

Territorial patterns and relations in Poland

Smarter Europe

Greener Europe

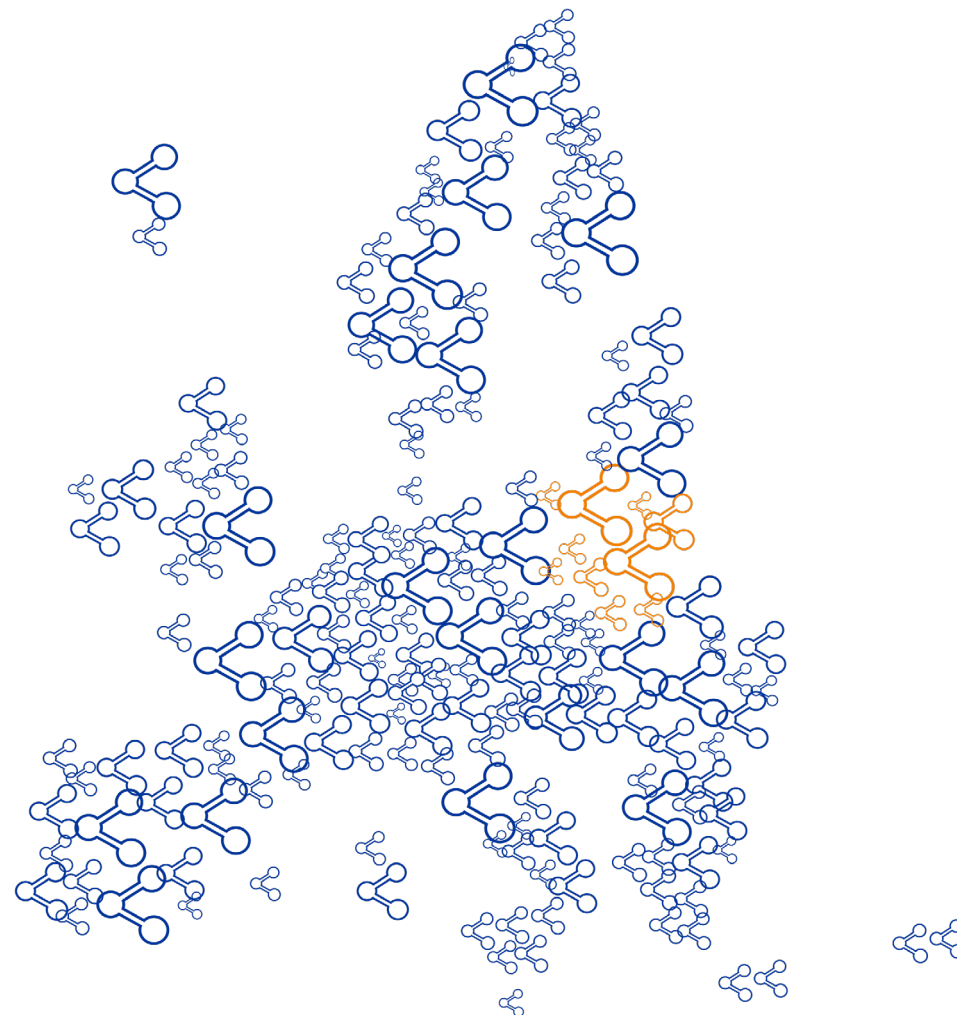
More connected Europe

More social Europe

Europe closer to citizens

Interactive version:

www.espon.eu/participate/espon-your-country/poland



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.



Smarter Europe

Regional Innovation Scoreboard (2019)

R&D expenditure (2014)

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

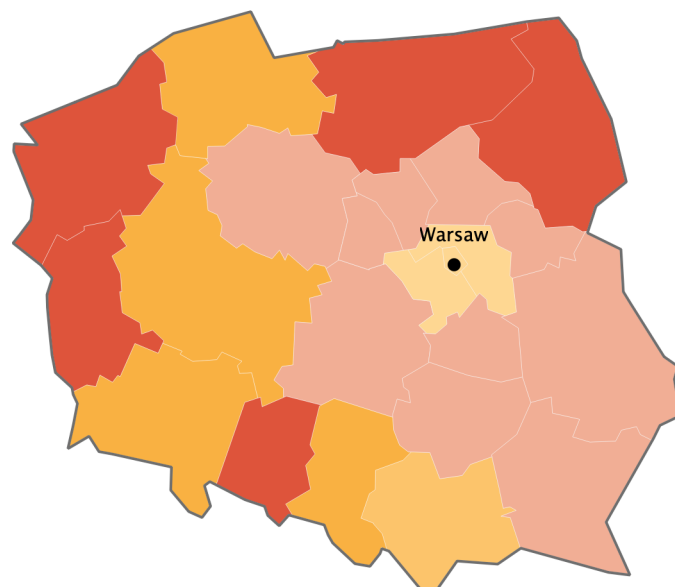
Knowledge-economy in regions (2015)

Regional patterns of 4.0 technological transformation (2019)

Dominant types of enterprises in regions (2014)

Decentralised circular economy (foresight scenario)

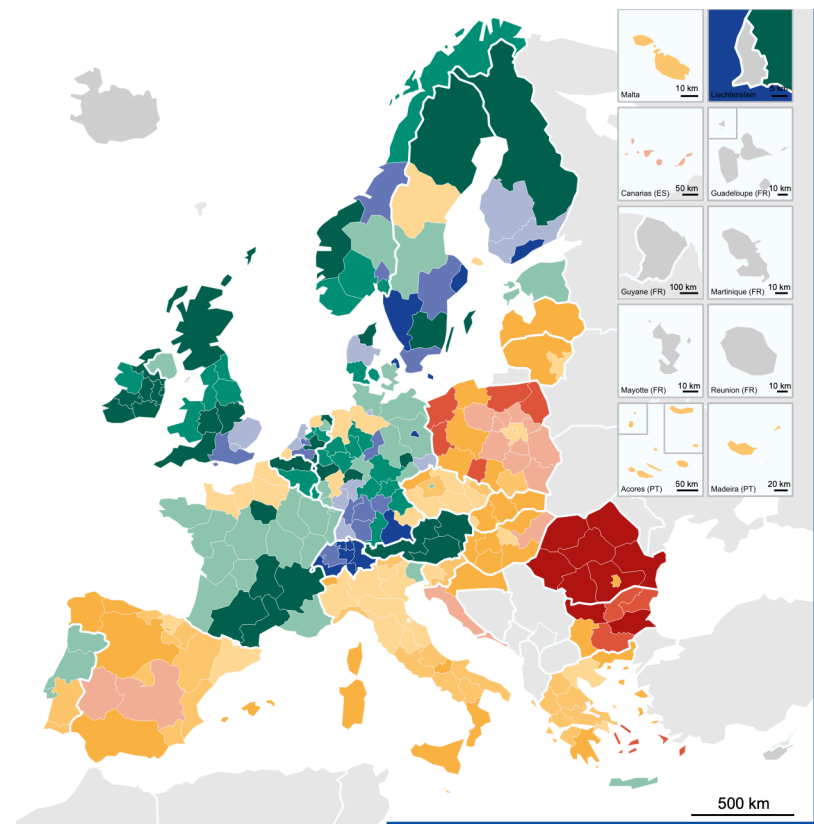
Regional Innovation Scoreboard (2019)



ESPON
EUROPEAN UNION
© ESPON, 2020
Regional level: NUTS 1/2 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

RIS Performance groups 2019

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



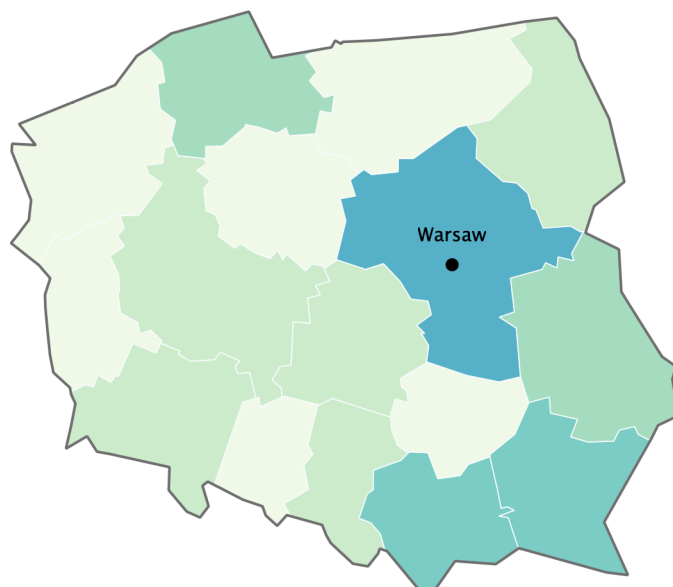
Origin of data: Regional Innovation Scoreboard, 2019
Definitions: The RIS 2019 is a comparative assessment of regional innovation based on the European innovation scoreboard methodology, using 18 of the latter's 27 indicators. It provides a more detailed breakdown of performance groups with contextual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


Modest to moderate performance profiles due to scarce R&D investments and limited innovation in SMEs

Innovation performance is measured by the European Commission on the basis of the unweighted average of 17 indicators reflecting human resources, research systems, R&D expenditure, innovation in SMEs, cooperation, patents and sales of innovative products. Based on their scores, EU regions fall into four performance groups: innovation leaders, strong innovators, moderate innovators and modest innovators, with three subgroups. At the European level, one observes a concentration of high performances in a European core area running from South-East England to Switzerland, southern Germany, including the southern part of Saxony on the border to the Czech Republic. Values are also high in a number of northern European regions with large cities.

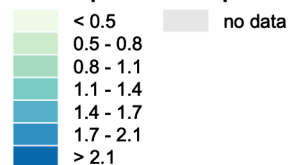
Polish regions have modest to moderate innovation performance profiles. Higher values ("Moderate+") are found in Warsaw region that records outstanding values compared to EU level average for tertiary education (Warsaw is the main university centre of the country), employment in knowledge intensive services and trademark applications. Moderate innovation profiles are also found in western regions around large tertiary education centres (Gdańsk, Poznań, Wrocław, Katowice, Kraków). Beyond lack of tertiary education infrastructures, modest innovation profile in the rest of the country is, in several cases, related to scarce R&D investments and limited innovation in SMEs.

R&D Expenditure (2014)

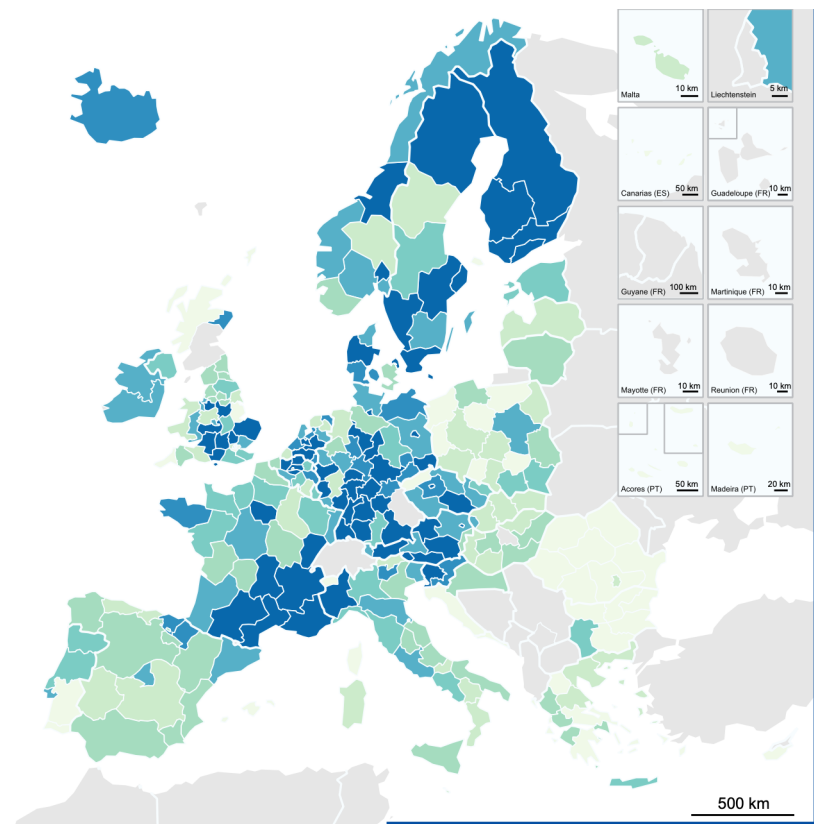


ESPON  © ESPON, 2020
Regional level: NUTS 2 (2016), NUTS2 (2013) for FR and IE
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

R&D Expenditure as percentage of GDP, 2014



100 km



Source: Spatial Foresight, 2020
Origin of data: Eurostat, online code: rd_e_gerdreg, extracted on 10.07.2020

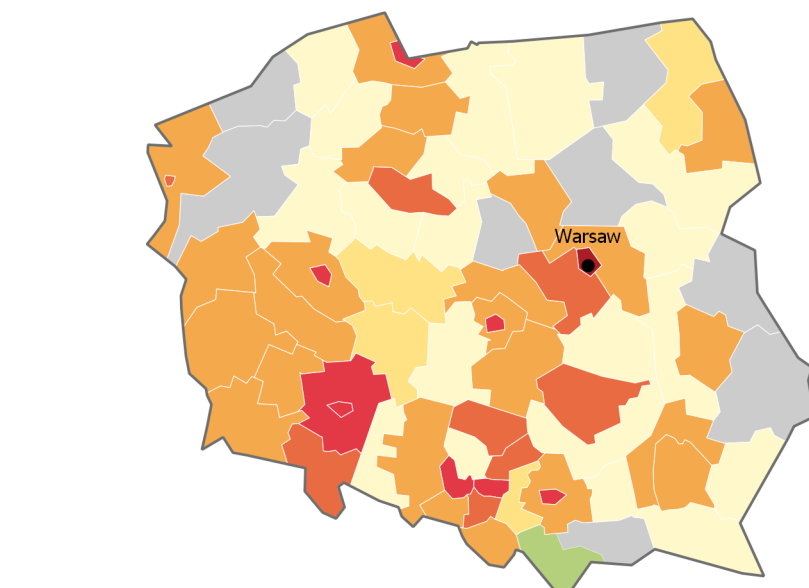
Values for Germany, Greece, Ireland, France, Austria, Finland and Sweden from 2013.

Higher R&D expenditure in Mazowieckie, Małopolskie, Podkarpackie Voivodeship

Investments in research and development aim to stimulate innovation and productivity growth and therewith stimulate competitive levels in Europe. The Europe 2020 strategy encouraged EU Member States to attain a 3% R&D expenditure level as percentage of GDP. In 2018 this level was reached by Denmark, Germany, Sweden and Austria. Regional data illustrates that R&D expenditures are particularly high in capital cities and regions with innovative industries, e.g. the car industry in Southern Germany or southern France. High shares of R&D expenditures in Finland and northern Sweden are mainly driven by the government sector.

In Poland, R&D expenditure in regional GDP is lower than the European average. According to the European innovation scoreboard (2020), this is due to limited R&D investment both in the public sector (40.3% of EU level), and in the business sector (54.1% of EU average). In 2014, regional R&D expenditures are relatively higher in eastern regions. R&D investments are highest in the Mazowieckie voivodeship (1.7%), Małopolskie (1.4%) and Podkarpackie (1.4%) voivodeships. R&D expenditure remain behind in predominant rural regions, for instance in Opolskie, Lubuskie, Zachodniopomorskie, and Warminsko-Mazurskie. The share of R&D expenditures against GDP are here among the lowest in Europe.

