

Country fiche

Territorial patterns and relations in Romania

Green Europe

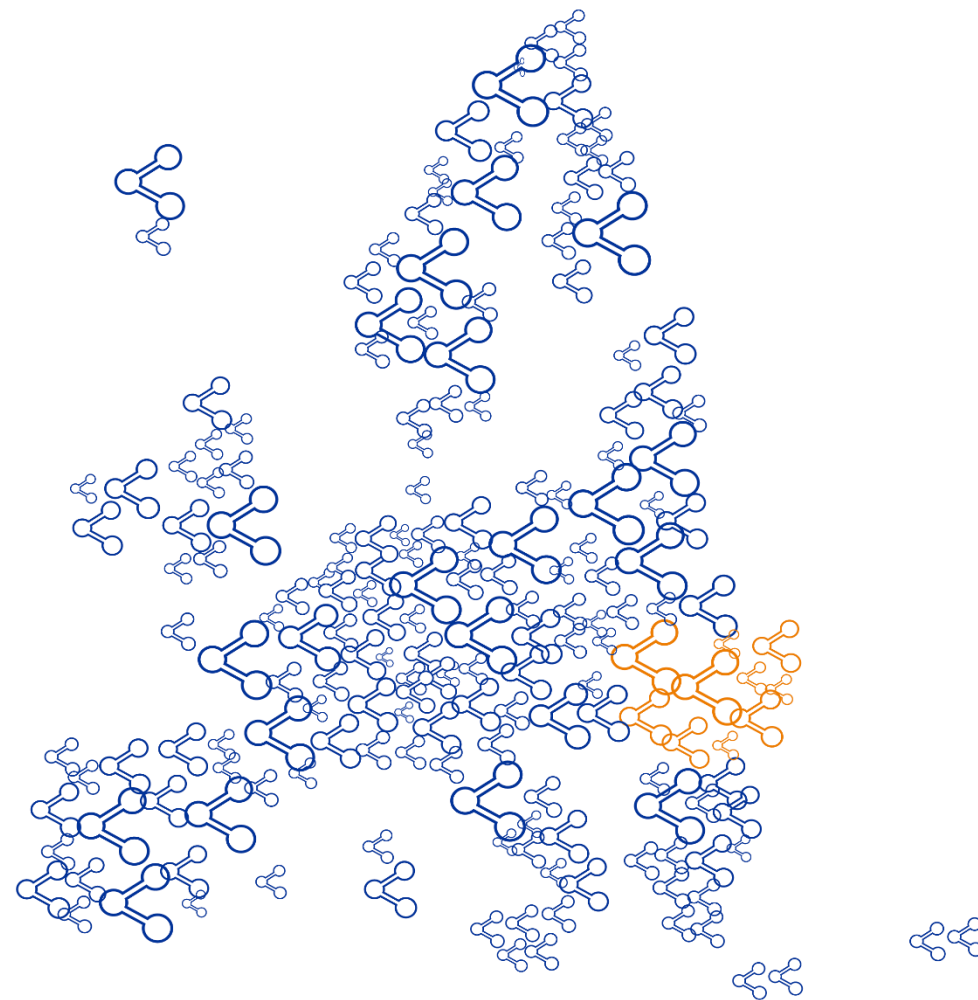
Just Europe

Productive Europe

Digital Europe

Interactive version:

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Introductory remarks

The content of the following overview is a summary of research results from different thematic applied research projects under the ESPON 2020 programme. As a consequence, most indicators and analyses are not based on most recent data but represent the data availability at the time when the research was undertaken. Only in a few cases, for some rather basic indicators that could easily be reproduced, more up-to-date information was used.

It is therefore important to note that this overview is mainly a collection of available findings with different time stamps and not an up-to-date, comprehensive analysis. Its main goal is to showcase the wide range of ESPON research and, by zooming-in on a specific country, to raise interest for the scientific results at a more national and even regional scale.



Green Europe

Development of artificial area in relation to population development (2000-2018)

Coverage of potential Green Infrastructure (2012)

Aggregated potential impact of climate change

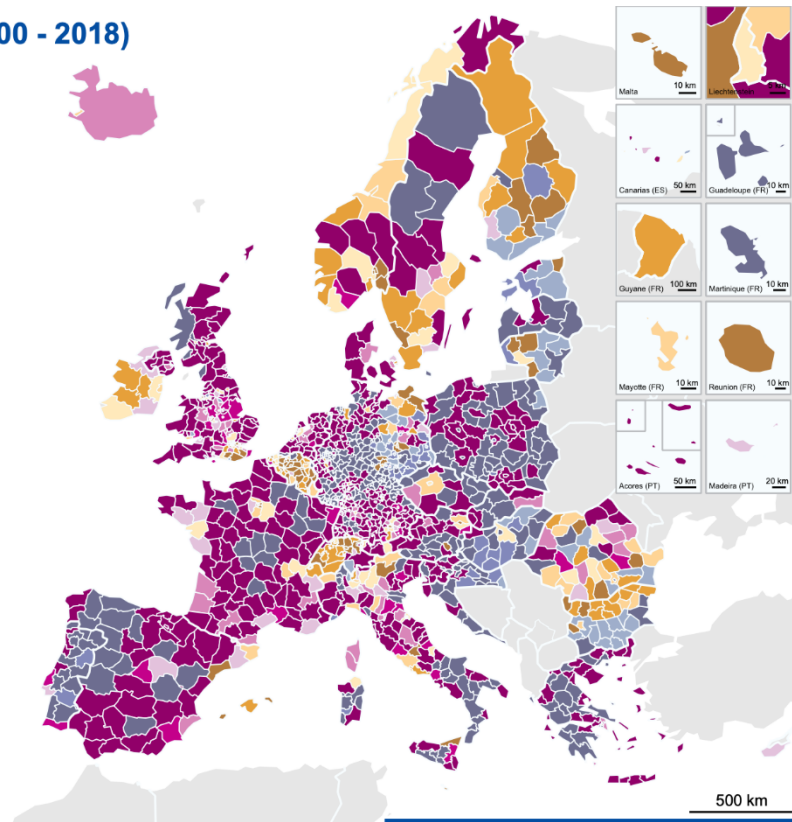
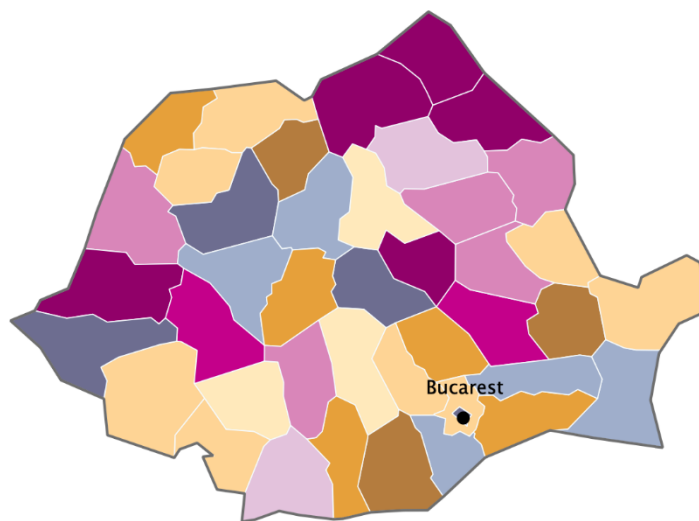
Proportion of protected areas (2017)

Accessibility potential by road (2030)

Accessibility potential by rail (2030)

Access to cities in Europe

Development of artificial area in relation to population development (2000 - 2018)






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200 km





500 km

Ration of percentage change of artificial area and population change (2000 - 2018)





with increase of artificial area by declining population

-  up to below -1
-  -1 up to below -0.5
-  -0.5 up to below 0

with increase of population higher than increase of artificial area

-  0 up to below 0.25
-  0.25 up to below 0.5
-  0.5 up to below 0.75
-  0.75 up to below 1

with increase of artificial area higher than increase of population

-  1 up to below 1.25
-  1.25 up to below 1.5
-  1.5 up to below 1.75
-  1.75 and more

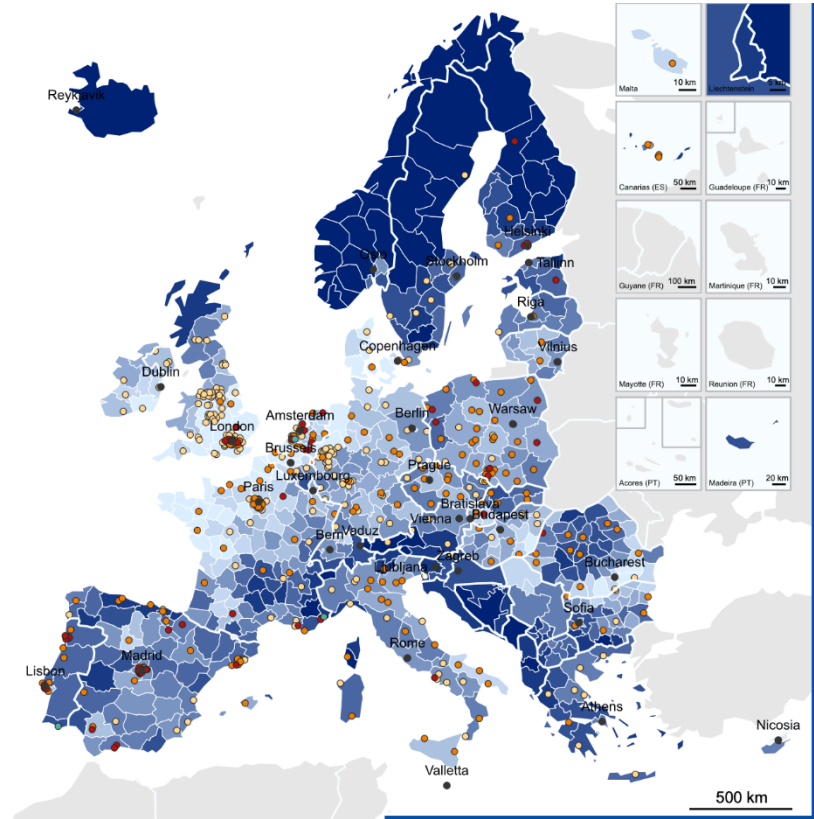
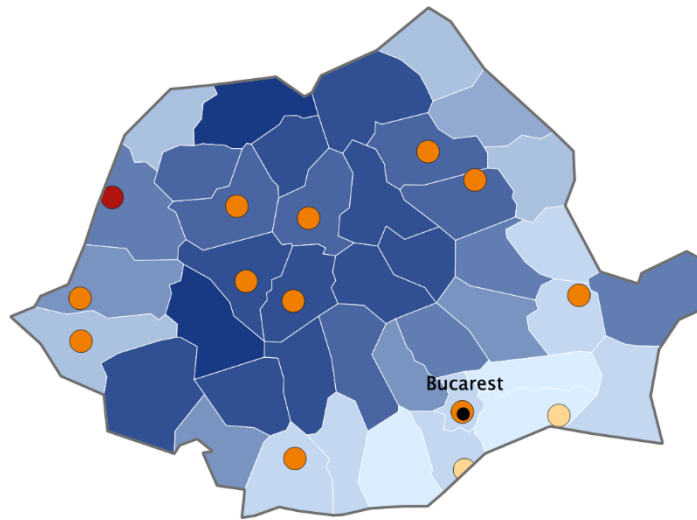
Source: ESPON SUPER, 2019
 Origin of data: Corine Landcover, 2019

Higher land take than population growth

The relationship between land take and population growth is to some extent an indicator of sprawling development, i.e. exceeding the assumed need of the existing population. With very few exceptions, the general trend across the continent is that of an increase of artificial area higher than the increase in population, particularly in France, northern Italy, Spain and the United Kingdom. Furthermore, even areas with declining population experience an increase in land take. Such is the case for Germany and most of eastern Europe, especially Hungary and Poland. The few exceptions where the increase in population is higher than the increase in artificial area are Belgium, north Bulgaria, Romania and Switzerland.

Romania presents a very heterogenous situation, with most counties in Moldova region (north-east) having higher land take than population growth, while most Wallachian counties (south) experience the opposite process. At the same time, the central counties of Transylvania, such as Cluj and those adjacent to it, as well as those in the rural south adjacent to Bucharest have an increase of artificial area while having a declining population. This can be explained twofold: for Cluj, the recent revival of its county seat of Cluj-Napoca prompted an effervescent real estate market in the region; for the counties around Bucharest, rural flight toward the capital has accelerated in recent decades, but so has suburban living.

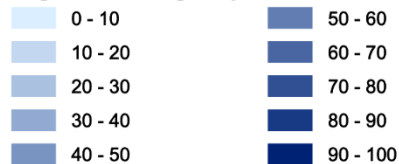
Coverage of potential Green Infrastructure (2012)



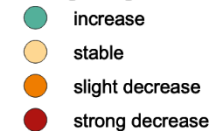


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 Regional level: NUTS 3 (2016)
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Regional coverage of potential GI network



Change of green areas within cities, 2006 - 2012*



Origin of data: NUTS2/3 (2013)

Definitions: CLC 2012, Copernicus HRL Impervious 2012, OSM 2017, Natura 2000 (EEA 2012), Emerald Network 2012, HNVF (EEA 2015), Ecosystem types map (ETC-SIA 2015)

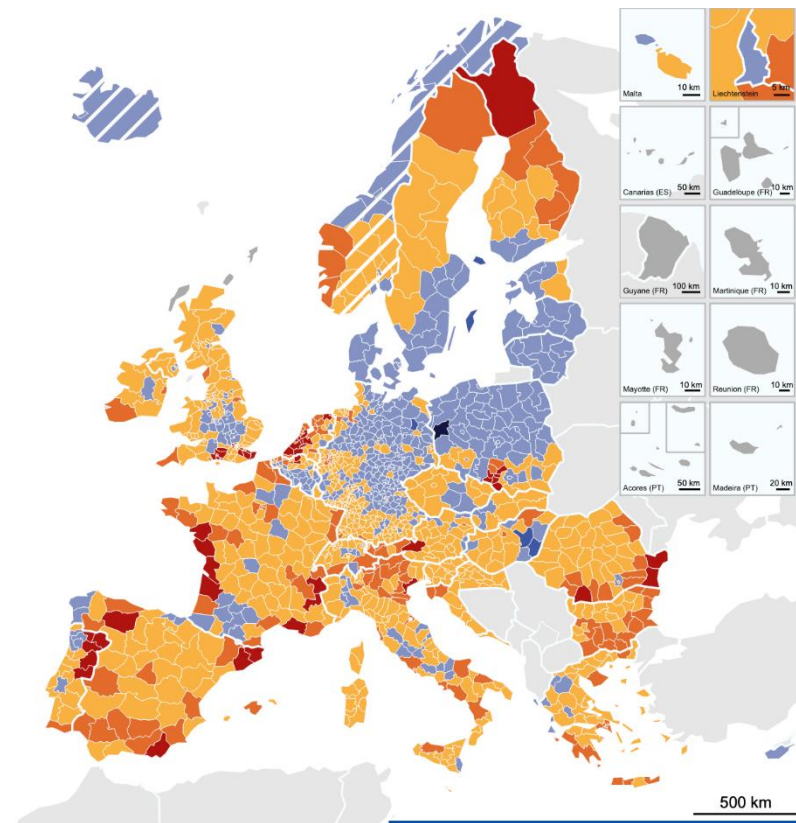
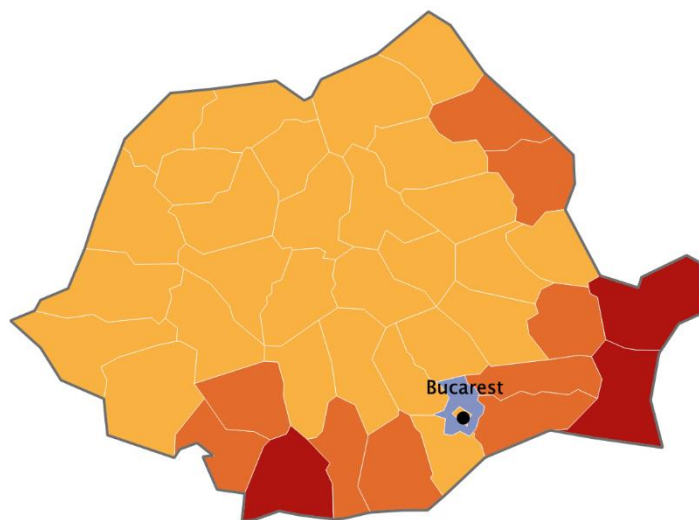
* Change values are recorded by comparing datasets from the Urban Atlas, version 2006 and 2012. Cities without symbols are not included in the two datasets

Green infrastructure coverage decreasing slightly

The potential of green infrastructure in cities is highlighted by both the Urban Agenda for the EU and the New Urban Agenda. At European level, the coverage of green areas at urban scale is generally decreasing. Europe is dominated by cities in which green areas have remained stable (central and north-western Europe) or have decreased (eastern and southern Europe). The decrease in southern Europe is mainly attributed to urbanisation, economic development and touristic purposes. Cities with higher green infrastructure are dominant in Austria, the Baltic countries, Czech Republic, Finland, Germany, Portugal and Sweden.

