

Inspire Policy Making with Territorial Evidence

Country fiche

Territorial patterns and relations in Cyprus

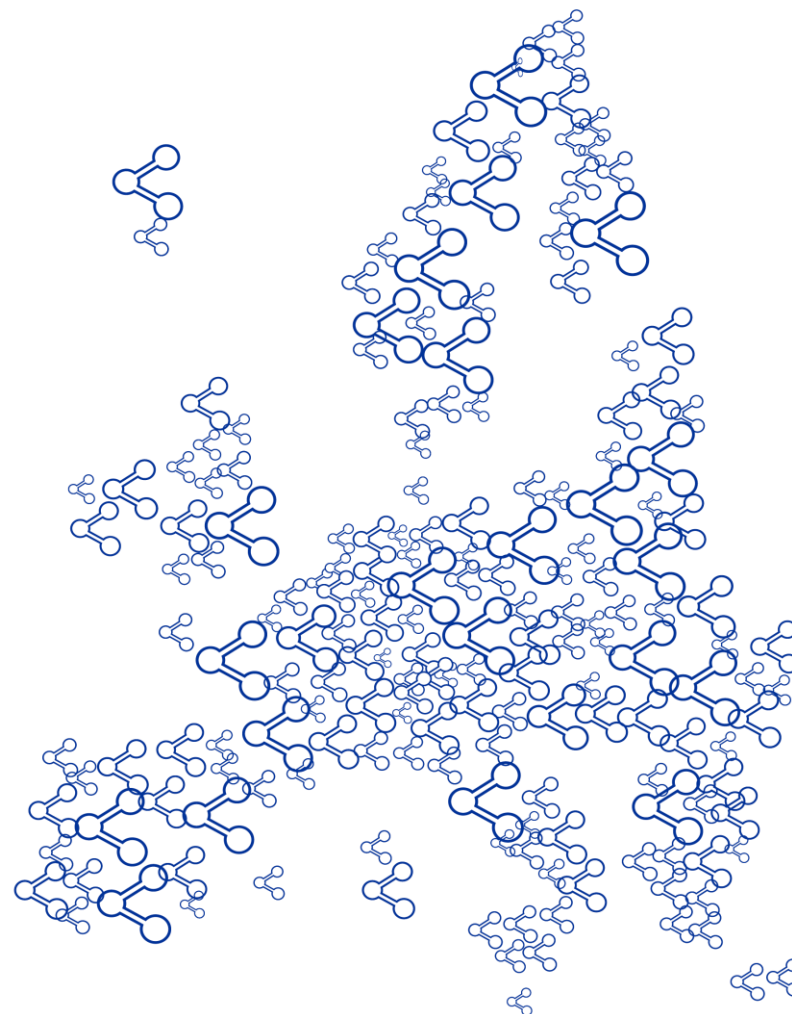
Socio-economics

Spatial planning

Ecosystems and renewables

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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.

Socio-economics

Regional Innovation Scoreboard (2019)

GDP per capita in PPS (2008-2013)

GDP per capita in PPS (2015-2030)

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

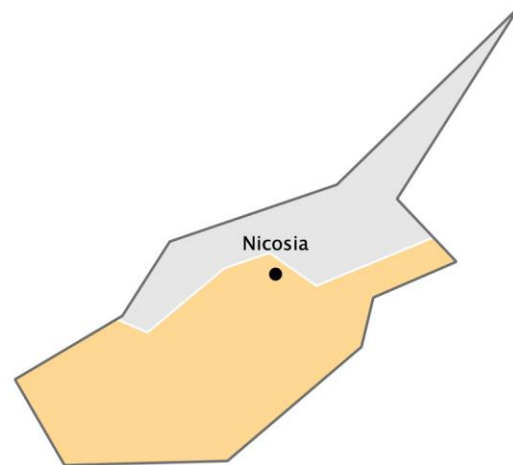
Regional SME Typology: combination of SME performance and sectoral focus

Employment in Small and Medium size Enterprises (2014)

Employment in micro-enterprises (2014)

Risk of poverty (2015)

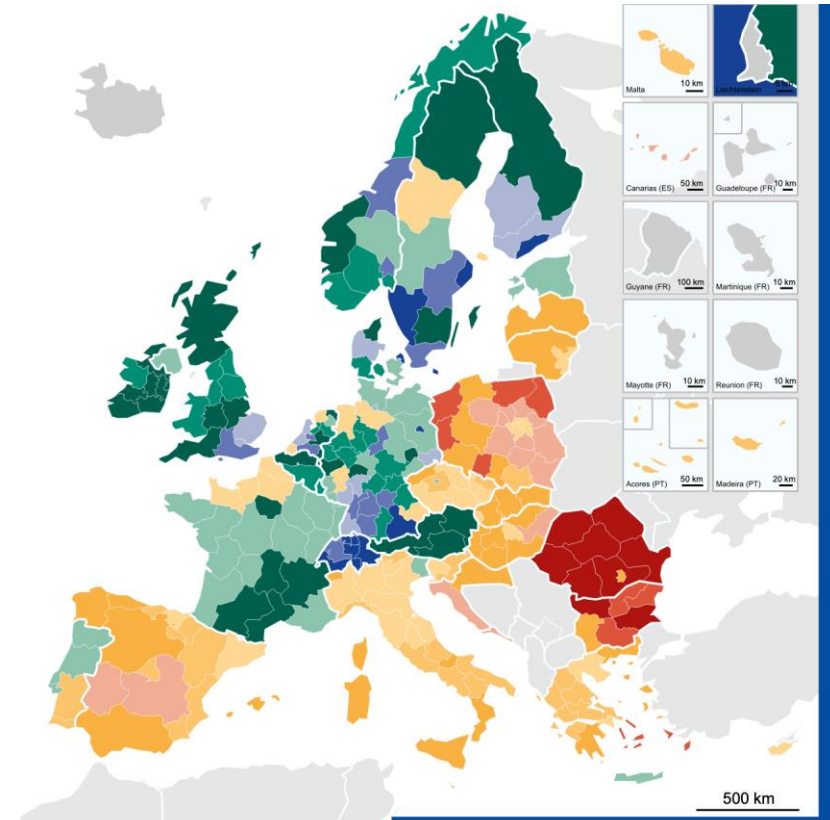
Regional Innovation Scoreboard (2019)



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RIS Performance groups 2019

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



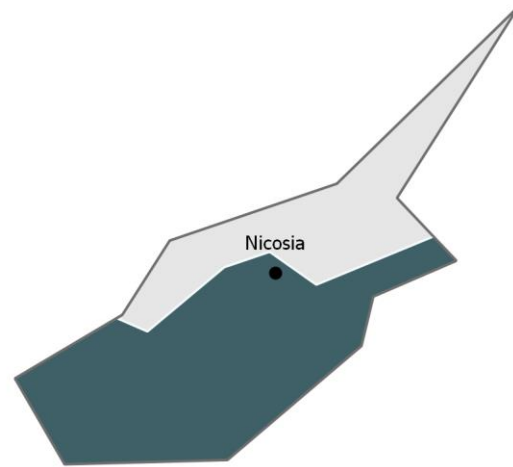
Origin of data: Regional Innovation Scoreboard, 2019
Definitions: The RIS 2019 is a comparative assessment of regional innovation based on the European innovation scoreboard methodology, using 18 of the latter's 27 indicators. It provides a more detailed breakdown of performance groups with contextual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

Moderate innovator with positive outlook

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.

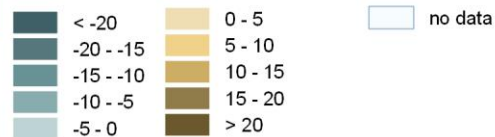
Cyprus is a moderate innovator in a European context, similar to many southern and eastern European regions. The last years Cyprus gradually improved its innovation performance and was in 2019 close to being classified as a strong innovator in Europe. Cyprus scores particularly well on the number of international co-publications, followed by the share of population with tertiary education, number of trademark applications, accessibility to venture capital and enterprises providing ICT training. On the contrary Cyprus scores below the EU average with respects to R&D spending of enterprises, rule of law and population, of which the latter two function as framework conditions for innovations.