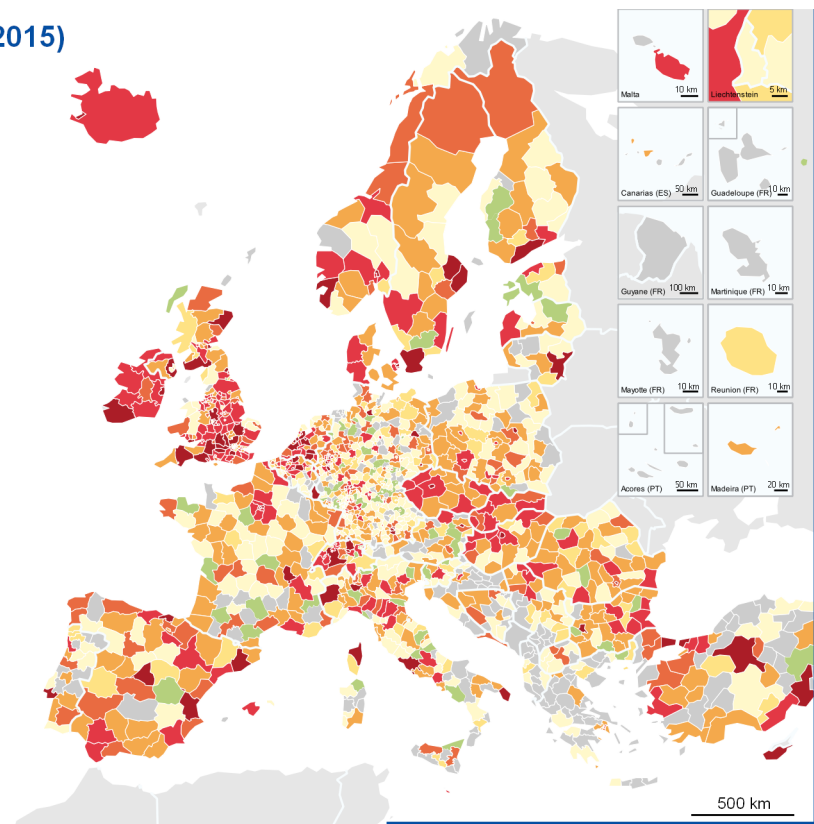
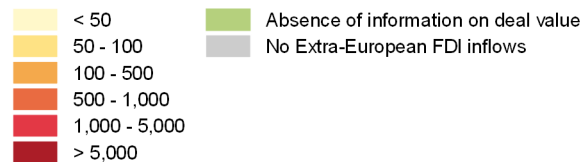
Extra-European FDI inflows by sector across European regions (2003-2015)



ESPON
Co-financed by the European Regional Development Fund

© ESPON, 2020
Regional level: NUTS 3 (2013)
© UMS RIATE for administrative boundaries

Value of extra-European FDI inflows to European regions in 2003-2015 (in million euro, 2015 value)



Source: The World in Europe, global FDI flows towards Europe, 2017
Origine de data: Copenhagen Economics based on BvD's Zephyr and the Financial Times databases, 2016

Higher concentration of FDI in main cities and their regions

Amounts of Foreign Direct Investments recorded in a region reflects its regional capacity to attract capital from third-country investors. Some countries attract high amounts of FDI distributed across all regions. This is the case in the Netherlands, Ireland or the UK. In Ireland, case study shows that it is due to an aligned targeted FDI strategy aimed at maximising the potential of regions outside the capital. In other country, metropolitan capital regions and their neighbouring regions tend to attract significantly more FDI than other region, as observed in France, Spain, Hungary or the Baltic States. Absence of "information on deal value" is the consequence of gaps in the database. The results should therefore be considered with caution.

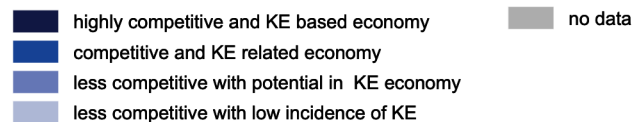
In Poland, FDI inflows from extra European sources are more massive in the south-eastern part of the country. Highest total amounts invested are recorded in main cities, such as Gdańsk, Łódź, Wrocław, Katowice, Kraków, Poznań, Warsaw, which are also the most industrialised and economically advanced regions of the country. High values are also recorded to a lesser extent, in the surrounding areas of these urban areas, for instance in Dolnośląskie, Lubuskie, western Wielkopolskie, Śląskie, Łódzkie, Świętokrzyskie regions. Similar preference to urban industrial areas for extra-European FDI flows can be observed in other parts of Europe.

Knowledge-economy in regions (2015)

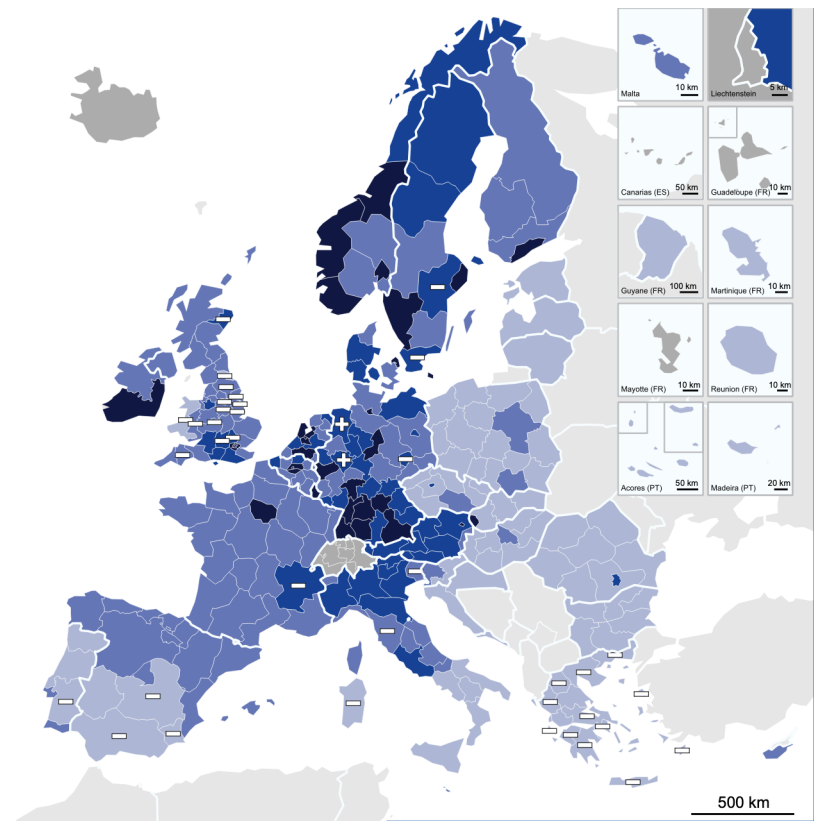
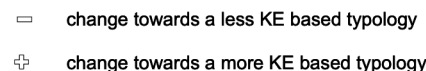


ESPON
© ESPON, 2020
Regional level: NUTS 2 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Regional classification of Knowledge Economy (KE), 2012-2015



Change in typology between 2004 and 2015*



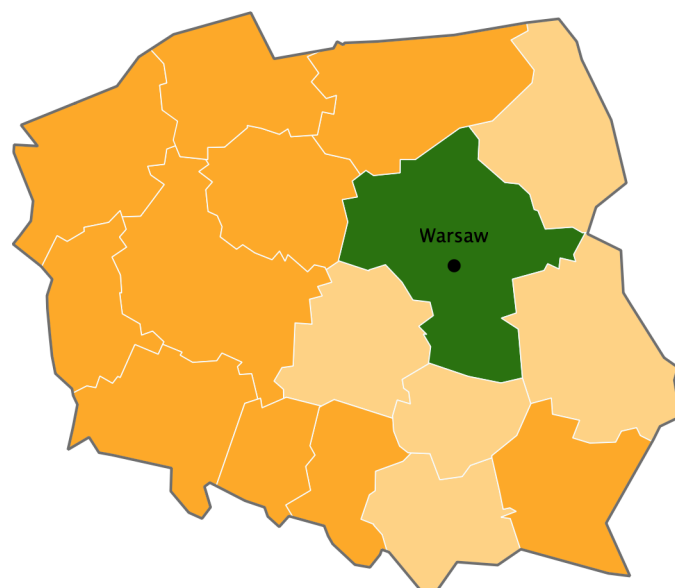
Origin of data: Eurostat, IRS Milano, IES Brighton, IRS Erkner, 2017
Definitions: Regional classification of KE according to labour market conditions, KE potential, population and migration dynamics and context indicators, 2012-2015
* Regions that did not change the KE typology between 2004 and 2015 are not marked with a symbol.

Higher potential for knowledge economy development in Mazowieckie and Małopolskie regions

The knowledge economy (KE) follows a clear core-periphery polarisation, with highly competitive regions located mostly in northern European regions or large cities. Less competitive regions with low incidence of KE are mostly found in the Mediterranean and eastern European countries. Many of them have been severely affected by the economic crisis. A number of regions have shifted to a less KE-based category between 2004 and 2015. These regions are concentrated in Greece, the southern Iberian Peninsula and the UK. Successful strategies to support the development of a KE in advanced and lagging regions are based on a careful assessment of territorial resources, a capacity to raise funds, and effective multilevel institutional cooperation.







In a European context, Polish regions have similar knowledge economy characteristics as can be observed in other eastern European countries. Most Polish regions are classified as "less competitive with low incidence of KE". Two regions stand out with more favourable situation: Mazowieckie (incl. Warsaw) and Małopolskie voivodeships. In these regions R&D investment patterns, economic activities and labour market, as well as migration trends indicate stronger potential for the development of KE in the future.

Regional patterns of 4.0 technological transformation (2019)

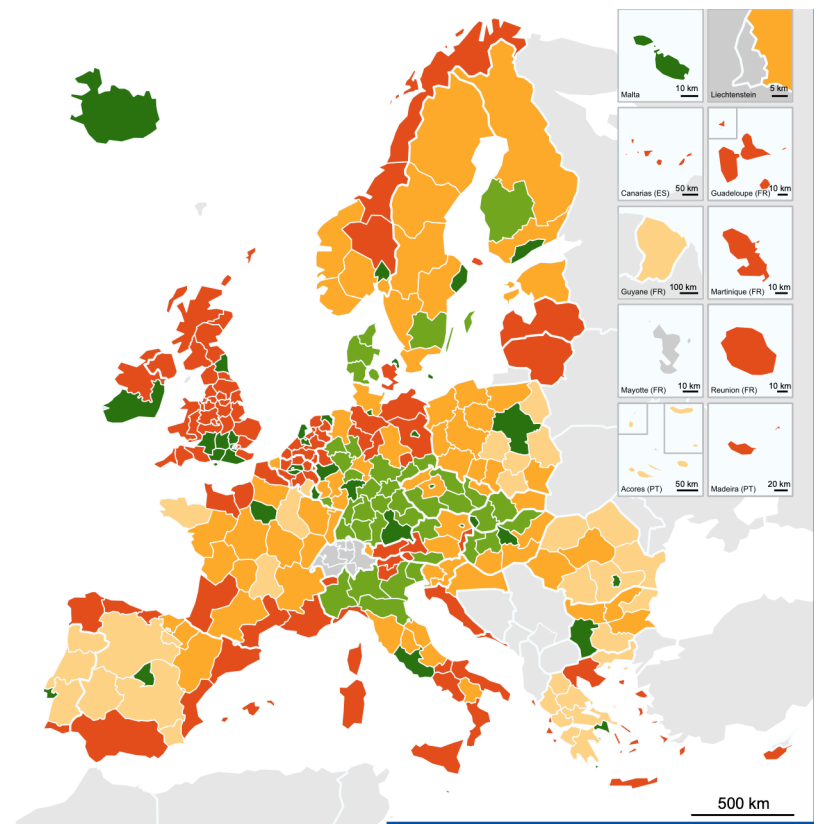


ESPON   © ESPON, 2020
Regional level: NUTS 2 (2013)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Regional patterns of 4.0 technological transformation

-  Servitisation
-  Industry 4.0
-  Digitalisation of traditional services
-  Robotisation of traditional manufacturing
-  Niches of robotisation
-  No data

100 km



Source: ESPON T4, 2020
Origin of data: Eurostat, 2019

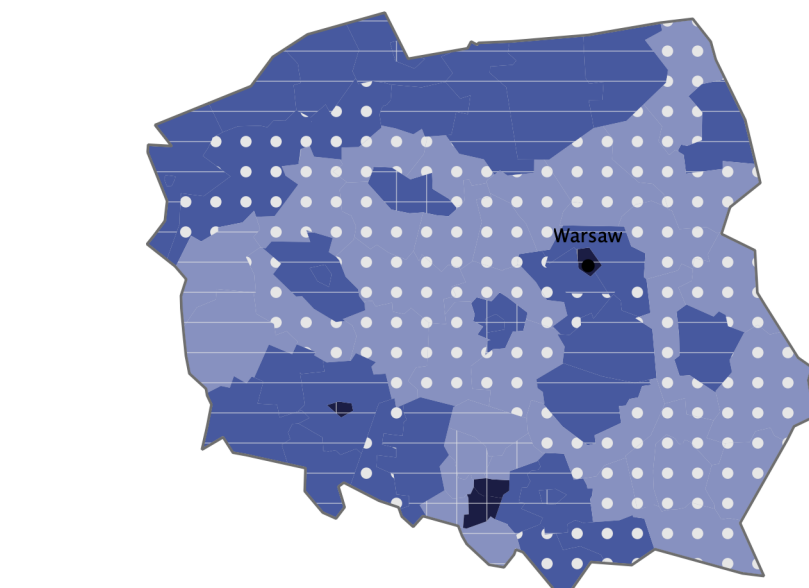
500 km

Moderate progress to industry 4.0 in regions with a pre-dominant manufacturing industry

Five clusters identify regions with specific patterns of technological transformation. Servitisation (specialisation in new technologies and industrial sectors undergoing changes in industrial production and society) found mainly in large urban areas. Industry 4.0 (specialisation in creative manufacturing), located mainly in southern Germany and Northern Italy. Digitalisation of traditional service (specialisation in digitalising traditional services), as in Baltic regions, most of the Netherlands. Robotisation of traditional manufacturing, (adoption of 4.0 technologies) seen in France and Poland. Lastly, niches in robotisation (technological transformation only due to industrial niche adopters, found e.g. in Eastern countries and Greece.

Polish regions are characterised by a pre-dominant manufacturing industry, except in Mazowieckie, which has a pre-dominant service industry. Advancements towards industry 4.0 are most developed in Mazowieckie voivodeship (incl. Warsaw) which is progressing towards "servitisation". Innovative service provision through digital intermediaries benefits from high densities and higher purchasing power in Warsaw metropolitan area. Diverse developments can be observed in the other regions. Most regions experience robotisation of traditional manufacturing. In western regions, this trend is widespread across dominant sectors (e.g. automotive, textile, or steel industries), while it is happening in specific sectoral "niches" in eastern regions.