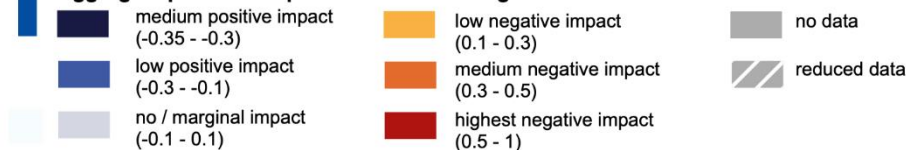
Regional coverage of potential green infrastructure network is highest in central and western Romania (between 60 and 80%) and especially in Maramureş County and Hunedoara County (between 80 and 100%). Overall, the coverage of green areas at city level is decreasing slightly. This tendency is particularly affecting central and western cities such as Timișoara, Arad, Cluj-Napoca, Alba Iulia and Târgu Mureș. The City of Oradea is especially exhibiting a strong decrease in green areas. At the opposite end, green infrastructure has remained stable in south-eastern cities such as Alexandria and Călărași, possibly due to slower urbanisation.

Aggregated potential impact of climate change



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Aggregate potential impact of Climate Change



Source : ESPON Database, ESPON Climate Update, plan – risk consult, 2014
 Origin of data : EEA, 2013, 2013 (CORIN 2006), 2014 (NATURA 2000), E-PTRT 2012, OSM2014, GISCO 2006, Eurostat 2006, 2011, 2013, 2014, JRC 2006, 2012 (ENSEMBLES), 2013a (Eurosoils), 2013b (LISFLOOD), 2013c, 2014, USGS 2011, DIVA 2004, ATSR 2014, Statistics Iceland 2011, Bundesamt für Statistik 2011, 2014, Amt für Statistik Liechtenstein 2014, 2011, HESTA, 2014.

The indicator puts together expected impact of climate change on environmental assets, economic activities, physical infrastructures, social cohesion and cultural sites. for more information, see ESPON CLIMATE final report

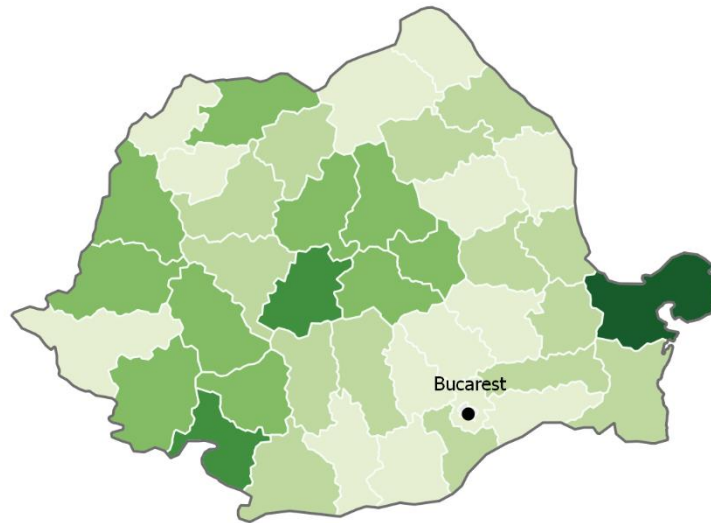
Note : regions with reduced data are missing information related to environmental sensitivity and exposure. For more details, see ESPON Climate Update Annex

High impact for coastal areas, low impact elsewhere

Anthropogenic activities affect two-thirds of the global land surface, which plays an important role in the climate system. These activities are also estimated to have caused 1°C of global warming above pre-industrial levels, a tendency which is likely to accelerate in the following decades if the current rate is to be maintained. As such, climate change is expected to impact most of the continent to a certain degree, with coastal areas being especially affected. Achieving sustainable development and reducing poverty are key components to limiting the risk of global warming, which require behaviour changes, investments in adaptation and mitigation, policy instruments and technological innovation.

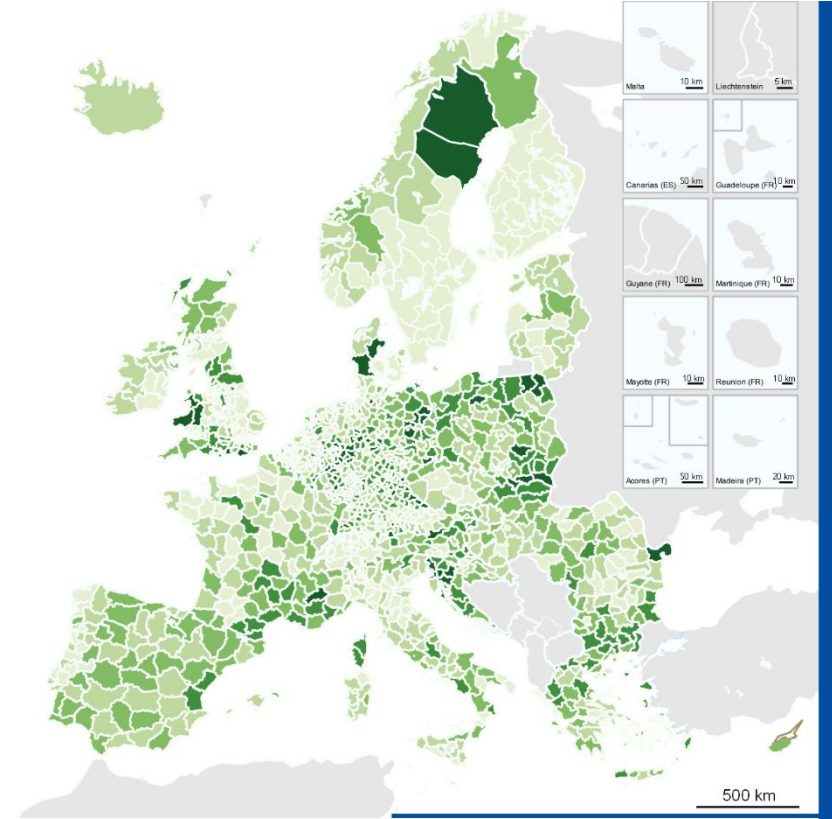
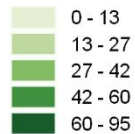
Climate change is overall estimated to have a low negative impact in Romania, except for coastal areas, the Danube Delta and several river banks, where a medium to high impact is expected. This will especially affect local communities that rely on agriculture and fishing. While there are generally no critical situations related to climate change for Romania, a certain vulnerability should still be highlighted in the context of land degradation, local and regional disturbance of air flow and changes in the cycle of meteorological phenomena, such as drought frequency, torrential rain, hot summers and mild winters.

Protected areas (2017)



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Share of protected area (% total NUTS3 area)



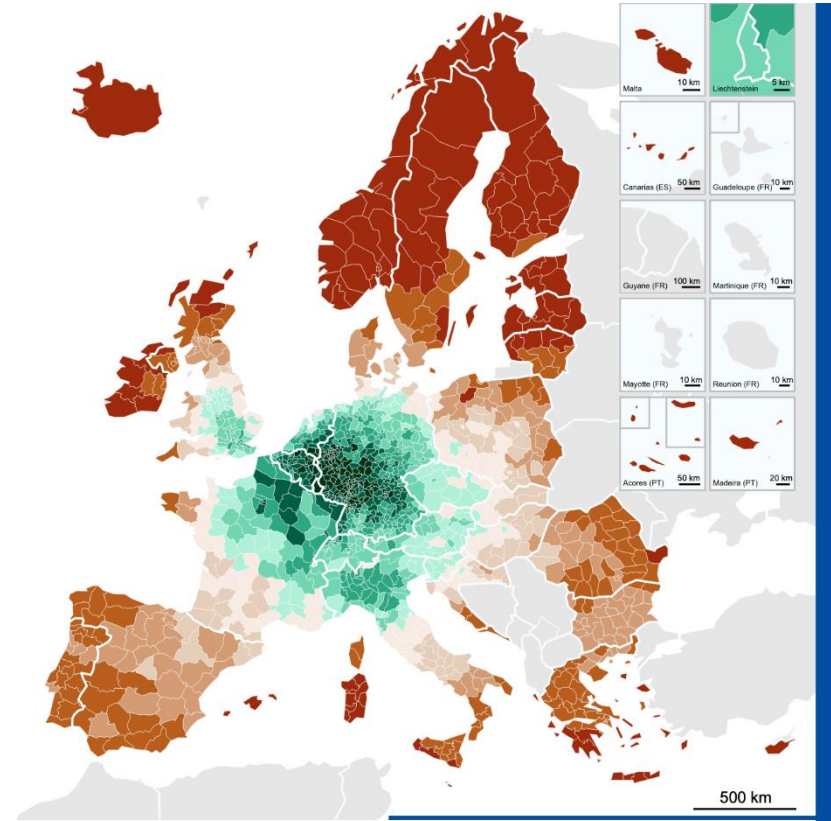
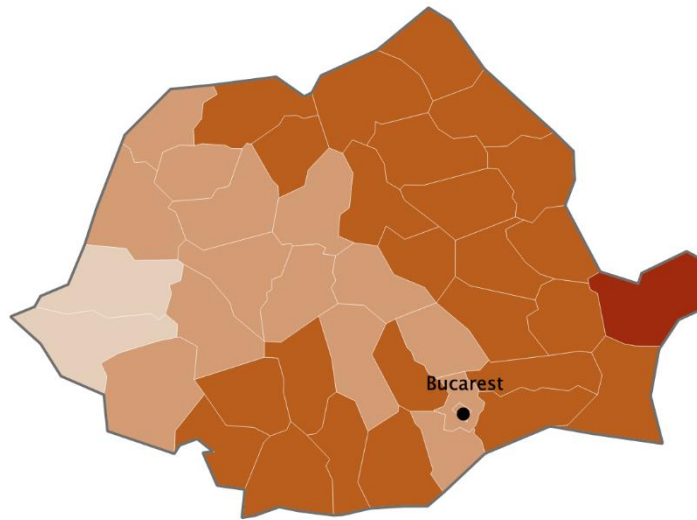
Source: ESPON project LinkPAs, Eurac Research 2017
 Origin of data: Calculation based on Natura 2000 sites (EEA 2017), nationally designated areas (EEA 2017) and NUTS3-regions (Eurostat/ GISCO 2013)

Higher percentage of protected areas in the west, except for the Danube Delta

The purpose of designating protected areas is to allow for management objectives linked to conservation of biodiversity. Protected areas are increasingly managed as networks rather than islands and integrated with social and economic aims such as the provision of ecosystem services for settlements and human well-being. Given the objective of coherence between conservation of biodiversity and socio-economic aspects, more and more networks of protected areas are being brought under the umbrella of sustainable development.

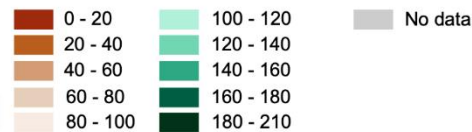
The surface of protected areas per county varies in Romania, with Tulcea and Mehedinți County standing out at national and even at European level due to the presence of the Danube Delta (in Tulcea case) and to the presence of very specific karst and a long segment of the Danube river (Mehedinți). Apart from that, southern and eastern counties display values well below average, partly justified by the predominantly agricultural uses and landscapes and mundane flora and fauna in these parts. Central and western counties on the other hand, which have mountainous or hilly terrain and contain either deciduous or evergreen forests that host many species of plants and animals, have larger surfaces of protected areas.

Accessibility potential by road (in 2030)



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Regional level: NUTS 3 (2013)
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Accessibility potential by road in 2030



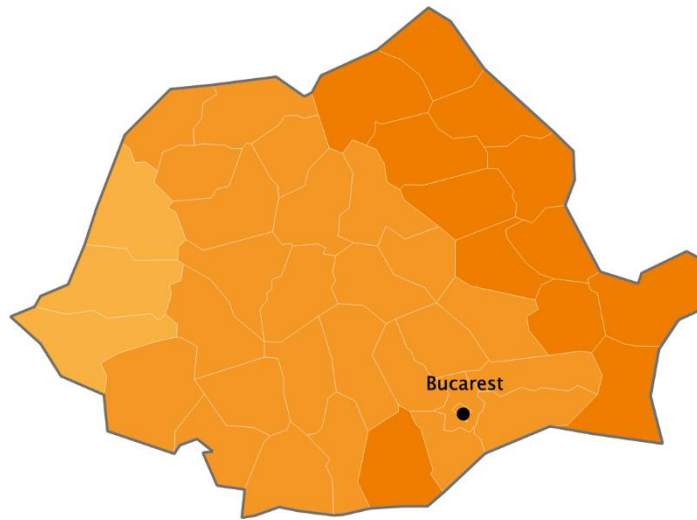
Source: Spiekermann and Wegener
Urban and Regional research (S&W),
ACC SCEN, 2017
Origin of data: S&W Accessibility Model, 2016
RRG GIS Database, 2014

Core-periphery pattern

At European level, accessibility potential by road highlights a concentric core-periphery pattern, with densely populated areas of Central Europe including Belgium, southern Netherlands, eastern France and western Germany having almost twice the European average. The next outer ring, consisting of Switzerland, western Austria, south-eastern England and northern Italy, displays accessibility potential by road high above the European average. Also above the average are central France, Germany and western Czech Republic, Slovenia and Austria. Road accessibility decreases toward the outer edges of the continent, especially in Scandinavia, eastern Turkey and the western Balkans.

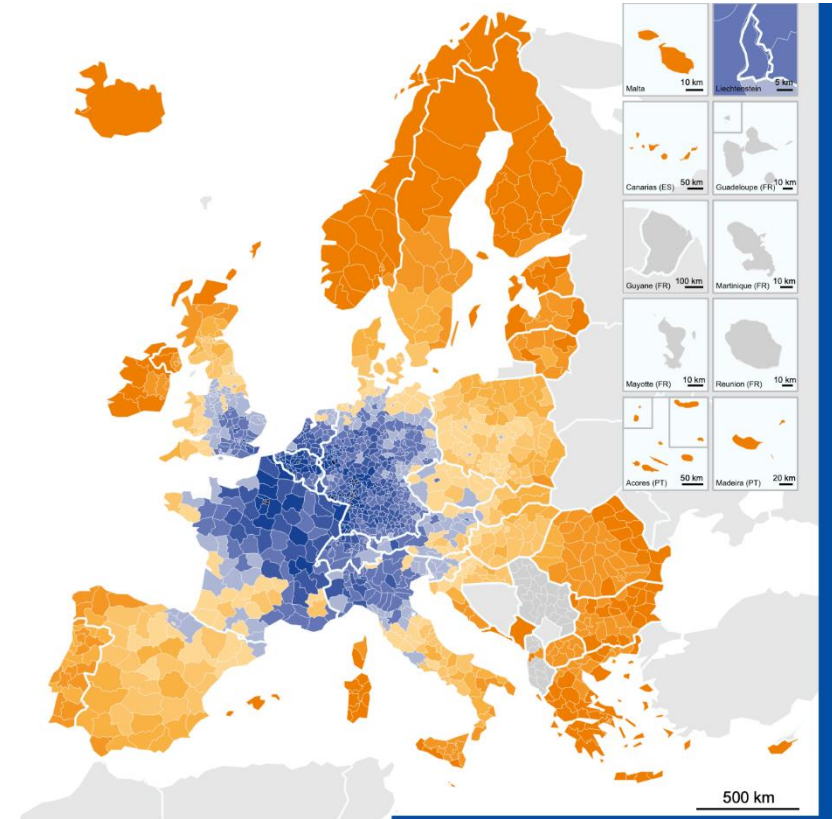
Romania occupies a peripheral position in the European road network, with below average values. Accessibility potential by road is higher in western Romania, with Arad and Timiș Counties around the European average, as they are also the main national connections to Central Europe. Road infrastructure density and quality decreases toward the provinces of Moldova and Dobrogea (eastern Romania) and parts of the rural south and south-west. Accessibility potential by road is hindered by decaying infrastructure and delays of investments in a network of high-speed roads. The lowest accessibility potential by road is found in Tulcea County, where transport is mostly waterborne.