GDP per capita (PPS) (2008-2013)

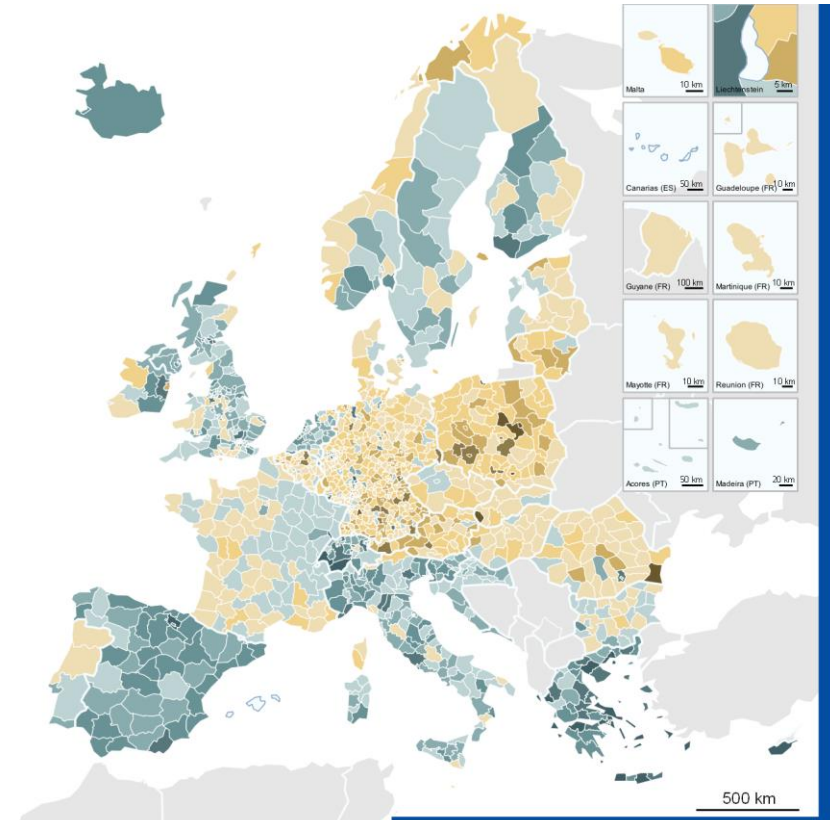


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Percentage points difference between 2008 and 2013 in relation to the EU average



50 km



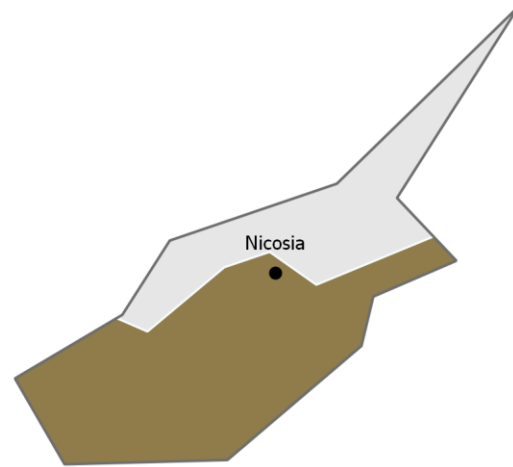
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
Origin of data: Eurostat (online data code: nama_10r_3gdp), 2008 & 2013

Increased economic disparity between Cyprus and the rest of Europe between 2008 and 2013

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. There is a group of countries including Belgium, Germany, Austria, Czech Republic, Hungary, Romania, Poland and the Baltic states where most regions improved their economic position, while in France, Bulgaria and Denmark some regions recovered and other fell behind. In all other countries, nearly all regions lagged behind.

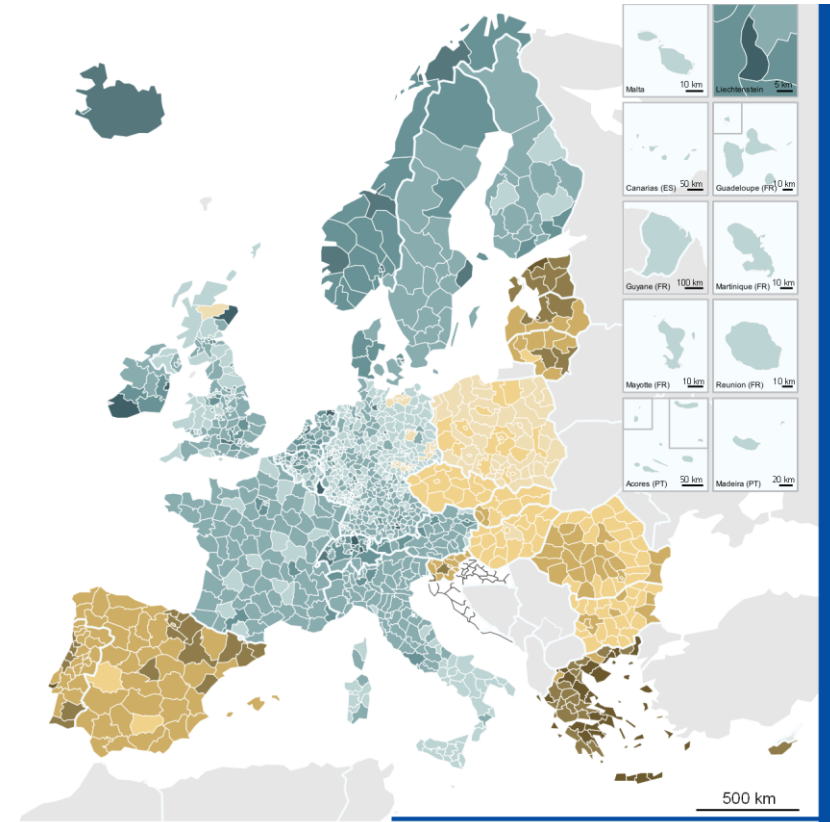
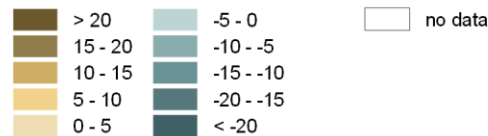
Between 2008 and 2013, economic performance in Cyprus was among the lowest compared to regions across the European Union. GDP per capita growth was 21 percent points lower than the EU average, as Cyprus was more affected by the economic and financial crisis. Regions with similar figures can be found in Greece, Spain, Italy, Ireland and Finland.

GDP per capita (PPS) (2015-2030)



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



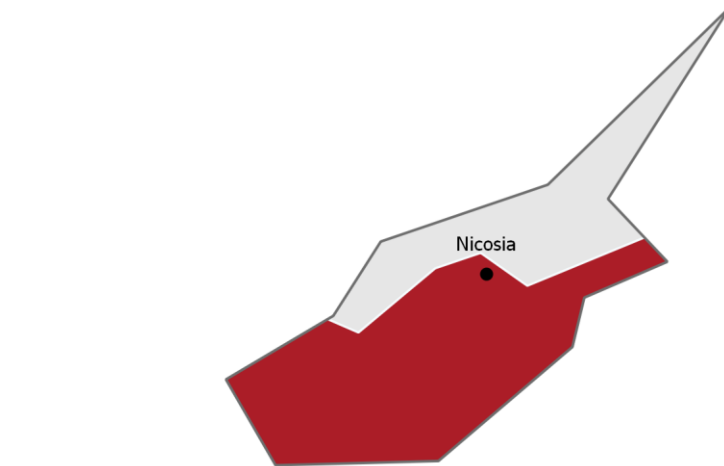
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
Origin of data: ESPON ET2050, 2015

Possible increase in territorial cohesion between Cyprus and the rest of Europe until 2030

Following the trends of circular economy, sharing economy, ecological awareness, as well as increasing public debts and changing roles of corporate and public players, forecast GDP development between 2015 and 2030 shows that regions falling behind, such as Greece, Spain and the Baltic states are predicted to gain most relative to EU average GDP. However, any prognosis on socio-economic development has to be handled with care.

Extrapolations based on Cyprus' economic outlooks in the aftermath of economic and financial crisis suggest that Cyprus' economy will experience higher economic growth than the EU average between 2015 and 2030. Cyprus has similar growth perspectives as regions in Northern Spain and in the Baltic countries. These high growth levels are partly linked to catching-up processes, after periods of particularly low growth after the financial and economic crisis. These predictions must furthermore be interpreted with caution. The effects of COVID-19 may, for example, limit growth in Cyprus, partly due to the relative importance of the tourism sector in terms of the GDP (21.9%).

