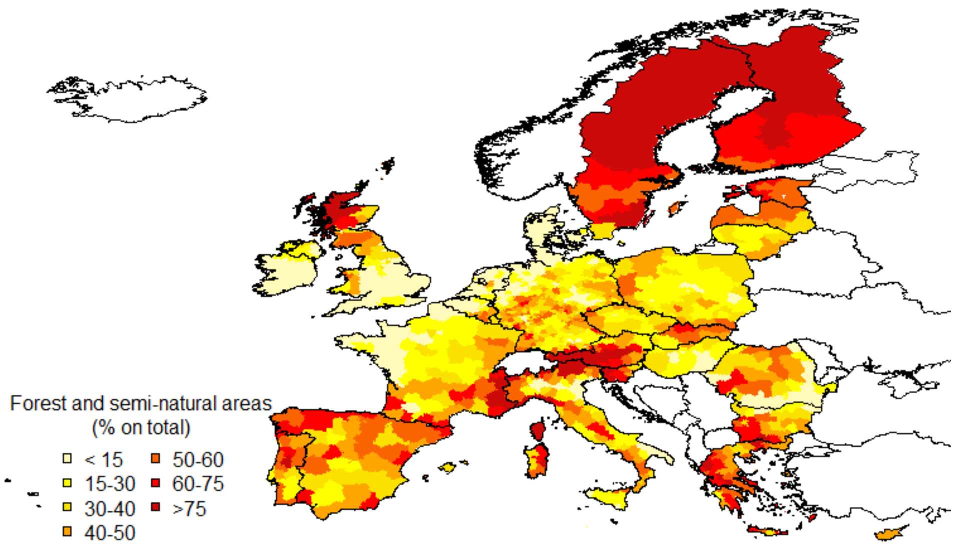
Share of surface covered by forests and semi-natural areas

This indicator is computed by summing up forests, natural grasslands, moors and heat lands, sclerophyllous vegetation, transitional woodland-shrub, Beaches, dunes and sand plains, bare rocks, sparsely vegetated areas, burnt areas and glaciers and perpetual snow. The source of this variable is Corine-Eurostat; the reference year is 2006.

	Forests and semi-natural areas
Mean	32.8
Sd.	21.9
Min.	0.0
1st Qu.	14.5
Median	30.7
3rd Qu.	48.1
Max.	92.1

	Forests and semi-natural areas
PR	40.7
IR	31.9
PU	21.2

Figure 40 – Forests and semi-natural areas as a share of the total surface by NUTS 3 region (2006)



Source: own elaboration on Corine-Eurostat (2013)

Spatial dimension

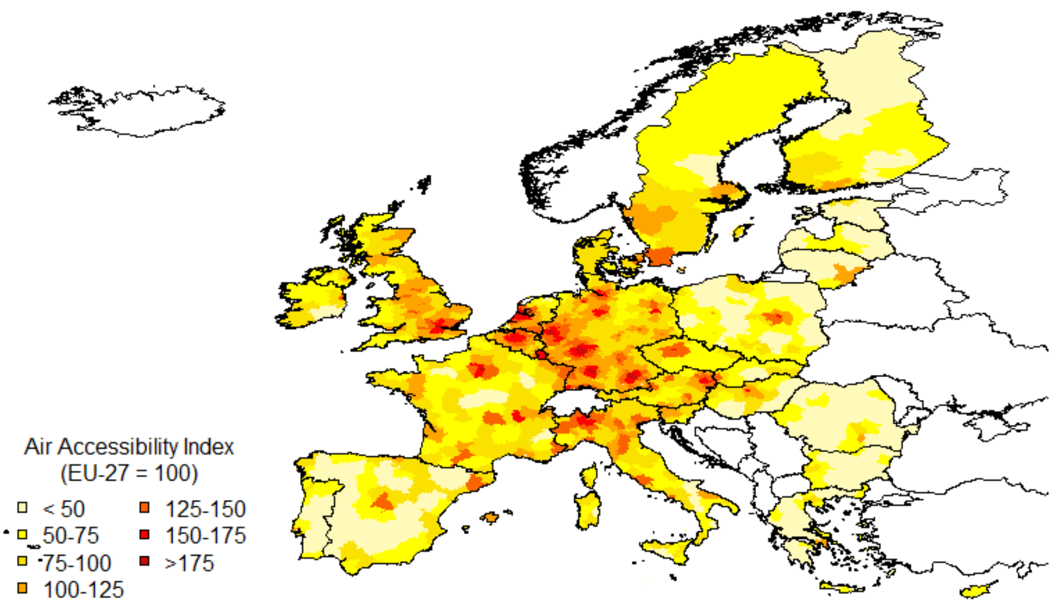
Air Accessibility Index

Air accessibility describes how easily people in one region can reach people located in other regions by air. The potential accessibility of a NUTS 3 region is calculated by summing up the population in all other EU regions, weighted by the travel time to go there by air. Values are standardised with the EU average (EU27=100). The source of the variable is the ESPON Project 1.1.1. The reference year is 2006.

	Air Accessibility Index
Mean	92.94
Sd.	37.55
Min.	14.80
1st Qu.	66.07
Median	91.30
3rd Qu.	118.10
Max.	209.00

	Air Accessibility Index
PR	70.62
IR	92.59
PU	130.48

Figure 41 – AIR Accessibility Index by NUTS 3 region (2006)



Source: own elaboration on ESPON

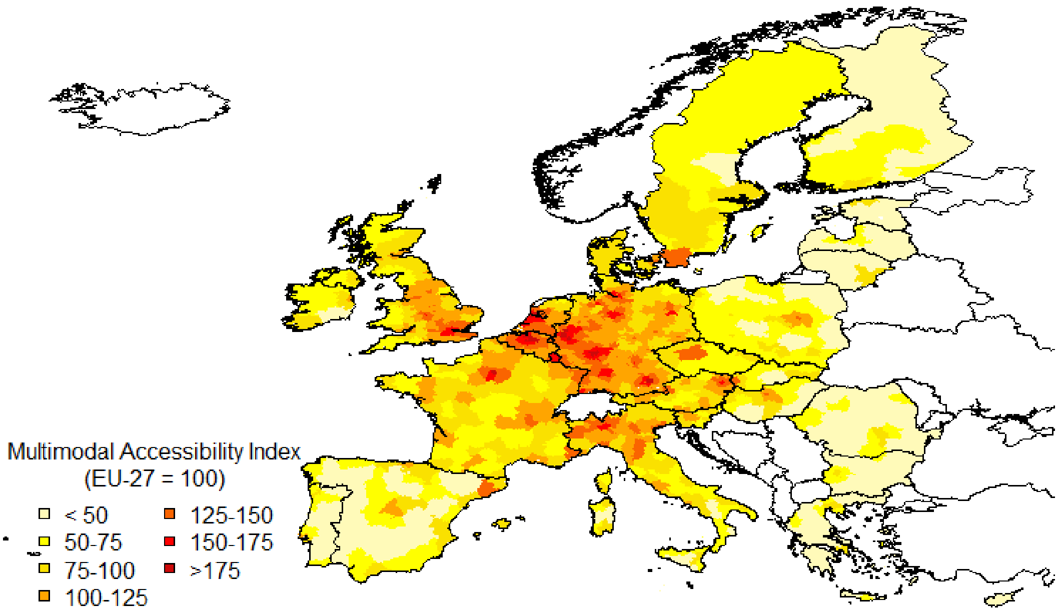
Multimodal Accessibility Index

Multimodal accessibility describes how easily people in one region can reach people located in other regions by combining the accessibility by road, rail and air. Values are standardised with the EU average (EU27=100). The source of the variable is ESPON Project 1.1.1. The reference year is 2006.

	Multimodal Accessibility Index
Mean	95.65
Sd.	38.54
Min.	15.70
1st Qu.	66.52
Median	96.50
3rd Qu.	122.90
Max.	200.60

	Multimodal Accessibility Index
PR	70.62
IR	92.59
PU	130.48

Figure 42 – Multimodal Accessibility Index by NUTS 3 region (2006)



Source: own elaboration on ESPON

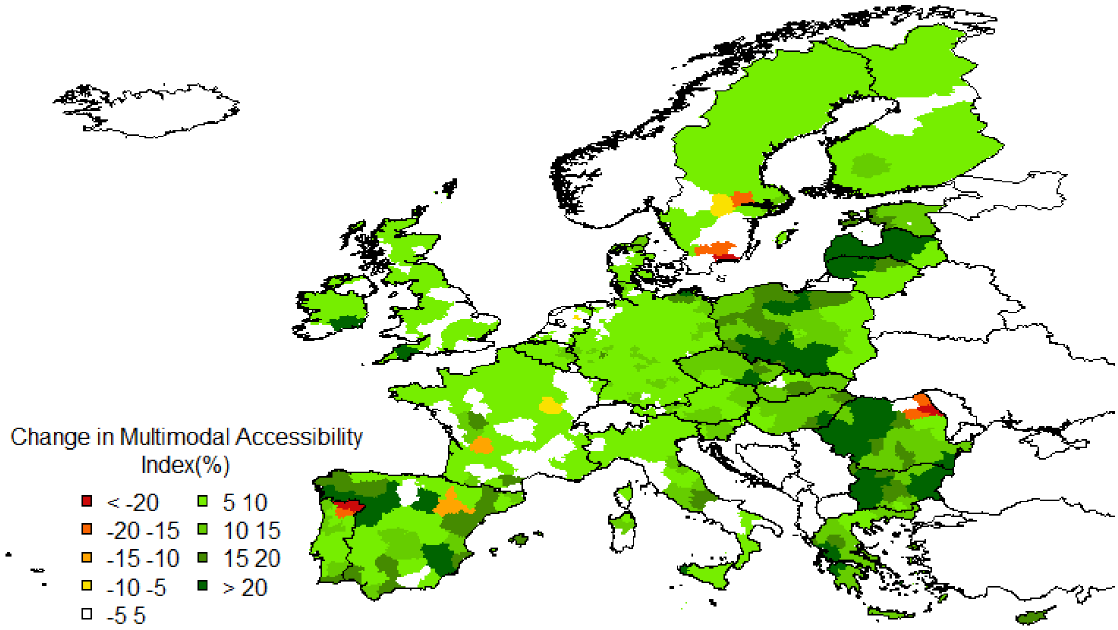
Change in Multimodal Accessibility Index

Moving from the Multimodal Accessibility Index, this variable provides the relative change between 2001 and 2006 in percentage. The change is calculated as a percentage of its absolute value in 2001. The source of the variable is ESPON.

	Change in Multimodal Accessibility Index (%)
Mean	**10.11**
Sd.	**12.22**
Min.	**-39.30**
1st Qu.	**5.90**
Median	**7.70**
3rd Qu.	**10.40**
Max.	**187.10**

	Change in Multimodal Accessibility Index (%)
PR	**11.70**
IR	**9.77**
PU	**8.04**

Figure 43 – Change in Multimodal Accessibility Index by NUTS 3 region (2006)



Source: own elaboration on ESPON

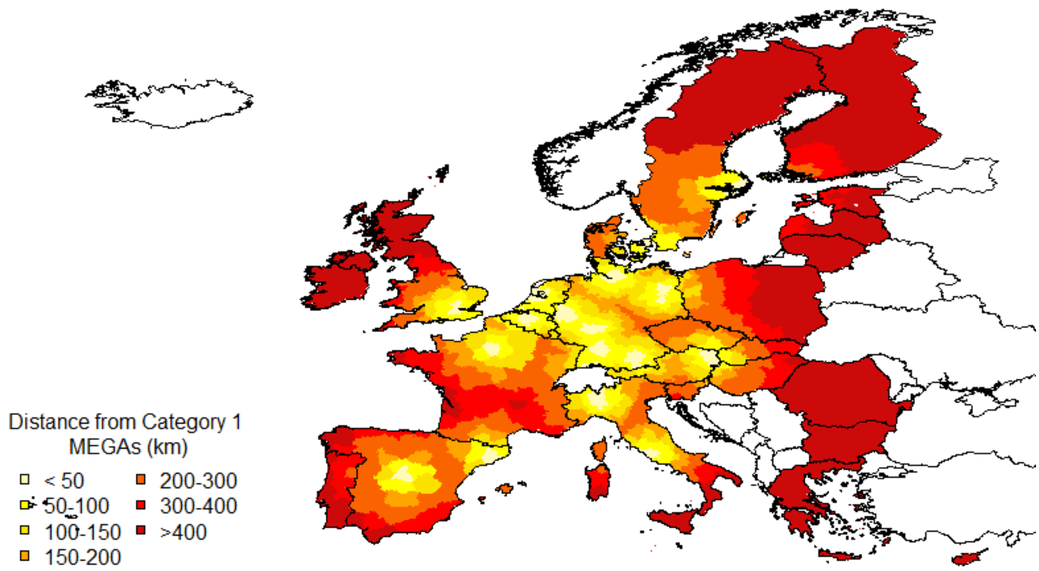
Distance from Category 1 MEGAs

Moving from a distance matrix (computed from the centroids of each NUTS 3 regions), the distance from each region to the closest category 1 MEGA (Metropolitan European Growth Areas) is computed. Five different categories of MEGAs (global, category 1 MEGAs, category 2 MEGAs, category 3 MEGAs, category 4 MEGAs) are provided by ESPON Project 1.1.1 (ESPON, 2005), according to different features in terms of mass, competitiveness, connectivity and knowledge basis. Data are expressed in km.