Accessibility potential by rail (in 2030)



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 Regional level: NUTS 3 (2013)
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Accessibility potential by rail in 2030



Source: Spiekermann and Wegener Urban and Regional research (S&W), ACC SCEN, 2017
 Origin of data: S&W Accessibility Model, 2016 RRG GIS Database, 2014

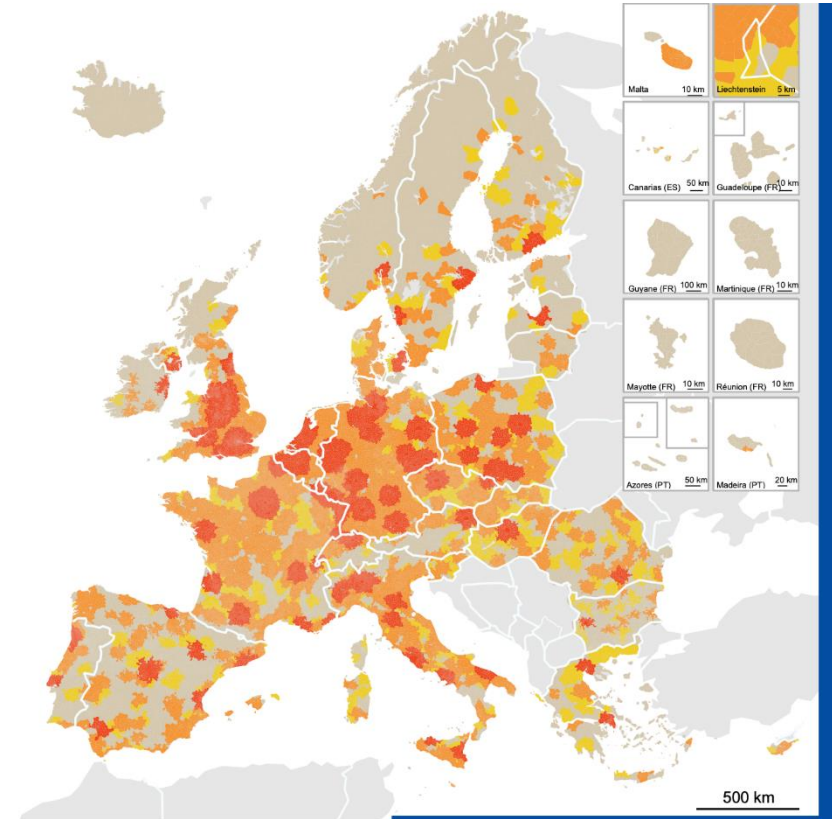
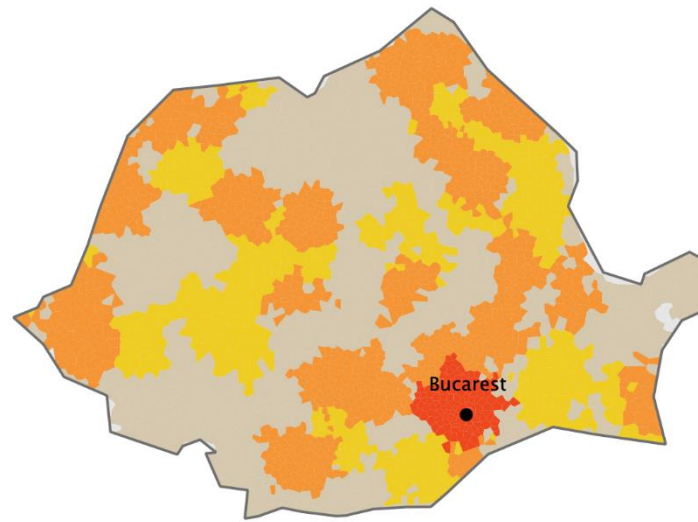
Accessibility potential is also presented for regions that at the moment don't have railways, but have plans on developing this kind of infrastructure. Calculations for the accessibility potential rely on an expected and realistic time table for the development of the TEN-T.

Similar core-periphery pattern but better accessibility

Accessibility potential by rail follows the same core-periphery pattern and paints a similar picture with that of the road scenario, however above average accessibility extends further from the core. Within the core areas, top accessibility is concentrated along high-speed rail links, but generally the rail network brings high accessibility to areas with average road accessibility. Belgium, the Netherlands, Luxembourg, Switzerland, England, France, Germany and northern Italy all have accessibility potential by rail above the European average. At the opposite end are Scandinavia, the Baltic States, eastern regions of Romania and Bulgaria, the western Balkans, Greece and Turkey.

In Romania, the rail accessibility potential records the same decrease from west to east that characterises road infrastructure, but the values are overall much lower. Similar to the road accessibility, the most well-connected counties are those to the west, namely Timiș, Arad and Bihor, with above average values. Most of northern, central and southern Romania has very poor accessibility potential by rail, with the values for Moldova and Dobrogea regions even lower. A continuous lack of maintenance and investment in rail networks and services, starting with the end of the communist regime, are the main reasons for poor performance and the country's peripheral position.

Access to cities in Europe



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 Regional level: Local administrative units (LAU)
 GISCO and UNIGE for administrative boundaries
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Municipalities within 45 minutes from Morphological Urban Areas (MUA)

Population of the corresponding Functional Urban Area (FUA)

- > 750,000 inh.
- > 100,000 inh.
- > 50,000 inh.
- No data available

200 km

500 km

Source: ESPON BRIDGES, 2019
 Origin of data: ESPON GEOSPECS, 2019

Good distribution of cities but uneven development

Contemporary shifts in urban development, economy and technology have shaped the way in which cities interact at local, regional, and sometimes national level, as well as blur the line between urban and rural fringes. It is no longer possible to think of cities or attempt to tackle issues at city-level, as modern-day metropolises influence much wider areas than their administrative borders, while small- and medium-sized towns have to cooperate in order to stay competitive, and policy-makers need valid comparative measures. MUAs and FUAs have emerged as a new means to analyse these complex urban systems.

Romania has a geographically well-distributed network of cities and towns, the major hindrance being the uneven development and hypertrophy of several large historical cities such as Cluj-Napoca, Timișoara or Iași, as well as Bucharest. Furthermore, due to over 40 years of communist central planning, the county seats have also generated a disproportionate interest and growth in relation to other towns. This is mirrored in the size of their corresponding MUAs/FUAs and population accessibility to them: Bucharest is the largest, followed by large traditional centres such as Craiova (south-west), Constanța (Black Sea port), Brașov (central Carpathians), Oradea (north-west), Ploiești (north of Bucharest), rounded up by other smaller county seats.



Just Europe

Population development (2014-2030)

Inner Peripheries according to poor access to services of general interest

Typology on structural demographic shrinkage (2001-2016)

Future demographic trends in shrinking rural regions (2017-2032)

Sparsely populated areas and areas at risk of becoming sparsely populated

Population change in Functional Urban Areas (2000-2017)

Inner peripherality by main driver

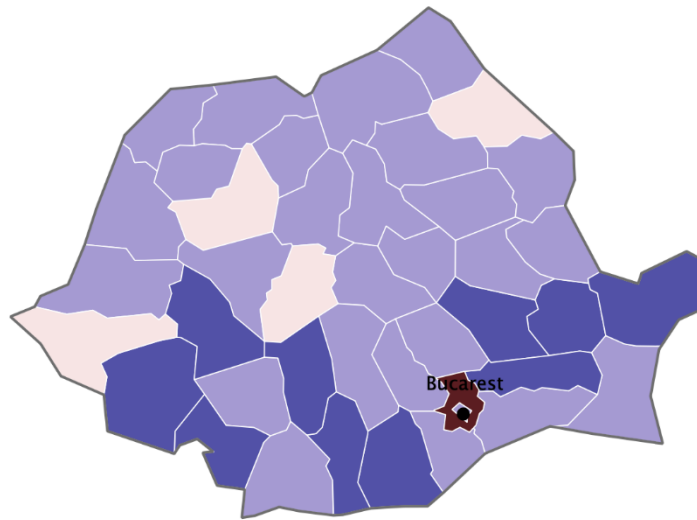
High education (students) in core cities (2011)

Out-Migration and Higher Education (2014)

People not in Education, Employment or Training (2016)

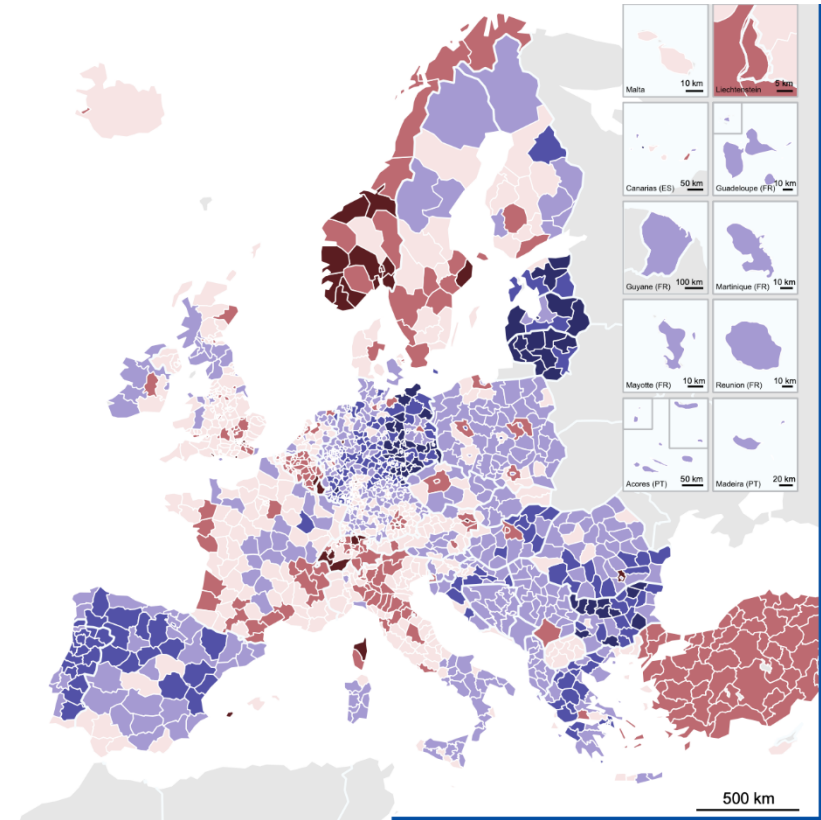
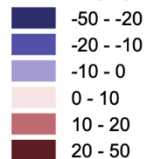
Risk of poverty (2015)

Population development 2014 - 2030



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 Regional level: NUTS 3 (2013)
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Relative population development (%)



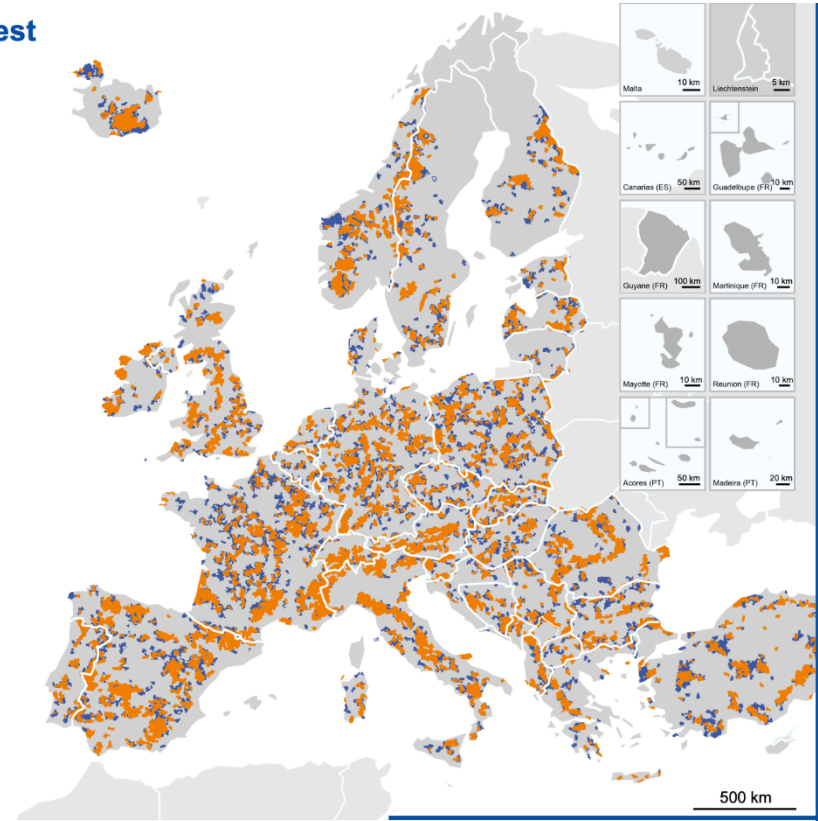
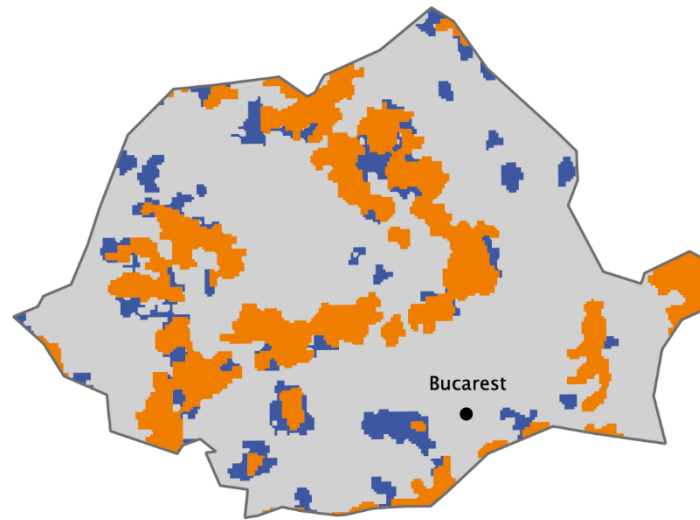
Source: Spiekermann and Wegener Urban Regional Research (S&W), Territorial Futures, 2017
 Origin of data: Eurostat (online data code: demo_r_gind3; proj_13rprms3), 2014 & 2030

A pressing need for action against demographic decline

Depending on the model applied, Europe's demographic evolution differs, but generally the population is expected to grow. Between 2014-2030 relatively high population growth is expected in western and northern Europe as well as in the main urban centres in eastern European countries, while in eastern Europe and Germany it will continue to decline. Increasing rural-urban disparities are expected. The highest population loss is expected in rural regions in eastern Germany, Baltic States, northwest Spain, southern Italy, Hungary, southern Romania, and northern Bulgaria. Highest population growth and increase in young and working-age population should be seen in metropolitan areas in Nordic countries, north-western Europe, central Europe and around the Alps..





Population projections made by the National Institute for Statistics estimate that Romania will have a resident population of 17.9 million by 2030 and –13.8 million –by 2060, a steep drop. Territorially, in the moderate scenario, the resident population of most counties will decrease by 2030, with the most notable exception being Ilfov County, part of the Bucharest metropolitan area, which will register an increase in population of approximately 160 thousand people or 36.4% by 2030. Other counties projected for small increases are Timiș, Cluj, Sibiu and Iași, which are currently among the more developed ones. Significant population decline is expected especially in southern and former industrial counties which are also among the poorest.