Dominant types of enterprises in regions (2014)



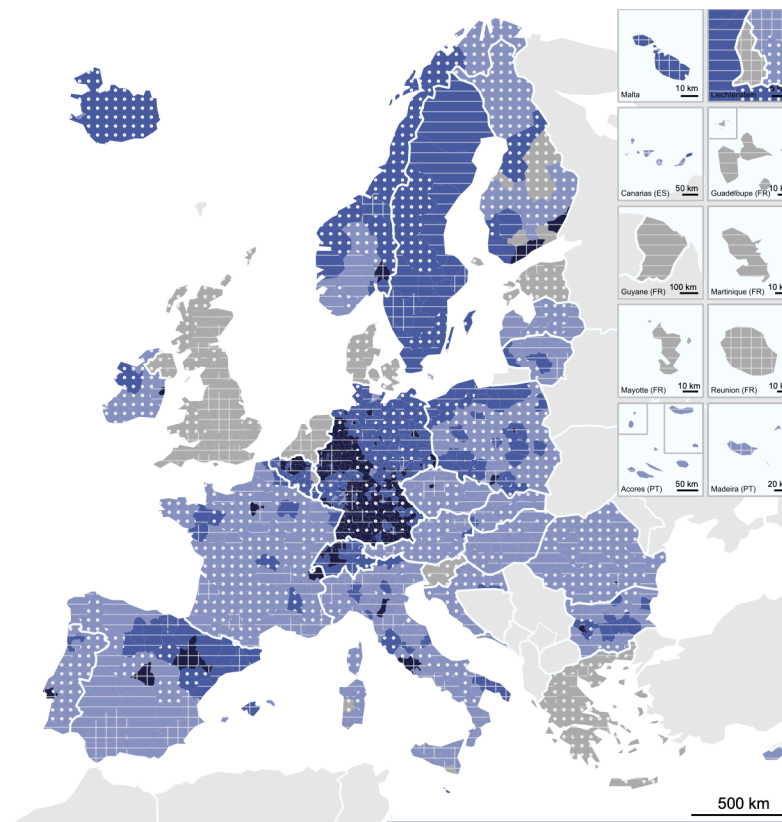
ESPON
© ESPON, 2020
Regional level: NUTS 3 / 2 / 0 (2013)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Employment by size of enterprises

- Type 1: above-average share of employment in large enterprises (250+)
- Type 2: above-average share of employment in SME (10-249)
- Type 3: above-average share of employment in microenterprises (1-9)
- no data

Urban-rural typology

- Predominantly urban
- Intermediate
- Predominantly rural



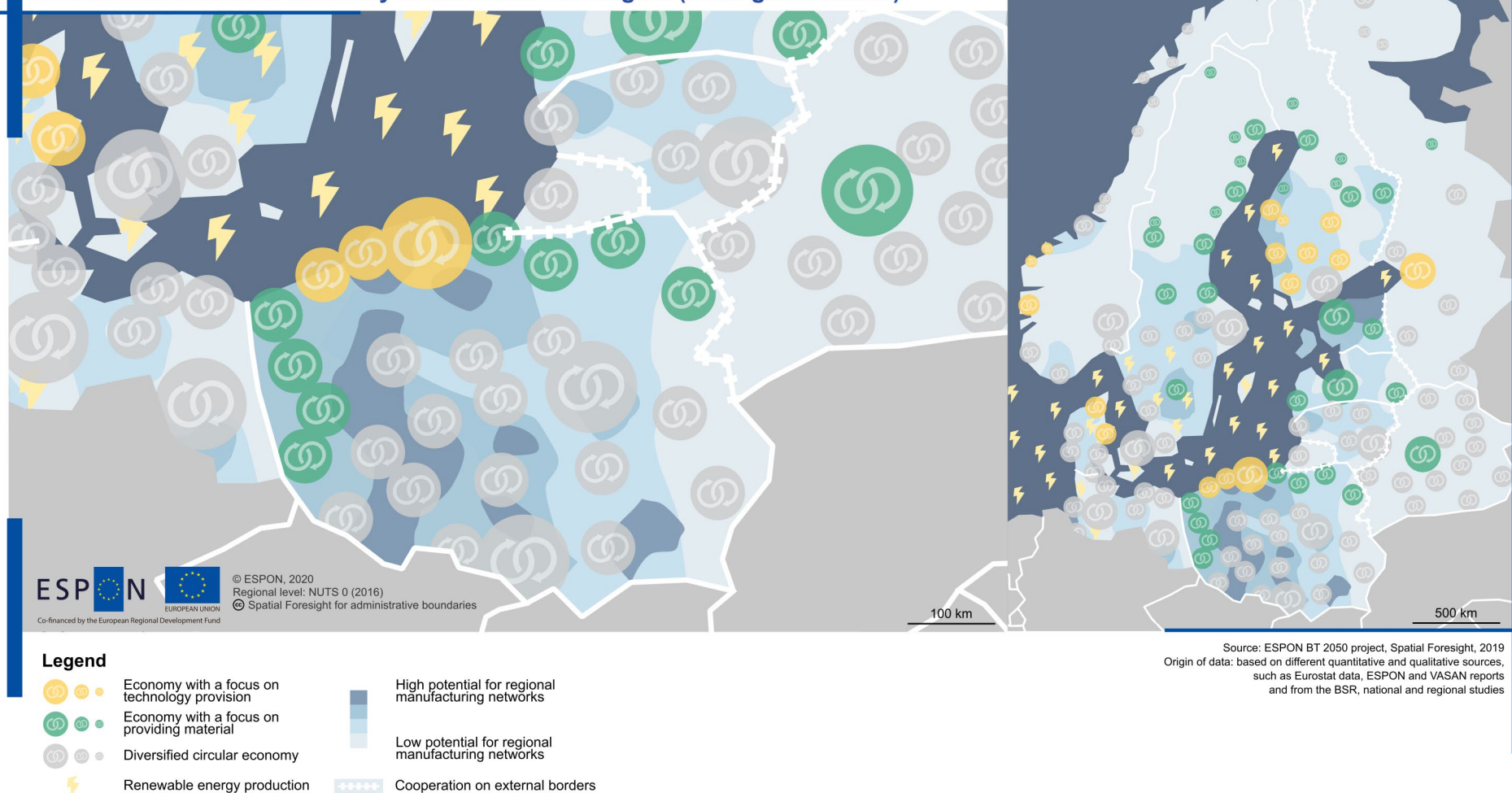
Origin of data: Eurostat Business Demography, Structural Business Statistics, Statistics Austria national SBS, Eurostat urban-rural typology.

Employment patterns strongly linked to urban-rural structures in Poland

Regions with an above average share of employment in large enterprises are predominantly urban. In these regions, one can also observe a positive development of employment in SMEs. Capital city regions and regions in southern and western Germany belong to this type. Regions with an above-average share of employment in SMEs are found in northern and central European regions with diverse sectoral specialisation in the knowledge economy and ICT as well as regions in northern Poland, central Bulgaria, north-eastern Spain and parts of Italy. Regions with thriving microenterprises are found all over Europe, with sectoral foci in services, tourism or knowledge economy and ICT.

Urban-rural territorial structures define, to a large extent, dominant types of enterprises in Polish regions. The dense and urbanised regions of Warsaw, Katowice and Wrocław have above average share of employment in large enterprises. This is related to the presence of large industrial plants and headquarters of tertiary enterprises. Regions with an "intermediate" profile tend to have an above average share of employment in SMEs (e.g Baltic coast, at the border with Czech Republic and with Slovakia and in Mazowieckie voivodeship). Regions classified as "predominantly rural" have higher shares of employment in micro-enterprises. This includes in particular small farms and crafts that are a key element of the rural economic landscape.

Decentralised circular economy in the Baltic Sea Region (foresight scenario)



Coastal and border regions potential core areas for technology and material provision

Based on a participative process in the region, the BT2050 project has produced two alternative territorial scenarios for the Baltic Sea region in 2050. One is focused on “Growing into green-tech giants” and puts the achievements of the 4th industrial revolution as the epicentre of everyday life. This may lead to a functional polarisation between territories with highly innovative activities in the cross-border global urban networks of Copenhagen-Malmö and Helsinki-Tallinn. The other scenario focuses on “Well-being in a circular economy” and depicts trends towards a growing repairing and sharing culture which may imply a more decentralised economic system, and re-localised ecological food production.

Focusing the economy on well-being and circularity would provide opportunities for Polish regions along the Baltic Sea to position themselves as “technology provider” in 2050. In particular regions along the Baltic coast would benefit from innovation in the “blue economy”. Regions at the borders with Germany, Kaliningrad and Lithuania could become hotspots of “material production” (e.g. new industrial specialisation). The rest of the country could be characterised as diversified circular economies. Current densities of industries and crafts related provide a high potential for regional manufacturing networks to develop in western Poland.



Greener Europe

Coverage of potential Green Infrastructure and change in urban green areas (2012)

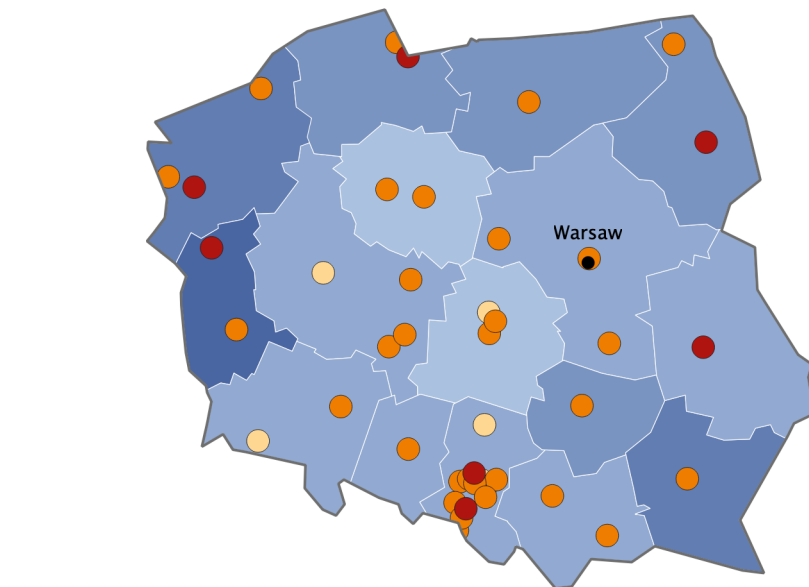
Potential Green infrastructure networks (2012)

Aggregated potential impact of climate change

Urban land use development in relation to population development (2000-2018)

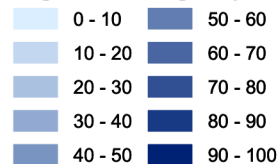
Flood hazard (areas exposed to events with 100-year return period)

Coverage of potential Green Infrastructure (2012)



ESPON
© ESPON, 2020
Regional level: NUTS 3 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

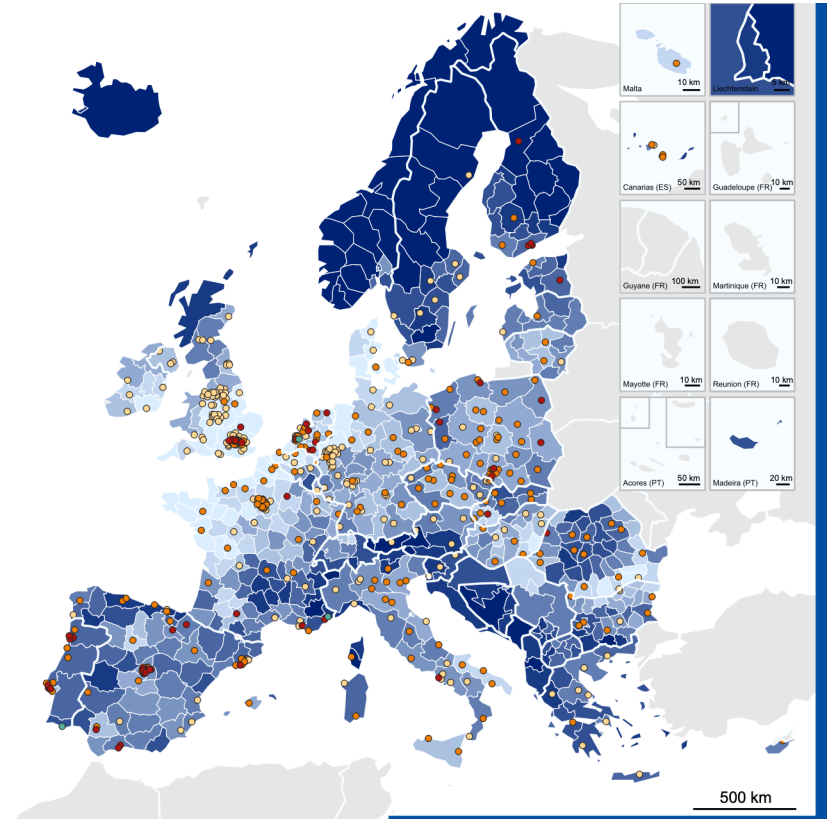
Regional coverage of potential GI network



Change of green areas within cities, 2006 - 2012*



100 km



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

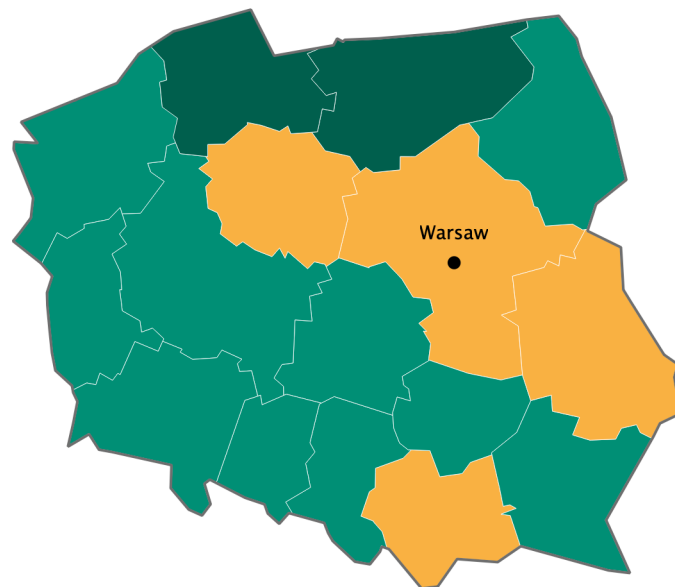
Green infrastructure network more prevalent in regions along the Baltic coast and along borders

Evolutions in proportions of green and blue areas between 2006 and 2012 have been calculated for 524 European “core cities” based on Urban Atlas data. On average, green and blue areas cover about two thirds of the area in European core cities. In a majority of cities, this proportion is decreasing slightly between 2012 and 2016. Significant decreases tend to be found in eastern and southern European countries. This is mainly a result of urbanisation and/or of the development of tourism. Green infrastructures cover a low proportion of the area in an area running from western France and Cornwall to Denmark. They are the highest in northern Scandinavia and the Western Balkans.

In Poland, green infrastructure networks are more comprehensive and better connected in northernmost regions and border regions in relation to higher prevalence of forest land coverage compared to other regions.