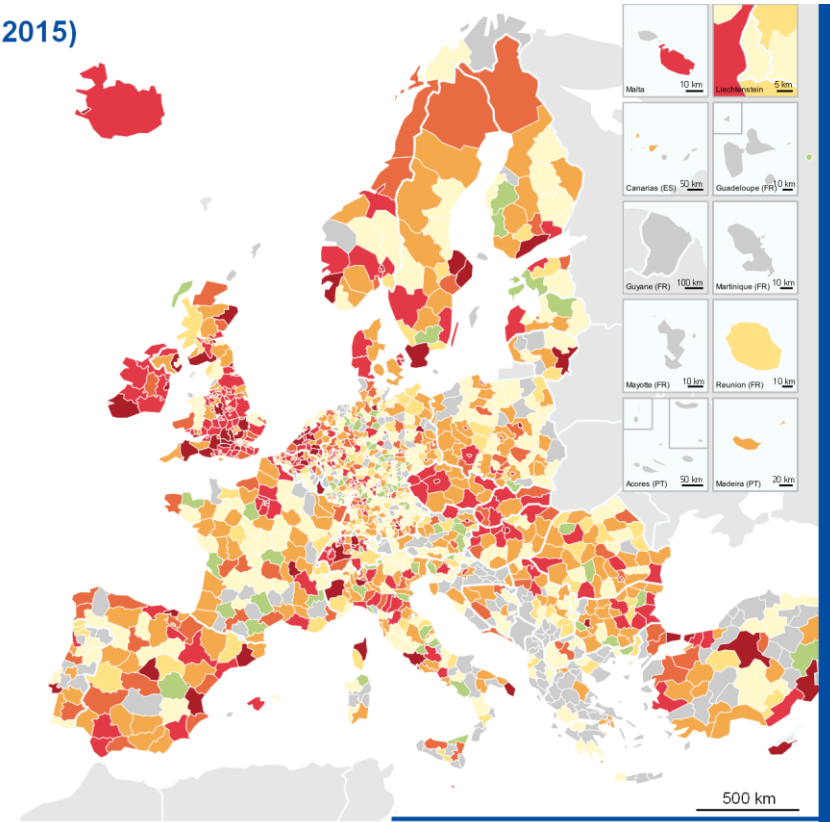
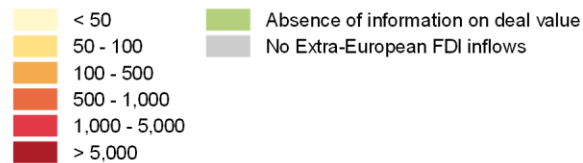
Foreign Direct Investment inflows from extra-European sources (2003-2015)



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



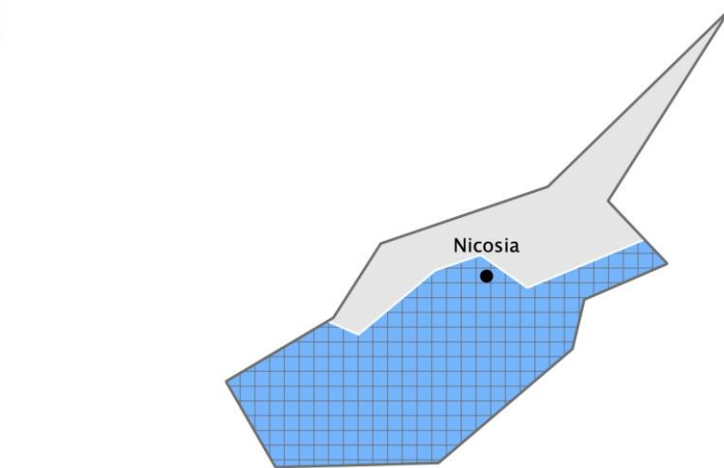
Source: The World in Europe, global FDI flows towards Europe, 2017
 Origin of data: Copenhagen Economics based on BvD's Zephyr and the Financial Times databases, 2016

Cyprus among Europe's main regions attracting foreign direct investments

Based on the model for FDI location (strength of industry clusters, tertiary education, labour abundance, accessibility, level of innovation, population density, FDI concentration, market size, border region) data was used to estimate the attractiveness of NUTS3 regions. Based on this, each region was divided into one of three categories: 'High', 'Middle' and 'Low'. The results show that capital regions and their neighbouring regions tend to be 'more attractive', while rural regions tend to be less attractive. The capital metropolitan regions and their neighbouring regions are generally more attractive, which suggests that these types of regions have some inherent characteristics that attract FDI relative to other types of regions.

Cyprus is one of Europe's main destinations of FDI. Between 2003 and 2015, it received similar amounts of foreign investments as main European cities, including London, Madrid, Stockholm and Helsinki. Cyprus has had particular advantages to attract investments in the financial and insurance sectors, for instance low corporate tax rates, multilingual and experienced workforce, high quality of transport and telecommunication infrastructures. FDI levels increased exponentially between 2007 and 2009 and remained volatile until after 2015. FDI did not decrease until years after the Cypriot financial crisis of 2012-2013. Available sectoral statistics suggest that FDI in services and manufacturing in Cyprus are low.

Regional SME Typology: Combination of SME performance and sectoral focus



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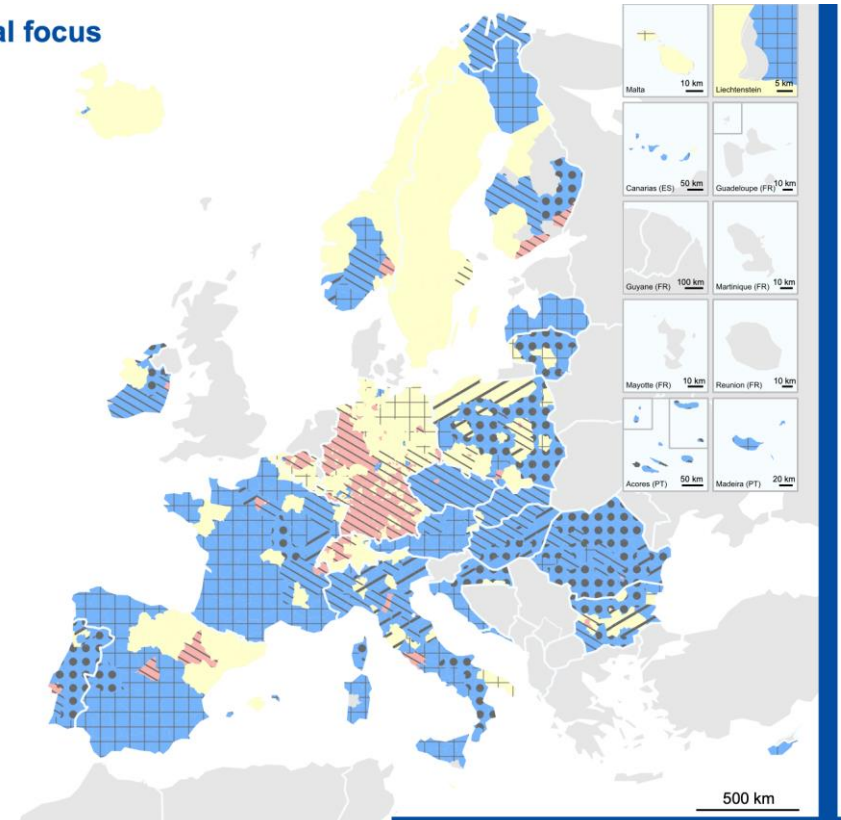
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SME performance type

- Above average share of employment in large enterprises (250+)
- Above average share of employment in SME (10-249)
- Above average share of employment in micro enterprises (1-9)

Sectoral focus

- Agriculture
- Industry
- Knowledge economy and ICT, (Industry, Services)
- Regions with diverse sectoral foci
- Services / Tourism
- No data available



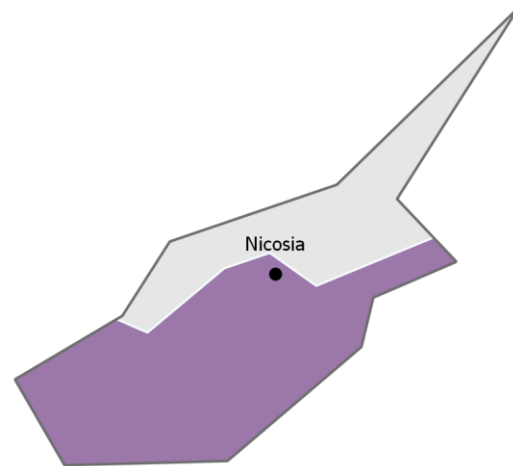
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee, Direction des statistiques 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

A business structure dominated by micro-enterprises and the service and tourism industry

Small and medium-sized enterprises (SMEs) represent 99% of all businesses in Europe and are important for ensuring economic growth, innovation, job creation and social integration. SMEs include medium-sized, small and microenterprises. The share of employment in micro-enterprises is particularly high in most southern and eastern European regions as well as in some Nordic regions. The sectoral focus in these regions is rather diverse. In many eastern and rural regions most micro-enterprises are in agriculture. In Austria, Latvia, Spain and France most micro-enterprises provide services or relate to tourism. Industrial enterprises are mostly of small and medium size and are more represented in Northern Poland and Central Bulgaria than in other European regions.