Inner Peripheries according to poor access to services of general interest



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 Regional level: Grid cells (2.5 x 2.5 km)
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Inner peripheries according to access to SGIs

-  Inner Peripheries according to access to SGIs
-  Areas at risk according to access to SGIs
-  Not an Inner Periphery
-  no data (outermost regions)

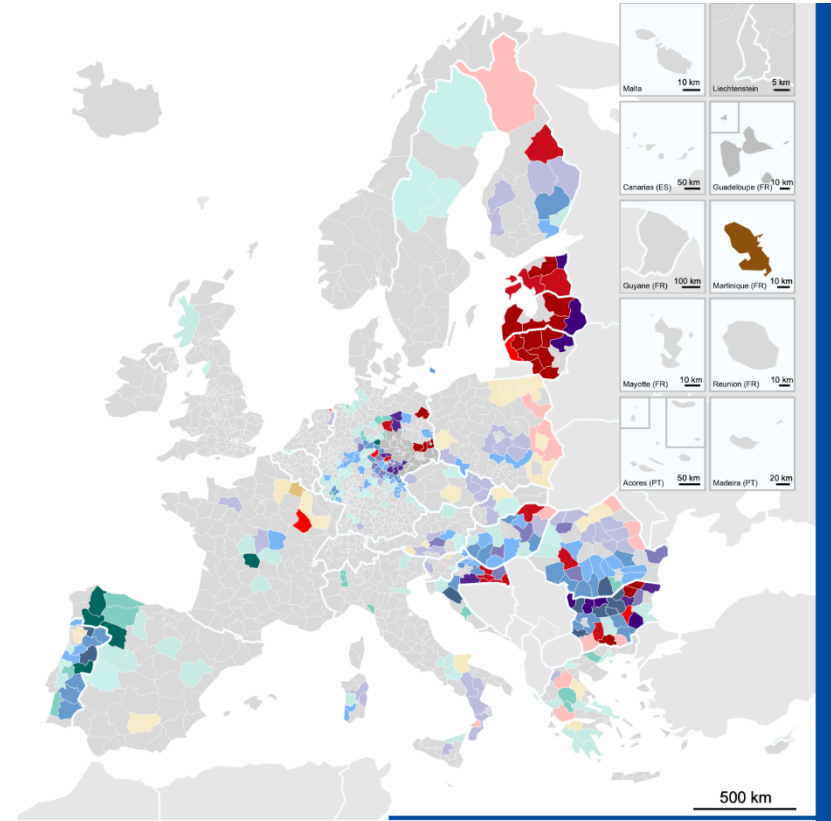
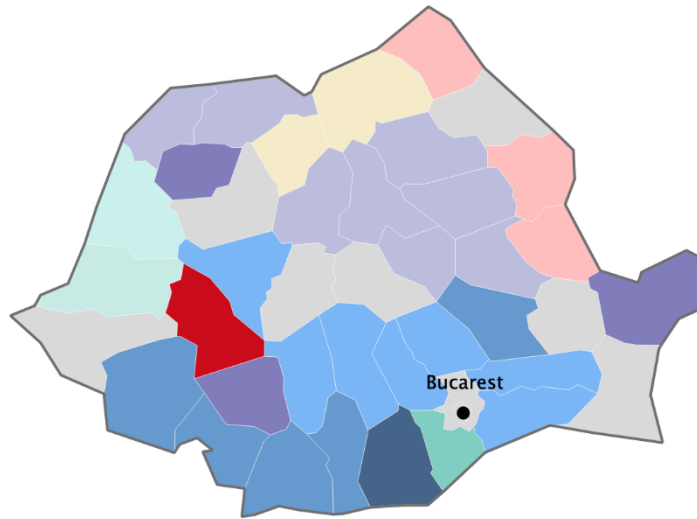
Source: ESPON PROFECY 2017
 Origin of data: TCP International 2017,
 TCP International Accessibility model 2017

Underdeveloped rural infrastructure and limited access to social services

Adequate provision and access to main SGIs do not only indicate the territories' connectedness, but allow easy and cheap access to many types of services, higher quality of life, provide choice opportunities for the resident population and thus contributes to keep population and jobs within the area. IP areas and areas "at risk to become IP" reflect intra-national disparities in access to SGIs. These can thus be found in all ESPON countries, except for Cyprus and Malta. These are mostly observed in rural areas and are prevalent in mountains, islands and northern peripheral areas.

In Romania, the mountainous areas and Danube Delta are identified as inner peripheries according to access to SGIs. Access to utilities is difficult for inhabitants of these areas. For example, in Alba County there are still 495 households without electricity located in 28 settlements, some of them sparsely populated. Clean drinking water, which is a serious problem in the villages of the Delta, and sanitation are priority objectives together with mobility infrastructures that would allow people to travel within a reasonable amount of time to a locality where they could benefit from social assistance, for example.

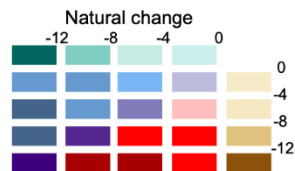
Structural typology of demographic shrinkage (2001-2016)



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 Regional level: NUTS 3 (2013)
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Structural demographic shrinkage in shrinking regions (NUTS3) in 2001-2016

Other regions
 No data



200 km

500 km

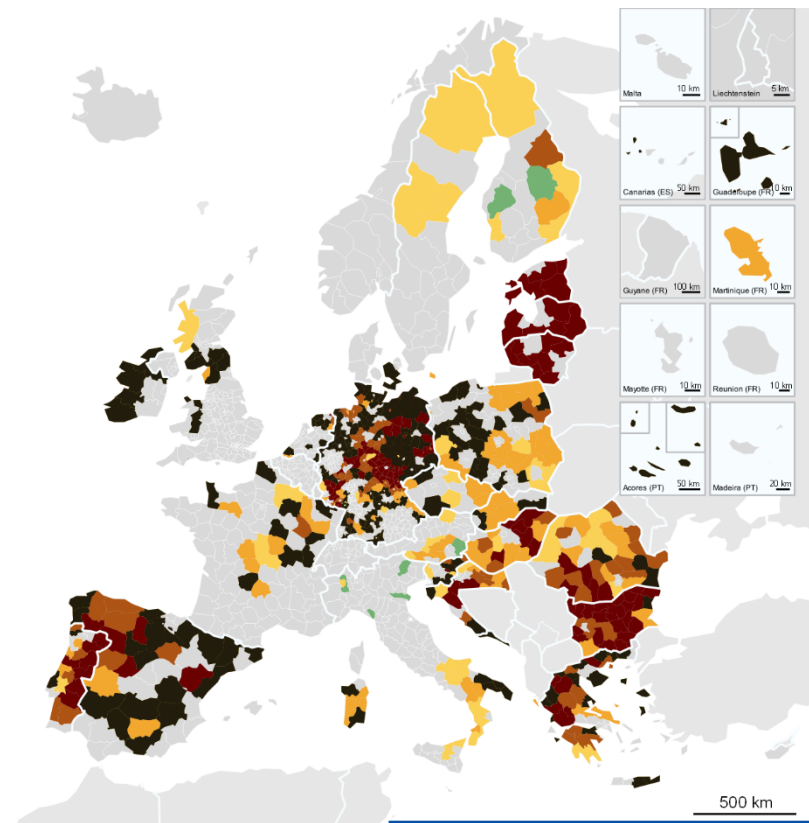
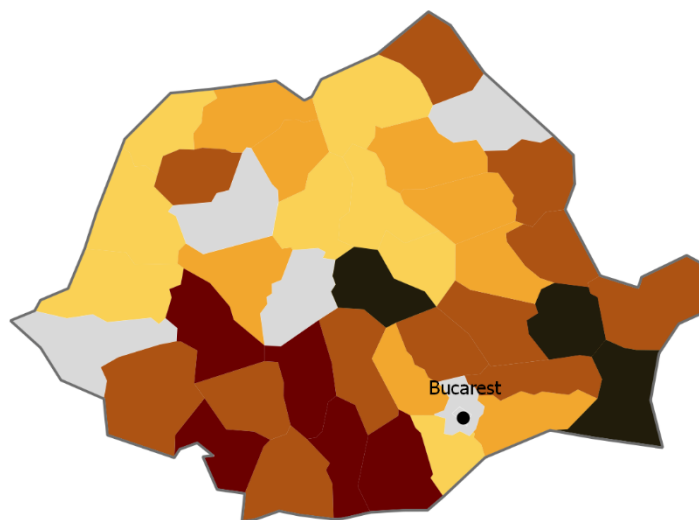
Source: ESPON ESCAPE, 2020
 Origin of data: Eurostat, Nordregio, 2020

A dual trajectory of growth and shrinkage

Simple shrinking means that a region loses a significant proportion of its population (outmigration and natural decrease of population), it can easily be measured through population figures, but reflects only one side of the coin. Areas suffering from both important negative natural population change and important out-migration (<-12% for each of the two indicators) are found in five European countries: in parts of Bulgaria, (eastern) Germany, Latvia, Lithuania, and Romania.

At least nine intermediate and rural counties registered demographic shrinkage caused by negative natural change and negative net-migration. These are counties with predominantly agricultural profile from southern Romania or other counties that lost their economic power (due to the decline of mining or heavy industry). Most internal migration flows in Romania are long-distance ones. Almost 51% of the migrants moved to a different county than the one they were born or used to live in and only 49% moved to a different settlement inside the same county. This indicates that long-term migration is more intense where commuting is limited, explaining also the demographic collapse of many remote rural areas in Romania.

Future demographic trends in shrinking rural regions (2017-2032)



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 Regional level: NUTS 3 (2013)
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Future demographic trends in shrinking intermediate and rural regions (2017-2032)



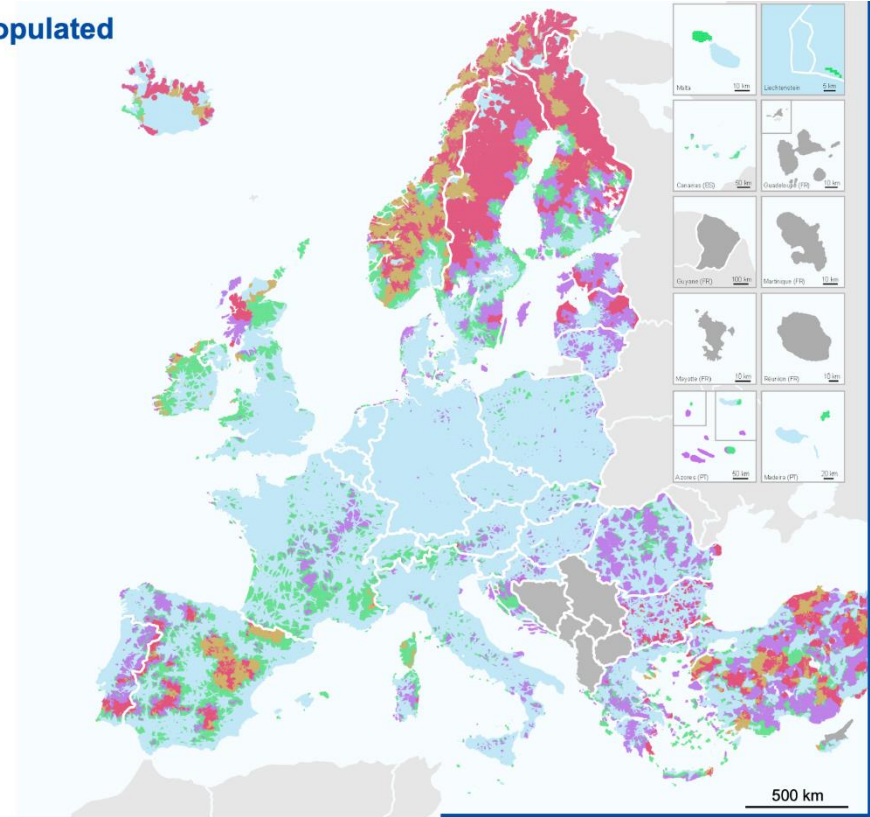
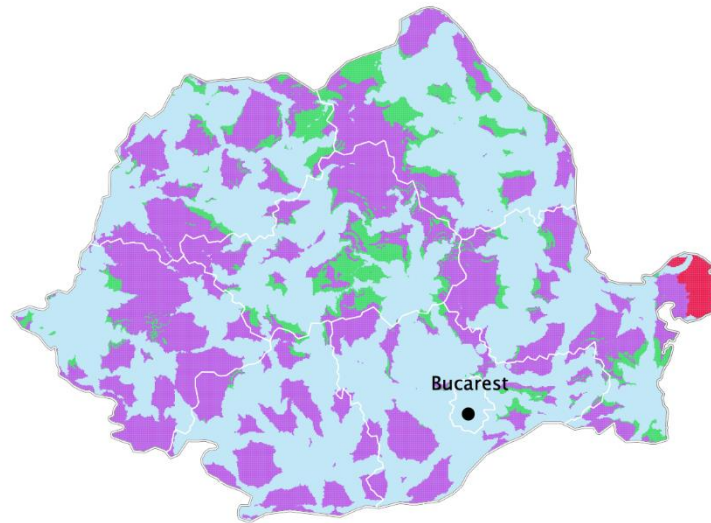
Source: ESPON ESCAPE, 2020
 Origine of data: Eurostat, Nordregio, 2020

The uncertain future of rural Romania

Most rural regions identified as shrinking between 2001-2016 are expected to keep the trend in 2017-2032. Rural regions that gained population in 2001-2016 but will lose population in 2017-2032 (regions “at-risk of shrinking”) can mostly be found in eastern Germany, western Poland, Ireland, Spain, and Greece. 128 shrinking rural regions from Baltic States, Bulgaria, Eastern Germany, Portugal will lose over 12% of their population in 2017-2032. Six regions (five from Lithuania) may lose over 30% of the population. Only 16 shrinking rural regions of six countries are expected to increase their population in 2017-2032. They include six regions in Italy and four in Austria, whereas only two regions are from eastern Europe (both in Romania).

Romania is a peculiar case of the EU-28, as a large proportion of the population (about 46%) lives in rural areas, where agriculture represent the main income source - although almost half of it lives in functional urban areas. Despite the advantage of natural resources, Romanian rural areas have several weaknesses: the intense migration of working-age people (especially youth) to cities and other countries for better jobs, population ageing, low level of training, the low living standard, lack of access to essential services etc. The strong demographic decline is most visible in south-western, and south-eastern regions and in some Carpathian communities, but it affects many rural local administrative units in all parts of the country.