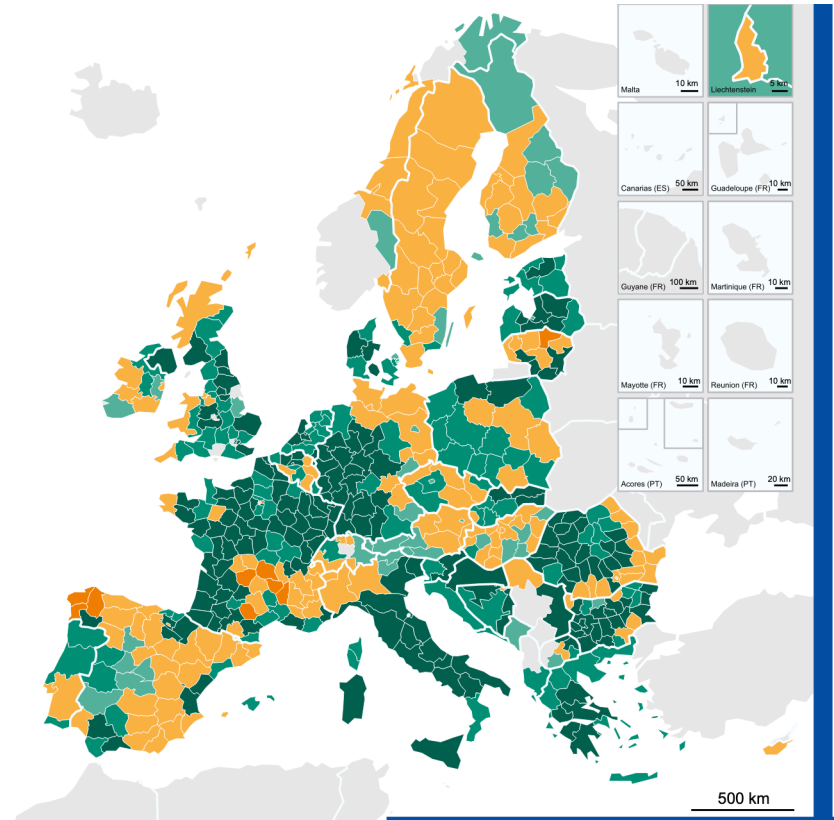
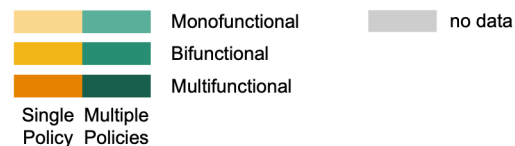
Like in other countries in Europe, almost all Polish cities have recorded a decrease of green areas within their boundaries between 2006 and 2012. Exceptions are found in central and western Poland: Zgierz, Poznan, Katowice, Chorzów, Jelenia Góra, and Czeszochowa managed to keep a rather stable share of green areas.

Potential Green Infrastructure networks (2012)



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

Dominant type of Green Infrastructure (GI) links*



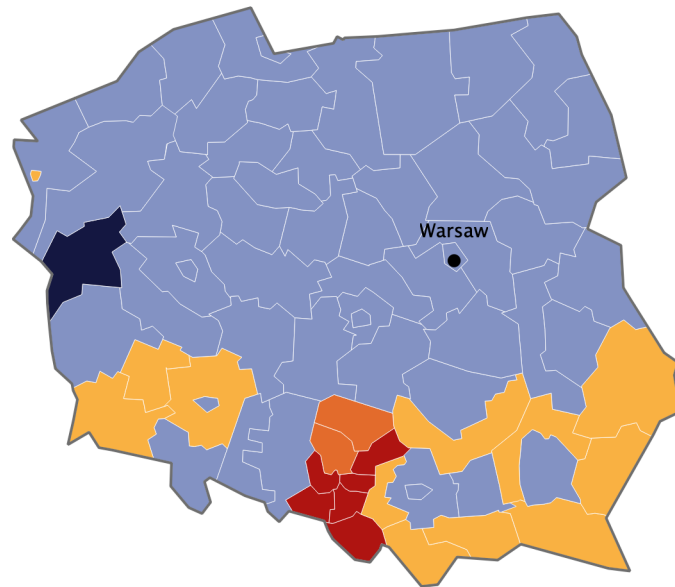
Origin of data: CLC 2012, Copernicus HRL Impervious 2012, OSM 2017, Natura 2000 (EEA, 2012), Emerald Network 2012, MAES (2011, 2015), HNMF (EEA 2015), Ecosystem types of map (ETC-SIA 2015)
Definitions: Multifunctionality in GI planning means that multiple ecological, social and also economic functions shall be explicitly considered instead of being a product of chance.
Single policy: the purpose of GI is to serve one single policy (e.g. biodiversity, climate change, water management, etc.)
Multiple Policies: the purpose of GI is to serve multiple policies simultaneously.

High synergies between ecosystem services provided by green infrastructures

Green Infrastructure (GI) can be defined as a strategically planned network of natural and semi-natural areas whose environmental features are designed and managed to deliver a wide range of ecosystem services (ES) in both rural and urban areas. GI development can be a component of different policies i.e. Biodiversity, Climate Change and Disaster Risk Reduction and Water Management. It can also provide one or more environmental services, making it mono- bi or multi-functional. At the European level, GI tend to contribute to a single policy in many mountainous and less populated regions (e.g. western Alps, Iberian mountain regions, Massif Central). However, observed patterns are complex, as a wide range of factors intervene.

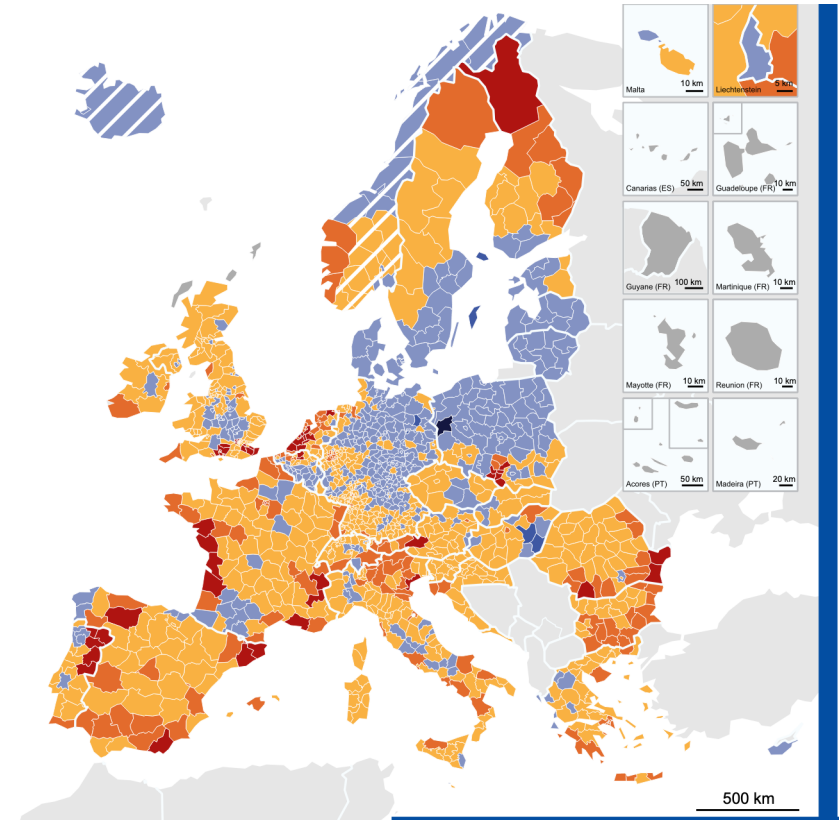
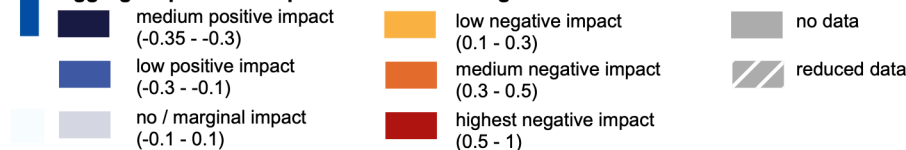
In Poland, GI tend to be bifunctional, meaning that they provide at least two different types of ES. However, while GI tend to serve multiple policies in northern and south-western regions, they tend to serve only one policy in Mazowieckie, Kujawsko-Pomorskie, Lubelskie and Małopolskie voivodeships. This makes of Poland one of the European countries where synergies between ES is most developed. In practical terms, the improvement of ES tends to have a multiplier effect on others (increasing the provision of ecosystem services). Therefore, the implementation of GI is quite efficient since a focus on improvement of key ES results in co-benefits that supports the achievement of several policy objectives.

Aggregated potential impact of climate change



ESPON  © ESPON, 2020
Regional level: NUTS 3 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

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

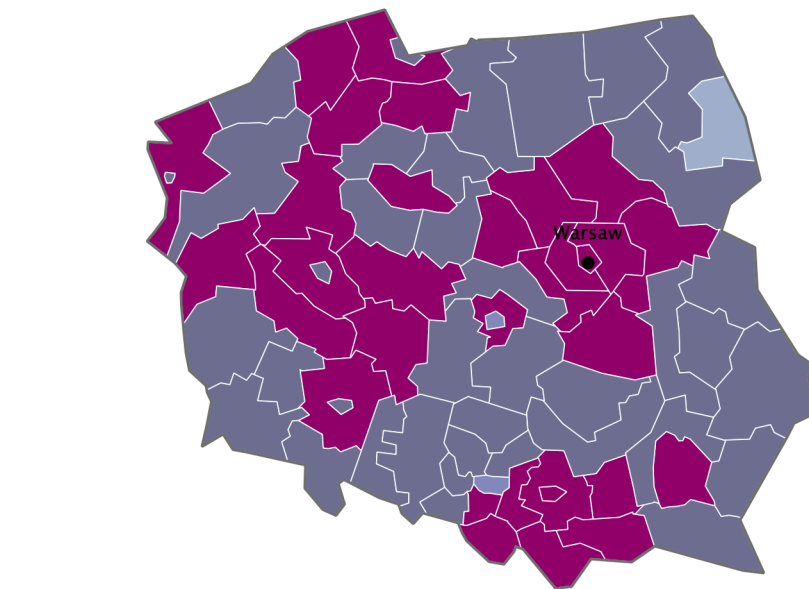
Note : regions with reduced data are missing information related to environmental sensitivity and exposure. For more details, see ESPON Climate Update Annex

Overall limited potential impact of climate compared to other European regions

Aggregated potential impact of climate change brings together environmental, physical, social, cultural and economic expected consequences of future climate disruption based on combined measures of regional “sensitivity” and “exposure”. Important factors for the potential impact of climate change are high slopes (e.g. in mountainous regions), exposure to soil erosion (e.g. in river deltas or along coasts) and large protected areas, flood and drought risks. Regions that are the most exposed are primary close to a coastline or to a major river (e.g. Rhone, Po), southern Europe and in the inland to the north and east of Scandinavia. Exposure is more limited around the southern part of the Baltic Sea, in Eastern Germany and in most of Poland.

In Poland, aggregated impact of climate change is expected to be rather limited in most regions compared to other regions in Europe. This is mainly due to an overall limited exposure to expected meteorological changes (mean number of snow days, annual mean precipitation, change in temperature). Higher potential impact is expected though in the south of the country because of higher sensitivity in these mountainous regions, which are habitats of specific fauna and flora (*environmental* sensitivity) and partly rely on tourism and agricultural activities that could suffer from temperature rise (*economic* sensitivity).

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



ESPON
Co-financed by the European Regional Development Fund

© ESPON, 2020
Regional level: NUTS 3 (2016)
© UMS RIATE for administrative boundaries

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

with increase of artificial area by declining population

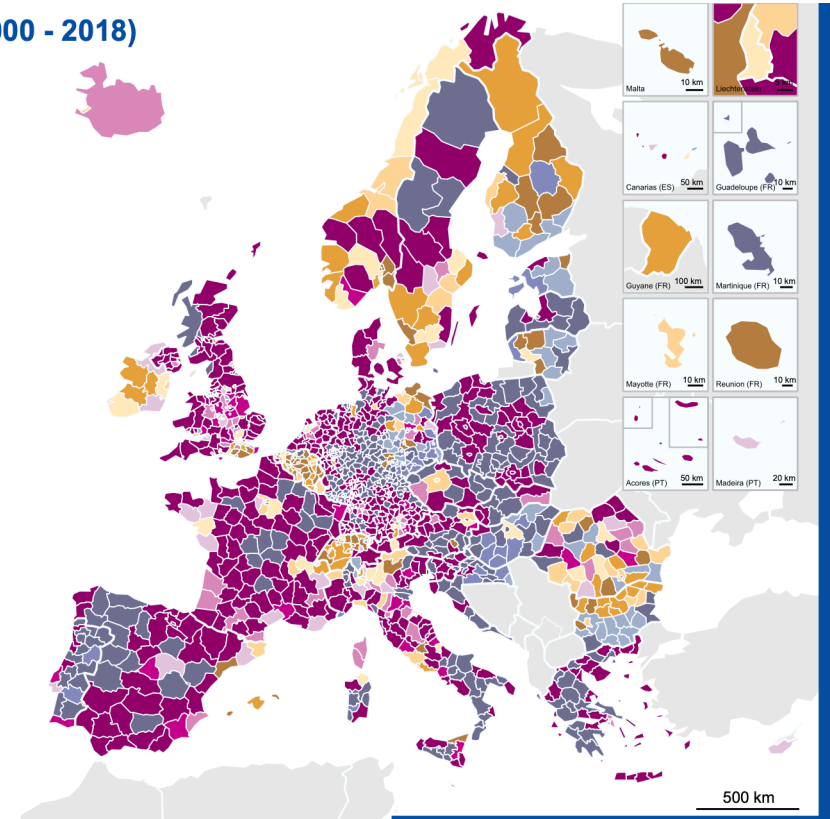
- up to below -1
- 1 up to below -0.5
- 0.5 up to below 0

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



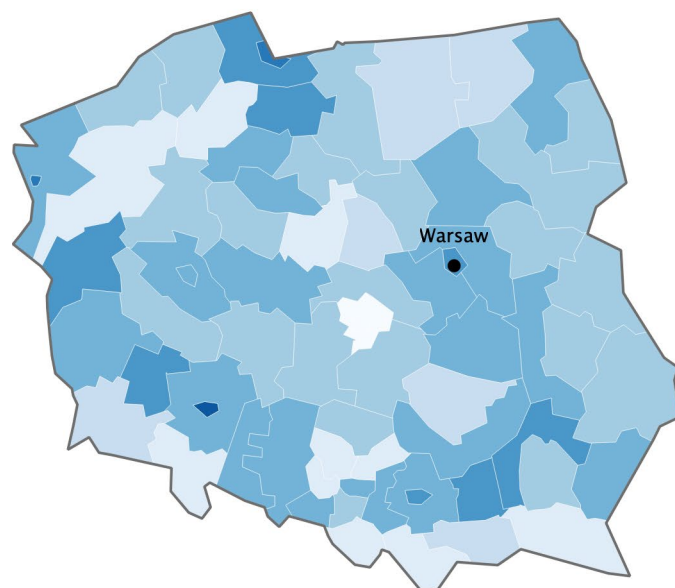
Source: ESPON SUPER, 2019
Origin of data: Corine Landcover, 2019

High relative levels of artificialisation in areas with growing and declining population

Land artificialisation is commonly considered a necessity to accommodate the development of new activities and infrastructures as population grows. A European comparison of both dynamics (artificialisation vs. demography) shows that the correlation is not systematic. This map distinguishes regions with a rather frugal profile in shades of yellow where the increase in population has been accompanied with a moderate land artificialisation, from regions with more consumptive profiles that artificialized land at a faster pace than their population growth (purple shades) or that continued to artificialize land despite a population decline.

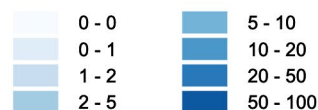
In Poland, in almost all regions, land artificialisation expanded at a high pace, with partial disconnection from the demographic dynamics. Region with declining population (in dark grey) have recorded land artificialisation rates systematically higher than in most other demographically declining regions in Europe. Regions with growing population (located mostly around large cities) have artificialized land at a pace that exceeds their population growth rate. This highlights the need to reuse building and optimise infrastructures according to each regional demographic context.