A large share of Cypriot employees work in micro enterprises, compared to the EU average. In 2018, 38.6% of all employees worked for one of the 51,314 enterprises with 1 to 9 employees. 25.3% of employees worked in enterprises with 10 to 49 employees and 19.8% worked in enterprises with 50 to 249 employees. The remaining employees worked in large enterprises. Most Cypriot SMEs operate in the service and tourism industries. The island is in this respect similar to many other southern European regions, among others, in Italy, Spain and France.

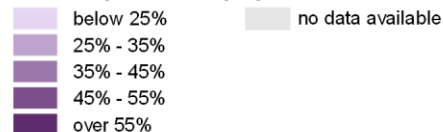
Employment in Small and Medium size Enterprises (2014)



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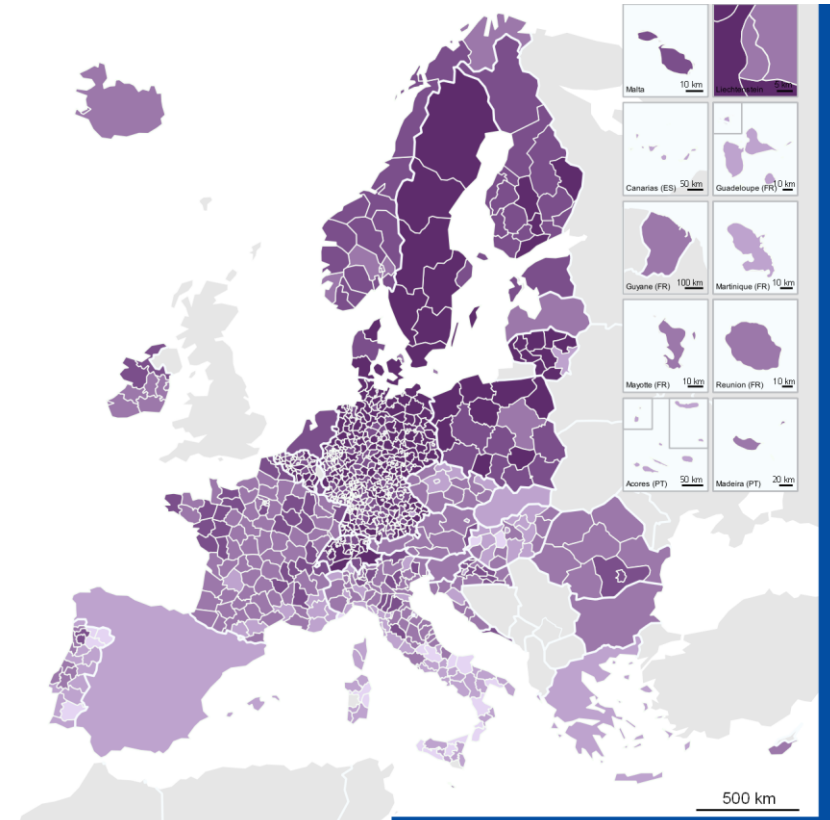
Share of persons employed in small and medium enterprises (10 - 249)



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)

50 km



Source: ESPON SME, 2017

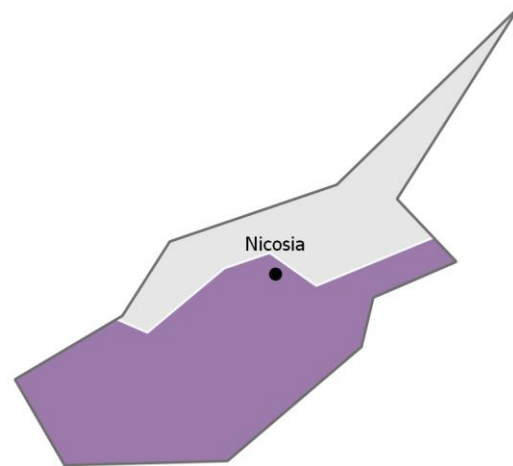
Origin of data: Eurostat Business demography, Structural Business Statistics, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee, Direction des statistiques démographiques et sociales (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.

Increasing amount of people employed in small and medium sized companies

SMEs represent 99% of all businesses in Europe and play a crucial role in economic growth, innovation, job creation and social integration. Europe's remote areas (Nordic countries) as well as rural and peripheral regions in Germany, Lithuania, Switzerland and Poland tend to employ more people in SMEs than in urban areas. The opposite is the case in Finland, Italy, France and Portugal.

43.63% of persons employed in Cyprus worked in SMEs in 2014. As such, the share of persons employed in SMEs in Cyprus was similar to those observed in Bulgarian, Romanian, French and Dutch regions and rural parts of Poland. Since 2014, the share of persons employed in SMEs in Cyprus has increased (45.1% in 2018). The EC SME performance review points out that it surpassed its 2008 pre-crisis levels in 2018. Between 2018 and 2020 the EC SME performance review forecasts a growth of employment in SMEs of 7.4%, representing 86.4% of all new jobs created by 2020 in the non-financial business economy. Cyprus' SME sector is therefore important for its economy and employment perspectives.

Employment in micro-enterprises (2014)



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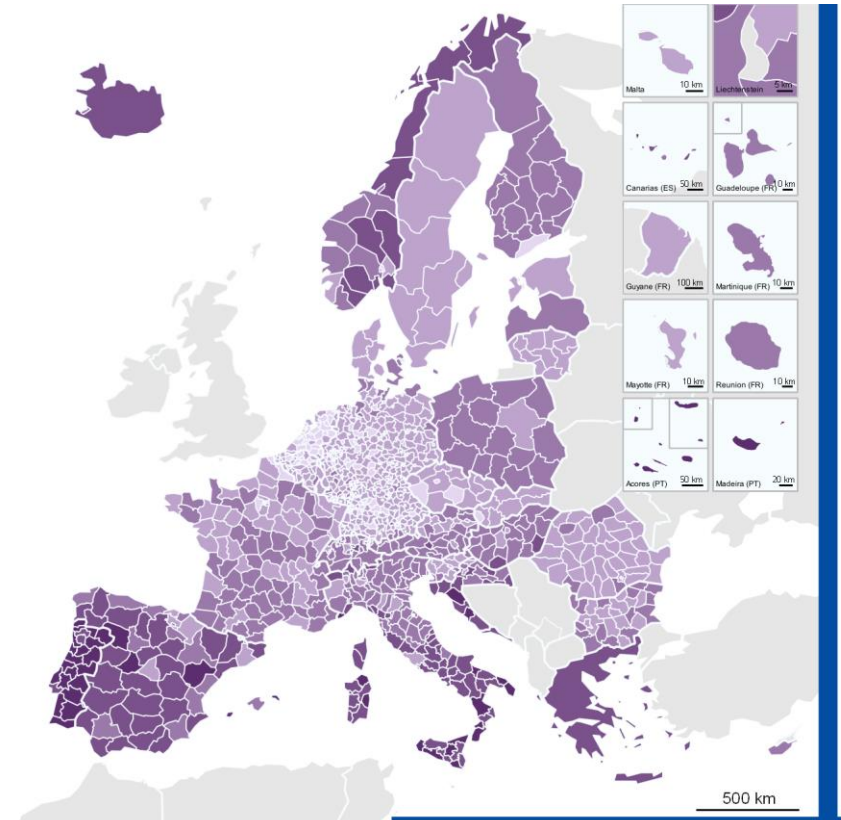
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Share of persons employed in enterprises with 1 to 9 employees



Notes

- Data for FI, SI correspond to 2010
- Data for DK, FR, MT correspond to 2013
- Data for DE correspond to 2015
- Data for EE, LV, MT, PL, SE correspond to NUTS2
- Data for EL calculated from SBS Data, split up of size group 0-9 in 0 and 1-9 using the results of IME - GSEVEE study (survey of 1.006 Greek SME, July 2017)



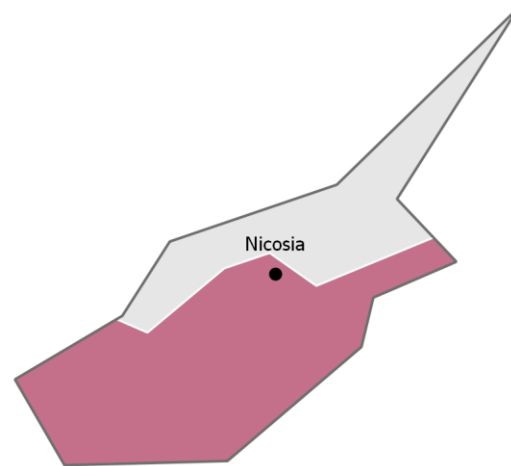
Source: ESPON SME, 2017
Origin of data: Eurostat Business demography, Statistics Austria national SBS, Statistics Belgium Demografie Ondernemingen, ORBIS, Beschäftigtenstatistik Bundesagentur, national SBS, Statistics Finland national BD, Insee, Direction des statistiques démographiques et sociales (DSDS), Financial Agency, Central Statistics Office (CSO) national BD, Statistics Iceland national BD, Amt für Statistik Fürstentum Liechtenstein - Beschäftigtenstatistik, 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, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)