Sparsely populated areas and areas at risk of becoming sparsely populated



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Resolution: 1x1 km grid cells
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Current SPAs (population potential < 100,000 residents)

- SPA in decline
- SPA with stable or growing population potential

Other areas with low population potential (< 125,000 residents)

- Areas at risk of becoming SPAs
- Areas with low, but stable or growing population potential

no data available

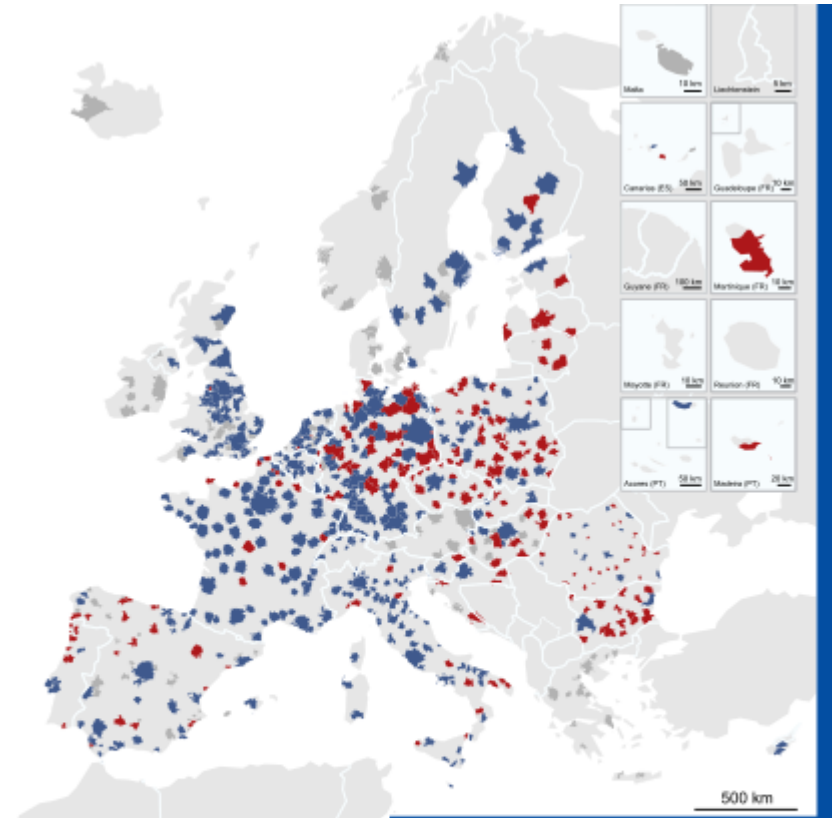
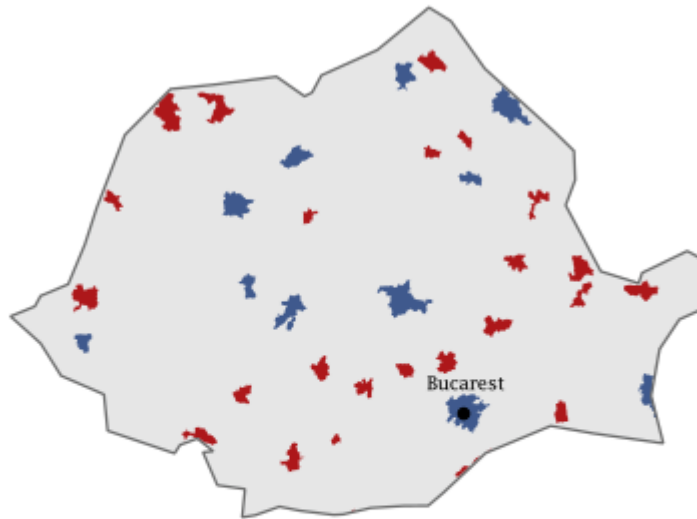
Source: ESPON BRIDGES, 2019
Origine de data: TCP International, 2019, ESPON GEOSPECS, 2012, RRG GIS Database, 2018



Geographic specificities and SPAs

Sparsely populated areas (SPAs) are delineated on the basis of population potentials, i.e. the number of persons that can be reached within a maximum generally accepted daily commuting or mobility area from each point in space. SPAs cover 24.7% of the ESPON space and 3.7% of its population. These are found mostly in Nordic and Baltic countries, and in large patches in Spain, Turkey and Bulgaria. Areas with low and declining population potential are at risk of becoming SPAs. Such areas are identified in Romania, Bulgaria, Greece and Portugal and well as in France. The demographic evolution of these areas will be closely watched in the coming years.

In Romania, the average population density in rural areas is 61.6 inh/km². Declining sparsely populated areas can be observed especially in the Danube Delta. Areas at risk of becoming SPAs are localized in central Dobrogea, large Eastern and Western Carpathian areas and disparately in Brăila County and at the southern border areas. These areas are often affected by poor accessibility and aging. Areas with low but stable population potential are found in the north-east counties and in the central Transilvania, particularly in the mountainous areas. If demographic decline continues in these areas, they will rapidly reach thresholds below which service provision and economically and socially sustainable development become challenging.

Population change in FUAs (2000 - 2017)



ESPON   © ESPON, 2020
 Regional level: FUA (Urban Audit)
 UMS RIATE for administrative boundaries, © EuroGeographics, © FAO (UN)
 Co-financed by the European Regional Development Fund

200 km

500 km

Population change in FUAs (2000 - 2017)

- Population increase
- Population decline
- No data or data incomplete

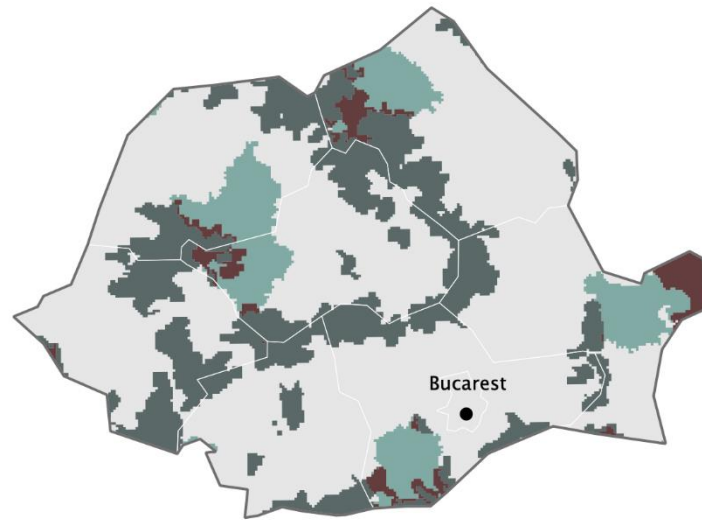
Source: ESPON EGTC, 2019
 Origin of data: Eurostat Urban Audit, 2019

Strong cities as a prerequisite for a strong economy

A functional urban area is a geographic entity consisting of one or more core cities and the surrounding commuter belt with which it has strong ties. The term can be used interchangeably with that of metropolitan area. According to TERCET, a FUA consists of a city (more than 50'000 inhabitants) and its commuting zone whose labour market is highly integrated with the city. In some places, FUA can overlap and delineation evolve in time. The map reflects the latest delineation of FUAs which is based on the census commuting data from 2011 and onwards). Population ageing and the migration of the young and well educated could lead to long-term decline and shrinkage in their origin regions, especially in central and eastern Europe.

There is no official definition in Romanian legislation of functional urban areas, but metropolitan areas are defined as voluntarily-constituted associations between urban centres and adjoining rural municipalities up to a 30 km radius. FUA delineations, in accordance with Urban Audit, are different, therefore the map shows FUAs defined as the city and its closest adjacent areas (first row of communes) connected from the economic and social point of view (see map). The 8 largest cities in Romania amass around 22% of the population and generate around 53% of the country's GDP. Some of the cities suffered a demographic decline, but the population of their functional area grew up.

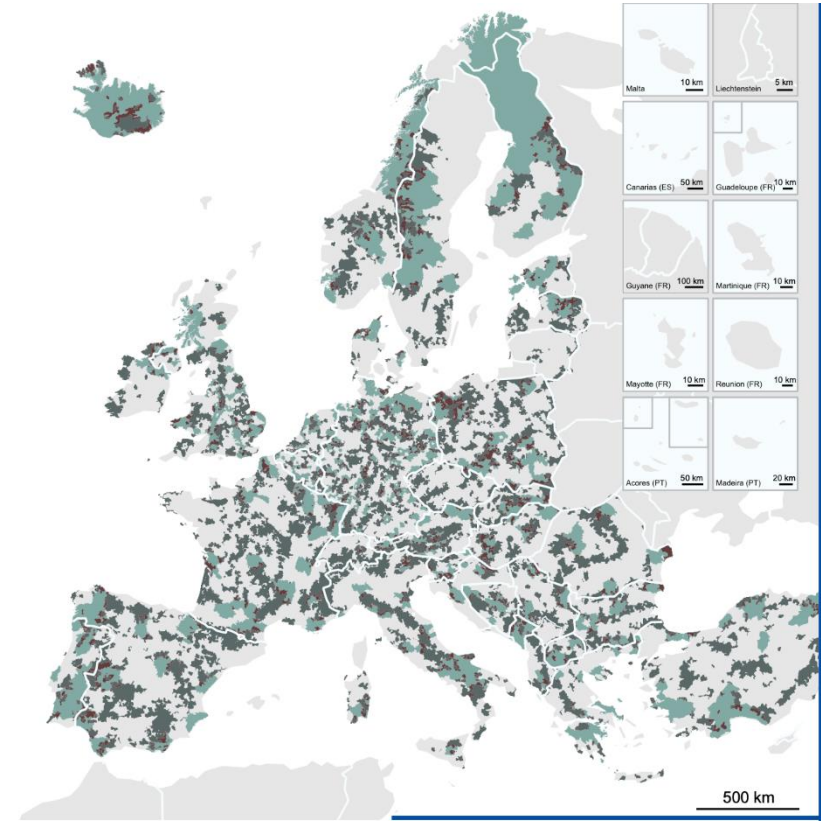
Main socio-economic drivers of inner peripherality



ESPON  © ESPON, 2020
 Regional level: Grid Level (2.5x2.5 km)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

Main socio-economic drivers of inner peripherality

- Poor economic potentials and poor socio-economic situation
- Main driver: lack of access to centres and/or services
- Main driver: poor accessibility and poor economic potentials/poor socio-economic situation
- no data



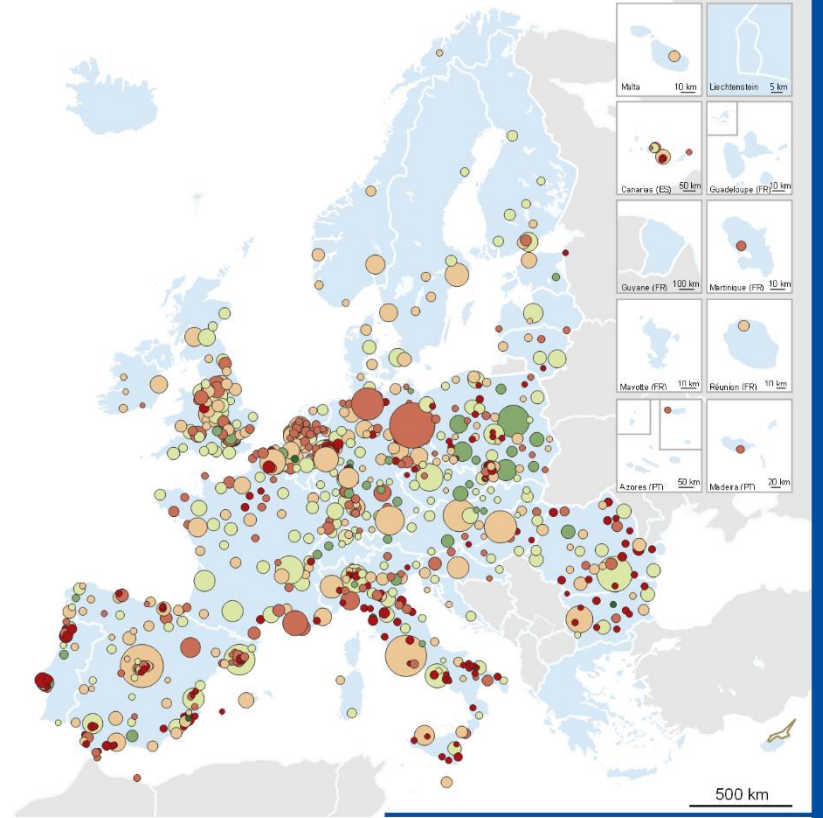
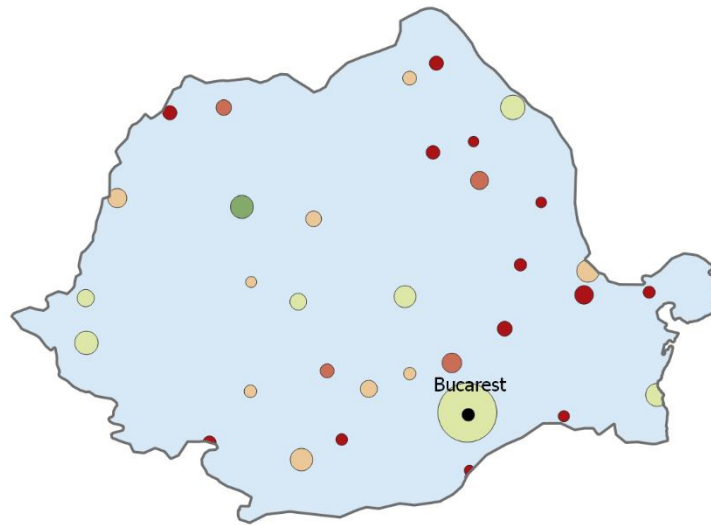
Source: ESPON PROFECY, 2017
 Origin of data: TCP International Accessibility Model, 2017

Current inner peripheries – future SPAs?

Around 45% of the ESPON territory represent inner peripheries, of which two third due to one delineation only, and one third due to two or more delineations. IP areas with a lack of access (to centres or services) as key driver account for some 45% of all IP areas (20% of entire ESPON space). The main driver in most Scandinavian and Icelandic IP areas is not a lack of access, but their poor economic and demographic basis, (lack of demand). Similar cases are found in East Germany, Baltic States, Turkey, southern Italy, Portugal, parts of Spain, Scotland and parts of eastern Europe. IP areas triggered both by poor access and poor economy and demography (approx. 9.4% of all IP areas) are scattered around Europe in small patches.

Romanian IPs are generally located in rural territories characterized by unsuitable terrain for agriculture, particularly in the mountains. Tulcea county is identified as IP regarding three delineations: economic potential interstitial areas, relative low access to services of general interest and socio-economic performance. These issues are mostly linked to the county's geography, which highly affects socio-economic standings. Inner and outer transport connections are relatively poor, due to the isolation of the Danube Delta from the mainland. The main directions of Tulcea's development are linked to the main strengths of the area - the local cultural and natural resources connected to the Delta.


High education (students) in core cities (2011)



ESPON   © ESPON, 2020
Regional level: Core cities (2018)
GISCO and © UNIGE for administrative boundaries
Co-financed by the European Regional Development Fund

Students in the total population (/1000 inhabitants), in core cities

- 0 - 20
- 20 - 50
- 50 - 100
- 100 - 200
- 200 - 350
- 350 - 579

 Proportional to population (2015)

200 km

500 km

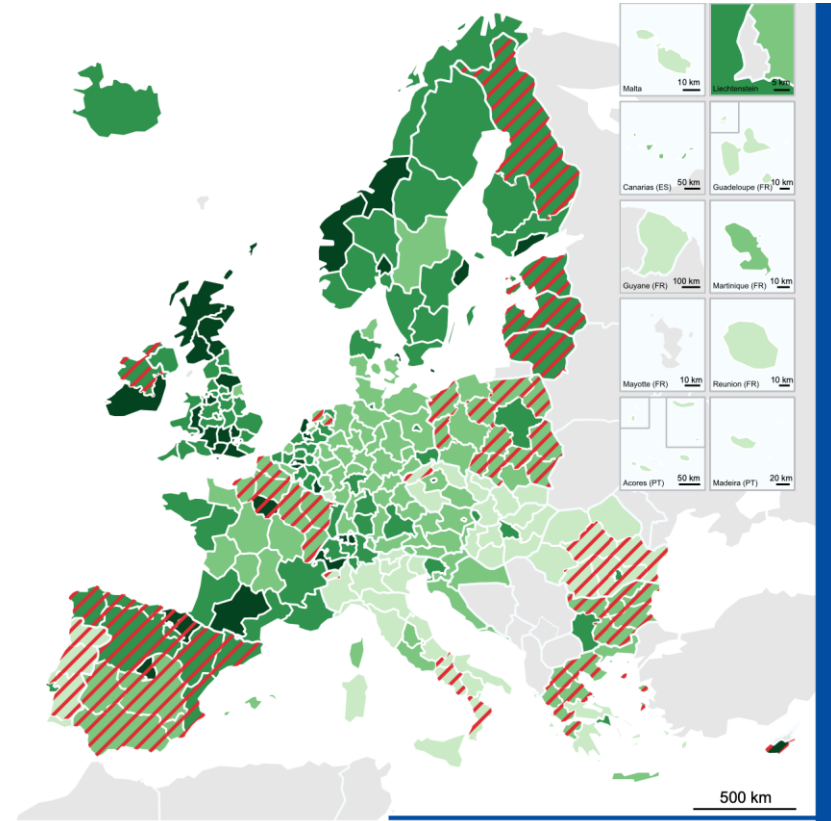
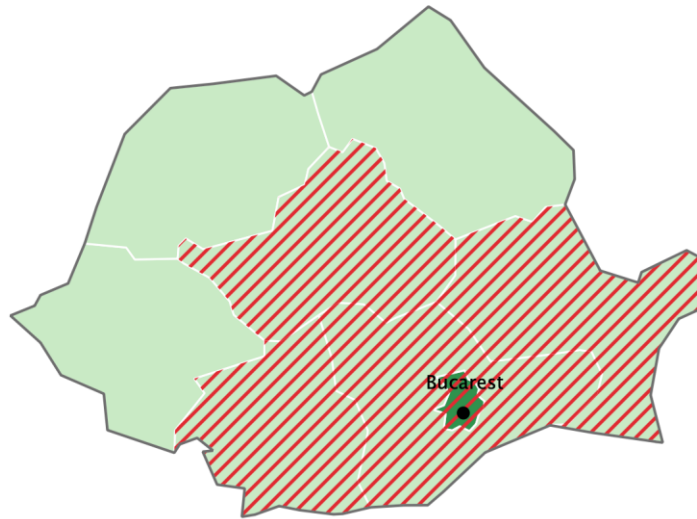
Source: Big Data and Housing, 2019
Origine of data: Eurostat, 2019

Universities as anchors for urban economy

The proportion of students in town shapes a city's identity from a social and cultural perspective. As shown on the map and in a recent EC publication, large cities tend to have higher proportions of students. While students represent (on average) 6 % of the cities' population, they account for 7.5 % in cities between 250 000 and 500 000 inhabitants and for 8% in cities between 500 000 and 1 million inhabitants. Higher proportions of students are observed in core cities in Romania, Poland, Greece and the Scandinavian countries, followed by Czech Republic, Slovakia, Austria, Belgium, Spain and Portugal. In 38 European cities, university students represent more than 20% of the cities' population.