	Distance from the closest Category 1 MEGA (km)
Mean	265.0
Sd.	257.7
Min.	0.0
1st Qu.	88.5
Median	171.3
3rd Qu.	352.4
Max.	1942.0

	Distance from the closest Category 1 MEGA (km)
PR	352.8
IR	234.2
PU	169.7

Figure 44 – Distance by closest category 1 MEGA



Source: own elaboration

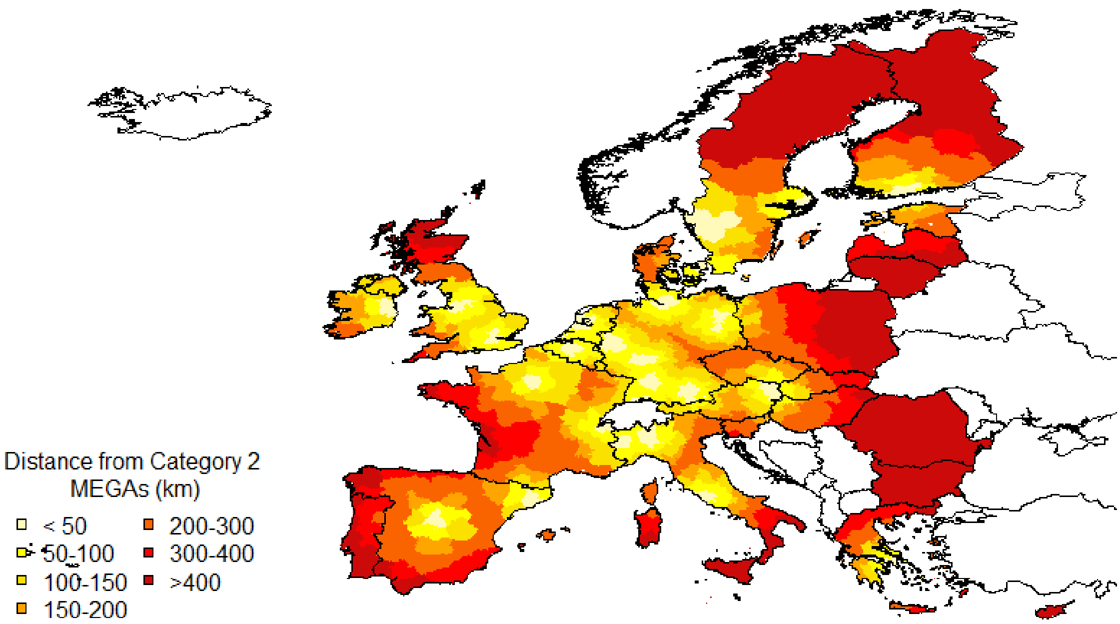
Distance from Category 2 MEGAs

The indicator shows the distance (in km) of each NUTS 3 region's centroid to the closest category 2 MEGA (Metropolitan European Growth Areas), according to the list of MEGAs provided by the ESPON Project 1.1.1 (ESPON, 2005).

	Distance from the closest Category 2 MEGA (km)
Mean	**203.5**
Sd.	**174.8**
Min.	**0.0**
1st Qu.	**80.5**
Median	**147.7**
3rd Qu.	**272.5**
Max.	**918.8**

	Distance from the closest Category 2 MEGA (km)
PR	**258.0**
IR	**196.0**
PU	**125.5**

Figure 45 – Distance by closest category 2 MEGA



Source: own elaboration on ESPON

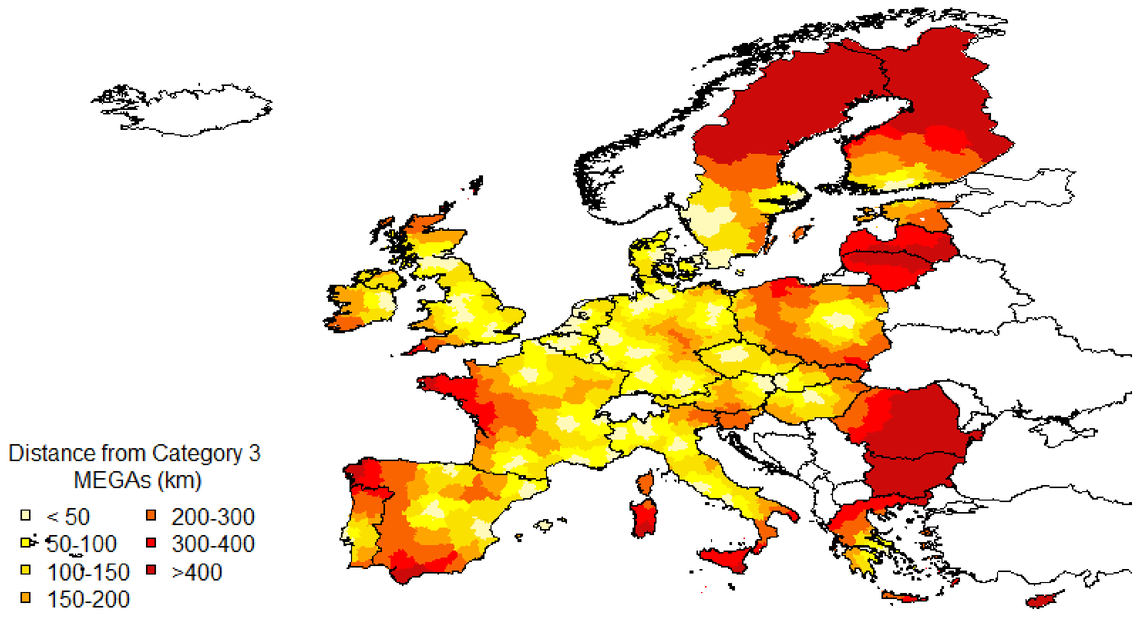
Distance from Category 3 MEGAs

The indicator shows the distance (in km) of each NUTS 3 region's centroid to the closest category 3 MEGA (Metropolitan European Growth Areas), according to the list of MEGAs provided by the ESPON Project 1.1.1 (ESPON, 2005).

	Distance from the closest Category 3 MEGA (km)
Mean	153.4
Sd.	140.8
Min.	0.0
1st Qu.	62.8
Median	112.6
3rd Qu.	187.1
Max.	911.6

	Distance from the closest Category 3 MEGA (km)
PR	199.6
IR	150.1
PU	82.4

Figure 46 – Distance by closest category 3 MEGA



Source: own elaboration on ESPON

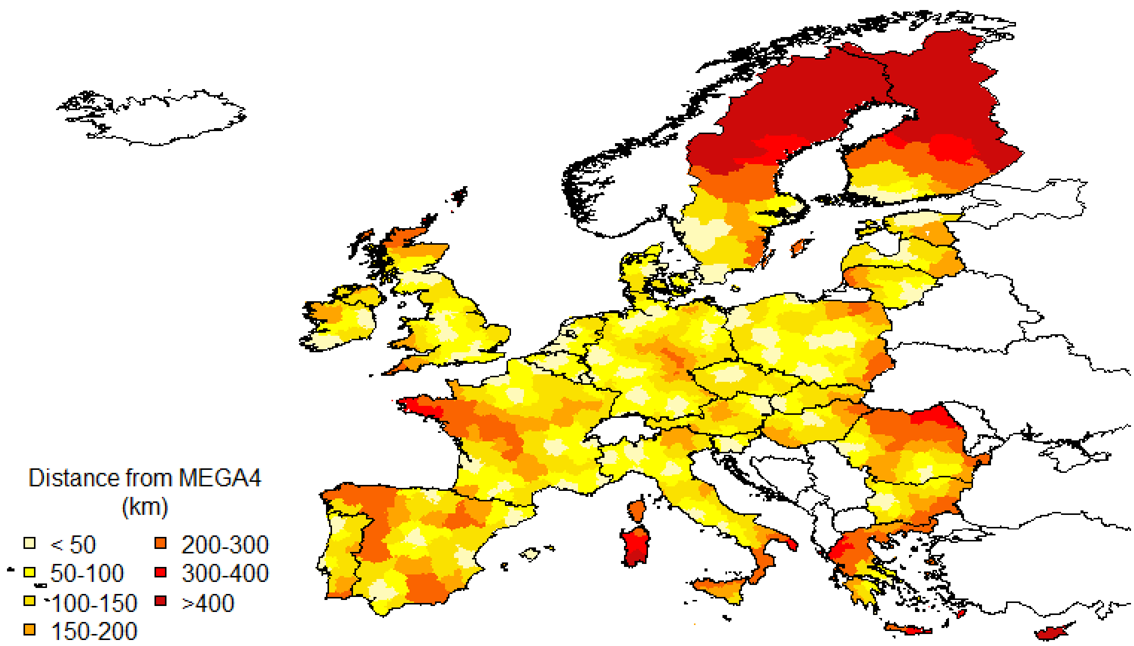
Distance from Category 4 MEGAs

The indicator shows the distance (in km) of each NUTS 3 region's centroid to the closest category 4 MEGA (Metropolitan European Growth Areas), according to the list of MEGAs provided by the ESPON Project 1.1.1 (ESPON, 2005).

	Distance from the closest Category 4 MEGA (km)
Mean	108.9
Sd.	85.1
Min.	0.0
1st Qu.	53.6
Median	93.9
3rd Qu.	144.8
Max.	911.6

	Distance from the closest Category 4 MEGA (km)
PR	142.5
IR	111.3
PU	49.1

Figure 47 – Distance by closest category 4 MEGA



Source: own elaboration on ESPON

Missing values

Collection of data is not optimal. In Table 12, missing values are listed.

Table 12 – Missing values

	Variable	Missing values	Replacements: NUTS 2	Replacements: NUTS 1/0	Replacements: Other replacements	Replacements: Geographical features
Socio-Demographic features	Population	-	-	-		-
	Population Variation	23	10	13		Sachsen-Anhalt (DEE), Denmark, Malta
	Net Migration Rate	-	-	-		-
	Density	-	-	-		-
	Unemployment Rate	325	324	1		Regions across Austria, Belgium, Germany, France, Malta and Portugal
	Young-age dependency ratio	-	-	-		-
	Aged dependency ratio	-	-	-		-
Structure of th e economy	GVA Agriculture (%)	430	-	-	NACE Rev.1	Germany, Luxembourg
	Employment Agriculture (%)	638	-	5	NACE Rev.1 (in some cases:2006)	Germany, Luxembourg, France (2006), Italy (2006)
	Employment Manufacturing (%)	638	-	5	NACE Rev.1 (in some cases:2006)	Germany, Luxembourg, France (2006), Italy (2006)
	Employment Services (%)	638	-	5	NACE Rev.1 (in some cases:2006)	Germany, Luxembourg, France (2006), Italy (2006)
	Per capita GDP	44	44	-		Spain
	Average farm size	535	535	-		Austria, Germany; regions across Italy, Spain, Poland
	Average SGM	536	536	-		Austria, Germany; regions across Italy, Spain, Poland
Land Use	Artificial areas (%)	184	-	-	Year 2000	Greece, United Kingdom
	Agricultural areas (%)	184	-	-	Year 2000	Greece, United Kingdom
	Forests (%)	184	-	-	Year 2000	Greece, United Kingdom
Spatial dimension	Air Accessibility	-	-	-		-
	Multimodal Accessibility	-	-	-		-
	Multimodal Accessibility Change	-	-	-		-
	Distance MEGA1	-	-	-		-
	Distance MEGA2	-	-	-		-
	Distance MEGA3	-	-	-		-
	Distance MEGA4	-	-	-		-

Source: own elaboration

Referring to each original variables, the number of values that have been replaced with NUTS 2 and NUTS 1/0 data is shown. Moreover, other replacements are listed (e.g. data referring to different years), as well as the geographical distribution of the missing values.

It can be noticed that less than 5% of values has been replaced with regional or national data (NUTS2 / NUTS1-0 data).

Annex B: Cluster analysis

Methodology and output

A hierarchical cluster analysis has been performed by following the AGNES algorithm, (Kaufman and Rousseeuw, 1990). The package ‘cluster’ from software R has been adopted. The AGNES algorithm constructs a hierarchy of clusterings (hierarchical clustering technique), by following an agglomerative approach. At first, each observation is a small cluster by itself. Clusters are merged until only one large cluster remains which contains all the observations. At each stage the two *nearest* clusters are combined to form one larger cluster.

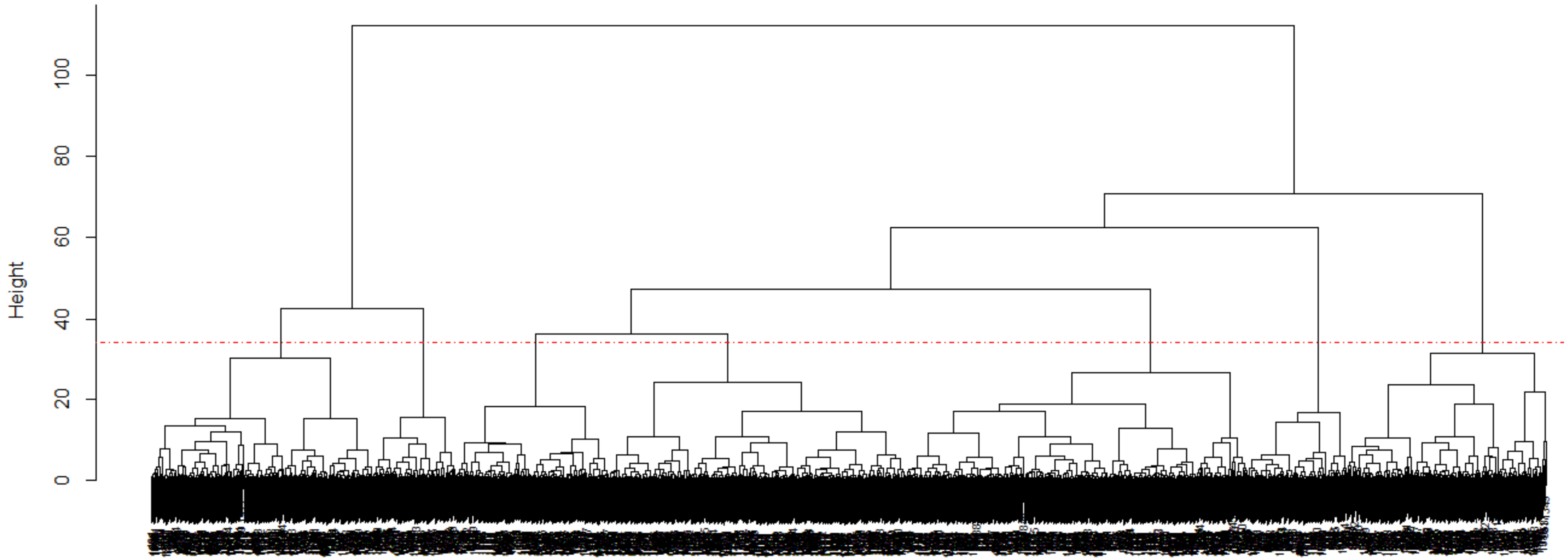
The algorithm has been applied on the 5 PCs previously extracted. Therefore, no standardized measurements are used, in order to maintain the original variability which lies in the components. However, the Euclidean distance (i.e., the root sum-of-squares of differences) is applied to these PCs in order to compute the dissimilarity matrix. Then the Ward’s method is selected in order to compute distances between groups (or clusters). According to it, the two nearest clusters to be combined at each stage to form one larger cluster are selected in order to minimize the total within-cluster variance. At each step the pair of clusters with minimum between-cluster distance are merged (Lance and Williams, 1966; Ward, 1963).