Most enterprises in Cyprus employ less than 10 persons

An increasing number of SMEs represent micro-enterprises, meaning enterprises with 1 to 9 employees. These represent many start-ups as well as innovative companies. Micro-enterprises are thus important contributors to making an economy dynamic. The share of persons employed in micro-enterprises was particularly high in Portugal, southern Italy and several regions in Spain and Croatia. In general, the share of micro-enterprises was higher in rural areas. In Portuguese rural areas 60% of employed persons worked in micro enterprises in 2014. The share of persons employed in micro-enterprises was considerably lower in urban regions, notably in Denmark and the Netherlands, where about 10% of the employed persons worked in micro-enterprises in 2014.

The share of employment in micro-enterprises in Cyprus was above the European average in 2014. The share of employment in micro-enterprises in Cyprus was similar to the levels in many Polish, French, and Hungarian regions as well as many regions in the Alps. The EC SME performance review estimated the presence of about 51,314 micro-enterprises in Cyprus in 2018, representing about 92.9% of all enterprises. 99,384 persons were employed in these enterprises, which represented 38.6% of all employment. The added value of these companies was about 2.5 billion, slightly below the added value of small enterprises with 10-49 employees. Therefore, micro-enterprises represent an important component of Cyprus' economy.

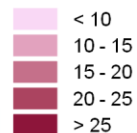
Risk of poverty (2015)



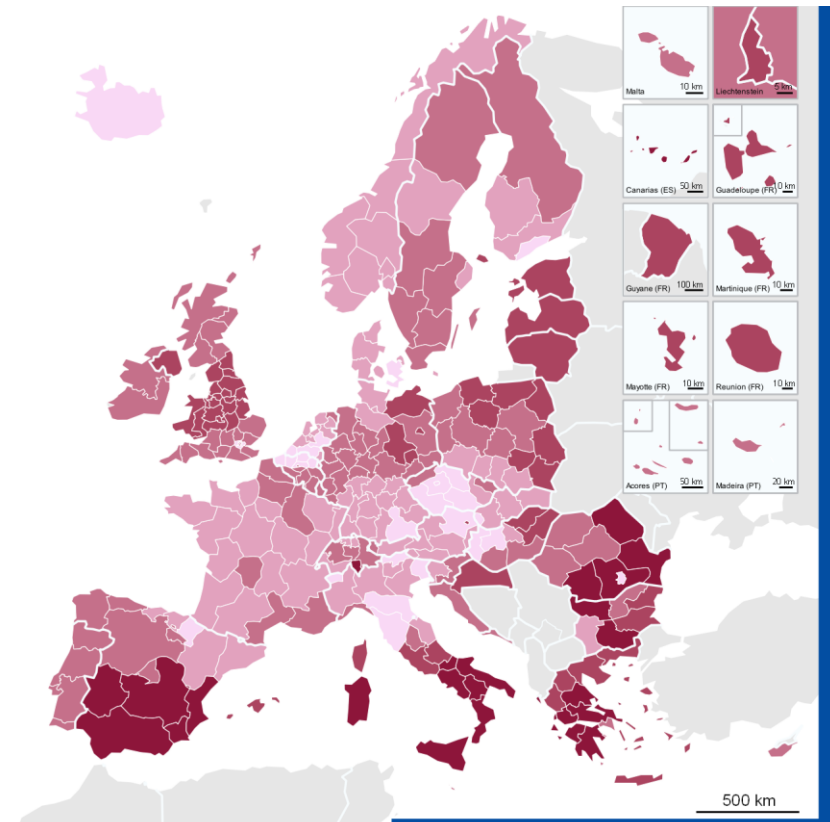
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At-risk-of-poverty rate (%), 2015*



* 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.



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

Higher than EU-average share of people at risk of poverty in Cyprus

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 poverty directly, but rather income in comparison to others in the country. The highest at-risk-of-poverty rates can be found in Southern and Eastern Europe. There are also large regional differences 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, 16.2% of the population in Cyprus was at risk of poverty. This implies that about 1 out of 6 persons had a disposable income which is below 60% of the national median. The number of people that are considered to be at risk of poverty has been more or less stable in Cyprus the last decade. Hence, the target set in the Europe 2020 strategy has not been met, like in most other European countries. Reasons for this development are manifold. For example, both the economic and financial crisis as well as economic recovery led to an increase of people at risk of poverty. The first increased the number of people with low incomes, the second enhanced income disparities.

Spatial planning

Development of Artificial area (2000-2018)

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

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

Historical building stock in Europe (2011)

Proportion of protected areas (2017)

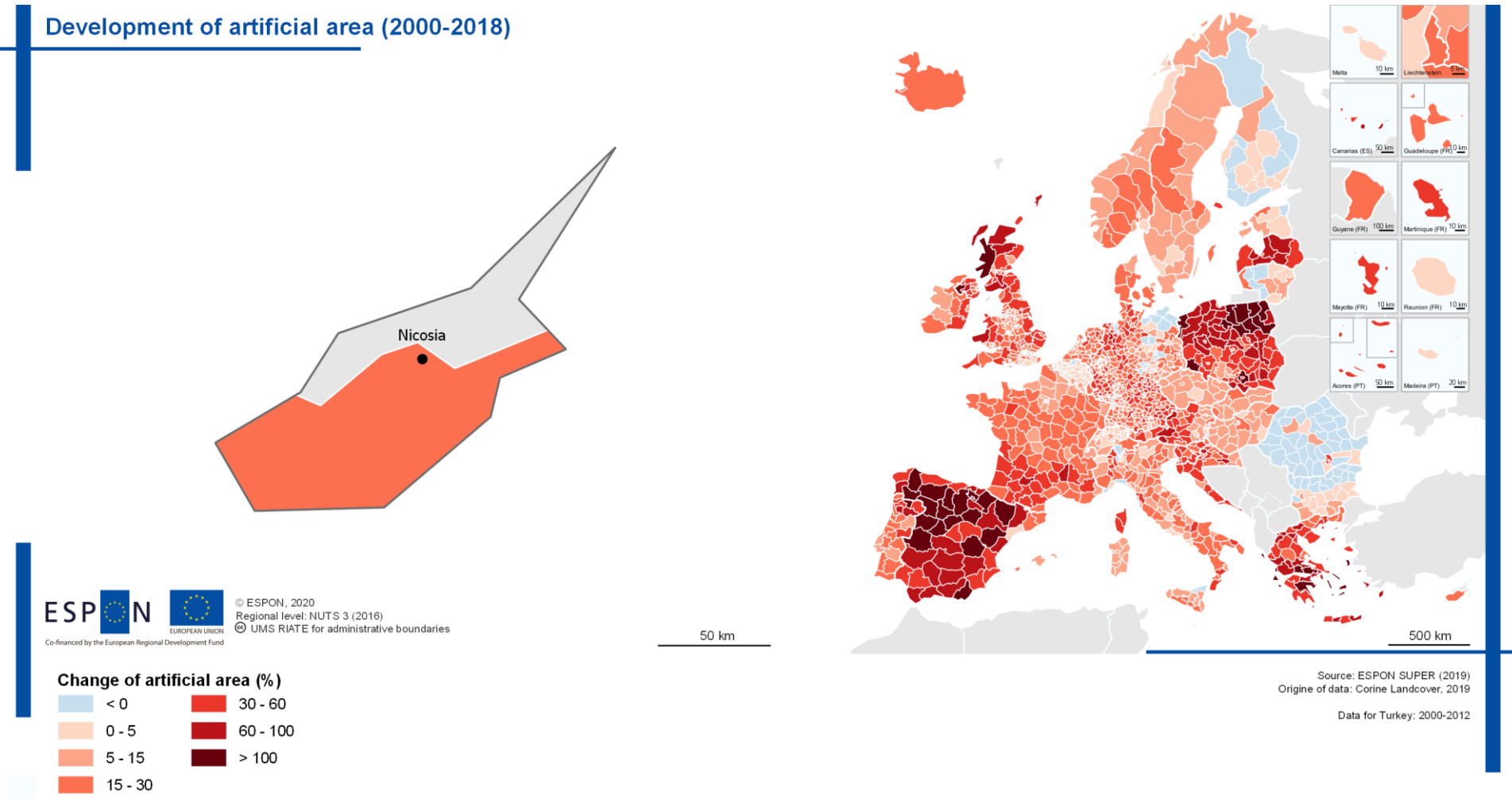
Coverage of potential Green Infrastructure and change in urban green areas (2012)