Flood hazard (areas exposed to events with 100-year return period)

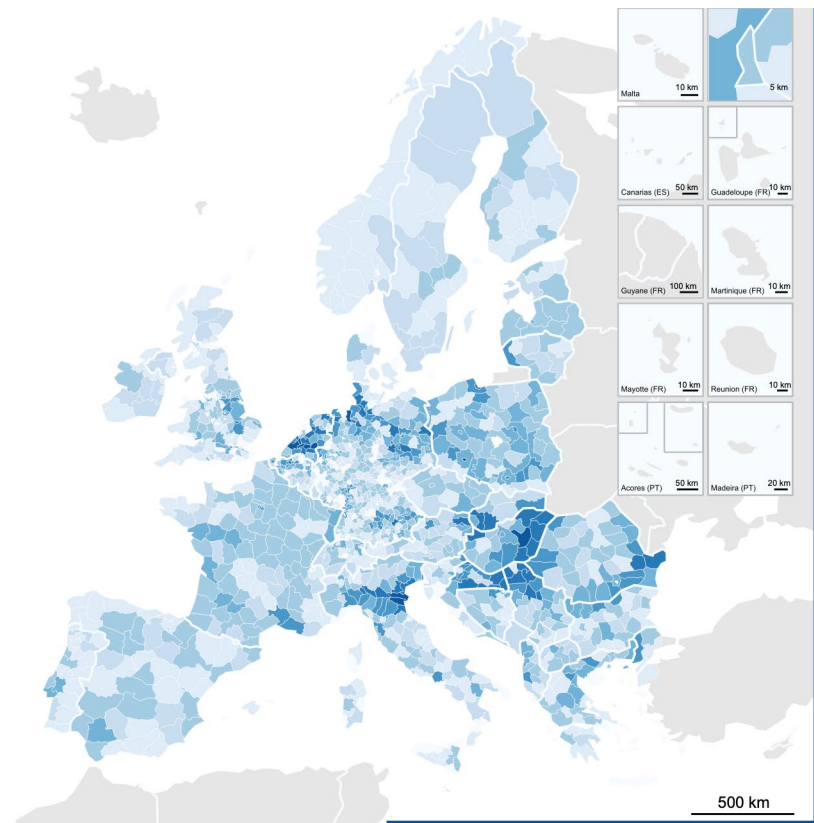


ESPON   © ESPON, 2020
Regional level: NUTS 3 (2013)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Share of regions exposed to flood hazard (% NUTS3 area, including water bodies)



100 km



Source: ESPON TITAN
Origin of data: JRC, 2020; Alfieri et alii, 2014
Methodology: calculation of the share of flood prone areas
based on 100m*100m grid provided by the JRC

Regions crossed by the Vistula, the Bug, and the Odra, most exposed to flood hazard

The number and intensity of river flooding event may increase in the future as a result of climate change. European regions are unevenly exposed to these events. The highest average values for floods per year measured for each river basin in Europe are found in the low-lying areas along the Rhine and the Danube rivers. The other river basins with high flood risks are the Po river in Northern Italy and all river systems in England. The main reason for high flood occurrence is the general increase in winter precipitation, apparent in almost all regions of Europe except in the Southern Mediterranean.

In Poland, regions most exposed to flood hazards are those located along main rivers, specifically the Vistula, from its source in the Carpathian to the Gdańsk bay, the Bug which flows into the Vistula near Warsaw, and the Odra in the south-west and west of the country that forms part of the border with Germany. Climate change could have opposite effects on precipitations and floods risks in the future, with less snow coverage but more heavy rainfall, making flooding less predictable.



More connected Europe

Broadband access (2018)

Regional share of population using e-banking services (2008-2016)

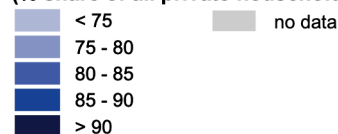
Thematic fields covered by crossborder public services (2018)

Broadband access (2018)

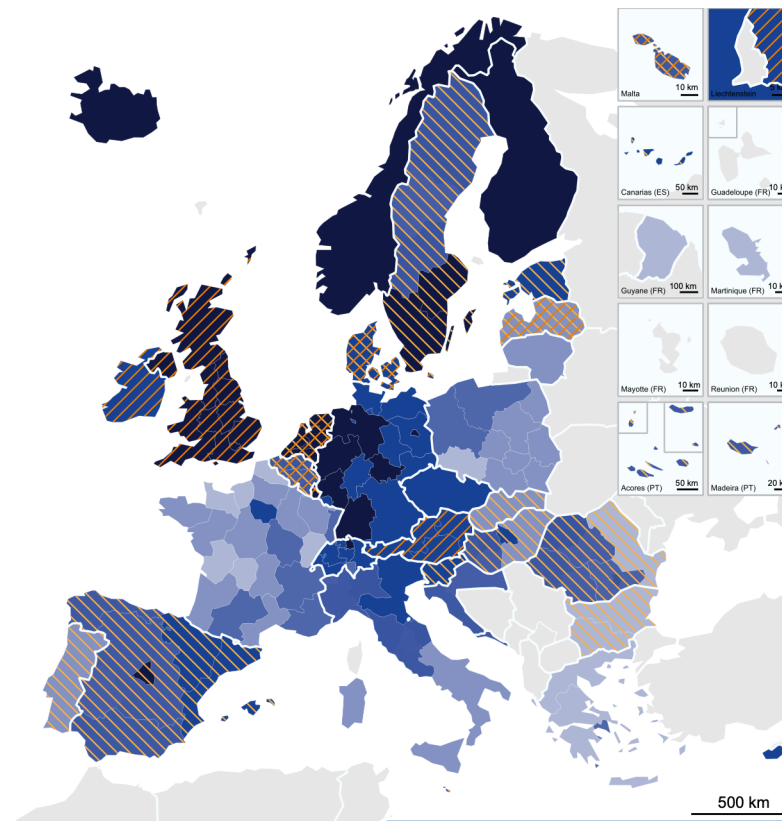
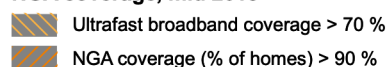


ESPON  © ESPON, 2020
 Regional level: NUTS 2 / 1 / 0 (2013)
 © UMS RIATE for administrative boundaries
 Co-financed by the European Regional Development Fund

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



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



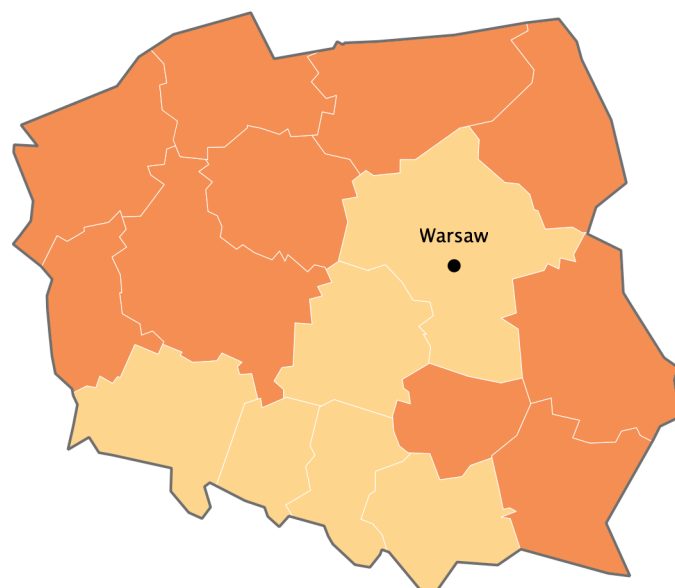
Origin of data: Eurostat, DESI Index 2019
 Definition: Ultrafast broadband offers at least 100 Mbps download speed, NGA = next-generation access
 * The availability of broadband measured by the percentage of households that are connectable and thus refers to coverage.

Better access to broadband in north-western regions

The Nordic states, the United Kingdom and Western Germany register the highest values in terms of households with basic broadband access. Most regions have more than 75 % of households with at least 30 Mbps broadband access, therefore missing the EU 2020 target of 100 % coverage. Regions in the core of Europe are close to ensuring 100 % 30 Mbps broadband access, while those in southern Europe can cover between 75 % and 85 % of households, or even less. Even though eastern European countries lag behind in terms of broadband access, with values below 75 %, they show high internet performance, having good next-generation access broadband coverage and, in some cases, high scores with regard to access to ultrafast broadband.

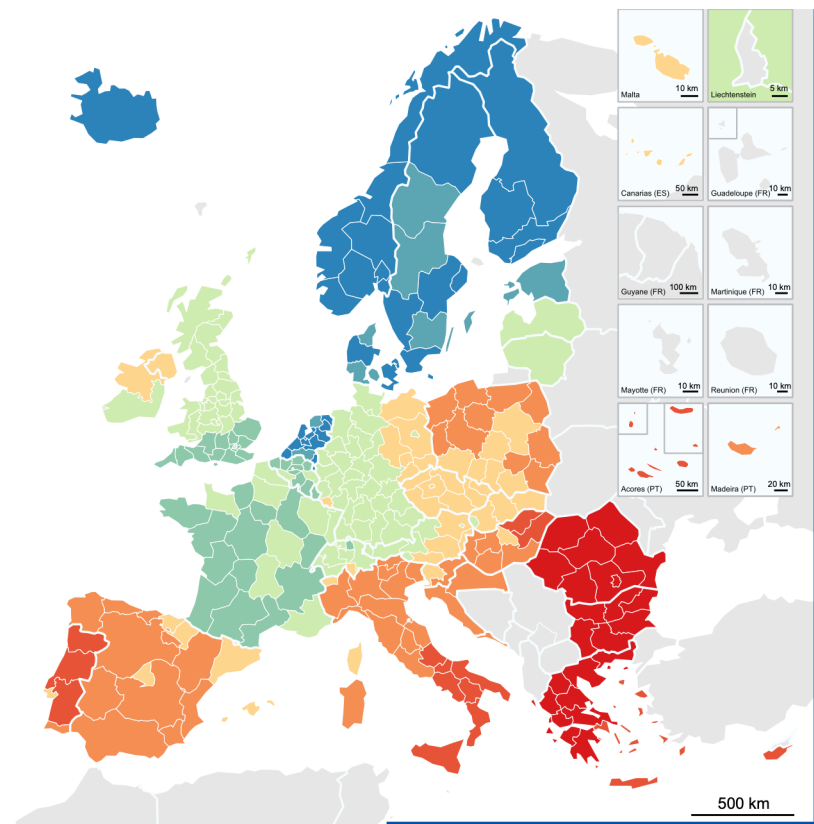
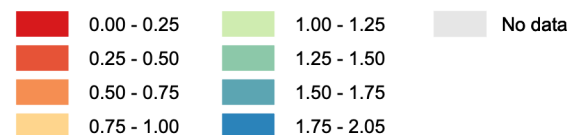
In Poland, access to broadband internet is more developed in north-western macro-regions (Północno-Zachodni, Północny) where broadband is available to 80% of households. Eastern macro-regions have a broadband coverage similar to the national average (75 – 80%). Południowo-Zachodni macro-region has the lowest level of broadband coverage (slightly below 75% of households covered). Polish regions are not covered by ultrafast broadband or next-generation access, in 2018.

Population using e-banking services (2008 - 2016)



ESPON   © ESPON, 2020
Regional level: NUTS 2 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Share of population using e-banking service (weighted to the European average)



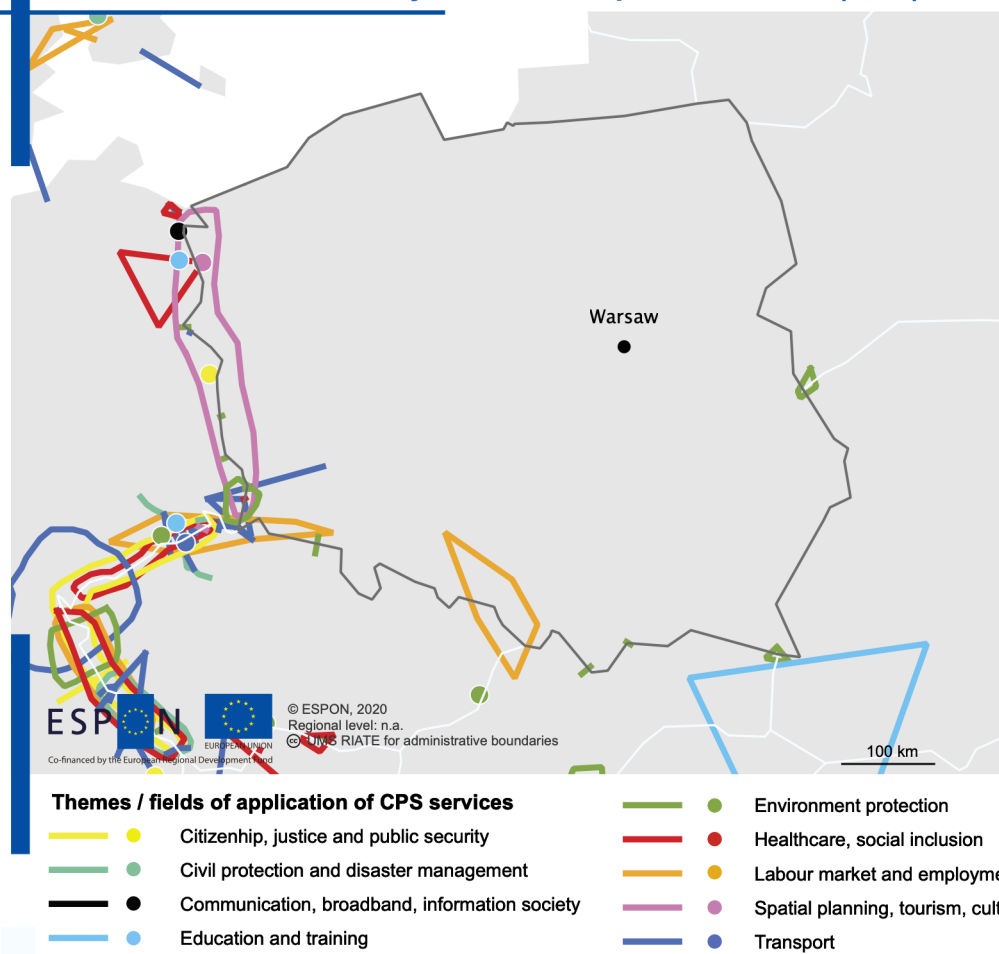
Source: ESPON T4
Origin of data: Eurostat, 2019

Use of e-banking services below the European average in all regions

The regional share of the population that use e-banking services is one way to see in how far industry 4.0 technologies have been adopted by the society. The map shows a north-south and east-west divide in Europe when it comes to people using e-banking services. All regions in Norway, Sweden, Finland and Estonia, as well as regions in Denmark and the Netherlands, show a share of population using e-banking services that is way higher than the European average. Similarly, most of France and the UK have also higher share than the European average. The situation is different in the east of Europe, where Romania and Bulgaria have among the lowest population shares using e-banking when compared to ESPON average. Low are the shares also in the EU south.

Fewer people in Poland than on average in Europe use e-banking services. At national level, Mazowieckie, Łódzkie and all voivodeships bordering Czech Republic and Slovakia have higher rates compared to national average, while eastern regions display lowest rates (below half of the European average). Lockdown measures adopted in Poland to control the COVID-19 pandemic may have substantially modified penetration of e-banking services.