The structure of clustering can be described by the agglomerative coefficient (AC). For each observation i, denote by m(i) its dissimilarity to the first cluster it is merged with, divided by the dissimilarity of the merger in the final step of the algorithm. The AC is the average of all 1 - m(i). It can also be seen as the average width (or the percentage filled) of the banner plot. Because AC grows with the number of observations, this measure should not be used to compare datasets of very different sizes. According to the selected structure, the AC is 0.992. This value can be considered very high.

Moreover, the structure of clustering can be also displayed through a dendrogram plot. It shows how the 1,288 observations are merged together. According to this structure of the data, the tree can be truncated in order to select a specific number of clusters. A clear trade-off exists when considering the proper number of clusters to be selected. It is useful to recall that the main purpose of this analysis is the extraction of the minimum number of clusters, having the greater within-cluster homogeneity. Therefore, if fewer clusters were chosen, they would probably composed by more observations, thus being characterised by a greater within-cluster heterogeneity.

According to this data structure, the dendrogram plot can be truncated as shown by the dotted red line, thus obtaining seven different cluster (Figure 48).

Figure 48 – Dendrgoram



Source: own elaboration, software R – package 'cluster'

The seven clusters which emerge from analysing the dendrogram have been labelled according to the average values for each of the five PCs, which had been previously identified. Peripheries, Nature-quality regions, Cities, Remote regions, Mixed-economy regions, Shrinking regions, Manufacturing regions are thus obtained.

In the following tables, average values by cluster for the whole set of the original variables are shown. Tables are organized according to the different thematic areas defining the datatase: socio-demographic features are shown in Table 13; those variables which refer to the structure of the economy are listed in Table 14; land use indicators are reported in Table 15; the variables referring to accessibility and distance from major urban areas (spatial dimension) are shown in Table 16.

Table 13 – Socio-demographic features: average values by cluster

	Popul. (000)	Ann. Pop. Variation (%)	Net Migration Rate	Density	Unempl. Rate	Young-age depend. ratio	Aged depend. ratio
Peripheries	367.48	0.04	0.107	81	11.19	21.71	28.01
Nature-quality regions	303.90	0.48	3.434	103	7.75	23.24	31.83
Cities	719.33	0.37	3.941	2059	8.01	22.68	25.96
Remote regions	351.49	-0.81	-6.075	66	9.32	21.53	24.73
Mixed-economy regions	420.26	0.56	2.863	254	7.47	25.37	28.32
Shrinking regions	118.39	-0.95	-3.534	304	12.90	16.99	36.93
Manufacturing regions	276.70	0.08	0.817	228	6.07	21.18	29.77

Source: own elaboration

Table 14 – Structure of the economy: average values by cluster

	GVA Agric. (%)	Empl. Agric. (%)	Empl. Manufact. (%)	Empl. Services (%)	Per capita GDP	Av. farm size	Av. SGM
Peripheries	5.94	15.93	15.98	59.29	15,806	13.91	9.16
Nature-quality regions	2.50	5.23	16.46	70.07	23,223	49.17	25.54
Cities	0.26	0.58	13.84	79.87	33,094	31.20	43.19
Remote regions	10.81	30.21	22.22	40.82	8,166	6.18	1.90
Mixed-economy regions	2.19	4.13	16.57	71.63	21,962	46.56	59.34
Shrinking regions	1.78	3.44	18.15	69.95	19,685	183.90	138.42
Manufacturing regions	1.79	4.61	27.40	60.90	22,931	27.84	29.37

Source: own elaboration

Table 15 – Land use: average values by cluster

	Artificial areas (%)	Agricultural areas (%)	Forests (%)
Peripheries	2.87	47.75	46.23
Nature-quality regions	4.02	30.28	62.46
Cities	45.77	33.69	16.55
Remote regions	5.13	57.38	35.12
Mixed-economy regions	9.97	69.17	17.14
Shrinking regions	13.38	57.71	25.75
Manufacturing regions	8.07	52.24	38.38

Source: own elaboration

Table 16 – Structure of the economy: average values by cluster

	Air Access.	Multimodal Access.	Multimodall Access. Change	Distance from MEGA1	Distance from MEGA2	Distance from MEGA3	Distance from MEGA4
Peripheries	51.2	48.8	16.3	565.5	366.3	270.8	196.0
Nature-quality regions	82.3	80.6	6.1	250.8	186.9	129.6	116.7
Cities	136.6	138.9	7.8	142.3	99.8	68.6	44.6
Remote regions	38.5	38.0	24.5	764.1	635.2	500.0	158.9
Mixed-economy regions	101.3	107.1	6.8	178.4	142.4	99.8	86.4
Shrinking regions	88.3	96.4	8.8	153.3	153.3	142.1	138.0
Manufacturing regions	107.1	111.7	9.3	128.6	127.0	103.8	85.7

Source: own elaboration

Clusters' membership

In Table 17, the general output of the cluster analysis is shown. Referring to each NUTS 3 regions across Europe, both the cluster membership and the PRI value are reported.

Table 17 – Cluster membership and PRI value

Code	Name	PRI	Cluster
AT111	Mittelburgenland	15.8	Manufacturing regions
AT112	Nordburgenland	14.7	Manufacturing regions
AT113	Südburgenland	15.7	Manufacturing regions
AT121	Mostviertel-Eisenwurzen	15.8	Manufacturing regions
AT122	Niederösterreich-Süd	15.0	Nature-quality regions
AT123	Sankt Pölten	14.6	Mixed-economy regions
AT124	Waldviertel	16.0	Manufacturing regions
AT125	Weinviertel	15.7	Mixed-economy regions
AT126	Wiener Umland/Nordteil	14.6	Manufacturing regions
AT127	Wiener Umland/Südteil	13.6	Manufacturing regions
AT130	Wien	8.2	Cities
AT211	Klagenfurt-Villach	14.3	Nature-quality regions
AT212	Oberkärnten	16.0	Nature-quality regions
AT213	Unterkärnten	15.9	Manufacturing regions
AT221	Graz	13.7	Nature-quality regions
AT222	Liezen	16.1	Nature-quality regions
AT223	Östliche Obersteiermark	16.0	Nature-quality regions
AT224	Oststeiermark	15.9	Manufacturing regions
AT225	West- und Südsteiermark	15.4	Manufacturing regions
AT226	Westliche Obersteiermark	16.2	Nature-quality regions
AT311	Innviertel	15.9	Manufacturing regions
AT312	Linz-Wels	13.8	Mixed-economy regions
AT313	Mühlviertel	15.9	Manufacturing regions
AT314	Steyr-Kirchdorf	15.7	Manufacturing regions
AT315	Traunviertel	15.5	Manufacturing regions
AT321	Lungau	15.9	Nature-quality regions
AT322	Pinzgau-Pongau	15.0	Nature-quality regions
AT323	Salzburg und Umgebung	13.9	Nature-quality regions
AT331	Außerfern	15.3	Nature-quality regions
AT332	Innsbruck	14.3	Nature-quality regions
AT333	Osttirol	16.2	Nature-quality regions
AT334	Tiroler Oberland	15.1	Nature-quality regions
AT335	Tiroler Unterland	14.9	Nature-quality regions
AT341	Bludenz-Bregenzer Wald	15.0	Nature-quality regions
AT342	Rheintal-Bodenseegebiet	14.0	Manufacturing regions
BE100	Arr. de Bruxelles-Capitale / Arr. van Brussel-Hoofdstad	5.8	Cities
BE211	Arr. Antwerpen	11.7	Cities
BE212	Arr. Mechelen	12.9	Cities
BE213	Arr. Turnhout	13.8	Mixed-economy regions
BE221	Arr. Hasselt	13.1	Cities
BE222	Arr. Maaseik	14.3	Mixed-economy regions
BE223	Arr. Tongeren	14.1	Mixed-economy regions

BE231	Arr. Aalst	13.3	Cities
BE232	Arr. Dendermonde	13.7	Mixed-economy regions
BE233	Arr. Eeklo	15.2	Mixed-economy regions
BE234	Arr. Gent	13.2	Cities
BE235	Arr. Oudenaarde	14.6	Mixed-economy regions
BE236	Arr. Sint-Niklaas	13.5	Cities
BE241	Arr. Halle-Vilvoorde	12.3	Cities
BE242	Arr. Leuven	12.8	Cities
BE251	Arr. Brugge	14.1	Mixed-economy regions
BE252	Arr. Diksmuide	15.9	Mixed-economy regions
BE253	Arr. Ieper	15.7	Mixed-economy regions
BE254	Arr. Kortrijk	13.5	Mixed-economy regions
BE255	Arr. Oostende	14.5	Mixed-economy regions
BE256	Arr. Roeselare	14.3	Mixed-economy regions
BE257	Arr. Tielt	15.6	Mixed-economy regions
BE258	Arr. Veurne	15.2	Mixed-economy regions
BE310	Arr. Nivelles	13.4	Cities
BE321	Arr. Ath	14.5	Mixed-economy regions
BE322	Arr. Charleroi	12.9	Cities
BE323	Arr. Mons	13.6	Cities
BE324	Arr. Mouscron	13.9	Mixed-economy regions
BE325	Arr. Soignies	14.1	Mixed-economy regions
BE326	Arr. Thuin	14.7	Mixed-economy regions
BE327	Arr. Tournai	14.2	Mixed-economy regions
BE331	Arr. Huy	14.4	Mixed-economy regions
BE332	Arr. Liège	12.6	Cities
BE334	Arr. Waremme	14.7	Mixed-economy regions
BE335	Arr. Verviers	14.3	Mixed-economy regions
BE336	Bezirk Verviers	14.9	Mixed-economy regions
BE341	Arr. Arlon	14.3	Mixed-economy regions
BE342	Arr. Bastogne	15.0	Mixed-economy regions
BE343	Arr. Marche-en-Famenne	14.9	Mixed-economy regions
BE344	Arr. Neufchâteau	15.2	Mixed-economy regions
BE345	Arr. Virton	15.2	Mixed-economy regions
BE351	Arr. Dinant	15.0	Mixed-economy regions
BE352	Arr. Namur	13.8	Cities
BE353	Arr. Philippeville	14.9	Mixed-economy regions
BG311	Vidin	19.2	Remote Regions
BG312	Montana	18.9	Remote Regions
BG313	Vratsa	18.6	Remote Regions
BG314	Pleven	18.7	Remote Regions
BG315	Lovech	18.8	Remote Regions
BG321	Veliko Tarnovo	18.3	Remote Regions
BG322	Gabrovo	18.5	Remote Regions
BG323	Ruse	17.9	Remote Regions

BG324	Razgrad	19.6	Remote Regions
BG325	Silistra	20.3	Remote Regions
BG331	Varna	16.9	Peripheries
BG332	Dobrich	19.7	Remote Regions
BG333	Shumen	19.0	Remote Regions
BG334	Targovishte	19.4	Remote Regions
BG341	Burgas	17.7	Peripheries
BG342	Sliven	19.1	Remote Regions
BG343	Yambol	20.0	Remote Regions
BG344	Stara Zagora	18.0	Remote Regions
BG411	Sofia (stolitsa)	13.2	Cities
BG412	Sofia	17.3	Remote Regions
BG413	Blagoevgrad	18.1	Remote Regions
BG414	Pernik	17.2	Remote Regions
BG415	Kyustendil	18.1	Remote Regions
BG421	Plovdiv	17.4	Remote Regions
BG422	Haskovo	18.9	Remote Regions
BG423	Pazardzhik	18.3	Remote Regions
BG424	Smolyan	18.6	Remote Regions
BG425	Kardzhali	19.8	Remote Regions
CY000	Kypros	19.1	Peripheries
CZ010	Hlavní mesto Praha	9.9	Cities
CZ020	Stredoceský kraj	14.7	Manufacturing regions
CZ031	Jihocecký kraj	16.0	Manufacturing regions
CZ032	Plzenský kraj	15.8	Manufacturing regions
CZ041	Karlovarský kraj	15.7	Nature-quality regions
CZ042	Ústecký kraj	15.0	Manufacturing regions
CZ051	Liberecký kraj	15.7	Manufacturing regions
CZ052	Kralovehradecký kraj	15.9	Manufacturing regions
CZ053	Pardubický kraj	16.2	Manufacturing regions
CZ063	Kraj Vysocina	16.4	Manufacturing regions
CZ064	Jihomoravský kraj	14.9	Manufacturing regions
CZ071	Olomoucký kraj	16.0	Manufacturing regions
CZ072	Zlínský kraj	15.7	Manufacturing regions
CZ080	Moravskoslezský kraj	14.9	Manufacturing regions
DE111	Stuttgart, Stadtkr.	9.9	Cities
DE112	Böblingen	14.0	Manufacturing regions
DE113	Esslingen	13.7	Manufacturing regions
DE114	Göppingen	14.7	Manufacturing regions
DE115	Ludwigsburg	13.8	Manufacturing regions
DE116	Rems-Murr-Kreis	14.3	Manufacturing regions
DE117	Heilbronn, Stadtkr.	12.9	Manufacturing regions
DE118	Heilbronn, Landtkr.	15.2	Manufacturing regions
DE119	Hohenlohekreis	15.6	Manufacturing regions
DE11A	Schwäbisch Hall	15.2	Manufacturing regions