Potential Green infrastructure networks (2012)

Relative population potential change in islands (2001-2011)

Sparsely populated areas and areas at risk of becoming sparsely populated

Development of artificial area (2000-2018)

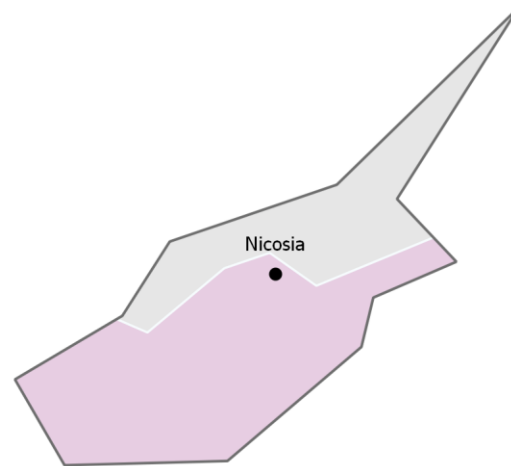


Increasing impact of human activities on Cypriot land-use

Changing shares of artificial areas illustrates the impact of human activities on the land, namely for housing, industries, infrastructures, and recreation (urban green areas). Between 2000 and 2018 the share of artificial area increased in northern Poland, southern Latvia, Spain, Scotland and Tirol in Austria. In most of these regions agricultural land was turned into urban use. The reasons for low or negative changes of artificial areas are diverse. The relative coverage of artificial areas hardly changed in some of Europe's main urban areas where the levels of artificial area were already high, e.g. in Antwerp, Ljubljana, Genova and Paris.

Between 2000 and 2018, the share of artificial land-use increased in Cyprus more than the average in Europe. The share of artificial land-use increased particularly between 2000 and 2006. In particular, the share of housing and commercial areas increased around Nicosia and around the cities along the southern coast, i.e. Paphos, Larnaca and Limassol. The increase of artificial land-use on Cyprus is comparable to that in Crete, in coastal areas in Spain, notably around Valencia and in southern French regions.

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

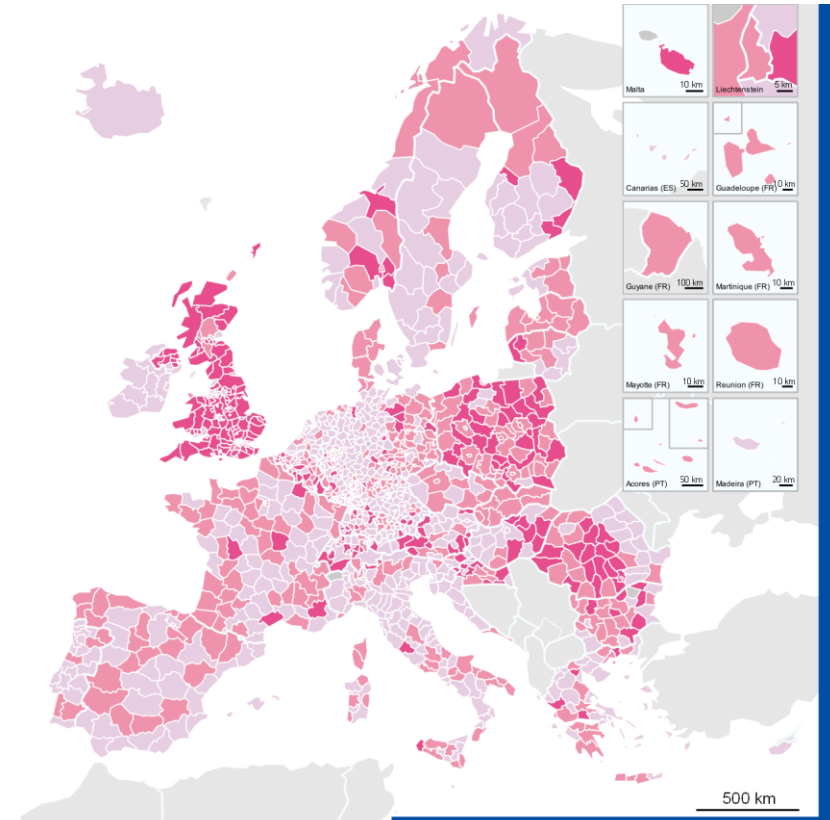


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Period of greatest development of urban use

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

50 km



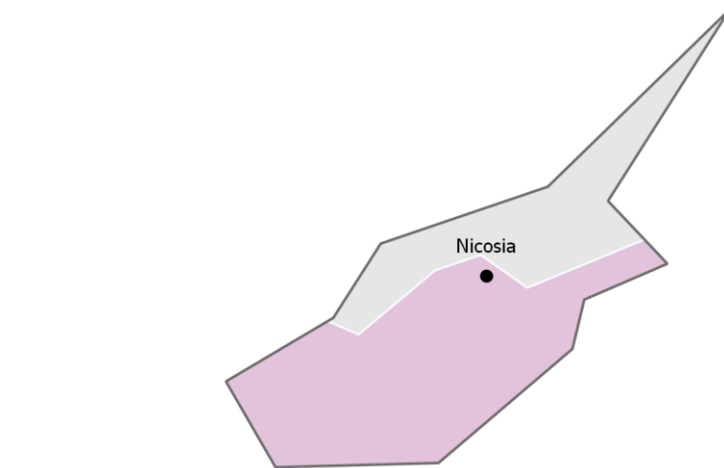
Source: ESPON SUPER, 2019
Origin of data: Corine Landcover, 2019

The increase of artificial land-use slowed down after 2006

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, Poland, 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.

Comparing the increase of artificial land-use between the periods 2000-2006, 2006-2012 and 2012-2018, the first period shows the greatest increase of artificial land-use in. Greater increase of artificial land-use between 2000-2006 may result from an economic upturn and a building boom in the years prior to the economic and financial crisis. At the same time, more environmental-friendly measures are introduced in recent years, promoting denser cities and encouraging re-naturalisation of farmlands. Indeed, new forest areas can be observed in the hinterlands of Limassol and Larnaca as well as in the northern part of the Paphos district.

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



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

with increase of artificial area by declining population

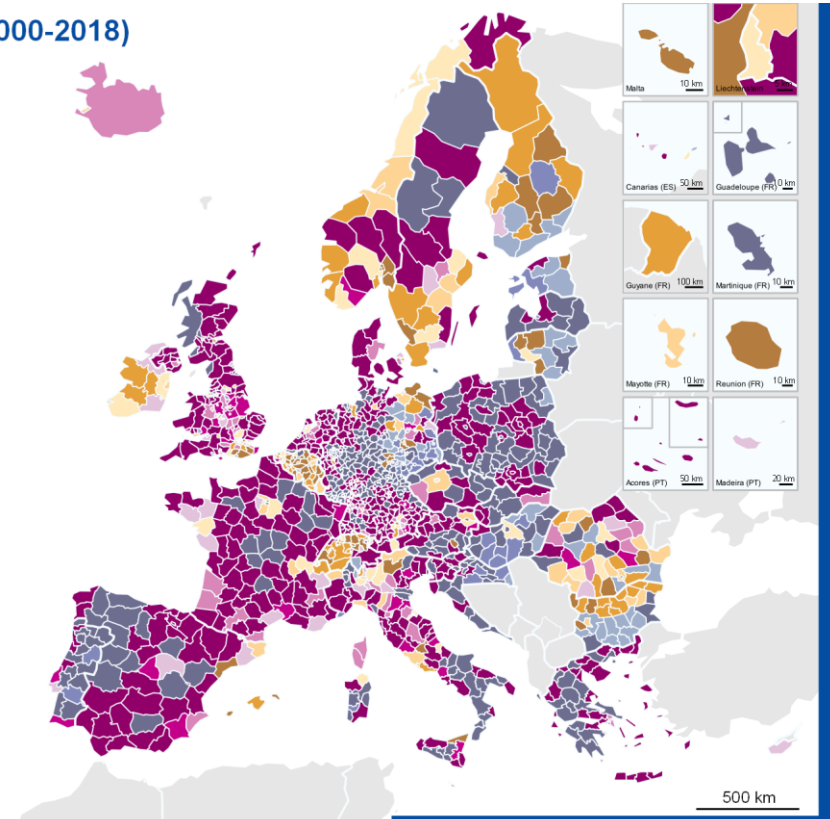
- up to below -1
- 1 up to below -0.5
- 0.5 up to below 0