The largest university centres in terms of students are Bucharest, Cluj-Napoca, Iasi, followed by Brasov, Timisoara, Constanta, Craiova, Sibiu and Arad. The share of students in higher education for the core cities scores highest values in the biggest Romanian cities, including Bucharest and Cluj-Napoca. The indicator correlates positively with high skilled population and youth. The Romanian cities with the strongest university centres have the highest chance of offering higher salaries and are already sought after by the well-trained workforce. The strategy in place aims to enable access and participation in tertiary education for disadvantaged groups such as: students with disabilities and students from low-income families.

Out-Migration and Higher Education, 2004





 © ESPON, 2020
 Regional level: NUTS 2 (2013)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

200 km

500 km

Source: IRS Milano, IES Brighton, IRS Erknær (2017)
Origin of data: Eurostat, 2016

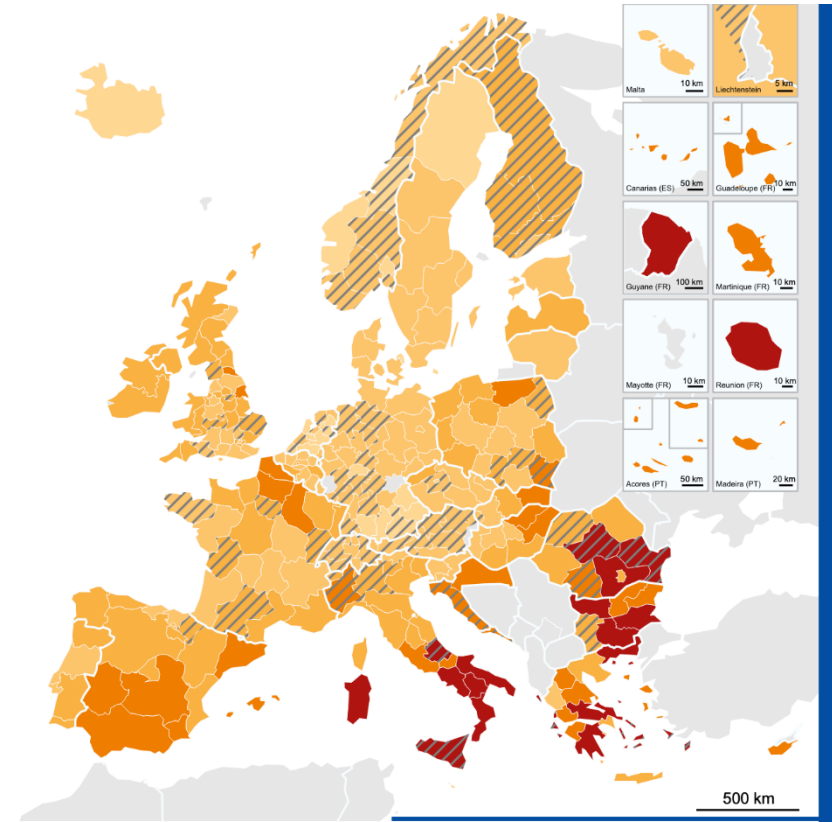
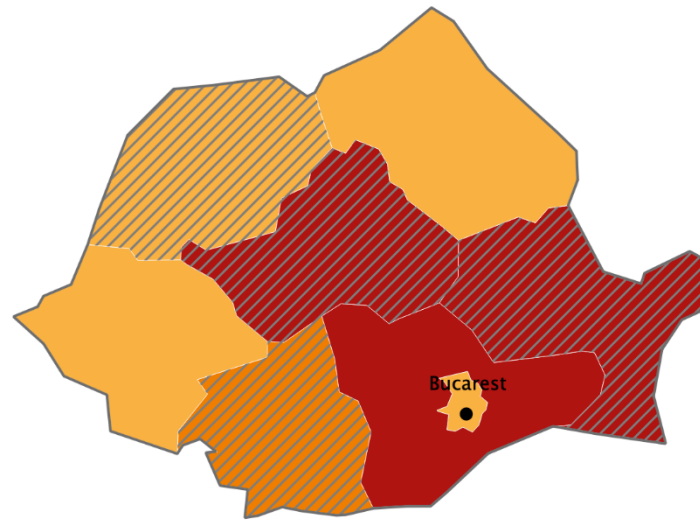
Out-Migration and Higher Education, 2004
 Higher Education (% of total population) Net Migration
 0 - 10
 10 - 20
 20 - 30
 30 - 40
 > 40
 Sending regions

Better connectivity and public services leading to KE concentration in Iași

The map reflects the intensity of the knowledge economy (share of people with higher education per region), in relation to demographic evolution (sending regions). Highest share of people with higher education are found in the UK, Ireland, the Benelux, Baltic countries and Switzerland. At a national level, capital regions usually stand out with relatively higher records. A competitive knowledge economy is usually associated with migration attractiveness (pull factor): very few regions with high share of educated people are losing population. Economic crisis exacerbated youth mobility as a push factor. Affluent regions could be considered net beneficiaries while rural & peripheral regions and second tier cities are negatively affected by this trend.

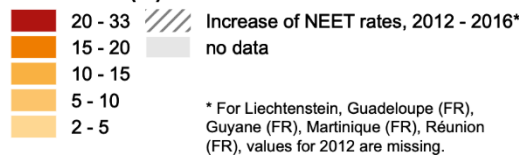
The North-East region, the Romanian case study from the EMPLOY ESPON project, is included in the category 'less competitive economy with a low incidence of knowledge economy', but displays an increase in KE in recent years (e.g. ICT becoming a strategic sector in the regional economy; increase in the number of companies and employees in KE; increase in the number of patent applications). Iași county is the most relevant university centre in the region; characterised by strong collaborations between universities and companies, especially in the field of ICT. In recent years it has also become a place of internal migration due to the attractiveness of Iași county: over 50% of the overall youth established in the region live in Iași.

People not in Education, Employment or Training (NEET)



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 Regional level: NUTS 2 (2013)
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NEET rates (%) 2016



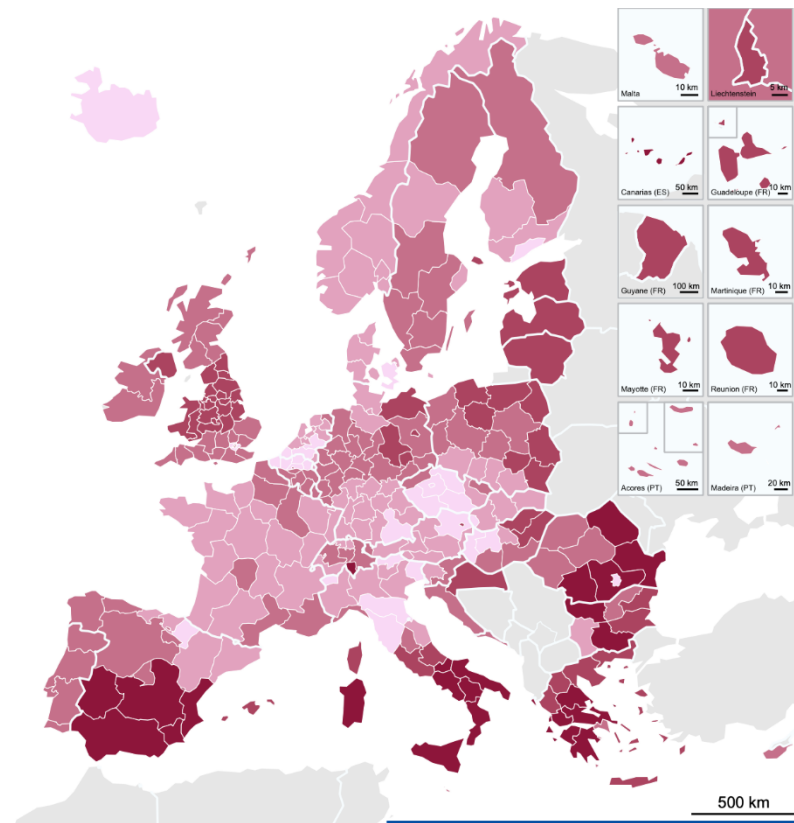
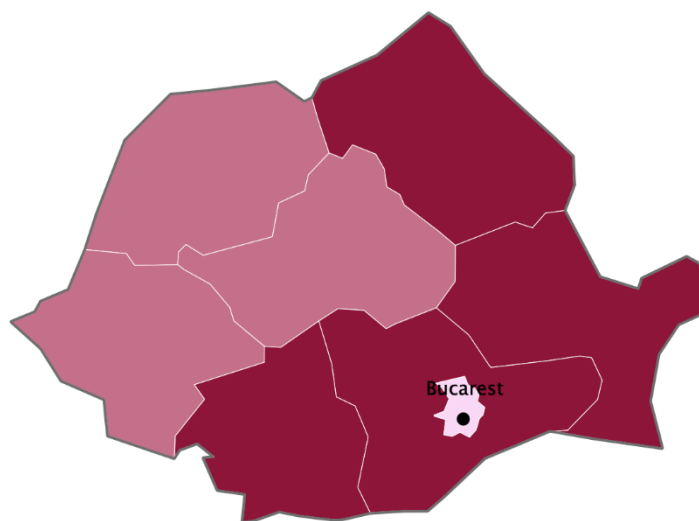
Source: ESPON YUTRENDS, 2019
 Origin of data: Eurostat, 2019

“The Invisible Generation of Romania”: Young NEETs

Young people who are “Not in Education, Employment, or Training” (NEETs) are a category facing specific challenges in many European regions. A significant problem with NEETs is that they are not a homogeneous group and are often difficult to identify and engage with. Regions in the south and east of Europe registered the highest NEET rates in 2016, with the highest values in Bulgaria, southern Italy and Romania. Between 2012 and 2016, proportions of NEETs have increased in many parts of Europe, including regions with low rates in e.g. Germany and Norway and also in some of the regions with highest rates in Europe (e.g. Sicily, parts of Romania).

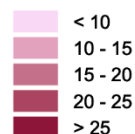
The percentage of NEETs is among the highest in the EU (14.5% of people aged 15-29 yrs). More than a third of them were discouraged workers, short- and long-term unemployed. Despite the positive outcomes of some outreach measures, around 69% of NEETs remain inactive. In addition, a very high and increasing share of young people leave the country. The share of NEETs among the young rural resident population is almost three times that of those living in cities (18.1% compared to 7%). Romania ranks second regarding the differences between the educational levels: the NEET rate among the people who graduated an intermediate educational level is 6 times higher than in among those who graduated from higher education.

At-risk-of-poverty rate, 2015



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 Regional level: NUTS 2 (2013)
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 Co-financed by the European Regional Development Fund

At-risk-of-poverty rate (%), 2015*



* The persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income.

200 km

500 km

Source: Spatial Foresight, 2020
 Origin of data: ESPON Database II, 2020 id: 329

Widespread poverty in extra-Carpathian regions

The at-risk-of-poverty rate refers to the share of the population with a disposable income below 60% of the national median disposable income after social transfers. The indicator therefore doesn't measure absolute poverty, but the importance of lower income in the national distribution of income. The highest at-risk-of-poverty rates can be found in southern and eastern Europe. Large regional disparities can be observed within countries such as Spain and Italy, with substantially higher at-risk-of-poverty rates found in the southern regions. All the regions in the Nordic countries have at-risk-of-poverty rates below the EU average.

In 2015, more than a third of the population was at risk of poverty or social exclusion in three Member States: Bulgaria (41.3%), Romania (37.3%) and Greece (35.7%). There are large regional disparities in terms of the poverty rate. The lowest share of people at risk of poverty was recorded in the Bucharest-Ilfov region, where only 3 percent of the population was at risk of relative poverty. Proportions lower than the national percentage are also recorded in the Northwest (16%) and Central (19%) regions. The regions with the highest percentages of people at risk of poverty are the Northeast (34%) and Southeast (30 %) regions. The at-risk-of-poverty rate in rural areas is almost five times higher than in cities.



Productive Europe

GDP per capita in PPS (2008-2013)

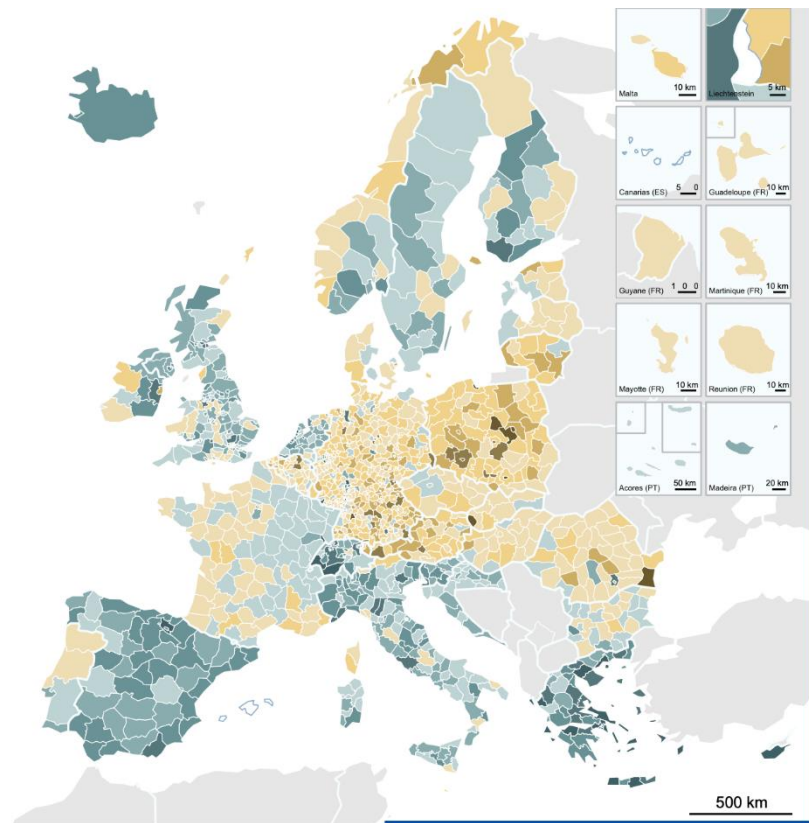
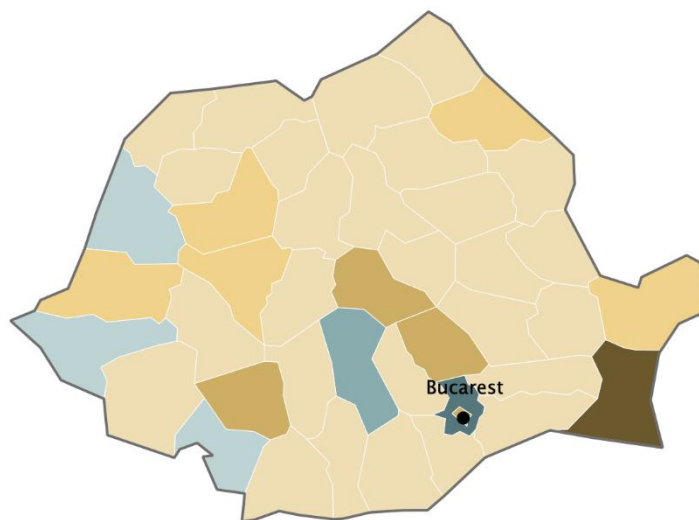
GDP per capita in PPS (2015-2030)