DE11B	Main-Tauber-Kreis	15.6	Manufacturing regions
DE11C	Heidenheim	15.6	Manufacturing regions
DE11D	Ostalbkreis	15.2	Manufacturing regions
DE121	Baden-Baden, Stadtkr.	14.3	Nature-quality regions
DE122	Karlsruhe, Stadtkr.	11.3	Cities
DE123	Karlsruhe, Landtkr.	14.4	Manufacturing regions
DE124	Rastatt	15.2	Manufacturing regions
DE125	Heidelberg, Stadtkr.	12.1	Cities
DE126	Mannheim, Stadtkr.	10.7	Cities
DE127	Neckar-Odenwald-Kreis	15.2	Manufacturing regions
DE128	Rhein-Neckar-Kreis	14.0	Manufacturing regions
DE129	Pforzheim, Stadtkr.	12.9	Cities
DE12A	Calw	14.7	Manufacturing regions
DE12B	Enzkreis	15.4	Manufacturing regions
DE12C	Freudenstadt	15.3	Manufacturing regions
DE131	Freiburg im Breisgau, Stadtkr.	12.2	Cities
DE132	Breisgau-Hochschwarzwald	15.0	Manufacturing regions
DE133	Emmendingen	15.2	Manufacturing regions
DE134	Ortenaukreis	14.6	Manufacturing regions
DE135	Rottweil	15.6	Manufacturing regions
DE136	Schwarzwald-Baar-Kreis	15.1	Manufacturing regions
DE137	Tuttlingen	15.7	Manufacturing regions
DE138	Konstanz	14.3	Manufacturing regions
DE139	Lörrach	14.6	Manufacturing regions
DE13A	Waldshut	14.8	Manufacturing regions
DE141	Reutlingen	14.7	Manufacturing regions
DE142	Tübingen, Landtkr.	13.7	Manufacturing regions
DE143	Zollernalbkreis	15.2	Manufacturing regions
DE144	Ulm, Stadtkr.	12.6	Cities
DE145	Alb-Donau-Kreis	15.4	Manufacturing regions
DE146	Biberach	15.5	Manufacturing regions
DE147	Bodenseekreis	14.9	Manufacturing regions
DE148	Ravensburg	15.0	Manufacturing regions
DE149	Sigmaringen	15.3	Manufacturing regions
DE211	Ingolstadt, Kreisfr.St.	13.5	Manufacturing regions
DE212	München, Kreisfr.St.	7.7	Cities
DE213	Rosenheim, Kreisfr.St.	12.1	Cities
DE214	Altötting	15.1	Manufacturing regions
DE215	Berchtesgadener Land	15.0	Nature-quality regions
DE216	Bad Tölz-Wolfratshausen	15.0	Nature-quality regions
DE217	Dachau	14.6	Mixed-economy regions
DE218	Ebersberg	14.4	Manufacturing regions
DE219	Eichstätt	15.2	Manufacturing regions
DE21A	Erding	14.3	Mixed-economy regions
DE21B	Freising	13.7	Mixed-economy regions

DE21C	Fürstenfeldbruck	14.3	Mixed-economy regions
DE21D	Garmisch-Partenkirchen	15.1	Nature-quality regions
DE21E	Landsberg am Lech	15.0	Manufacturing regions
DE21F	Miesbach	14.9	Nature-quality regions
DE21G	Mühldorf am Inn	15.2	Manufacturing regions
DE21H	München, Landtkr.	12.7	Cities
DE21I	Neuburg-Schrobenhausen	15.1	Manufacturing regions
DE21J	Pfaffenhofen an der Ilm	14.8	Manufacturing regions
DE21K	Rosenheim, Landtkr.	14.8	Manufacturing regions
DE21L	Starnberg	14.2	Manufacturing regions
DE21M	Traunstein	15.2	Manufacturing regions
DE21N	Weilheim-Schongau	15.4	Manufacturing regions
DE221	Landshut, Kreisfr.St.	12.4	Cities
DE222	Passau, Kreisfr.St.	13.3	Cities
DE223	Straubing, Kreisfr.St.	13.5	Mixed-economy regions
DE224	Deggendorf	15.2	Manufacturing regions
DE225	Freyung-Grafenau	15.9	Nature-quality regions
DE226	Kelheim	15.2	Manufacturing regions
DE227	Landshut, Landtkr.	15.2	Manufacturing regions
DE228	Passau, Landtkr.	15.7	Manufacturing regions
DE229	Regen	15.8	Nature-quality regions
DE22A	Rottal-Inn	15.6	Mixed-economy regions
DE22B	Straubing-Bogen	15.8	Manufacturing regions
DE22C	Dingolfing-Landau	16.0	Manufacturing regions
DE231	Amberg, Kreisfr.St.	13.7	Manufacturing regions
DE232	Regensburg, Kreisfr.St.	11.1	Cities
DE233	Weiden in der Oberpfalz, Kreisfr.St.	13.8	Cities
DE234	Amberg-Sulzbach	15.7	Manufacturing regions
DE235	Cham	15.8	Manufacturing regions
DE236	Neumarkt in der Oberpfalz	15.1	Manufacturing regions
DE237	Neustadt an der Waldnaab	16.3	Manufacturing regions
DE238	Regensburg, Landtkr.	15.3	Manufacturing regions
DE239	Schwandorf	15.6	Manufacturing regions
DE23A	Tirschenreuth	16.3	Manufacturing regions
DE241	Bamberg, Kreisfr.St.	12.3	Cities
DE242	Bayreuth, Kreisfr.St.	12.7	Cities
DE243	Coburg, Kreisfr.St.	13.3	Cities
DE244	Hof, Kreisfr.St.	13.5	Manufacturing regions
DE245	Bamberg, Landtkr.	15.4	Manufacturing regions
DE246	Bayreuth, Landtkr.	15.9	Manufacturing regions
DE247	Coburg, Landtkr.	16.4	Manufacturing regions
DE248	Forchheim	15.1	Manufacturing regions
DE249	Hof, Landtkr.	16.0	Manufacturing regions
DE24A	Kronach	16.3	Manufacturing regions
DE24B	Kulmbach	15.7	Manufacturing regions

DE24C	Lichtenfels	15.5	Manufacturing regions
DE24D	Wunsiedel im Fichtelgebirge	16.1	Manufacturing regions
DE251	Ansbach, Kreisfr.St.	13.8	Manufacturing regions
DE252	Erlangen, Kreisfr.St.	12.2	Cities
DE253	Fürth, Kreisfr.St.	11.8	Cities
DE254	Nürnberg, Kreisfr.St.	10.1	Cities
DE255	Schwabach, Kreisfr.St.	13.4	Manufacturing regions
DE256	Ansbach, Landtkr.	15.7	Manufacturing regions
DE257	Erlangen-Höchstadt	15.2	Manufacturing regions
DE258	Fürth, Landtkr.	14.7	Manufacturing regions
DE259	Nürnberger Land	14.9	Manufacturing regions
DE25A	Neustadt an der Aisch-Bad Windsheim	15.5	Mixed-economy regions
DE25B	Roth	15.0	Manufacturing regions
DE25C	Weißenburg-Gunzenhausen	15.6	Manufacturing regions
DE261	Aschaffenburg, Kreisfr.St.	12.0	Cities
DE262	Schweinfurt, Kreisfr.St.	12.8	Cities
DE263	Würzburg, Kreisfr.St.	11.8	Cities
DE264	Aschaffenburg, Landtkr.	14.6	Manufacturing regions
DE265	Bad Kissingen	15.3	Manufacturing regions
DE266	Rhön-Grabfeld	15.8	Manufacturing regions
DE267	Haßberge	16.0	Manufacturing regions
DE268	Kitzingen	15.4	Mixed-economy regions
DE269	Miltenberg	15.1	Manufacturing regions
DE26A	Main-Spessart	15.8	Manufacturing regions
DE26B	Schweinfurt, Landtkr.	15.5	Manufacturing regions
DE26C	Würzburg, Landtkr.	15.2	Mixed-economy regions
DE271	Augsburg, Kreisfr.St.	11.9	Cities
DE272	Kaufbeuren, Kreisfr.St.	13.5	Manufacturing regions
DE273	Kempten (Allgäu), Kreisfr.St.	13.8	Mixed-economy regions
DE274	Memmingen, Kreisfr.St.	14.3	Manufacturing regions
DE275	Aichach-Friedberg	15.1	Manufacturing regions
DE276	Augsburg, Landtkr.	15.0	Manufacturing regions
DE277	Dillingen an der Donau	15.6	Manufacturing regions
DE278	Günzburg	15.1	Manufacturing regions
DE279	Neu-Ulm	14.9	Manufacturing regions
DE27A	Lindau (Bodensee)	15.5	Manufacturing regions
DE27B	Ostallgäu	15.8	Manufacturing regions
DE27C	Unterallgäu	16.0	Manufacturing regions
DE27D	Donau-Ries	15.5	Manufacturing regions
DE27E	Oberallgäu	15.7	Manufacturing regions
DE300	Berlin	7.3	Cities
DE411	Frankfurt (Oder), Kreisfr.St.	15.3	Shrinking Regions
DE412	Barnim	15.5	Mixed-economy regions
DE413	Märkisch-Oderland	16.1	Shrinking Regions
DE414	Oberhavel	15.4	Mixed-economy regions

DE415	Oder-Spree	16.2	Shrinking Regions
DE416	Ostprignitz-Ruppin	16.4	Shrinking Regions
DE417	Prignitz	17.4	Shrinking Regions
DE418	Uckermark	17.0	Shrinking Regions
DE421	Brandenburg an der Havel, Kreisfr.St.	15.3	Shrinking Regions
DE422	Cottbus, Kreisfr.St.	14.2	Shrinking Regions
DE423	Potsdam, Kreisfr.St.	13.3	Cities
DE424	Dahme-Spreewald	15.5	Mixed-economy regions
DE425	Elbe-Elster	16.8	Shrinking Regions
DE426	Havelland	16.0	Mixed-economy regions
DE427	Oberspreewald-Lausitz	16.5	Shrinking Regions
DE428	Potsdam-Mittelmark	15.7	Mixed-economy regions
DE429	Spree-Neiße	16.8	Shrinking Regions
DE42A	Teltow-Fläming	15.8	Mixed-economy regions
DE501	Bremen, Kreisfr.St.	11.0	Cities
DE502	Bremerhaven, Kreisfr.St.	12.0	Cities
DE600	Hamburg	9.5	Cities
DE711	Darmstadt, Kreisfr.St.	11.6	Cities
DE712	Frankfurt am Main, Kreisfr.St.	8.6	Cities
DE713	Offenbach am Main, Kreisfr.St.	10.5	Cities
DE714	Wiesbaden, Kreisfr.St.	11.5	Cities
DE715	Bergstraße	14.1	Manufacturing regions
DE716	Darmstadt-Dieburg	13.9	Manufacturing regions
DE717	Groß-Gerau	13.3	Manufacturing regions
DE718	Hochtaunuskreis	13.5	Manufacturing regions
DE719	Main-Kinzig-Kreis	14.1	Manufacturing regions
DE71A	Main-Taunus-Kreis	12.3	Cities
DE71B	Odenwaldkreis	15.1	Manufacturing regions
DE71C	Offenbach, Landtkr.	12.7	Cities
DE71D	Rheingau-Taunus-Kreis	14.4	Manufacturing regions
DE71E	Wetteraukreis	14.2	Manufacturing regions
DE721	Gießen, Landtkr.	13.9	Manufacturing regions
DE722	Lahn-Dill-Kreis	14.7	Manufacturing regions
DE723	Limburg-Weilburg	14.4	Manufacturing regions
DE724	Marburg-Biedenkopf	14.6	Manufacturing regions
DE725	Vogelsbergkreis	15.7	Manufacturing regions
DE731	Kassel, Kreisfr.St.	11.5	Cities
DE732	Fulda	14.9	Manufacturing regions
DE733	Hersfeld-Rotenburg	15.4	Manufacturing regions
DE734	Kassel, Landtkr.	15.7	Manufacturing regions
DE735	Schwalm-Eder-Kreis	15.4	Manufacturing regions
DE736	Waldeck-Frankenberg	15.6	Manufacturing regions
DE737	Werra-Meißner-Kreis	15.8	Manufacturing regions
DE801	Greifswald, Kreisfr.St.	14.9	Shrinking Regions
DE802	Neubrandenburg, Kreisfr.St.	14.9	Shrinking Regions

DE803	Rostock, Kreisfr.St.	14.5	Shrinking Regions
DE804	Schwerin, Kreisfr.St.	14.9	Shrinking Regions
DE805	Stralsund, Kreisfr.St.	14.6	Shrinking Regions
DE806	Wismar, Kreisfr.St.	14.8	Shrinking Regions
DE807	Bad Doberan	16.8	Shrinking Regions
DE808	Demmin	17.9	Shrinking Regions
DE809	Güstrow	17.4	Shrinking Regions
DE80A	Ludwigslust	17.1	Shrinking Regions
DE80B	Mecklenburg-Strelitz	17.2	Shrinking Regions
DE80C	Müritz	17.1	Shrinking Regions
DE80D	Nordvorpommern	17.5	Shrinking Regions
DE80E	Nordwestmecklenburg	17.1	Shrinking Regions
DE80F	Ostvorpommern	17.2	Shrinking Regions
DE80G	Parchim	17.4	Shrinking Regions
DE80H	Rügen	17.2	Shrinking Regions
DE80I	Uecker-Randow	17.1	Shrinking Regions
DE911	Braunschweig, Kreisfr.St.	12.8	Cities
DE912	Salzgitter, Kreisfr.St.	15.3	Manufacturing regions
DE913	Wolfsburg, Kreisfr.St.	14.7	Manufacturing regions
DE914	Gifhorn	15.3	Mixed-economy regions
DE915	Göttingen	15.0	Nature-quality regions
DE916	Goslar	15.8	Manufacturing regions
DE917	Helmstedt	15.8	Mixed-economy regions
DE918	Northeim	16.1	Manufacturing regions
DE919	Osterode am Harz	16.1	Manufacturing regions
DE91A	Peine	15.2	Mixed-economy regions
DE91B	Wolfenbüttel	15.7	Mixed-economy regions
DE922	Diepholz	15.6	Mixed-economy regions
DE923	Hameln-Pyrmont	15.1	Mixed-economy regions
DE925	Hildesheim	15.0	Mixed-economy regions
DE926	Holzminden	16.2	Manufacturing regions
DE927	Nienburg (Weser)	15.4	Mixed-economy regions
DE928	Schaumburg	15.1	Mixed-economy regions
DE929	Region Hannover	13.1	Cities
DE931	Celle	14.9	Manufacturing regions
DE932	Cuxhaven	15.8	Mixed-economy regions
DE933	Harburg	14.8	Mixed-economy regions
DE934	Lüchow-Dannenberg	16.6	Manufacturing regions
DE935	Lüneburg, Landtkr.	14.8	Mixed-economy regions
DE936	Osterholz	15.0	Mixed-economy regions
DE937	Rotenburg (Wümme)	15.3	Mixed-economy regions
DE938	Soltau-Fallingbostel	15.1	Manufacturing regions
DE939	Stade	15.0	Mixed-economy regions
DE93A	Uelzen	15.7	Mixed-economy regions
DE93B	Verden	15.1	Mixed-economy regions