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



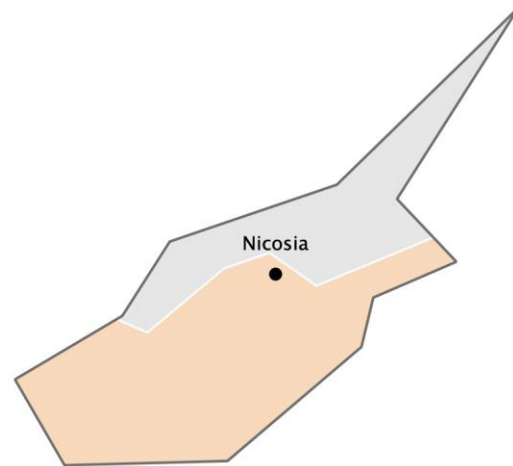
Source: ESPON SUPER, 2019
 Origin of data: Corine Landcover, 2019

Sign of increasing sprawling of Cypriot cities

Urban fabric can be measured in relation to the population growth in the period 2000-2018. Different degrees of urbanisation can be observed across Europe. Increase of the urban fabric area has been higher than the increase of population in most of France, Spain, the UK, as well as Sweden and Finland. Along the east part of the EU, from the Baltic States, along Poland, central Europe to Greece, the increase in urban fabric occurred, despite a decrease in population. In some areas the increase of population has been higher than the increase of the urban areas. This is to be seen for example in Ireland, most of Finland, in Norway, parts of Germany and Belgium, as well as large parts of Romania and Bulgaria.

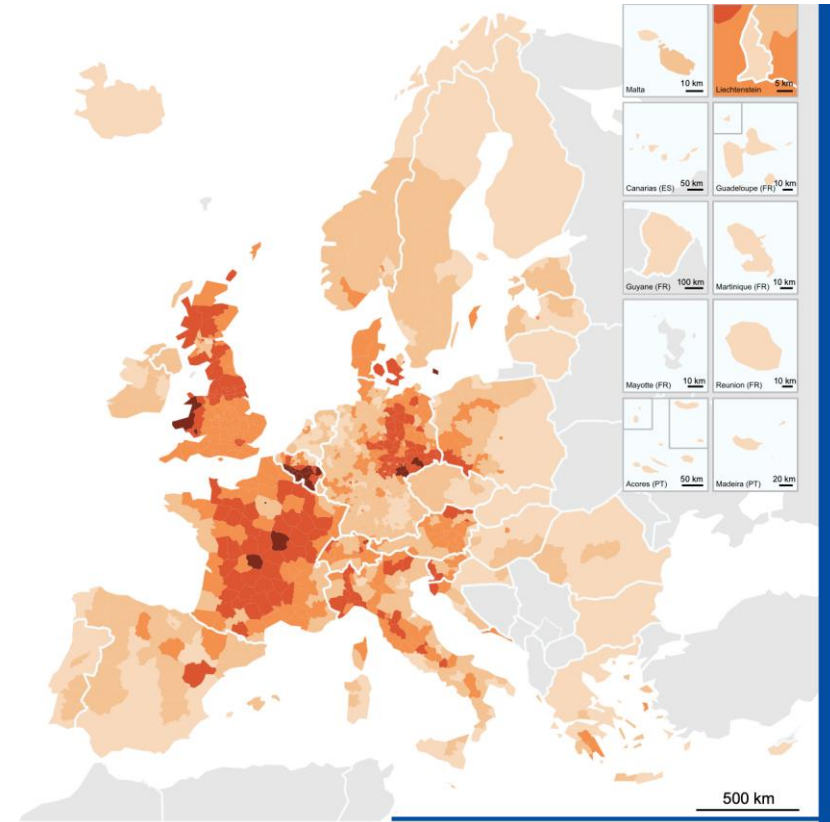
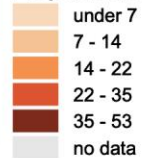
In Cyprus, increase of the urban fabric area, grew between 2000 and 2018 relatively more than population in the same period. Hence an urban sprawling effect could be observed. Land use growth around Nicosia, Larnaca and Limassol and Paphos was particularly intense between 2000 and 2006 compared to more recent years. Still, urban sprawl in Cyprus is limited compared to other parts of Europe.

Historical building stock in Europe



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Proportion of pre-1919 dwellings in total dwellings, %



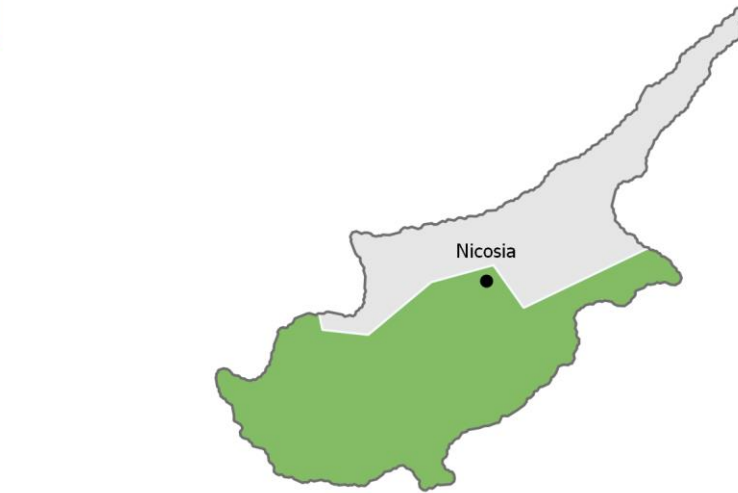
Source: ESPON EGTC, 2019
Origin of data: Eurostat, 2011 Population and Housing Census

Low share of dwellings more than 100 years old in Cyprus

Historical buildings can provide a cultural heritage added value to European cities and villages. A high share of historical buildings can enhance the attractiveness of places as living areas and may be a lever for tourism. At the same time, a large share of historical buildings may increase challenges to meet modern housing standards for energy efficiency, insulation and noise reduction. Moreover, maintenance costs for historical buildings can be high historical. These opportunities and challenges may be more visible in Wallonia, Wales, some French or German regions. In these regions the share of historic buildings, dwellings of 100 years and older is relatively high.

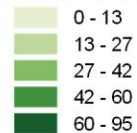
Similar to many other regions in southern and eastern Europe, Cyprus has relatively few buildings older than 100 years as a share of the total building stock. The majority of population lives in more recent dwellings. Most dwellings in Cyprus date from the 1980s or later.

Proportion of protected areas (2017)

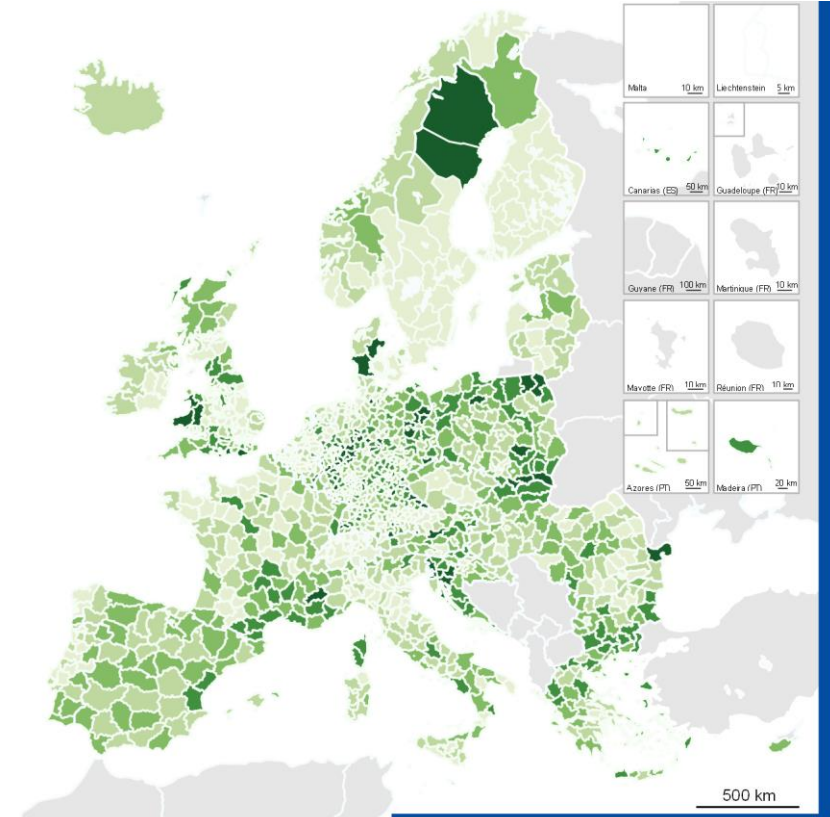


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Share of protected area by NUTS3 region