Regional innovation Scoreboard (2019)

Employment in Small and Medium size Enterprises (2014)

Foreign Direct Investment inflows from extra-European sources (2003-2015)

GDP per capita (PPS) (2008 - 2013)





 © ESPON, 2020
 Regional level: NUTS 3 / 2 (2013)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

200 km

500 km

Percentage points difference between 2008 and 2013 in relation to the EU average



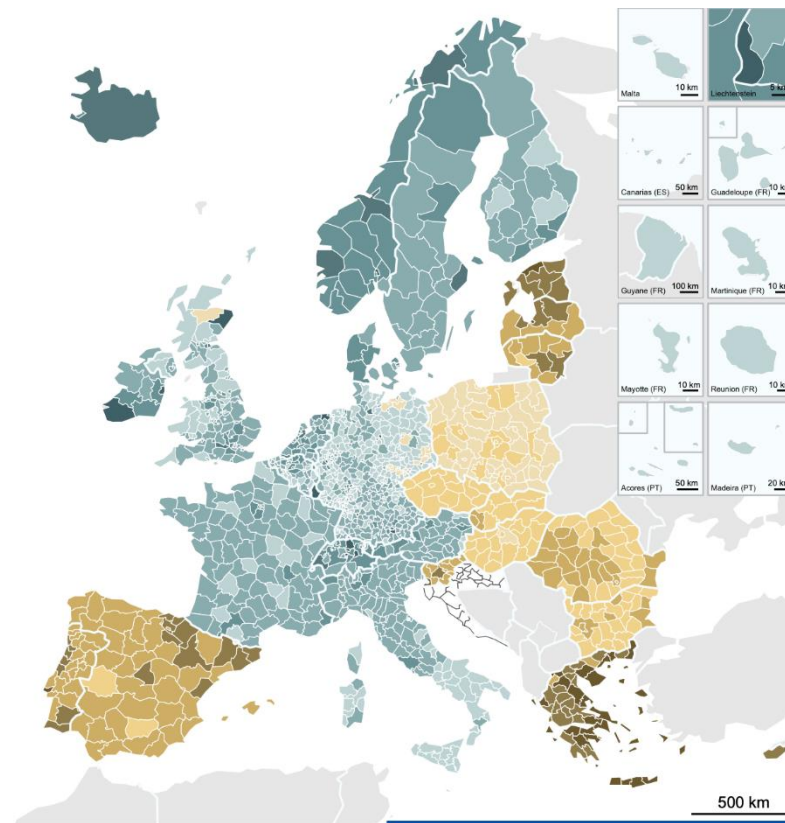
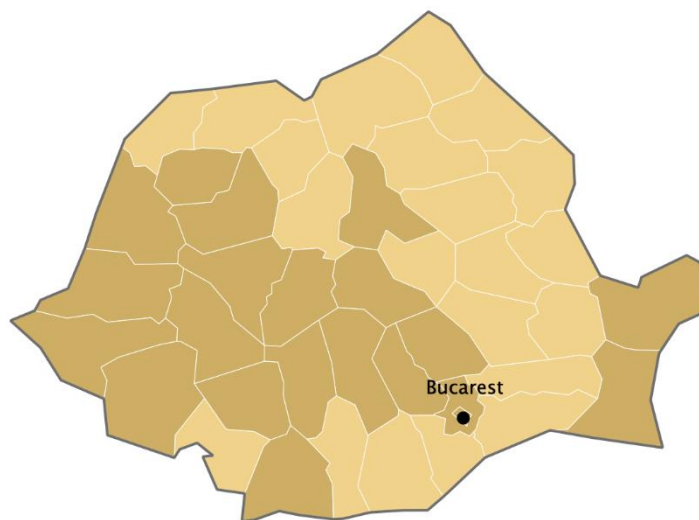
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
Origin of data: Eurostat (online data code: nama_10r_3gdp), 2008 & 2013

Slight GDP growth except for Constanța County

Before the economic and financial crisis, disparities between and within regions were declining. However, since the financial crisis Europe's economic development has been asymmetric. A group of countries has seen most of its regions recovering faster than the rest of Europe. It includes Belgium, Germany, Austria, Czech Republic, Hungary, Romania, Poland and the Baltic states. On the contrary, in Greece, Italy, Spain, as well as in the UK and Iceland, most regions were hit harder by the crisis than the rest of Europe, with no sign of recovery before 2013. The dynamic is more diverse in France, Bulgaria and Denmark with some regions that experienced a fast recovery process and others not.

Most Romanian counties only experienced a slight growth in GDP per capita in relation to the EU average for the 2008-2013 period (between 0 and 5%), with several exceptions. Constanța County stands out with a massive over 20% growth, followed by Prahova County, Brașov County and Gorj County, with values between 10 and 15%. Several western counties such as Arad, Alba and Cluj, as well as Iași and Tulcea in the east had between 5 and 10% growth. At the opposite end, Bucharest and several other western counties experienced negative values between -10 and -5%. This was because they were initially more affected by the crisis.

GDP per capita, PPS (2015 - 2030)

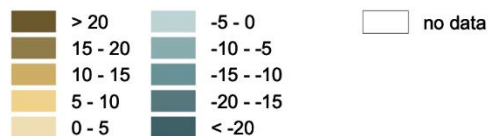


ESPON © ESPON, 2020
 Regional level: NUTS 3 (2006)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

200 km

500 km

Percentage points difference between 2015 and 2030 in relation to the EU average



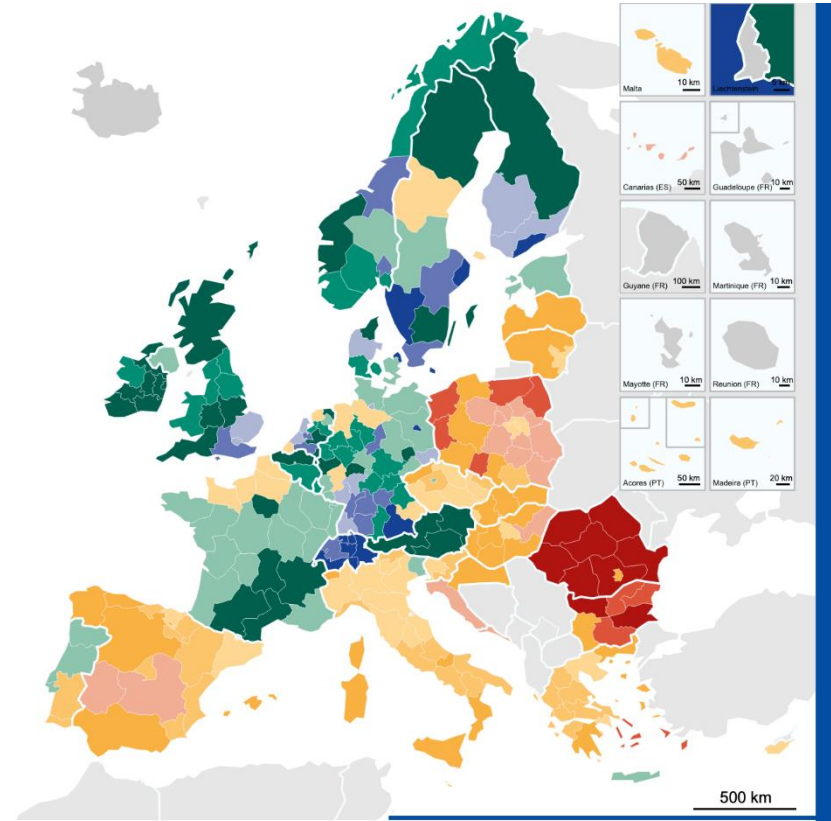
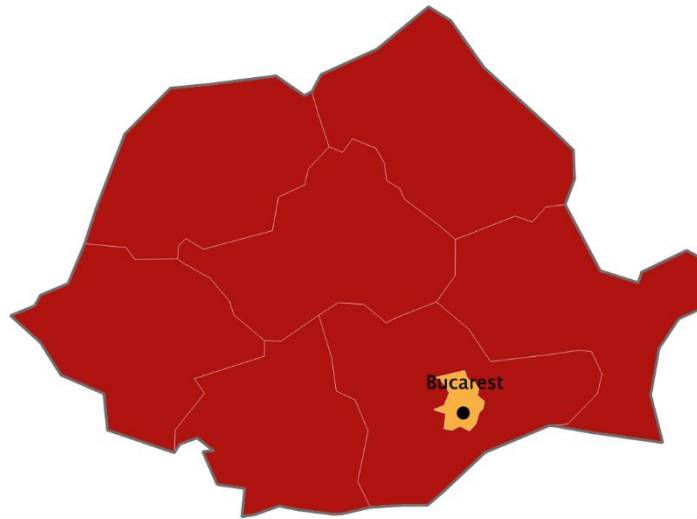
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
 Origin of data: ESPON ET2050, 2015

Above average nationwide GDP growth

Based on observed trends of circular economy, sharing economy, ecological awareness, as well as increasing public debts and changing roles of corporate and public players, GDP development forecast between 2015 and 2030 shows that least developed regions in Europe (eastern European countries), as well as regions that suffered most from the crisis (in Greece, Spain and the Baltic states) are predicted to see their GDP per capita grow faster than the EU average. In other term, these regions are expected to “catch-up” relatively to EU average. However, any prognosis on socio-economic development has to be handled with care.

The estimate for the 2015-2030 period is for the entire national territory of Romania to experience a favourable evolution of GDP per capita in relation to the EU average, with two spatial distinctions: northern, eastern and southern areas would grow at a moderately higher pace than EU average (+5 to 10%) compared to EU expected , while central and western parts along with the Dobrogea province would grow even more significantly than the rest of the EU (+10 to 15%). The current trend indicates convergence to the EU at national level but would increase regional disparities. Also, in light of recent events and possible economic contraction in 2020, it remains to be seen whether GDP growth will still occur at the same rate.

Regional Innovation Scoreboard (2019)



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 Regional level: NUTS 1 / 2 / 3 (2016)
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RIS Performance groups 2019

 Leader +	 Strong +	 Moderate +	 Modest +	 No data
 Leader	 Strong	 Moderate	 Modest	
 Leader -	 Strong -	 Moderate -	 Modest -	

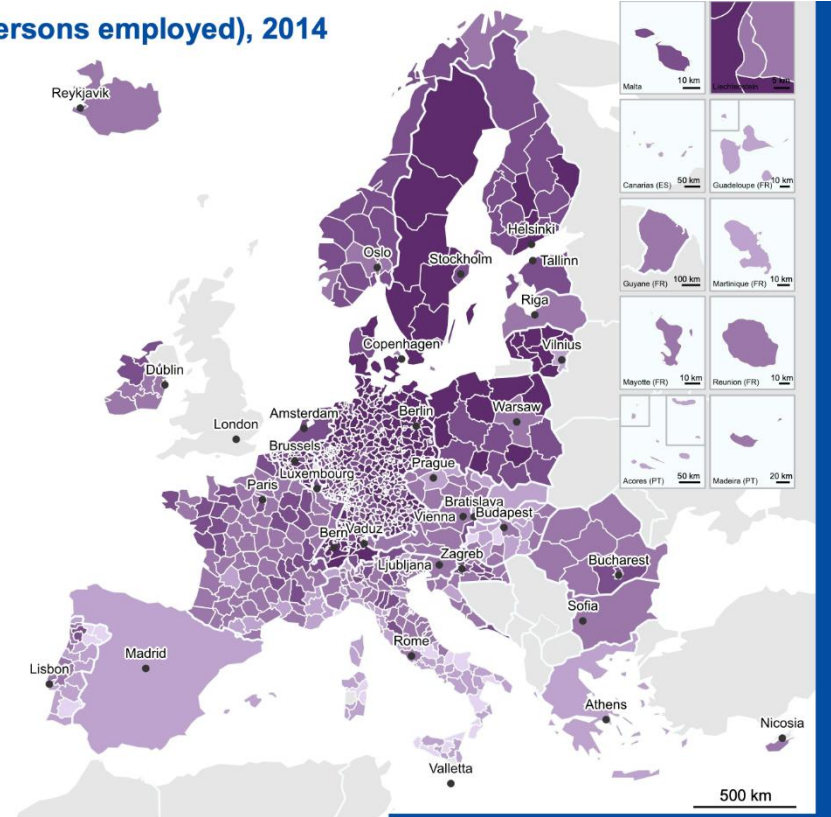
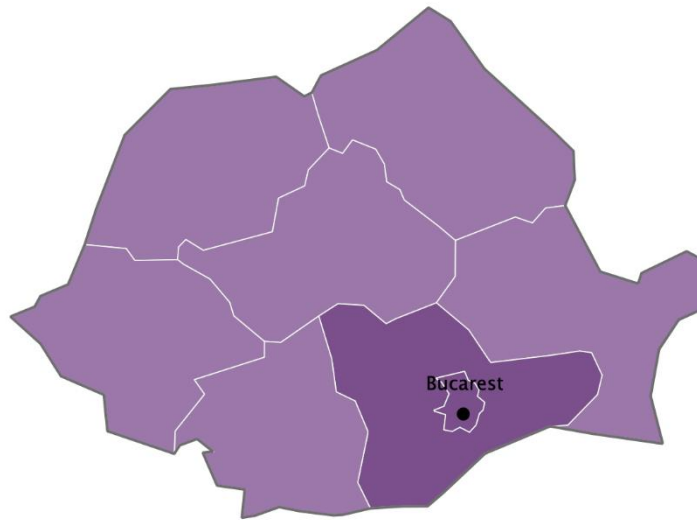
Origin of data: Regional Innovation Scoreboard, 2019
 Definitions: The RIS 2019 is a comparative assessment of regional innovation based on the European innovation scoreboard methodology, using 18 of the latter's 27 indicators. It provides a more detailed breakdown of performance groups with contextual data that can be used to analyse and compare structural economic, business and socio-demographic structure differences between regions.

Low regional innovation except for Bucharest-Ilfov

The Regional Innovation Scoreboard (RIS) calculated yearly by the European Commission proposes four regional performance groups, measured along indicators concerning framework conditions, investments, innovation activities, and effects on employment and sales. Thus, evidence indicates the existence of (1) innovation leaders (38 regions, among which are regions in Finland, southern Germany, southern Sweden and Switzerland), (2) strong innovators (73 regions mostly in western and northern Europe: France, Germany, Norway and the United Kingdom), (3) moderate innovators (97 regions in the Baltics, central Europe, Italy and Spain) and (4) modest innovators (30 regions mostly in eastern Europe) (European Commission 2019a).