DE941	Delmenhorst, Kreisfr.St.	12.8	Mixed-economy regions
DE942	Emden, Kreisfr.St.	14.9	Manufacturing regions
DE943	Oldenburg (Oldenburg), Kreisfr.St.	11.6	Cities
DE944	Osnabrück, Kreisfr.St.	12.1	Cities
DE945	Wilhelmshaven, Kreisfr.St.	13.4	Cities
DE946	Ammerland	15.7	Mixed-economy regions
DE947	Aurich	15.5	Mixed-economy regions
DE948	Cloppenburg	16.0	Mixed-economy regions
DE949	Emsland	15.6	Mixed-economy regions
DE94A	Friesland (DE)	15.5	Mixed-economy regions
DE94B	Grafschaft Bentheim	15.7	Mixed-economy regions
DE94C	Leer	15.3	Mixed-economy regions
DE94D	Oldenburg, Landtkr.	15.4	Mixed-economy regions
DE94E	Osnabrück, Landtkr.	15.6	Mixed-economy regions
DE94F	Vechta	15.5	Mixed-economy regions
DE94G	Wesermarsch	15.5	Manufacturing regions
DE94H	Wittmund	15.7	Mixed-economy regions
DEA11	Düsseldorf, Kreisfr.St.	9.2	Cities
DEA12	Duisburg, Kreisfr.St.	11.0	Cities
DEA13	Essen, Kreisfr.St.	10.1	Cities
DEA14	Krefeld, Kreisfr.St.	11.9	Cities
DEA15	Mönchengladbach, Kreisfr.St.	12.2	Mixed-economy regions
DEA16	Mülheim an der Ruhr, Kreisfr.St.	11.8	Cities
DEA17	Oberhausen, Kreisfr.St.	10.4	Cities
DEA18	Remscheid, Kreisfr.St.	13.1	Cities
DEA19	Solingen, Kreisfr.St.	12.5	Cities
DEA1A	Wuppertal, Kreisfr.St.	11.7	Cities
DEA1B	Kleve	14.8	Mixed-economy regions
DEA1C	Mettmann	13.0	Mixed-economy regions
DEA1D	Rhein-Kreis Neuss	13.1	Mixed-economy regions
DEA1E	Viersen	14.1	Mixed-economy regions
DEA1F	Wesel	14.4	Mixed-economy regions
DEA21	Aachen, Kreisfr.St.	12.1	Cities
DEA22	Bonn, Kreisfr.St.	10.6	Cities
DEA23	Köln, Kreisfr.St.	9.7	Cities
DEA24	Leverkusen, Kreisfr.St.	11.7	Cities
DEA25	Aachen, Kreis	14.1	Manufacturing regions
DEA26	Düren	14.3	Mixed-economy regions
DEA27	Rhein-Erft-Kreis	13.3	Mixed-economy regions
DEA28	Euskirchen	14.7	Manufacturing regions
DEA29	Heinsberg	14.3	Mixed-economy regions
DEA2A	Oberbergischer Kreis	14.7	Manufacturing regions
DEA2B	Rheinisch-Bergischer Kreis	13.8	Manufacturing regions
DEA2C	Rhein-Sieg-Kreis	13.6	Manufacturing regions
DEA31	Bottrop, Kreisfr.St.	13.0	Mixed-economy regions

DEA32	Gelsenkirchen, Kreisfr.St.	10.6	Cities
DEA33	Münster, Kreisfr.St.	12.8	Cities
DEA34	Borken	15.1	Mixed-economy regions
DEA35	Coesfeld	15.2	Mixed-economy regions
DEA36	Recklinghausen	13.2	Mixed-economy regions
DEA37	Steinfurt	15.1	Mixed-economy regions
DEA38	Warendorf	15.5	Mixed-economy regions
DEA41	Bielefeld, Kreisfr.St.	12.9	Cities
DEA42	Gütersloh	15.0	Manufacturing regions
DEA43	Herford	14.8	Mixed-economy regions
DEA44	Höxter	15.7	Manufacturing regions
DEA45	Lippe	15.0	Manufacturing regions
DEA46	Minden-Lübbecke	14.9	Mixed-economy regions
DEA47	Paderborn	14.5	Mixed-economy regions
DEA51	Bochum, Kreisfr.St.	10.4	Cities
DEA52	Dortmund, Kreisfr.St.	10.7	Cities
DEA53	Hagen, Kreisfr.St.	12.8	Cities
DEA54	Hamm, Kreisfr.St.	13.6	Mixed-economy regions
DEA55	Herne, Kreisfr.St.	9.9	Cities
DEA56	Ennepe-Ruhr-Kreis	13.9	Manufacturing regions
DEA57	HochsauerLandtkr.	15.3	Manufacturing regions
DEA58	Märkischer Kreis	14.8	Manufacturing regions
DEA59	Olpe	15.2	Manufacturing regions
DEA5A	Siegen-Wittgenstein	14.7	Manufacturing regions
DEA5B	Soest	15.0	Mixed-economy regions
DEA5C	Unna	13.6	Mixed-economy regions
DEB11	Koblenz, Kreisfr.St.	12.4	Cities
DEB12	Ahrweiler	14.8	Manufacturing regions
DEB13	Altenkirchen (Westerwald)	15.0	Manufacturing regions
DEB14	Bad Kreuznach	14.7	Manufacturing regions
DEB15	Birkenfeld	15.3	Manufacturing regions
DEB16	Cochem-Zell	15.1	Manufacturing regions
DEB17	Mayen-Koblenz	14.6	Manufacturing regions
DEB18	Neuwied	14.7	Manufacturing regions
DEB19	Rhein-Hunsrück-Kreis	15.0	Manufacturing regions
DEB1A	Rhein-Lahn-Kreis	15.0	Manufacturing regions
DEB1B	Westerwaldkreis	14.6	Manufacturing regions
DEB21	Trier, Kreisfr.St.	12.6	Cities
DEB22	Bernkastel-Wittlich	15.4	Manufacturing regions
DEB23	Eifelkreis Bitburg-Prüm	15.5	Manufacturing regions
DEB24	Vulkaneifel	15.6	Manufacturing regions
DEB25	Trier-Saarburg	15.1	Manufacturing regions
DEB31	Frankenthal (Pfalz), Kreisfr.St.	14.1	Mixed-economy regions
DEB32	Kaiserslautern, Kreisfr.St.	13.5	Cities
DEB33	Landau in der Pfalz, Kreisfr.St.	13.9	Cities

DEB34	Ludwigshafen am Rhein, Kreisfr.St.	11.6	Cities
DEB35	Mainz, Kreisfr.St.	10.8	Cities
DEB36	Neustadt an der Weinstraße, Kreisfr.St.	14.3	Manufacturing regions
DEB37	Pirmasens, Kreisfr.St.	14.4	Manufacturing regions
DEB38	Speyer, Kreisfr.St.	12.5	Cities
DEB39	Worms, Kreisfr.St.	13.7	Mixed-economy regions
DEB3A	Zweibrücken, Kreisfr.St.	14.2	Manufacturing regions
DEB3B	Alzey-Worms	14.9	Mixed-economy regions
DEB3C	Bad Dürkheim	14.9	Manufacturing regions
DEB3D	Donnersbergkreis	15.4	Manufacturing regions
DEB3E	Germersheim	15.4	Manufacturing regions
DEB3F	Kaiserslautern, Landtkr.	15.0	Manufacturing regions
DEB3G	Kusel	15.6	Manufacturing regions
DEB3H	Südliche Weinstraße	15.4	Manufacturing regions
DEB3I	Rhein-Pfalz-Kreis	14.7	Mixed-economy regions
DEB3J	Mainz-Bingen	14.4	Mixed-economy regions
DEB3K	Südwestpfalz	15.7	Manufacturing regions
DEC01	Regionalverband Saarbrücken	12.9	Cities
DEC02	Merzig-Wadern	14.8	Manufacturing regions
DEC03	Neunkirchen	14.2	Manufacturing regions
DEC04	Saarlouis	14.6	Manufacturing regions
DEC05	Saarpfalz-Kreis	14.9	Manufacturing regions
DEC06	St Wendel	15.2	Manufacturing regions
DED11	Chemnitz, Kreisfr.St.	13.9	Shrinking Regions
DED12	Plauen, Kreisfr.St.	14.8	Shrinking Regions
DED13	Zwickau, Kreisfr.St.	14.3	Shrinking Regions
DED14	Annaberg	16.2	Shrinking Regions
DED15	Chemnitzer Land	15.9	Shrinking Regions
DED16	Freiberg	16.0	Shrinking Regions
DED17	VogtLandtkr.	16.5	Shrinking Regions
DED18	Mittlerer Erzgebirgskreis	16.5	Shrinking Regions
DED19	Mittweida	16.4	Shrinking Regions
DED1A	Stollberg	16.4	Shrinking Regions
DED1B	Aue-Schwarzenberg	16.1	Manufacturing regions
DED1C	Zwickauer Land	16.3	Shrinking Regions
DED21	Dresden, Kreisfr.St.	12.3	Cities
DED22	Görlitz, Kreisfr.St.	15.1	Shrinking Regions
DED23	Hoyerswerda, Kreisfr.St.	16.4	Shrinking Regions
DED24	Bautzen	16.1	Shrinking Regions
DED25	Meißen	15.9	Mixed-economy regions
DED26	Niederschlesischer Oberlausitzkreis	16.5	Shrinking Regions
DED27	Riesa-Großenhain	16.3	Shrinking Regions
DED28	Löbau-Zittau	16.6	Shrinking Regions
DED29	Sächsische Schweiz	16.1	Shrinking Regions
DED2A	Weißeritzkreis	15.8	Mixed-economy regions

DED2B	Kamenz	16.2	Shrinking Regions
DED31	Leipzig, Kreisfr.St.	12.5	Shrinking Regions
DED32	Delitzsch	16.1	Shrinking Regions
DED33	Döbeln	17.1	Shrinking Regions
DED34	Leipziger Land	16.1	Shrinking Regions
DED35	Muldentalkreis	16.5	Shrinking Regions
DED36	Torgau-Oschatz	17.0	Shrinking Regions
DEE01	Dessau-Roßlau, Kreisfr.St.	16.5	Shrinking Regions
DEE02	Halle (Saale), Kreisfr.St.	14.0	Shrinking Regions
DEE03	Magdeburg, Kreisfr.St.	14.6	Shrinking Regions
DEE04	Altmarkkreis Salzwedel	17.6	Shrinking Regions
DEE05	Anhalt-Bitterfeld	17.2	Shrinking Regions
DEE06	Jerichower Land	17.2	Shrinking Regions
DEE07	Börde	17.2	Shrinking Regions
DEE08	Burgenland (DE)	17.3	Shrinking Regions
DEE09	Harz	17.3	Shrinking Regions
DEE0A	Mansfeld-Südharz	17.6	Shrinking Regions
DEE0B	Saalekreis	16.8	Shrinking Regions
DEE0C	SalzLandtkr.	17.4	Shrinking Regions
DEE0D	Stendal	17.4	Shrinking Regions
DEE0E	Wittenberg	17.2	Shrinking Regions
DEF01	Flensburg, Kreisfr.St.	11.7	Cities
DEF02	Kiel, Kreisfr.St.	11.0	Cities
DEF03	Lübeck, Kreisfr.St.	13.0	Cities
DEF04	Neumünster, Kreisfr.St.	12.7	Cities
DEF05	Dithmarschen	15.7	Mixed-economy regions
DEF06	Herzogtum Lauenburg	15.2	Mixed-economy regions
DEF07	Nordfriesland	15.4	Nature-quality regions
DEF08	Ostholstein	15.6	Mixed-economy regions
DEF09	Pinneberg	14.2	Mixed-economy regions
DEF0A	Plön	15.5	Mixed-economy regions
DEF0B	Rendsburg-Eckernförde	15.4	Mixed-economy regions
DEF0C	Schleswig-Flensburg	15.9	Mixed-economy regions
DEF0D	Segeberg	15.0	Mixed-economy regions
DEF0E	Steinburg	15.2	Mixed-economy regions
DEF0F	Stormarn	14.7	Mixed-economy regions
DEG01	Erfurt, Kreisfr.St.	14.1	Shrinking Regions
DEG02	Gera, Kreisfr.St.	15.6	Shrinking Regions
DEG03	Jena, Kreisfr.St.	14.3	Shrinking Regions
DEG04	Suhl, Kreisfr.St.	16.0	Shrinking Regions
DEG05	Weimar, Kreisfr.St.	14.4	Shrinking Regions
DEG06	Eichsfeld	16.7	Shrinking Regions
DEG07	Nordhausen	16.5	Shrinking Regions
DEG09	Unstrut-Hainich-Kreis	16.5	Shrinking Regions
DEG0A	Kyffhäuserkreis	17.0	Shrinking Regions

DEG0B	Schmalkalden-Meiningen	16.7	Shrinking Regions
DEG0C	Gotha	16.1	Shrinking Regions
DEG0D	Sömmerda	16.9	Shrinking Regions
DEG0E	Hildburghausen	16.9	Shrinking Regions
DEG0F	Ilm-Kreis	16.2	Shrinking Regions
DEG0G	Weimarer Land	16.5	Shrinking Regions
DEG0H	Sonneberg	16.9	Shrinking Regions
DEG0I	Saalfeld-Rudolstadt	16.8	Shrinking Regions
DEG0J	Saale-Holzland-Kreis	16.6	Shrinking Regions
DEG0K	Saale-Orla-Kreis	17.0	Shrinking Regions
DEG0L	Greiz	17.2	Shrinking Regions
DEG0M	Altenburger Land	17.1	Shrinking Regions
DEG0N	Eisenach, Kreisfr.St.	15.7	Shrinking Regions
DEG0P	Wartburgkreis	16.7	Shrinking Regions
DK011	Byen København	8.4	Cities
DK012	Københavns omegn	10.6	Cities
DK013	Nordsjælland	14.1	Mixed-economy regions
DK014	Bornholm	15.7	Mixed-economy regions
DK021	Østsjælland	14.4	Mixed-economy regions
DK022	Vest- og Sydsjælland	15.3	Mixed-economy regions
DK031	Fyn	15.6	Mixed-economy regions
DK032	Sydjylland	15.3	Mixed-economy regions
DK041	Vestjylland	15.7	Mixed-economy regions
DK042	Østjylland	14.6	Mixed-economy regions
DK050	Nordjylland	15.2	Mixed-economy regions
EE001	Põhja-Eesti	14.4	Nature-quality regions
EE004	Lääne-Eesti	16.8	Peripheries
EE006	Kesk-Eesti	16.9	Peripheries
EE007	Kirde-Eesti	16.5	Peripheries
EE008	Lõuna-Eesti	16.8	Peripheries
ES111	A Coruña	15.5	Peripheries
ES112	Lugo	17.3	Peripheries
ES113	Ourense	16.8	Peripheries
ES114	Pontevedra	15.3	Peripheries
ES120	Asturias	15.6	Peripheries
ES130	Cantabria	14.9	Nature-quality regions
ES211	Alava	15.0	Nature-quality regions
ES212	Guipúzcoa	14.5	Nature-quality regions
ES213	Vizcaya	13.5	Cities
ES220	Navarra	15.2	Nature-quality regions
ES230	La Rioja	15.8	Peripheries
ES241	Huesca	16.5	Nature-quality regions
ES242	Teruel	16.5	Nature-quality regions
ES243	Zaragoza	15.5	Nature-quality regions
ES300	Madrid	10.8	Cities