Thematic fields covered by crossborder public services (2018)



Origin of data: TCP International, 2018; Eureconsult, 2018; various data sources, 2018
Delineations: each dot or line represents one individual CPS, provided by two or more partners.

High density of CPS at the German border, very few at other borders

Crossborder Public Services allow to address joint problems or development potentials of border regions and to overcome border obstacles in the provision of public services. CPS are found all over Europe, but they are spread in a rather imbalanced way with more CPS provided at borders of “old” EU15 Member States and between Nordic countries. Most CPS deal with one of the following three policy fields: (1) environmental protection, (2) civil protection and disaster management and (3) transport. Highly integrated solutions are found in regions with a long lasting crossborder tradition.

Looking at Poland and its neighbours, more examples of crossborder public services can be observed at the border with Germany where a wide thematic range of services is provided. This includes examples of services that are most common across Europe (transport, health, culture) as well as examples in fields that are less common across Europe (citizenship, environment). These CPS are key aspects of the Common Future Vision for the Polish-German Interaction Area for 2030. Fewer examples of CPS are found along other Polish border segments and include labour market services and several transboundary biosphere reserves.



More social Europe

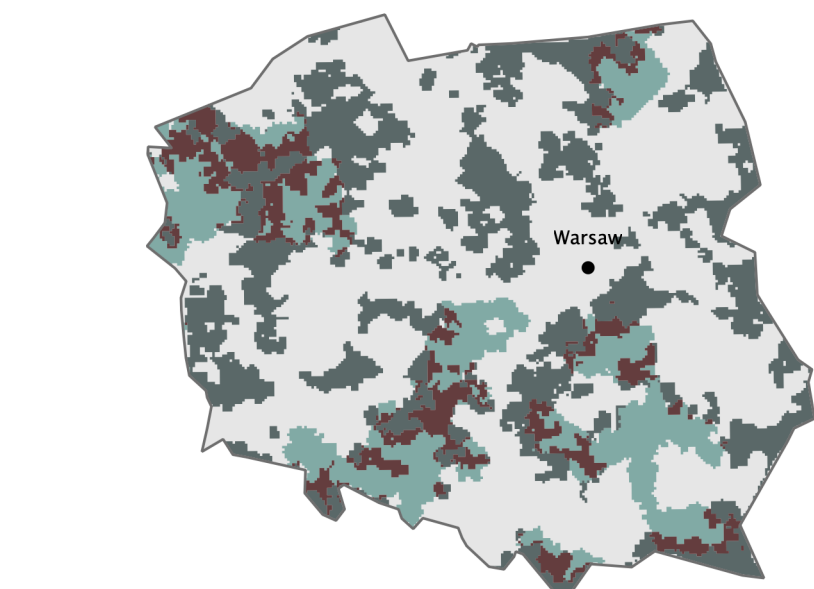
Inner peripherality by main driver

Out-Migration and Higher Education (2014)

A fragmented Europe? An interregional comparison of income





Regional job creation and job displacement by skill level (2013-2018)

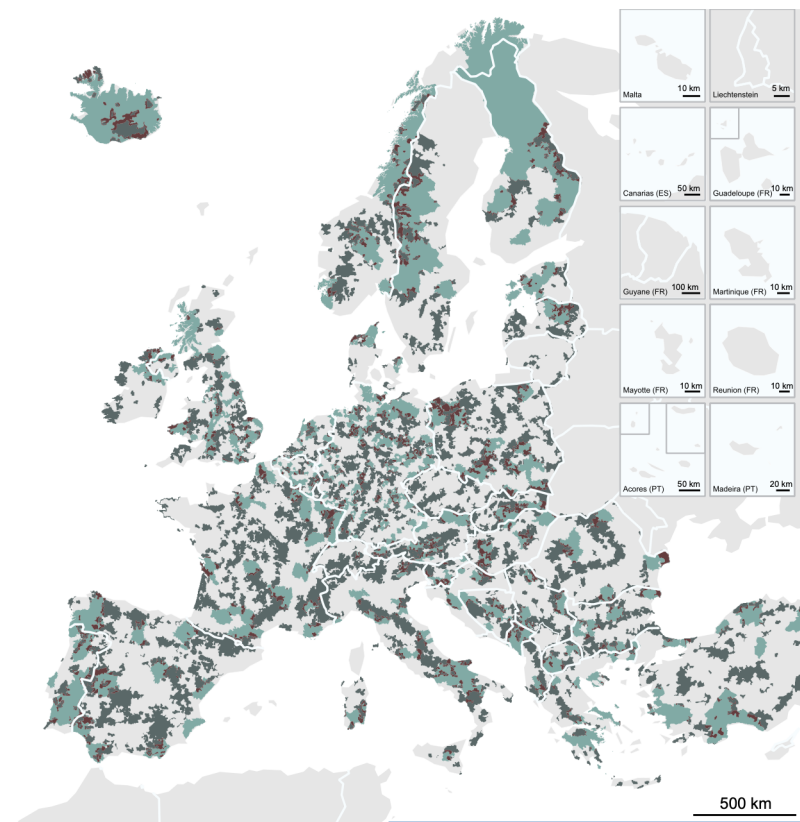
Main socio-economic drivers for inner peripherality



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
-  Not an IP area



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

Four pockets of inner peripherality combine lack of accessibility and poor economic situation

Inner peripheries are places with lower accessibility to services of general interest or lower connectivity to core areas of population, economic activities and jobs. They have generally lower levels of development and quality of life than their neighbouring regions and can be found all across Europe. Their nature is however very different. Poor socio-economic perspectives, lack of access to regional centres or services, or a combination of these two elements are among the key socio-economic drivers for inner periphery. Inner peripheries with poor socio-economic perspectives can mainly be found in place with a shrinking population or with a stagnating economy (e.g. rural or mountainous regions), but in close proximity to urban centres.

In Poland, four pockets of inner peripherality – in brown on the map – combine both lack of accessibility (to urban centres and SGIs) and poor socio-economic situations and potential: (1) in the north-west of the country in a triangle formed by Szczecin, Piła and Koszalin, (2) in the centre south of Łódź, along inter-regional borders, (3) at the border with Slovakia and (4) in the north-east, in Elcki region. These areas are affected by rural depopulation and lack of attractiveness. However, disparities in access to services – in dark green – is also scattered in large patches all around the country. These areas require more attention in order for their population not to be “left-behind”.

Out-Migration and Higher Education (2014)




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

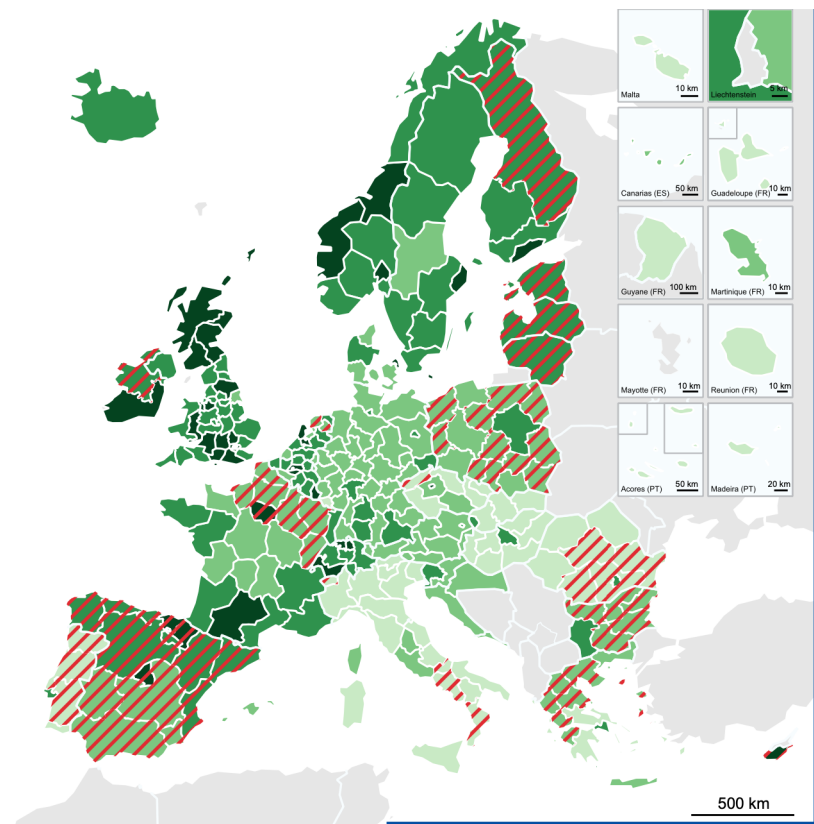
Out-Migration and Higher Education (2014)

Higher Education (% of total population) Net Migration

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- > 40

 Sending regions

100 km



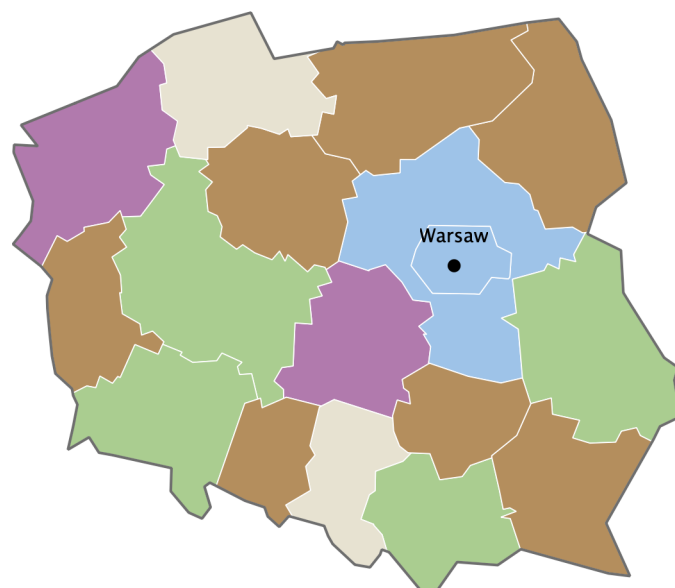
Source: IRS Milano, IES Brighton, IRS Erkner (2017)
Origin of data: Eurostat, 2016

Risk of brain-drain effect in Polish rural areas

A combined view of higher education levels in European regions and regions with out-migration illustrates a risk of brain-drain. Brain-drain occurs when high skilled, often young people, leave an area to seek better opportunities elsewhere. In 2014, most Eastern European regions as well as Portugal and Spain had a negative migration balance and were thus sending regions. Only some capital regions or larger urban regions had a positive migration balance including Sofia, Budapest and Warsaw. Sending regions that have a high share of population with higher education degrees risk most brain-drain effects, such as Northern Spain and Madrid, Cyprus, and the Baltic States. In other sending regions, this effect may already be in place.

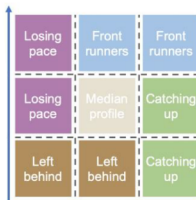
In Poland, two third of all regions have had a negative migratory balance during the period 2004-2014. Regions with positive migratory balance are those that are the most urbanised and prone to attract or retain populations with tertiary education: Mazowieckie, Pomorskie, Wielkopolskie, Dolnośląskie and Małopolskie voivodeships. Other regions of Poland combine high emigration and overall high tertiary education level which put those regions at risk of brain-drain.

A fragmented Europe? An interregional comparison of income

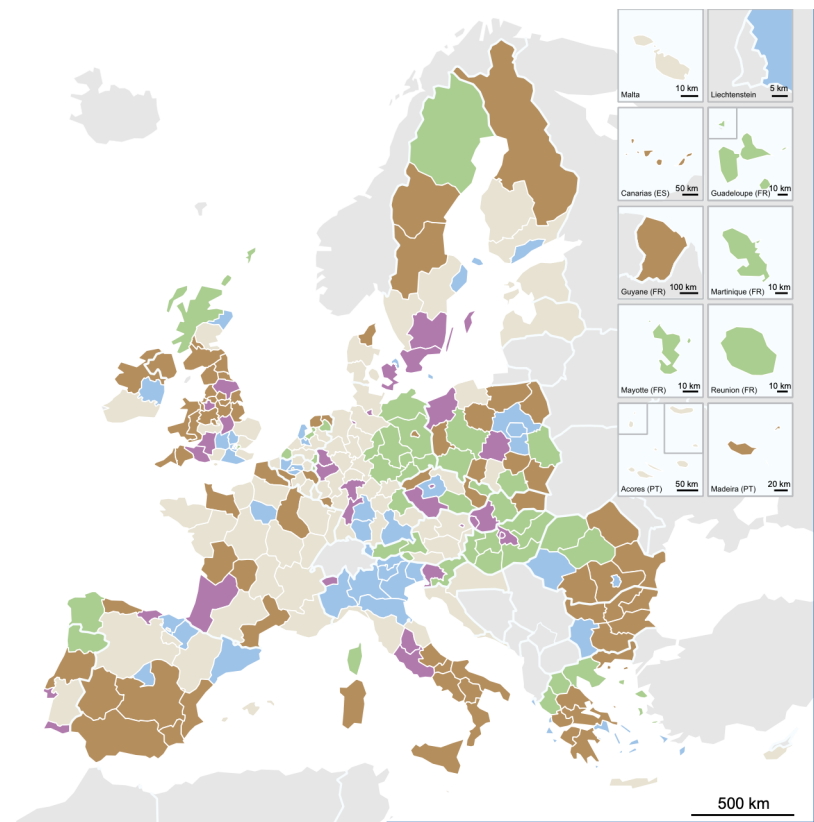


ESPON   © ESPON, 2020
Regional level: NUTS 2 (2016)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

Income per capita 2016,
classification by distance
to national average



Annual growth of income per capita 2006-2016,
classification by distance to national average in
percentage points