According to the Innovation scoreboard, Romania is a modest innovator, with the lowest rate of innovation of all Member states, in decline since 2011 and with no major change between 2017 and 2018. Romania's lowest indicator scores are on Lifelong learning, SMEs with product or process innovations, SMEs with marketing or organizational innovations, and SMEs innovating in-house. RIS 2019 results show that Bucharest-Ilfov is a "Moderate - Innovator", with performance decreasing over time. EC will provide help to Romanian regions to improve their innovation capacity and enhance cooperation between research centres and businesses to develop innovative products for the market, a project within the Catching up Regions initiative

Share of persons employed in small and medium enterprises (10-249 persons employed), 2014

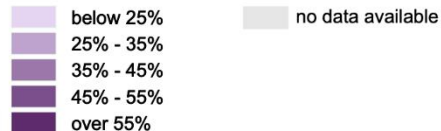


ESPON   © ESPON, 2020
 Regional level: NUTS 0 / 2 / 3 (2013)
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200 km

500 km

Share of persons employed in small and medium enterprises (10 - 249)



Notes
 - Data for DK, FR, MT correspond to 2013
 - Data for DE correspond to 2015
 - Data for AT, DK, EE, LV, MT, PL, RO, SE corresponds to NUTS2
 - Data for BG, CZ, EL, ES, HU, NL, SI, SK corresponds to NUTS0 (SBS)
 - Data for EL (2015) corresponds to estimates produced by DIW Econ (2016)

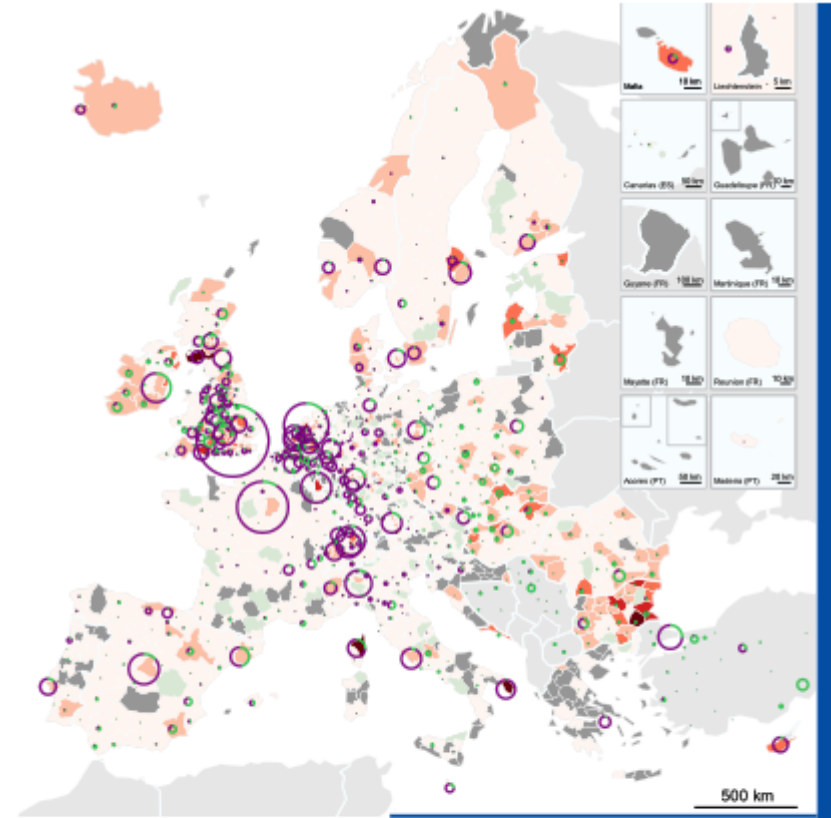
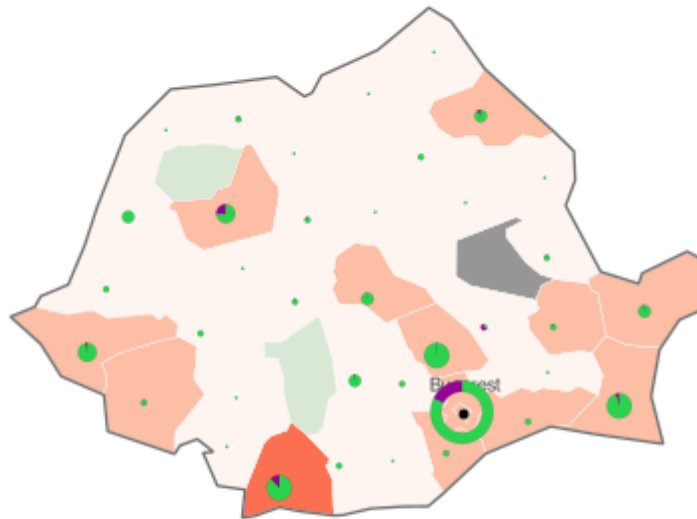
Source: ESPON SME, 2017
 Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee, Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigungsstatistik, Statistics Norway national BD, Central Statistical Office Poland national BD, Statistics Portugal Integrated Business Accounts System, National Statistics Institute Romania national SBS, Statistics Sweden Business Register, Bundesamt für Statistik Schweiz, SBA Factsheet Greece 2016.

Large share of SMEs especially around Bucharest

The share of persons employed in small and medium-sized enterprises is an indirect indicator of an active market, since for most thriving cities SMEs are the backbone of the local economy. In northern and north-eastern European countries SMEs are important employers, with employment shares above 55%, e.g. in Sweden and parts of Germany, Poland, France and Lithuania. In countries such as Belgium, Germany and Lithuania, SMEs are predominant in rural regions, while in Italy, France, Finland and Portugal the opposite is the case.

In general, Romania has a large share of small and medium-sized enterprises (between 35 and 45%) distributed across the entire territory, but particularly concentrated in the regions neighbouring Bucharest at a rate between 45 and 55%. SMEs in central and western regions, as well as Bucharest exhibit average or above average share of employment in knowledge and creative economy and ICT sector. Urbanisation, good governance, high accessibility and a high education level of the population are the main drivers for SMEs development.

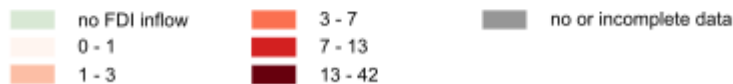
Extra-EU FDI inflows



ESPON   © ESPON, 2020
 Regional level: NUTS 3 (2013)
 UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund



Extra-EU FDI inflows, 2003-2015

As a % of GDP



Cumulative deal value and type (billion EUR)



 Greenfield investments
 Mergers and acquisitions

Source: Atlas for Territorial Agenda
 Origine of data: ESPON World in Europe, 2019

Extra-EU FDI mostly concentrated in the developed counties

There is a clear tendency for FDI (including extra-EU) to be attracted by large countries. The five largest countries in terms of GDP (i.e. Germany, UK, France, Italy and Spain) thus accounted for almost 60% of total FDI inflows into Europe over the period 2003-2015. Extra-EU FDI is highly concentrated across regions from EU15 Member States that accounted for around 82% of total extra-EU FDI towards Europe in the same period. The extra-EU FDI inflows between 2003-2015 highlight that capital city regions attract large values of greenfield investments, but the M&A investments are mostly widespread in some regions of the EU-15 member states (UK, France, Germany, Italy, Spain), where also the highest cumulative deal values of extra-EU occur.

Relative to GDP, Romania had the lowest volume of FDI stocks in the region (39%) in 2015. The extra-EU FDI amounts are smaller compared to intra-EU FDI. The greenfield investments have grown steadily since 2003 in nominal terms, also during the crisis. As a share of the total value of FDI, greenfield investments were permanently above 50%. The spatial distribution highlights the counties with high GDP, but also smaller counties with predominantly agricultural profile. FDI values as a share of GDP vary from maximum (3.41%) in Dolj County (automotive industry) to a county with no inflow of extra-EU FDI. The counties with values over 1% as a share of GDP largely coincide with the counties with the highest values of extra EU FDI in 2003-2015.

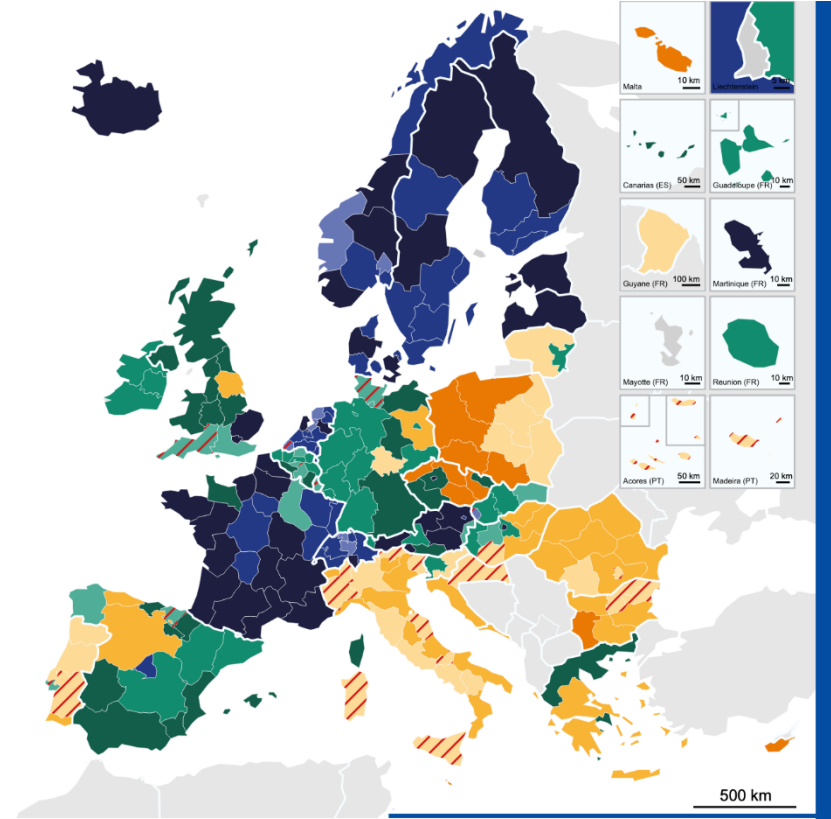
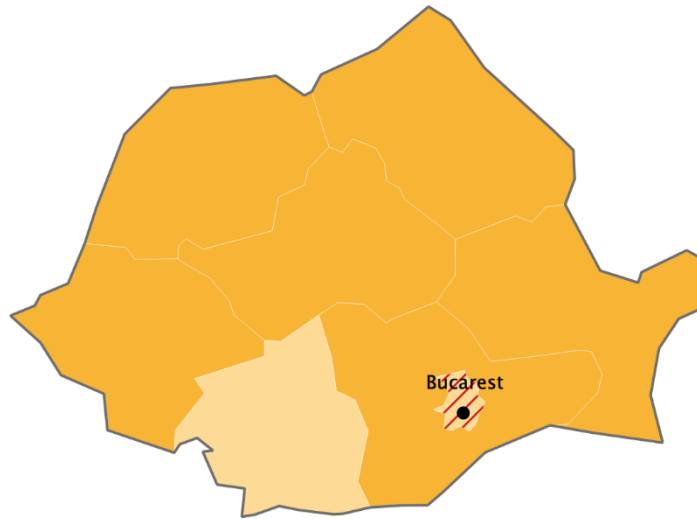


Digital Europe

Status and evolution of eGovernment interactions (2014-2019)


Broadband access (2018)

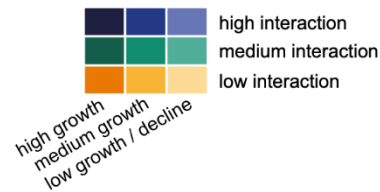
Status and evolution of eGovernment interactions (2014 - 2019)



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Regional level: NUTS 1/2 (2016)
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Share of people who have interacted with public authorities online (2019) and change (2014-2019)

 decline (2014-2019)



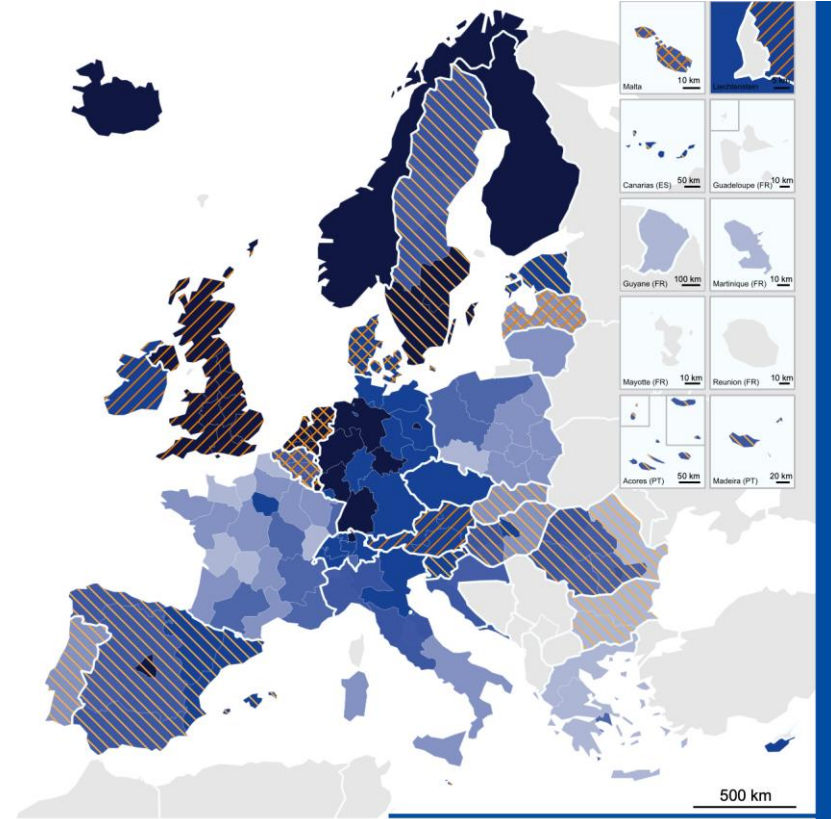
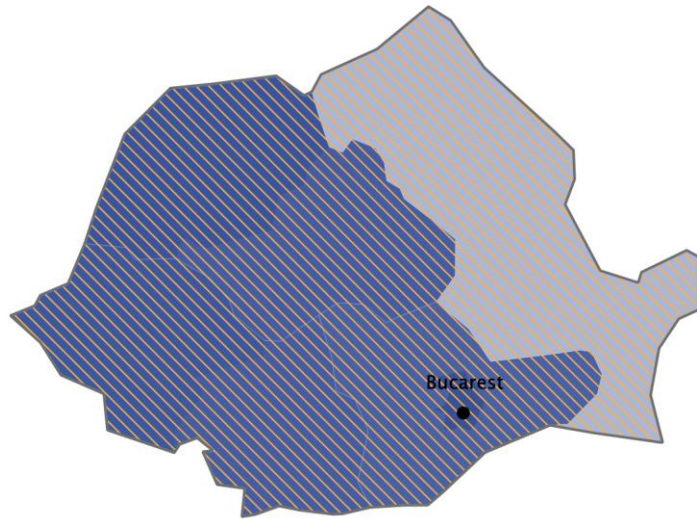
Source: ESPON EGTC, 2019
Origin of data: Eurostat, 2020

Low eGovernment interaction except for local initiatives

Digital transition is shaping not only households and businesses, but also the way in which citizens interact with government, and long-term can help counter difficulties related to the access to public services in remote areas. Currently, more than half of the European population of all ages is using the online environment for public services. The process of digitisation is mostly lead by larger, more developed cities that are both willing and able to provide such services. Digitisation is spearheaded by Nordic countries, Belgium, France, Austria and the Netherlands both in terms of growth and interaction, while southern and eastern European states are at the opposite end of the spectrum, with both low growth and low interaction.

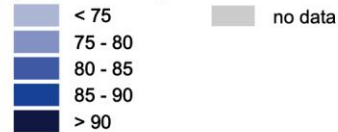
Nearly all regions in Romania exhibit medium growth and low eGovernment interaction. Attempts to improve the provision of online services to citizens are mostly local initiatives, such as those by the City of Galați (South-East Region), the City of Oradea (North-West Region) and Prahova County (South-Muntenia Region), and mostly cover urban planning aspects. The only nationwide public service is related to online tax payments. Digitisation could provide benefits especially to citizens in mountainous, deltaic and rural areas, as well as generally lead to simplified administrative procedures, reduced bureaucracy and improved citizen-administration interactions.

Broadband access (2018)

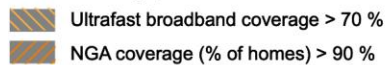


ESPON  © ESPON, 2020
 Regional level: NUTS 2 / 1 / 0 (2013)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

Proportion of households with broadband access, 2018 (% share of all private households)*



Countries with high values in ultrafast broadband or NGA coverage, mid 2018



Origin of data: Eurostat, DESI Index 2019
 Definition: Ultrafast broadband offers at least 100 Mbps download speed, NGA = next-generation access
 * The availability of broadband measured by the percentage of households that are connectable and thus refers to coverage.

Excellent broadband coverage but limited access

With technology impacting increasingly larger parts of economy and society, broadband access is becoming a critical infrastructure for both businesses and households, similar to the role of traditional infrastructure in the previous century. For businesses, innovation and competitiveness is crucial, with better broadband being a key component. For households, high-speed internet affects lifestyle and entertainment choices and enables enriched non-traditional education, real-time telemedicine, improved public services and safety, smart homes and electronics, as well as access to the global labour market through teleworking.

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Disclaimer:

The content of this publication does not necessarily reflect the opinion of the ESPON 2020 Monitoring Committee.

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