ES411	Avila	15.9	Nature-quality regions
ES412	Burgos	16.4	Nature-quality regions
ES413	León	16.5	Peripheries
ES414	Palencia	16.9	Peripheries
ES415	Salamanca	16.5	Peripheries
ES416	Segovia	15.8	Nature-quality regions
ES417	Soria	16.9	Nature-quality regions
ES418	Valladolid	15.6	Mixed-economy regions
ES419	Zamora	17.3	Peripheries
ES421	Albacete	16.2	Peripheries
ES422	Ciudad Real	16.3	Peripheries
ES423	Cuenca	16.7	Nature-quality regions
ES424	Guadalajara	15.8	Mixed-economy regions
ES425	Toledo	15.6	Mixed-economy regions
ES431	Badajoz	16.3	Peripheries
ES432	Caceres	16.4	Peripheries
ES511	Barcelona	11.1	Cities
ES512	Girona	14.6	Mixed-economy regions
ES513	Lleida	15.7	Nature-quality regions
ES514	Tarragona	14.8	Mixed-economy regions
ES521	Alicante / Alacant	14.1	Mixed-economy regions
ES522	Castellón / Castelló	15.4	Nature-quality regions
ES523	Valencia / València	13.5	Mixed-economy regions
ES531	Eivissa, Formentera	15.2	Mixed-economy regions
ES532	Mallorca	13.9	Mixed-economy regions
ES533	Menorca	15.1	Mixed-economy regions
ES611	Almería	16.5	Peripheries
ES612	Cadiz	15.2	Peripheries
ES613	Córdoba	16.2	Peripheries
ES614	Granada	15.7	Peripheries
ES615	Huelva	16.0	Peripheries
ES616	Jaen	16.4	Peripheries
ES617	Malaga	14.7	Peripheries
ES618	Sevilla	14.7	Mixed-economy regions
ES620	Murcia	15.5	Mixed-economy regions
FI131	Etelä-Savo	17.2	Peripheries
FI132	Pohjois-Savo	16.8	Peripheries
FI133	Pohjois-Karjala	17.3	Peripheries
FI134	Kainuu	17.9	Peripheries
FI181	Uusimaa	13.1	Cities
FI182	Itä-Uusimaa	15.5	Nature-quality regions
FI183	Varsinais-Suomi	15.1	Nature-quality regions
FI184	Kanta-Häme	15.7	Nature-quality regions
FI185	Päijät-Häme	15.8	Nature-quality regions
FI186	Kymenlaakso	16.0	Nature-quality regions

FI187	Etelä-Karjala	16.0	Peripheries
FI193	Keski-Suomi	16.2	Peripheries
FI194	Etelä-Pohjanmaa	16.8	Peripheries
FI195	Pohjanmaa	16.6	Peripheries
FI196	Satakunta	15.8	Nature-quality regions
FI197	Pirkanmaa	15.3	Nature-quality regions
FI1A1	Keski-Pohjanmaa	17.0	Peripheries
FI1A2	Pohjois-Pohjanmaa	17.4	Peripheries
FI1A3	Lappi	19.1	Peripheries
FI200	Åland	15.0	Nature-quality regions
FR101	Paris	4.2	Cities
FR102	Seine-et-Marne	14.1	Mixed-economy regions
FR103	Yvelines	12.9	Cities
FR104	Essonne	12.8	Cities
FR105	Hauts-de-Seine	3.8	Cities
FR106	Seine-Saint-Denis	6.1	Cities
FR107	Val-de-Marne	6.9	Cities
FR108	Val-d'Oise	12.8	Cities
FR211	Ardennes	16.1	Mixed-economy regions
FR212	Aube	16.3	Mixed-economy regions
FR213	Marne	15.7	Mixed-economy regions
FR214	Haute-Marne	16.9	Mixed-economy regions
FR221	Aisne	15.8	Mixed-economy regions
FR222	Oise	14.9	Mixed-economy regions
FR223	Somme	15.5	Mixed-economy regions
FR231	Eure	15.7	Mixed-economy regions
FR232	Seine-Maritime	14.8	Mixed-economy regions
FR241	Cher	16.8	Mixed-economy regions
FR242	Eure-et-Loir	15.9	Mixed-economy regions
FR243	Indre	17.1	Mixed-economy regions
FR244	Indre-et-Loire	15.5	Mixed-economy regions
FR245	Loir-et-Cher	16.3	Mixed-economy regions
FR246	Loiret	15.5	Mixed-economy regions
FR251	Calvados	15.4	Mixed-economy regions
FR252	Manche	16.3	Mixed-economy regions
FR253	Orne	16.7	Mixed-economy regions
FR261	Côte-d'Or	15.5	Nature-quality regions
FR262	Nièvre	16.8	Mixed-economy regions
FR263	Saône-et-Loire	15.7	Mixed-economy regions
FR264	Yonne	16.3	Mixed-economy regions
FR301	Nord (FR)	13.4	Mixed-economy regions
FR302	Pas-de-Calais	14.9	Mixed-economy regions
FR411	Meurthe-et-Moselle	14.9	Mixed-economy regions
FR412	Meuse	16.3	Mixed-economy regions
FR413	Moselle	14.4	Mixed-economy regions

FR414	Vosges	15.8	Nature-quality regions
FR421	Bas-Rhin	13.7	Mixed-economy regions
FR422	Haut-Rhin	14.5	Mixed-economy regions
FR431	Doubs	15.3	Mixed-economy regions
FR432	Jura	15.6	Manufacturing regions
FR433	Haute-Saône	16.2	Nature-quality regions
FR434	Territoire de Belfort	14.3	Mixed-economy regions
FR511	Loire-Atlantique	14.9	Mixed-economy regions
FR512	Maine-et-Loire	16.2	Mixed-economy regions
FR513	Mayenne	16.8	Mixed-economy regions
FR514	Sarthe	16.0	Mixed-economy regions
FR515	Vendee	16.3	Mixed-economy regions
FR521	Côtes-d'Armor	16.7	Mixed-economy regions
FR522	Finistère	15.9	Mixed-economy regions
FR523	Ille-et-Vilaine	15.2	Mixed-economy regions
FR524	Morbihan	16.2	Mixed-economy regions
FR531	Charente	16.1	Mixed-economy regions
FR532	Charente-Maritime	15.9	Mixed-economy regions
FR533	Deux-Sèvres	16.5	Mixed-economy regions
FR534	Vienne	15.9	Mixed-economy regions
FR611	Dordogne	16.3	Nature-quality regions
FR612	Gironde	14.0	Mixed-economy regions
FR613	Landes	16.0	Nature-quality regions
FR614	Lot-et-Garonne	16.2	Mixed-economy regions
FR615	Pyrenees-Atlantiques	15.3	Nature-quality regions
FR621	Ariège	16.0	Nature-quality regions
FR622	Aveyron	16.3	Nature-quality regions
FR623	Haute-Garonne	13.8	Mixed-economy regions
FR624	Gers	16.7	Mixed-economy regions
FR625	Lot	16.5	Nature-quality regions
FR626	Hautes-Pyrenees	15.6	Nature-quality regions
FR627	Tarn	15.9	Mixed-economy regions
FR628	Tarn-et-Garonne	15.9	Mixed-economy regions
FR631	Corrèze	16.5	Nature-quality regions
FR632	Creuse	17.0	Nature-quality regions
FR633	Haute-Vienne	15.6	Mixed-economy regions
FR711	Ain	15.1	Mixed-economy regions
FR712	Ardèche	16.2	Nature-quality regions
FR713	Drôme	15.5	Nature-quality regions
FR714	Isère	14.5	Nature-quality regions
FR715	Loire	14.9	Mixed-economy regions
FR716	Rhône	12.7	Cities
FR717	Savoie	14.9	Nature-quality regions
FR718	Haute-Savoie	14.3	Nature-quality regions
FR721	Allier	16.3	Mixed-economy regions

FR722	Cantal	16.5	Nature-quality regions
FR723	Haute-Loire	16.2	Nature-quality regions
FR724	Puy-de-Dôme	14.8	Mixed-economy regions
FR811	Aude	15.8	Mixed-economy regions
FR812	Gard	15.0	Mixed-economy regions
FR813	Herault	14.5	Mixed-economy regions
FR814	Lozère	16.6	Nature-quality regions
FR815	Pyrenees-Orientales	15.4	Nature-quality regions
FR821	Alpes-de-Haute-Provence	16.0	Nature-quality regions
FR822	Hautes-Alpes	15.9	Nature-quality regions
FR823	Alpes-Maritimes	13.6	Nature-quality regions
FR824	Bouches-du-Rhône	13.0	Cities
FR825	Var	14.8	Nature-quality regions
FR826	Vaucluse	15.0	Mixed-economy regions
FR831	Corse-du-Sud	16.0	Nature-quality regions
FR832	Haute-Corse	16.1	Nature-quality regions
GR111	Evros	17.3	Peripheries
GR112	Xanthi	17.1	Peripheries
GR113	Rodopi	18.1	Peripheries
GR114	Drama	17.5	Peripheries
GR115	Kavala	17.0	Peripheries
GR121	Imathia	17.9	Peripheries
GR122	Thessaloniki	15.0	Peripheries
GR123	Kilkis	17.3	Peripheries
GR124	Pella	18.1	Peripheries
GR125	Pieria	16.9	Peripheries
GR126	Serres	17.9	Peripheries
GR127	Chalkidiki	16.9	Peripheries
GR131	Grevena	18.7	Peripheries
GR132	Kastoria	17.8	Peripheries
GR133	Kozani	17.0	Peripheries
GR134	Florina	17.7	Peripheries
GR141	Karditsa	18.1	Peripheries
GR142	Larisa	17.4	Peripheries
GR143	Magnisia	16.4	Peripheries
GR144	Trikala	17.5	Peripheries
GR211	Arta	18.0	Peripheries
GR212	Thesprotia	17.6	Peripheries
GR213	Ioannina	16.9	Peripheries
GR214	Preveza	17.9	Peripheries
GR221	Zakynthos	16.7	Peripheries
GR222	Kerkyra	16.6	Peripheries
GR223	Kefallinia	17.2	Peripheries
GR224	Lefkada	17.4	Peripheries
GR231	Aitoloakarnania	17.6	Peripheries

GR232	Achaia	16.3	Peripheries
GR233	Ileia	18.4	Remote Regions
GR241	Voiotia	16.5	Peripheries
GR242	Evvoia	16.4	Peripheries
GR243	Evrytania	17.7	Peripheries
GR244	Fthiotida	17.4	Peripheries
GR245	Fokida	17.0	Peripheries
GR251	Argolida	16.7	Peripheries
GR252	Arkadia	17.1	Peripheries
GR253	Korinthia	16.4	Peripheries
GR254	Lakonia	18.2	Peripheries
GR255	Messinia	17.4	Peripheries
GR300	Attiki	11.6	Cities
GR411	Lesvos	17.0	Peripheries
GR412	Samos	16.8	Peripheries
GR413	Chios	16.4	Peripheries
GR421	Dodekanisos	16.8	Peripheries
GR422	Kyklades	16.1	Peripheries
GR431	Irakleio	16.9	Peripheries
GR432	Lasithi	18.0	Peripheries
GR433	Rethymni	17.3	Peripheries
GR434	Chania	16.6	Peripheries
HU101	Budapest	8.7	Cities
HU102	Pest	14.4	Mixed-economy regions
HU211	Fejer	16.2	Manufacturing regions
HU212	Komarom-Esztergom	16.0	Manufacturing regions
HU213	Veszprem	16.1	Manufacturing regions
HU221	Gyor-Moson-Sopron	15.7	Manufacturing regions
HU222	Vas	16.4	Manufacturing regions
HU223	Zala	16.3	Manufacturing regions
HU231	Baranya	16.5	Peripheries
HU232	Somogy	16.7	Peripheries
HU233	Tolna	17.0	Peripheries
HU311	Borsod-Abaúj-Zemplen	16.1	Peripheries
HU312	Heves	16.3	Manufacturing regions
HU313	Nógrad	16.1	Manufacturing regions
HU321	Hajdú-Bihar	16.6	Peripheries
HU322	Jasz-Nagykun-Szolnok	16.8	Peripheries
HU323	Szabolcs-Szatmar-Bereg	16.9	Peripheries
HU331	Bacs-Kiskun	16.4	Peripheries
HU332	Bekes	17.5	Remote Regions
HU333	Csongrad	16.6	Peripheries
IE011	Border	15.8	Mixed-economy regions
IE012	Midland	16.3	Mixed-economy regions
IE013	West	15.7	Mixed-economy regions