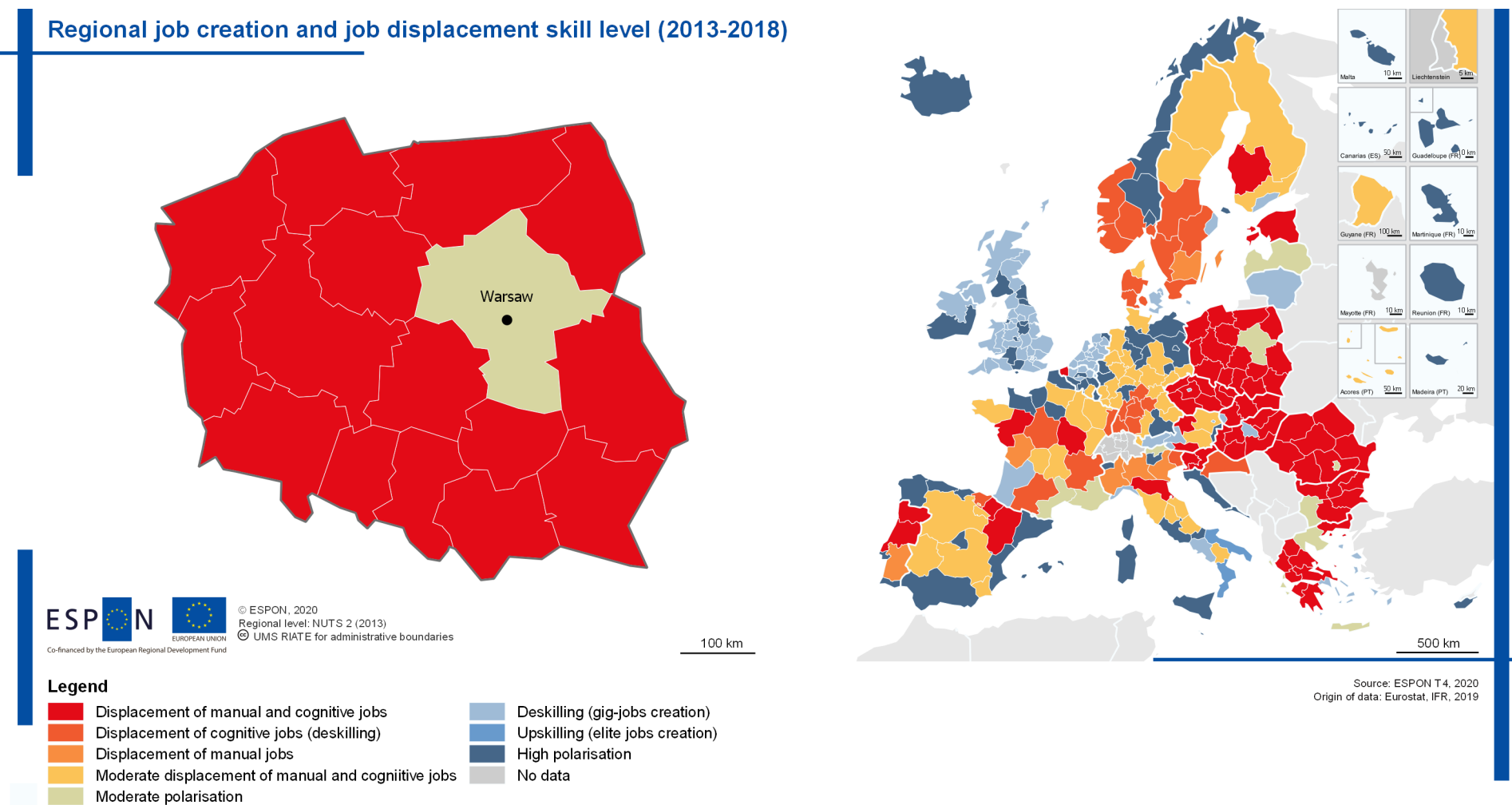
Source: ESPON Territorial Reference Framework, Spatial Foresight, 2019
Origin of data: Eurostat, 2019, dataset: nama_10_r_hhinc
Data on primary income per capita in PPS was used (Eurostat dataset: nama_10_r_2hhinc).
Income per capita is based on 2016 figures, except for France, the Netherlands, Poland (2015), Bulgaria, Denmark, Italy and Slovenia (2017).
Annual income growth is based on 2006 and 2016 figures, except for France, the Netherlands, Poland (2006-2015), Bulgaria, Denmark, Italy and Slovenia (2006-2017).
Data for the NUTS 2016 classification was not available for two Polish regions (Warszawski stołeczny, Mazowiecki regionalny), so the NUTS 2013 unit was used (region of Mazowieckie).
Data was not available for NUTS 2016 regions of Lithuania (April 2019).
Countries with only one NUTS2 region were assigned to the median profile (CY, EE, LI, LU, LV, MT).

Both converging and diverging trends of inter-regional distribution of income per capita

Fragmentation is a key challenge in Europe today. A starting point to understand the drivers towards fragmentation and depict the population's well-being, is looking into trends in primary income per capita at national level. Different national profiles stand out. Some countries are becoming more fragmented with a large number of lower income regions being "left-behind", e.g. in Spain, Italy, the UK, Romania and Bulgaria. A second category appears to be less fragmented with several regions "catching-up" with others, e.g. in Hungary or Germany. Other countries have more diversified regional pathways, depending on each regions' economic resilience during the crisis, e.g. Poland, the Netherlands, Sweden.

In Poland, dynamics of income per capita is very diversified. A convergence of inter-regional income can be noticed with regions "catching-up" with others (Wielkopolskie, Dolnośląskie, Lubelskie and Małopolskie voivodeships) or losing pace compared to their rather high pre-crisis income level (Zachodniopomorskie, Łódzkie voivodeships). However, inter-regional income levels are also diverging for Warsaw and its surrounding region (Mazowieckie voivodeship) have seen their medium to high income grow at an above-average pace. Whereas, seven relatively disfavoured regions have seen their income per capita grow at a below-average pace (e.g. Kujawsko-Pomorskie, Podkarpackie voivodeships). The latter can therefore be considered "left-behind".

Regional job creation and job displacement skill level (2013-2018)



Polish regions widely affected by displacement of manual and cognitive jobs, except Mazowieckie

Economic growth is increasingly dependent on automated and technology driven production processes and services. This 4th industrial revolution impacts Europe's labour markets that focus on services and manufacturing. In the service industry, it leads to a focus on unskilled jobs or on the creation of high skilled and specialised jobs. In most regions with predominant employment in the service sector it leads to a polarisation. The 4th industrial revolution impacts labour markets with predominant employment in manufacturing by displacement of jobs, mostly in Eastern European regions, as well as in Estonia, parts of Greece, Spain and Portugal. Other regions may experience rather displacement of manual (routine-based labour) or cognitive (non-routine-based labour) jobs.

Polish regions with a pre-dominant economic structure based on manufacturing industry experienced a displacement of both manual and cognitive jobs as result of technological transformation processes. This means that robotisation and adoption of online services have negatively affected the capacity of labour markets to retain workers. The only exception is Mazowieckie voivodeship (incl. Warsaw) which has a pre-dominant service industry economy. As result of technological transformation Mazowieckie experienced a moderate polarisation process. The regional labour market has modestly benefitted from robotisation and adoption of online services. The region had a positive balance of job creation yet below the group average.



Europe closer to citizens

Period of greatest land change for settlement purposes (2000-2018)

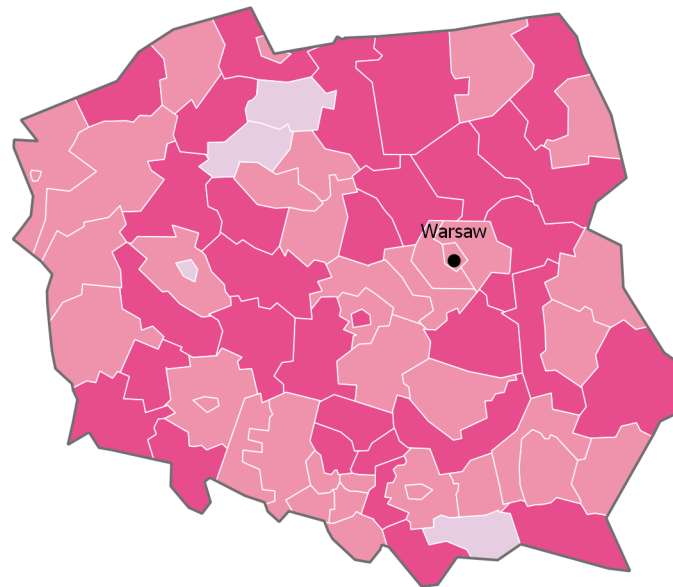
European quality of government index (2017)

Status and evolution of eGovernment interactions (2014-2019)

Tentative GDP-related cohesion effects of European disintegration (2030)

Inner Peripheries according to poor access to services of general interest




Period of greatest development of urban use (2000-2018)

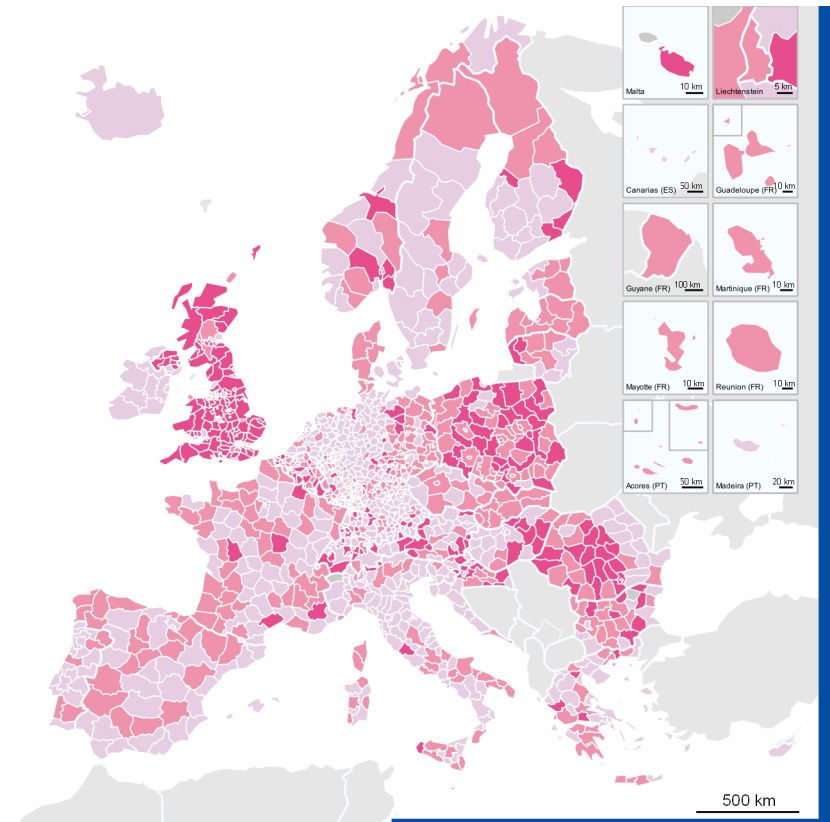


ESPON  
 Co-financed by the European Regional Development Fund

© ESPON, 2020
 Regional level: NUTS 3 (2016)
 © UMS RIATE for administrative boundaries

Period of greatest development of urban use

-  2000 until 2006
-  2006 until 2012
-  2012 until 2018
-  no change data



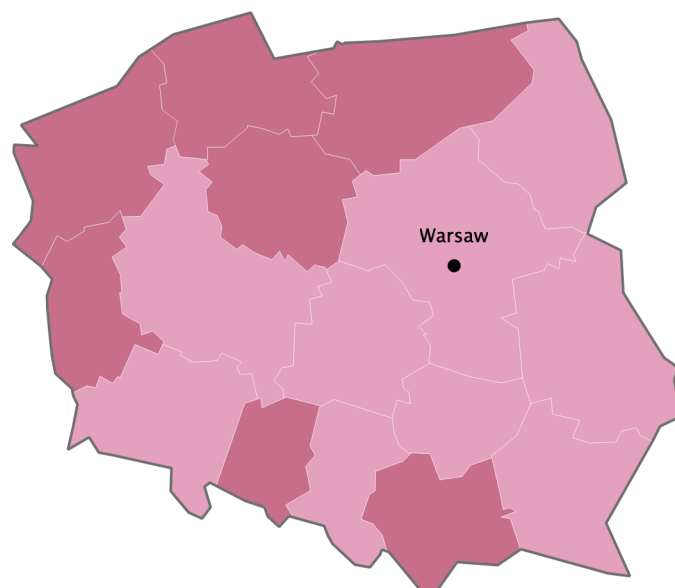
Source: ESPON SUPER, 2019
 Origin of data: Corine Landcover, 2019

Land change reflects the temporality of Polish regional development

The period of greatest amount of land change reflects the temporality of economic development in regions, as well as the extent to which urbanisation has become more or less “space-hungry” over time. In most European countries, regions have reached their peak of artificialisation either during 2000-2006 or during 2006-2012, which suggests that urbanisation has decelerated or that land planning has become more “frugal”. Some countries (or part of countries) however have consumed increasing amounts of land, e.g the UK, Bulgaria, continental Croatia, Switzerland. In these countries, despite growing concerns related to land artificialisation, urbanisation has accelerated at the expense of agricultural and natural areas.

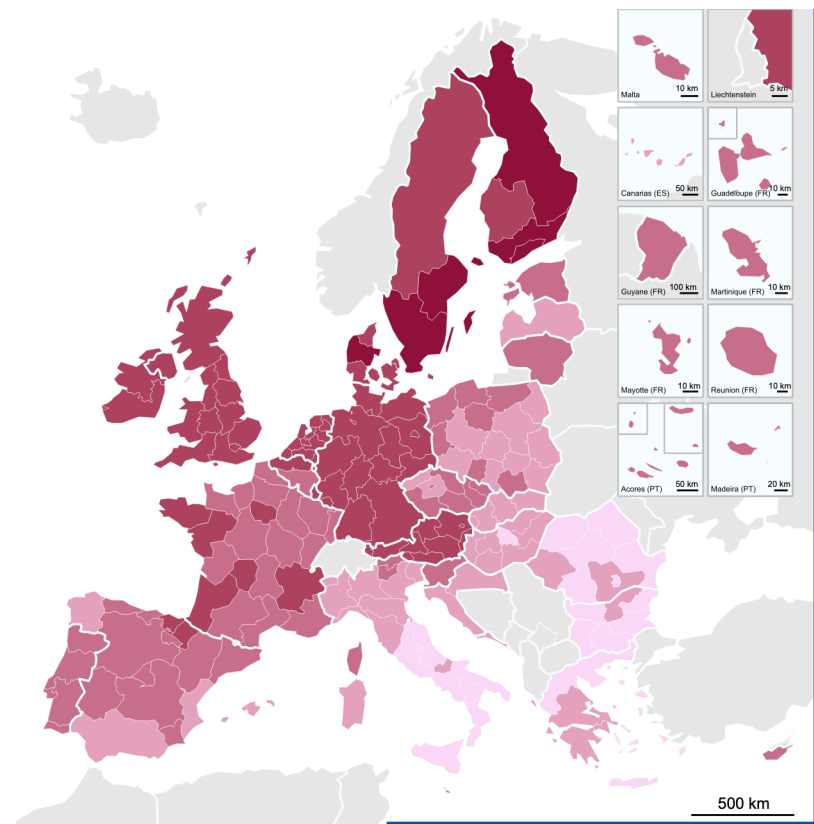
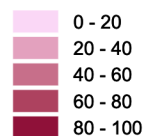
In Poland, artificialisation of land for settlement purposes have peaked either in the period 2006-2012 (around largest cities such as Warsaw, Łódź, Poznań, Wrocław, Kraków and at border with Germany) or in the period 2012-2018 (in more rural or mountainous regions). In other words, after having mainly concerned the most urban and peri-urban areas around the big cities, urban and infrastructure development has penetrated further in remote areas of Poland during the 2012-2018 period.