IE021	Dublin	11.2	Cities
IE022	Mid-East	15.8	Mixed-economy regions
IE023	Mid-West	15.5	Mixed-economy regions
IE024	South-East (IE)	16.3	Mixed-economy regions
IE025	South-West (IE)	14.8	Mixed-economy regions
ITC11	Torino	13.3	Manufacturing regions
ITC12	Vercelli	15.4	Manufacturing regions
ITC13	Biella	15.5	Manufacturing regions
ITC14	Verbano-Cusio-Ossola	15.3	Nature-quality regions
ITC15	Novara	14.5	Manufacturing regions
ITC16	Cuneo	15.7	Manufacturing regions
ITC17	Asti	15.6	Manufacturing regions
ITC18	Alessandria	15.4	Manufacturing regions
ITC20	Valle d'Aosta/Vallee d'Aoste	15.2	Nature-quality regions
ITC31	Imperia	15.1	Nature-quality regions
ITC32	Savona	15.3	Nature-quality regions
ITC33	Genova	14.0	Nature-quality regions
ITC34	La Spezia	15.3	Nature-quality regions
ITC41	Varese	13.2	Manufacturing regions
ITC42	Como	14.1	Manufacturing regions
ITC43	Lecco	14.8	Manufacturing regions
ITC44	Sondrio	15.6	Nature-quality regions
ITC45	Milano	10.3	Cities
ITC46	Bergamo	14.4	Manufacturing regions
ITC47	Brescia	14.7	Manufacturing regions
ITC48	Pavia	15.1	Manufacturing regions
ITC49	Lodi	15.0	Mixed-economy regions
ITC4A	Cremona	15.8	Mixed-economy regions
ITC4B	Mantova	15.8	Mixed-economy regions
ITD10	Bolzano-Bozen	15.2	Nature-quality regions
ITD20	Trento	15.4	Nature-quality regions
ITD31	Verona	14.3	Manufacturing regions
ITD32	Vicenza	15.1	Manufacturing regions
ITD33	Belluno	16.3	Nature-quality regions
ITD34	Treviso	14.8	Manufacturing regions
ITD35	Venezia	13.9	Mixed-economy regions
ITD36	Padova	14.5	Manufacturing regions
ITD37	Rovigo	15.8	Manufacturing regions
ITD41	Pordenone	15.5	Manufacturing regions
ITD42	Udine	15.1	Nature-quality regions
ITD43	Gorizia	14.9	Manufacturing regions
ITD44	Trieste	13.9	Cities
ITD51	Piacenza	15.4	Manufacturing regions
ITD52	Parma	15.4	Manufacturing regions
ITD53	Reggio nell'Emilia	15.4	Manufacturing regions

ITD54	Modena	15.0	Manufacturing regions
ITD55	Bologna	14.2	Manufacturing regions
ITD56	Ferrara	15.6	Mixed-economy regions
ITD57	Ravenna	15.5	Mixed-economy regions
ITD58	Forlì-Cesena	15.4	Manufacturing regions
ITD59	Rimini	14.6	Mixed-economy regions
ITE11	Massa-Carrara	15.1	Nature-quality regions
ITE12	Lucca	14.8	Nature-quality regions
ITE13	Pistoia	15.0	Nature-quality regions
ITE14	Firenze	14.2	Nature-quality regions
ITE15	Prato	14.5	Manufacturing regions
ITE16	Livorno	14.9	Nature-quality regions
ITE17	Pisa	15.0	Manufacturing regions
ITE18	Arezzo	15.8	Manufacturing regions
ITE19	Siena	15.8	Nature-quality regions
ITE1A	Grosseto	16.0	Nature-quality regions
ITE21	Perugia	15.3	Nature-quality regions
ITE22	Terni	15.6	Nature-quality regions
ITE31	Pesaro e Urbino	15.8	Manufacturing regions
ITE32	Ancona	15.4	Manufacturing regions
ITE33	Macerata	16.1	Manufacturing regions
ITE34	Ascoli Piceno	16.0	Manufacturing regions
ITE41	Viterbo	15.3	Mixed-economy regions
ITE42	Rieti	15.6	Nature-quality regions
ITE43	Roma	11.8	Cities
ITE44	Latina	15.0	Mixed-economy regions
ITE45	Frosinone	15.4	Manufacturing regions
ITF11	L'Aquila	15.6	Nature-quality regions
ITF12	Teramo	16.1	Manufacturing regions
ITF13	Pescara	15.1	Mixed-economy regions
ITF14	Chieti	15.9	Manufacturing regions
ITF21	Isernia	16.0	Nature-quality regions
ITF22	Campobasso	16.2	Manufacturing regions
ITF31	Caserta	14.7	Mixed-economy regions
ITF32	Benevento	15.8	Manufacturing regions
ITF33	Napoli	10.8	Cities
ITF34	Avellino	15.4	Manufacturing regions
ITF35	Salerno	14.8	Nature-quality regions
ITF41	Foggia	16.3	Peripheries
ITF42	Bari	14.9	Mixed-economy regions
ITF43	Taranto	16.3	Peripheries
ITF44	Brindisi	16.2	Peripheries
ITF45	Lecce	16.0	Peripheries
ITF51	Potenza	16.2	Peripheries
ITF52	Matera	16.4	Peripheries

ITF61	Cosenza	15.9	Peripheries
ITF62	Crotone	16.9	Peripheries
ITF63	Catanzaro	16.0	Peripheries
ITF64	Vibo Valentia	16.4	Peripheries
ITF65	Reggio di Calabria	16.0	Peripheries
ITG11	Trapani	16.3	Peripheries
ITG12	Palermo	15.1	Peripheries
ITG13	Messina	15.7	Peripheries
ITG14	Agrigento	16.8	Peripheries
ITG15	Caltanissetta	16.9	Peripheries
ITG16	Enna	16.8	Peripheries
ITG17	Catania	15.1	Peripheries
ITG18	Ragusa	16.8	Peripheries
ITG19	Siracusa	16.0	Peripheries
ITG25	Sassari	16.1	Peripheries
ITG26	Nuoro	16.7	Peripheries
ITG27	Cagliari	15.5	Peripheries
ITG28	Oristano	17.4	Peripheries
ITG29	Olbia-Tempio	15.4	Nature-quality regions
ITG2A	Ogliastra	16.9	Peripheries
ITG2B	Medio Campidano	17.2	Peripheries
ITG2C	Carbonia-Iglesias	16.9	Peripheries
LT001	Alytaus apskritis	17.4	Remote Regions
LT002	Kauno apskritis	16.5	Remote Regions
LT003	Klaipedos apskritis	17.0	Remote Regions
LT004	Marijampoles apskritis	18.1	Remote Regions
LT005	Panevezio apskritis	17.7	Remote Regions
LT006	Siauliu apskritis	17.9	Remote Regions
LT007	Taurages apskritis	18.8	Remote Regions
LT008	Telsiu apskritis)	17.9	Remote Regions
LT009	Utenos apskritis	17.4	Remote Regions
LT00A	Vilniaus apskritis	14.6	Peripheries
LU000	Luxembourg	13.1	Cities
LV003	Kurzeme	17.3	Remote Regions
LV005	Latgale	17.4	Peripheries
LV006	Riga	11.5	Cities
LV007	Pieriga	15.6	Peripheries
LV008	Vidzeme	17.4	Peripheries
LV009	Zemgale	17.0	Peripheries
MT001	Malta	13.6	Cities
MT002	Gozo and Comino	14.9	Peripheries
NL111	Oost-Groningen	16.0	Mixed-economy regions
NL112	Delfzijl en omgeving	15.9	Mixed-economy regions
NL113	Overig Groningen	14.3	Mixed-economy regions
NL121	Noord-Friesland	14.9	Mixed-economy regions

NL122	Zuidwest-Friesland	15.4	Mixed-economy regions
NL123	Zuidoost-Friesland	15.9	Mixed-economy regions
NL131	Noord-Drenthe	15.5	Mixed-economy regions
NL132	Zuidoost-Drenthe	15.9	Mixed-economy regions
NL133	Zuidwest-Drenthe	15.6	Mixed-economy regions
NL211	Noord-Overijssel	14.8	Mixed-economy regions
NL212	Zuidwest-Overijssel	15.1	Mixed-economy regions
NL213	Twente	14.7	Mixed-economy regions
NL221	Veluwe	14.1	Mixed-economy regions
NL224	Zuidwest-Gelderland	15.0	Mixed-economy regions
NL225	Achterhoek	15.3	Mixed-economy regions
NL226	Arnhem/Nijmegen	13.4	Cities
NL230	Flevoland	14.5	Mixed-economy regions
NL310	Utrecht	12.4	Cities
NL321	Kop van Noord-Holland	14.5	Mixed-economy regions
NL322	Alkmaar en omgeving	13.5	Mixed-economy regions
NL323	IJmond	12.9	Manufacturing regions
NL324	Agglomeratie Haarlem	11.9	Cities
NL325	Zaanstreek	13.1	Cities
NL326	Groot-Amsterdam	11.0	Cities
NL327	Het Gooi en Vechtstreek	12.7	Cities
NL331	Agglomeratie Leiden en Bollenstreek	12.5	Cities
NL332	Agglomeratie 's-Gravenhage	10.6	Cities
NL333	Delft en Westland	14.4	Mixed-economy regions
NL334	Oost-Zuid-Holland	14.2	Mixed-economy regions
NL335	Groot-Rijnmond	12.4	Cities
NL336	Zuidoost-Zuid-Holland	13.7	Mixed-economy regions
NL341	Zeeuwsch-Vlaanderen	15.1	Mixed-economy regions
NL342	Overig Zeeland	14.9	Mixed-economy regions
NL411	West-Noord-Brabant	13.9	Mixed-economy regions
NL412	Midden-Noord-Brabant	14.0	Mixed-economy regions
NL413	Noordoost-Noord-Brabant	14.2	Mixed-economy regions
NL414	Zuidoost-Noord-Brabant	13.7	Mixed-economy regions
NL421	Noord-Limburg	14.7	Mixed-economy regions
NL422	Midden-Limburg	14.4	Mixed-economy regions
NL423	Zuid-Limburg	13.1	Mixed-economy regions
PL113	Miasto Lódz	12.1	Cities
PL114	Lódzki	16.2	Manufacturing regions
PL115	Piotrkowski	16.4	Peripheries
PL116	Sieradzki	17.5	Peripheries
PL117	Skierniewicki	16.9	Peripheries
PL121	Ciechanowsko-plocki	16.8	Peripheries
PL122	Ostrolecko-siedlecki	17.7	Peripheries
PL127	Miasto Warszawa	8.7	Cities
PL128	Radomski	16.7	Peripheries

PL129	Warszawski-wschodni	15.6	Mixed-economy regions
PL12A	Warszawski-zachodni	14.9	Mixed-economy regions
PL213	Miasto Kraków	11.8	Cities
PL214	Krakowski	16.3	Peripheries
PL215	Nowosadecki	16.4	Peripheries
PL216	Oswiecimski	16.0	Manufacturing regions
PL217	Tarnowski	16.8	Peripheries
PL224	Czestochowski	15.9	Manufacturing regions
PL225	Bielski	15.5	Manufacturing regions
PL227	Rybnicki	15.1	Manufacturing regions
PL228	Bytomski	15.0	Manufacturing regions
PL229	Gliwicki	14.7	Manufacturing regions
PL22A	Katowicki	12.5	Cities
PL22B	Sosnowiecki	14.9	Manufacturing regions
PL22C	Tyski	15.2	Manufacturing regions
PL311	Bialski	17.7	Remote Regions
PL312	Chelmsko-zamojski	18.0	Remote Regions
PL314	Lubelski	16.2	Peripheries
PL315	Pulawski	17.3	Peripheries
PL323	Krosnienski	16.6	Peripheries
PL324	Przemyski	16.9	Peripheries
PL325	Rzeszowski	15.9	Peripheries
PL326	Tarnobrzeski	16.4	Peripheries
PL331	Kielecki	16.0	Peripheries
PL332	Sandomiersko-jedrzejowski	17.6	Peripheries
PL343	Bialostocki	16.7	Peripheries
PL344	Lomzynski	18.3	Remote Regions
PL345	Suwalski	18.4	Remote Regions
PL411	Pilski	17.0	Peripheries
PL414	Koninski	17.0	Peripheries
PL415	Miasto Poznan	11.4	Cities
PL416	Kaliski	17.1	Peripheries
PL417	Leszczynski	16.9	Peripheries
PL418	Poznanski	15.9	Mixed-economy regions
PL422	Koszalinski	16.1	Peripheries
PL423	Stargardzki	16.2	Peripheries
PL424	Miasto Szczecin	12.7	Cities
PL425	Szczecinski	15.7	Manufacturing regions
PL431	Gorzowski	15.9	Peripheries
PL432	Zielonogórski	15.7	Peripheries
PL514	Miasto Wroclaw	11.5	Cities
PL515	Jeleniogórski	15.8	Manufacturing regions
PL516	Legnicko-Glogowski	15.5	Manufacturing regions
PL517	Walbrzyski	15.8	Manufacturing regions
PL518	Wroclawski	16.3	Peripheries

PL521	Nyski	16.6	Peripheries
PL522	Opolski	16.0	Manufacturing regions
PL613	Bydgosko-Torunski	15.3	Peripheries
PL614	Grudziadzki	17.2	Peripheries
PL615	Wloclawski	16.9	Peripheries
PL621	Elblaski	16.7	Peripheries
PL622	Olsztynski	16.5	Peripheries
PL623	Elcki	17.5	Peripheries
PL631	Slupski	16.4	Peripheries
PL633	Trojmiejski	12.3	Cities
PL634	Gdanski	16.1	Mixed-economy regions
PL635	Starogardzki	16.3	Peripheries
PT111	Minho-Lima	16.4	Peripheries
PT112	Cavado	15.6	Peripheries
PT113	Ave	15.6	Manufacturing regions
PT114	Grande Porto	12.3	Cities
PT115	Tâmega	16.1	Peripheries
PT116	Entre Douro e Vouga	16.0	Manufacturing regions
PT117	Douro	17.0	Peripheries
PT118	Alto Tras-os-Montes	17.7	Peripheries
PT150	Algarve	15.9	Nature-quality regions
PT161	Baixo Vouga	16.0	Peripheries
PT162	Baixo Mondego	16.1	Peripheries
PT163	Pinhal Litoral	16.2	Peripheries
PT164	Pinhal Interior Norte	17.4	Peripheries
PT165	Dão-Lafões	16.8	Peripheries
PT166	Pinhal Interior Sul	18.4	Peripheries
PT167	Serra da Estrela	17.4	Peripheries
PT168	Beira Interior Norte	17.8	Peripheries
PT169	Beira Interior Sul	18.2	Peripheries
PT16A	Cova da Beira	17.7	Peripheries
PT16B	Oeste	16.3	Peripheries
PT16C	Medio Tejo	16.4	Peripheries
PT171	Grande Lisboa	11.6	Cities
PT172	Península de Setúbal	14.4	Mixed-economy regions
PT181	Alentejo Litoral	17.1	Peripheries
PT182	Alto Alentejo	17.4	Peripheries
PT183	Alentejo Central	17.0	Peripheries
PT184	Baixo Alentejo	17.6	Peripheries
PT185	Lezíria do Tejo	16.1	Peripheries
RO111	Bihor	17.5	Peripheries
RO112	Bistrita-Nasaud	18.7	Remote Regions
RO113	Cluj	16.5	Peripheries
RO114	Maramures	18.1	Remote Regions
RO115	Satu Mare	18.6	Remote Regions