European quality of government index (2017)



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

European quality of government index (2017)



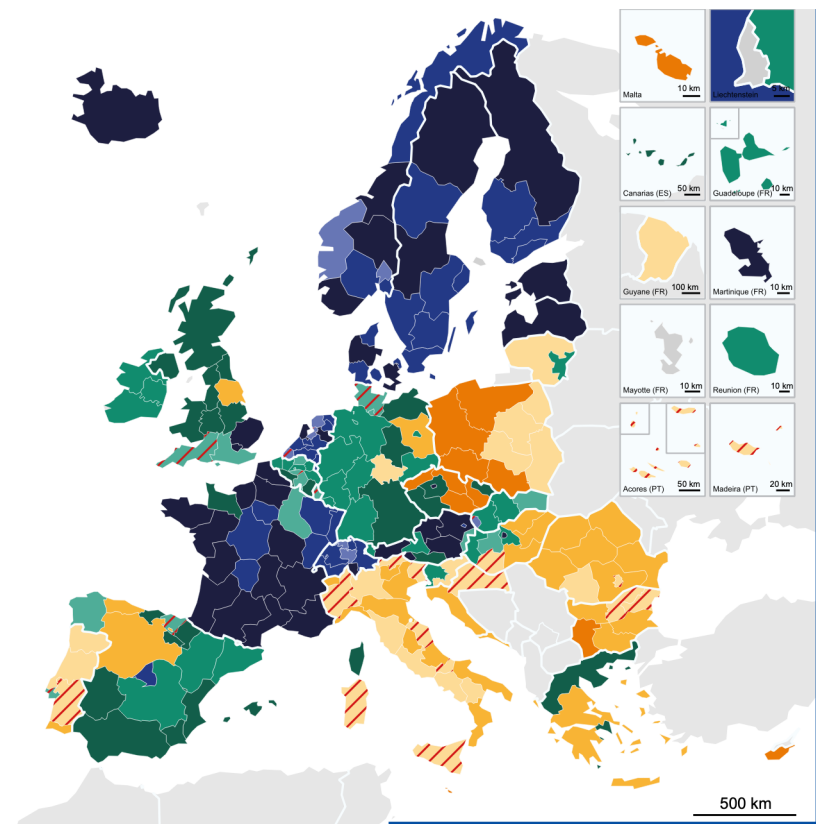
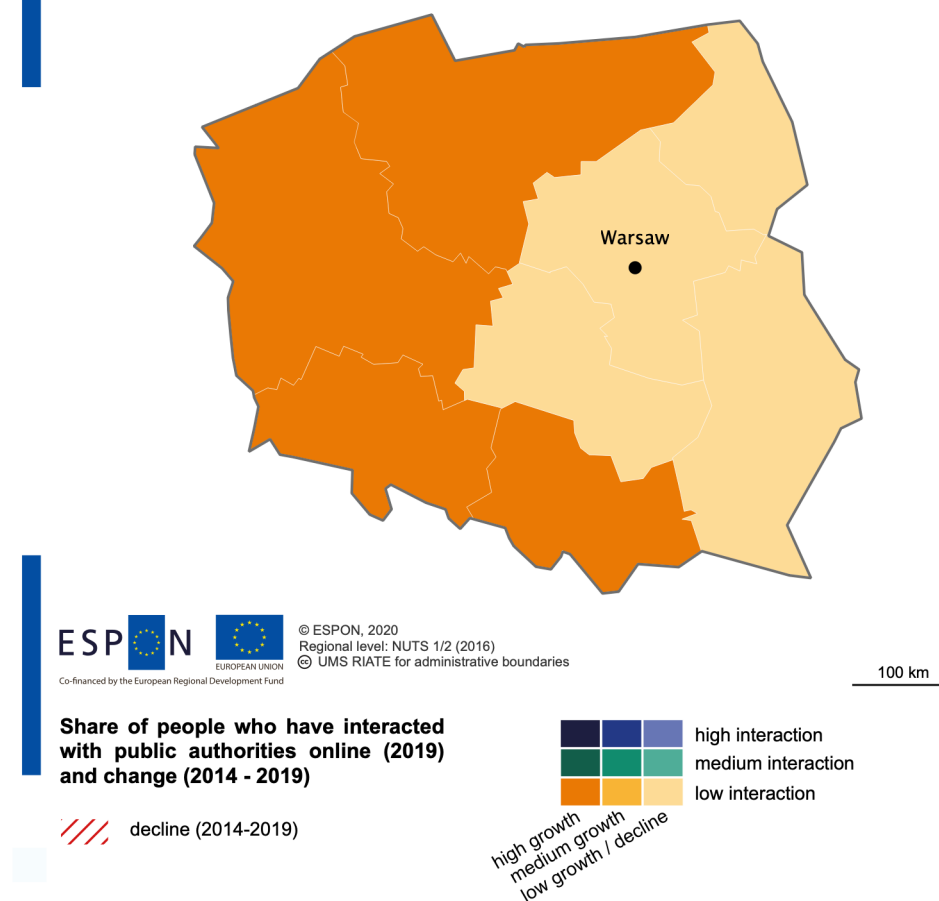
Source: ESPON EGTC
Origin of data: The Quality of Government Institute, 2017

Regional perception of quality of government lower than EU average

The European Quality of Government index depicts citizens' perceptions of public authorities and institutions. The index assumes a qualitative government as being impartial, efficient and without corruption. A qualitative government may stimulate socio-economic development and respond adequately to new challenges or events. In 2017, regions in northern and western Europe have highest levels of quality of government, particularly Finnish, Danish and Dutch regions. Regions in central Europe, Portugal and Spain have moderate quality of government. south-eastern European countries have lowest levels of quality of government, particularly in Bulgaria, Romania and southern Italy.

In Polish regions, the quality of government is overall relatively lower than the EU average (EU average = 50). The majority of regions in central Poland score between 20 and 40 (out of 100 points). Regions in north-western Poland, as well as Opolskie and Małopolskie voivodeships score above national average (> 40 points). Looking further into the data, these inter-regional differences are mostly related to different scoring on the "impartiality pillar" (that reflects the perceived level of equality in accessing public services) rather than the two other pillars ("quality" of public service and "corruption").

Status and evolution of eGovernment interactions (2014 - 2019)

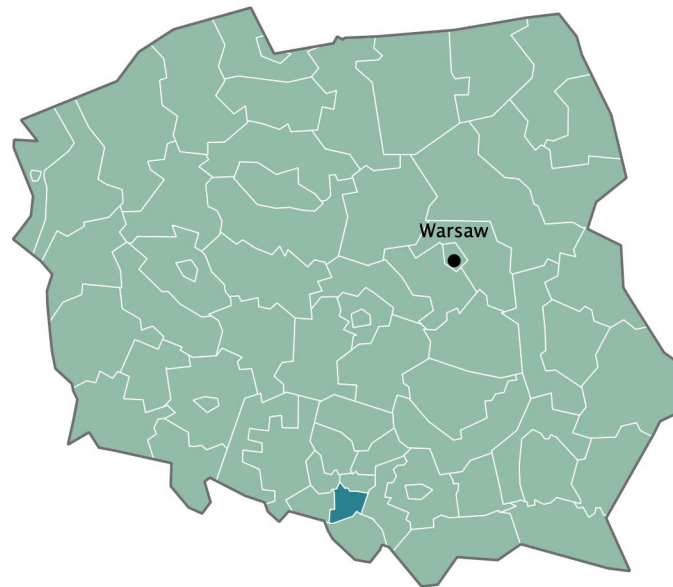


Low eGovernment interaction with catching-up process in western regions

Digitalisation of public administration and public services allows for more reliable and mutual interactions with citizens. One can observe substantial disparities in the uptake of eGovernment tools depending on the level of the regional offer (number of services with digital interfaces) and of the regional demand (educational and social capacities to make use of these tools). Western European countries display higher level of eGovernment interaction, with peak values in Nordic countries, France, Switzerland and Austria. Central and Eastern European countries have lower levels of interactions, but some regions are catching up, for instance in Romania, Poland and Greece.

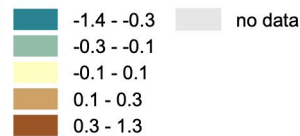
In Poland, eGovernment interactions are rather low compared to the EU average. Western regions are catching up at a faster pace than eastern regions, which demonstrate that the topic has come into the debate. Cooperation between administrations is key to set up appropriate online tools in the next years.

Tentative GDP-related cohesion effects of European disintegration 2030

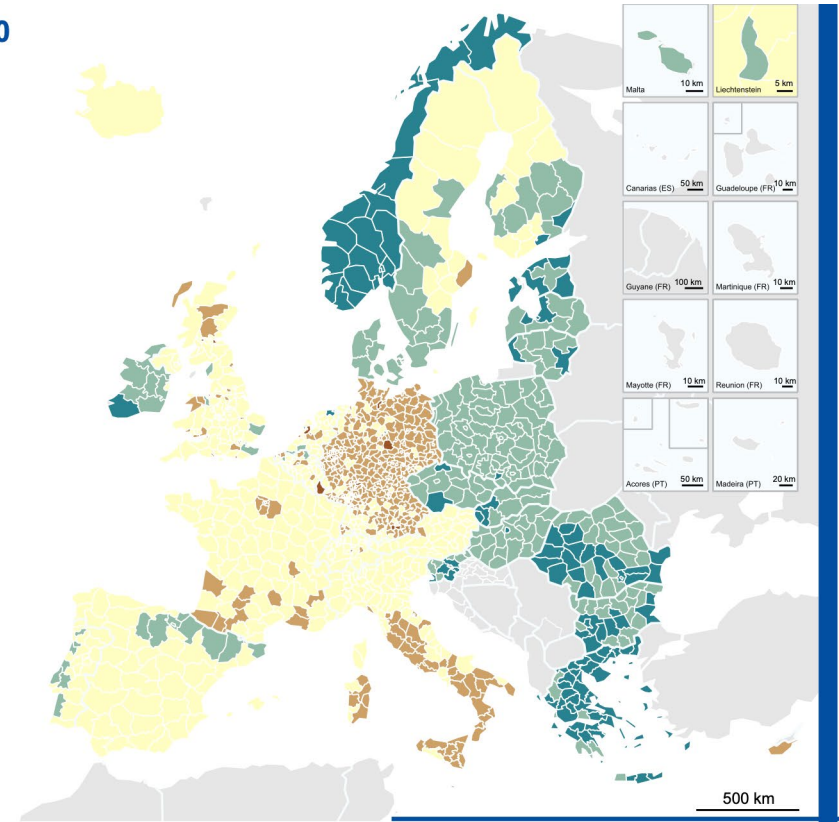


ESPON   © ESPON, 2020
Regional level: NUTS 3 (2006)
© UMS RIATE for administrative boundaries
Co-financed by the European Regional Development Fund

GDP per capita - Index change in relation to the EU average



100 km



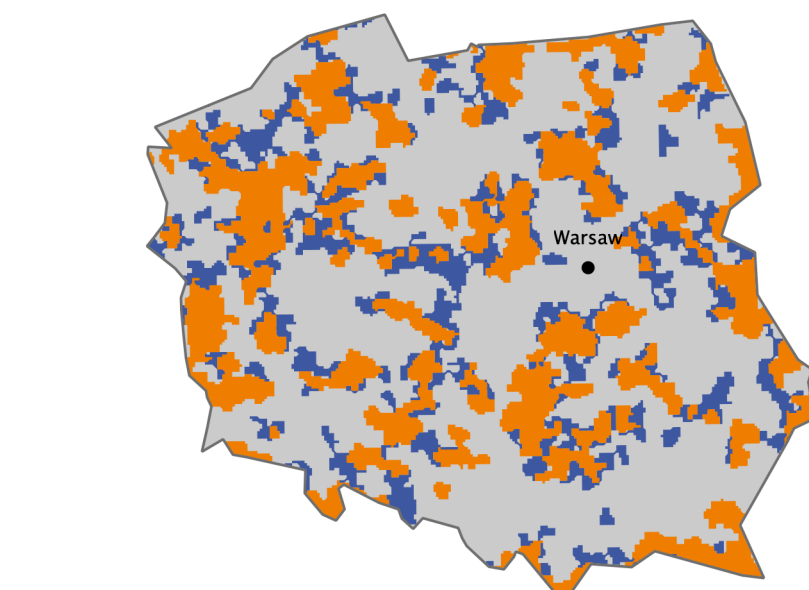
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
Origin of data: SASI Model

Polish regional economies to suffer strongly from a disintegration of the EU

European integration processes seem to come to a halt, as illustrated by the BREXIT and current tendencies to temporarily close borders and thus ignoring the Schengen agreement. Such disintegration effects affect the European economy by increasing waiting times at borders and limiting potentials for political and cultural integration. The impacts of these effects have been modelled assessing the impact on regional GDP levels. The impacts of disintegration on territorial cohesion are negative as many of current lagging regions would face stronger reduction of GDP (compared to the European average). On the contrary, some of Europe's economically stronger regions could benefit of such a situation (e.g. in most of Germany).

Polish regional economies would suffer relatively more than the average EU regions from a European disintegration that would reduce intra-EU trade and circulation of people. This is an illustration of the positive economic impact of an integrated EU for eastern European regions "lagging behind" in economic terms.

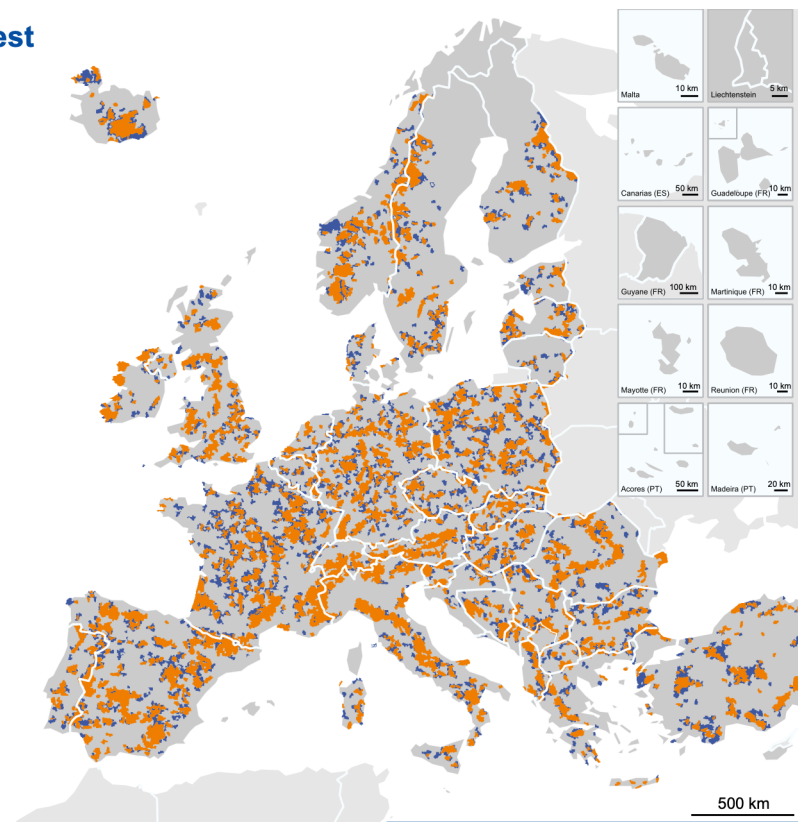
Inner Peripheries according to poor access to services of general interest



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

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
Origine of data: TCP International 2017,
TCP International Accessibility model 2017

SGI as key factors to curbing rural demographic decline in remote rural areas

An adequate provision and access to main SGIs not only constitute an indicator of the degree of connectedness of territories, but easy and cheap access to many different types of services ensures higher quality of life, provides choice opportunities for the resident population (if two or more facilities for each kind of service are within reach) and thus contributes to keep population and jobs within the area. IP areas and areas “at risk to become IP” reflect intranational disparities in access to SGIs. These can thus be found in all ESPON countries, with the exception of Cyprus and Malta. These are mostly observed in rural areas and are specifically prevalent in mountain ranges, islands and northern peripheral areas.

In Poland, limited access to services of general interest is found in remote rural areas all over the country, especially along inter-regional and national borders. Besides, several regions are considered at-risk of becoming an inner periphery in the future. These regards areas that may lack access to a number of SGI in the future, despite a fair access to them today. Maintaining a sustainable level of access to SGI is key to curbing rural demographic decline and support attractiveness of small rural centres.

ESPON EGTC

4 rue Erasme, L-1468 Luxembourg

Phone: +352 20 600 280

Email: info@espon.eu

www.espon.eu

The ESPON EGTC is the Single Beneficiary of the ESPON 2020 Cooperation Programme. The Single Operation within the programme is implemented by the ESPON EGTC and co-financed by the European Regional Development Fund, the EU Member States and the Partner States, Iceland, Liechtenstein, Norway and Switzerland.

Disclaimer:

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

September 2020