RO116	Salaj	18.2	Remote Regions
RO121	Alba	18.2	Remote Regions
RO122	Brasov	17.1	Remote Regions
RO123	Covasna	18.8	Remote Regions
RO124	Harghita	18.4	Remote Regions
RO125	Mures	17.8	Remote Regions
RO126	Sibiu	17.6	Remote Regions
RO211	Bacau	18.6	Remote Regions
RO212	Botosani	19.8	Remote Regions
RO213	Iasi	18.3	Remote Regions
RO214	Neamt	19.4	Remote Regions
RO215	Suceava	19.1	Remote Regions
RO216	Vaslui	20.2	Remote Regions
RO221	Braila	20.2	Remote Regions
RO222	Buzau	18.4	Remote Regions
RO223	Constanta	18.0	Remote Regions
RO224	Galati	18.7	Remote Regions
RO225	Tulcea	19.7	Remote Regions
RO226	Vrancea	19.0	Remote Regions
RO311	Arges	17.5	Remote Regions
RO312	Calarasi	20.5	Remote Regions
RO313	Dâmbovita	17.7	Remote Regions
RO314	Giurgiu	19.3	Remote Regions
RO315	Ialomita	20.3	Remote Regions
RO316	Prahova	16.8	Remote Regions
RO317	Teleorman	19.5	Remote Regions
RO321	Bucuresti	9.7	Cities
RO322	Ilfov	14.6	Mixed-economy regions
RO411	Dolj	18.9	Remote Regions
RO412	Gorj	18.2	Remote Regions
RO413	Mehedinti	19.3	Remote Regions
RO414	Olt	19.8	Remote Regions
RO415	Vâlcea	18.5	Remote Regions
RO421	Arad	17.4	Peripheries
RO422	Caras-Severin	18.0	Remote Regions
RO423	Hunedoara	17.7	Remote Regions
RO424	Timis	16.7	Peripheries
SE110	Stockholms län	12.9	Cities
SE121	Uppsala län	14.8	Nature-quality regions
SE122	Södermanlands län	15.5	Nature-quality regions
SE123	Östergötlands län	15.2	Nature-quality regions
SE124	Örebro län	15.7	Nature-quality regions
SE125	Västmanlands län	15.5	Nature-quality regions
SE211	Jönköpings län	15.4	Nature-quality regions
SE212	Kronobergs län	15.3	Nature-quality regions

SE213	Kalmar län	16.0	Nature-quality regions
SE214	Gotlands län	15.9	Nature-quality regions
SE221	Blekinge län	15.7	Nature-quality regions
SE224	Skåne län	14.0	Mixed-economy regions
SE231	Hallands län	15.6	Nature-quality regions
SE232	Västra Götalands län	13.8	Nature-quality regions
SE311	Värmlands län	15.5	Nature-quality regions
SE312	Dalarnas län	16.0	Nature-quality regions
SE313	Gävleborgs län	16.4	Nature-quality regions
SE321	Västernorrlands län	16.7	Peripheries
SE322	Jämtlands län	16.9	Peripheries
SE331	Västerbottens län	17.2	Peripheries
SE332	Norrbottens län	18.1	Peripheries
SI011	Pomurska	16.6	Manufacturing regions
SI012	Podravska	15.5	Manufacturing regions
SI013	Koroska	16.7	Manufacturing regions
SI014	Savinjska	16.1	Manufacturing regions
SI015	Zasavska	16.2	Manufacturing regions
SI016	Spodnjeposavska	16.2	Manufacturing regions
SI017	Jugovzhodna Slovenija	16.5	Manufacturing regions
SI018	Notranjsko-kraska	16.6	Manufacturing regions
SI021	Osrednjeslovenska	14.1	Nature-quality regions
SI022	Gorenjska	15.5	Manufacturing regions
SI023	Goriska	15.9	Manufacturing regions
SI024	Obalno-kraska	15.1	Nature-quality regions
SK010	Bratislavský kraj	12.9	Manufacturing regions
SK021	Trnavský kraj	15.0	Mixed-economy regions
SK022	Trenciansky kraj	15.8	Manufacturing regions
SK023	Nitriansky kraj	15.6	Peripheries
SK031	Zilinský kraj	15.4	Peripheries
SK032	Banskobystrický kraj	15.7	Peripheries
SK041	Presovský kraj	15.7	Peripheries
SK042	Kosický kraj	15.2	Peripheries
UKC11	Hartlepool, Stockton-on-Tees	13.3	Mixed-economy regions
UKC12	South Teesside	13.6	Mixed-economy regions
UKC13	Darlington	14.6	Mixed-economy regions
UKC14	Durham CC	15.0	Mixed-economy regions
UKC21	Northumberland	15.6	Nature-quality regions
UKC22	Tyneside	11.4	Cities
UKC23	Sunderland	11.8	Cities
UKD11	West Cumbria	15.9	Nature-quality regions
UKD12	East Cumbria	15.8	Nature-quality regions
UKD21	Halton, Warrington	12.2	Cities
UKD22	Cheshire CC	14.3	Mixed-economy regions
UKD31	Greater Manchester South	9.2	Cities

UKD32	Greater Manchester North	11.9	Cities
UKD41	Blackburn with Darwen	13.4	Cities
UKD42	Blackpool	10.5	Cities
UKD43	Lancashire CC	14.1	Mixed-economy regions
UKD51	East Merseyside	12.3	Cities
UKD52	Liverpool	8.6	Cities
UKD53	Sefton	12.6	Cities
UKD54	Wirral	12.3	Cities
UKE11	Kingston upon Hull, City of	9.9	Cities
UKE12	East Riding of Yorkshire	16.1	Mixed-economy regions
UKE13	North, North East Lincolnshire	15.0	Mixed-economy regions
UKE21	York	13.8	Mixed-economy regions
UKE22	North Yorkshire CC	15.2	Mixed-economy regions
UKE31	Barnsley, Doncaster, Rotherham	13.9	Mixed-economy regions
UKE32	Sheffield	12.1	Cities
UKE41	Bradford	12.8	Cities
UKE42	Leeds	11.8	Cities
UKE43	Calderdale, Kirklees, Wakefield	13.2	Cities
UKF11	Derby	9.6	Cities
UKF12	East Derbyshire	14.2	Mixed-economy regions
UKF13	South, West Derbyshire	14.7	Mixed-economy regions
UKF14	Nottingham	8.1	Cities
UKF15	North Nottinghamshire	14.9	Mixed-economy regions
UKF16	South Nottinghamshire	14.4	Mixed-economy regions
UKF21	Leicester	8.7	Cities
UKF22	Leicestershire CC, Rutland	14.6	Mixed-economy regions
UKF23	Northamptonshire	14.7	Mixed-economy regions
UKF30	Lincolnshire	16.0	Mixed-economy regions
UKG11	Herefordshire, County of	16.3	Mixed-economy regions
UKG12	Worcestershire	14.9	Mixed-economy regions
UKG13	Warwickshire	14.4	Mixed-economy regions
UKG21	Telford, Wrekin	14.2	Mixed-economy regions
UKG22	Shropshire CC	15.7	Mixed-economy regions
UKG23	Stoke-on-Trent	10.6	Cities
UKG24	Staffordshire CC	14.6	Mixed-economy regions
UKG31	Birmingham	8.1	Cities
UKG32	Solihull	12.4	Cities
UKG33	Coventry	9.7	Cities
UKG34	Dudley, Sandwell	9.0	Cities
UKG35	Walsall, Wolverhampton	10.0	Cities
UKH11	Peterborough	14.2	Mixed-economy regions
UKH12	Cambridgeshire CC	14.8	Mixed-economy regions
UKH13	Norfolk	15.3	Mixed-economy regions
UKH14	Suffolk	15.3	Mixed-economy regions
UKH21	Luton	8.2	Cities

UKH22	Bedfordshire CC	14.5	Mixed-economy regions
UKH23	Hertfordshire	13.2	Cities
UKH31	Southend-on-Sea	10.6	Cities
UKH32	Thurrock	13.0	Cities
UKH33	Essex CC	14.0	Mixed-economy regions
UKI11	Inner London - West	2.4	Cities
UKI12	Inner London - East	3.5	Cities
UKI21	Outer London - East, North East	8.7	Cities
UKI22	Outer London - South	8.7	Cities
UKI23	Outer London - West, North West	7.3	Cities
UKJ11	Berkshire	12.7	Cities
UKJ12	Milton Keynes	13.0	Cities
UKJ13	Buckinghamshire CC	14.1	Mixed-economy regions
UKJ14	Oxfordshire	14.4	Mixed-economy regions
UKJ21	Brighton and Hove	10.7	Cities
UKJ22	East Sussex CC	14.9	Mixed-economy regions
UKJ23	Surrey	12.4	Cities
UKJ24	West Sussex	14.2	Mixed-economy regions
UKJ31	Portsmouth	9.8	Cities
UKJ32	Southampton	8.4	Cities
UKJ33	Hampshire CC	13.8	Mixed-economy regions
UKJ34	Isle of Wight	14.9	Mixed-economy regions
UKJ41	Medway	13.0	Cities
UKJ42	Kent CC	13.9	Mixed-economy regions
UKK11	Bristol, City of	9.6	Cities
UKK12	Bath and NE Somerset, N.Somerset and S.Gloucestershire	14.1	Mixed-economy regions
UKK13	Gloucestershire	14.9	Mixed-economy regions
UKK14	Swindon	13.5	Mixed-economy regions
UKK15	Wiltshire CC	15.2	Mixed-economy regions
UKK21	Bournemouth, Poole	10.7	Cities
UKK22	Dorset CC	15.9	Mixed-economy regions
UKK23	Somerset	15.5	Mixed-economy regions
UKK30	Cornwall, Isles of Scilly	16.0	Mixed-economy regions
UKK41	Plymouth	10.8	Cities
UKK42	Torbay	13.4	Nature-quality regions
UKK43	Devon CC	15.5	Mixed-economy regions
UKL11	Isle of Anglesey	15.9	Mixed-economy regions
UKL12	Gwynedd	15.7	Nature-quality regions
UKL13	Conwy, Denbighshire	15.5	Nature-quality regions
UKL14	SW. Wales	16.0	Mixed-economy regions
UKL15	Central Valleys	14.2	Nature-quality regions
UKL16	Gwent Valleys	14.2	Nature-quality regions
UKL17	Bridgend, Neath Port Talbot	14.6	Nature-quality regions
UKL18	Swansea	14.1	Mixed-economy regions
UKL21	Monmouthshire, Newport	14.7	Mixed-economy regions

UKL22	Cardiff, Vale of Glamorgan	13.0	Cities
UKL23	Flintshire, Wrexham	14.7	Mixed-economy regions
UKL24	Powys	16.2	Nature-quality regions
UKM21	Angus, Dundee City	15.7	Nature-quality regions
UKM22	Clackmannanshire, Fife	14.6	Mixed-economy regions
UKM23	East Lothian, Midlothian	15.5	Mixed-economy regions
UKM24	Scottish Borders	16.3	Nature-quality regions
UKM25	Edinburgh, City of	11.0	Cities
UKM26	Falkirk	14.0	Mixed-economy regions
UKM27	Perth&Kinross, Stirling	15.9	Nature-quality regions
UKM28	West Lothian	14.0	Mixed-economy regions
UKM31	E.Dunbartonshire, W. Dunbartonshire, Helensburgh&Lomond	14.3	Nature-quality regions
UKM32	Dumfries&Galloway	16.5	Nature-quality regions
UKM33	E.Ayrshire, N.Ayrshire mainland	15.1	Nature-quality regions
UKM34	Glasgow City	8.7	Cities
UKM35	Inverclyde, E.Renfrewshire, Renfrewshire	13.6	Mixed-economy regions
UKM36	North Lanarkshire	13.5	Mixed-economy regions
UKM37	South Ayrshire	15.3	Nature-quality regions
UKM38	South Lanarkshire	14.7	Nature-quality regions
UKM50	Aberdeen City, Aberdeenshire	14.9	Mixed-economy regions
UKM61	Caithness&Sutherland, Ross&Cromarty	17.2	Nature-quality regions
UKM62	Inverness&Nairn, Moray, Badenoch&Strathspey	16.3	Nature-quality regions
UKM63	Lochaber, Skye&Lochalsh, Arran&Cumbrae, Argyll&Bute	16.9	Nature-quality regions
UKM64	Eilean Siar (Western Isles)	16.3	Peripheries
UKM65	Orkney Islands	16.9	Peripheries
UKM66	Shetland Islands	17.2	Peripheries
UKN01	Belfast	10.4	Cities
UKN02	Outer Belfast	14.7	Mixed-economy regions
UKN03	East of Northern Ireland (UK)	15.4	Mixed-economy regions
UKN04	North of Northern Ireland (UK)	15.6	Mixed-economy regions
UKN05	West and South of Northern Ireland (UK)	16.0	Mixed-economy regions

Source: own elaboration

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Project Information

Welfare, Wealth and Work for Europe

A European research consortium is working on the analytical foundations for a socio-ecological transition

Abstract

Europe needs a change: The financial crisis has exposed long neglected deficiencies in the present growth path, most visibly in unemployment and public debt. At the same time Europe has to cope with new challenges ranging from globalisation and demographic shifts to new technologies and ecological challenges. Under the title of Welfare, Wealth and Work for Europe – WWWforEurope – a European research consortium is laying the analytical foundations for a new development strategy that enables a socio-ecological transition to high levels of employment, social inclusion, gender equity and environmental sustainability. The four year research project within the 7th Framework Programme funded by the European Commission started in April 2012. The consortium brings together researchers from 33 scientific institutions in 12 European countries and is coordinated by the Austrian Institute of Economic Research (WIFO). Project coordinator is Karl Aiginger, director of WIFO.

For details on WWWforEurope see: www.foreurope.eu

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