50 km



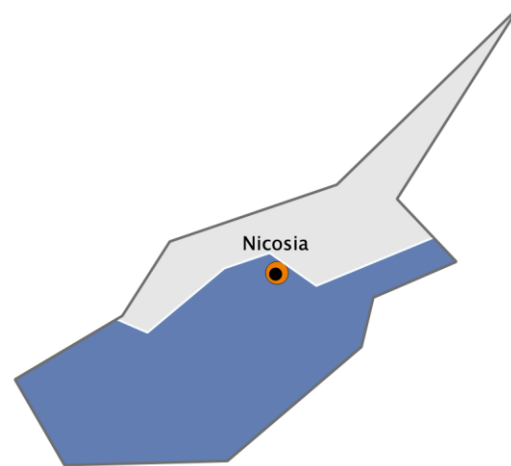
Source: ESPON project LinkPAs, Eurac Research 2017
Origin of data: Calculation based on Natura 2000 sites (EEA 2017),
nationally designated areas (EEA 2017) and NUTS3-regions (Eurostat/ GISCO 2013)

Coastal and mountainous ecosystems under several types of protection

The purpose of designating protected areas is to allow for the achievement of 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.

In Cyprus, 38% of all areas are under specific types of protection. These include ten strictly protected "national parks", e.g. Machairas, Petra tou Romiou and Troodos, as well as large areas with coordinated sustainable use of natural resource, e.g. Troodos range to south west shores and Akamas peninsula. More recently, and specifically since 2016, a number of permanent game reserve areas, have been defined in the mountains and on the coast to protect endemic fauna and control hunting activities.

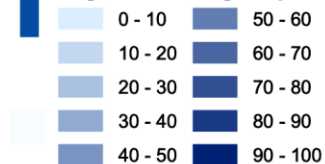
Coverage of potential Green Infrastructure (2012)



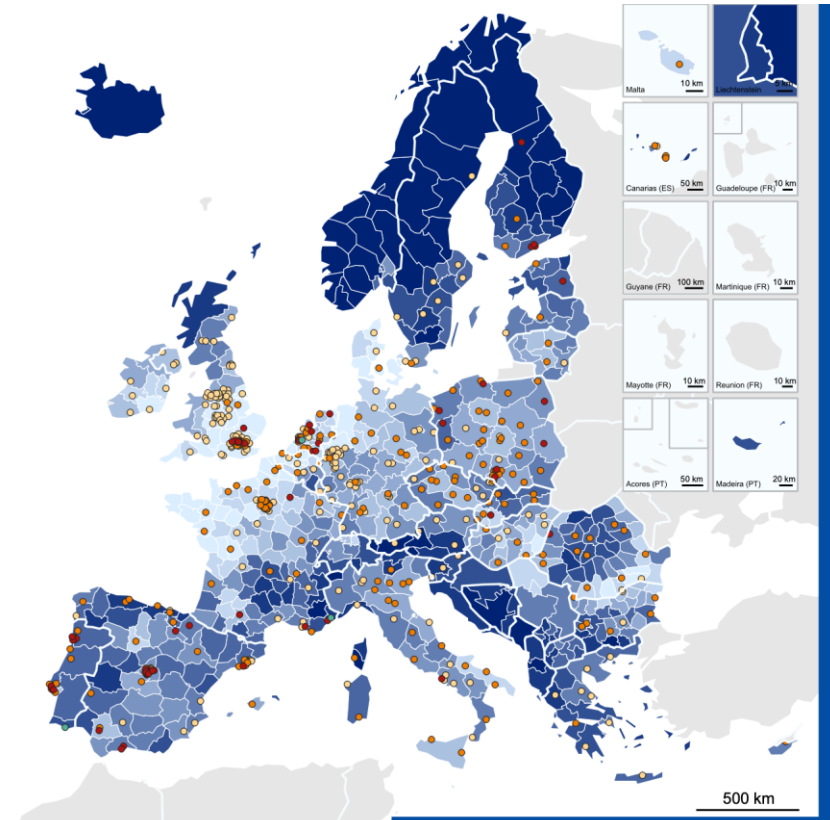
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Regional coverage of potential GI network



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)

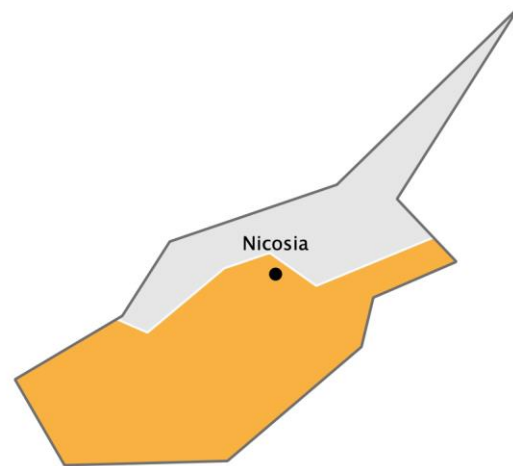
* Change values are recorded by comparing datasets from the Urban Atlas, version 2006 and 2012. Cities without symbols are not included in the two datasets

52% of Cyprus covered by Green Infrastructure networks

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 Cyprus, 52 % of the country is covered by Green Infrastructure networks, with major nodes being national forest parks and Natura 2000 sites. Cyprus is in an intermediate position compared to other Mediterranean islands: above values recorded in Sicily (30%) and Mallorca (40 %) but below Crete (62 %), Sardinia (65 %) and Corsica (North: 87 %, South: 91 %). Nicosia has seen its coverage of green areas slightly decrease between 2006 and 2012. This is related to the continuous urbanisation process going-on at the periphery of the city.

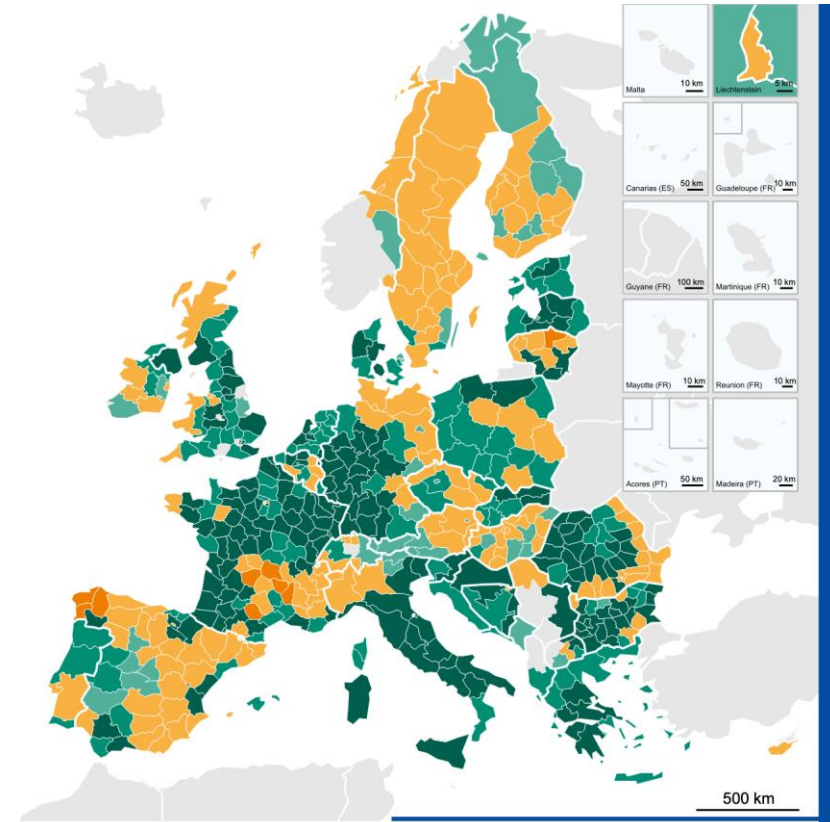
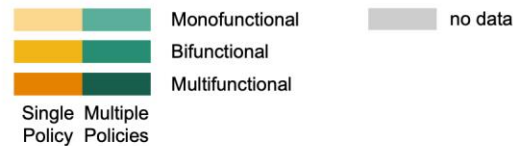
Potential Green Infrastructure networks (2012)



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Dominant type of Green Infrastructure (GI) links*



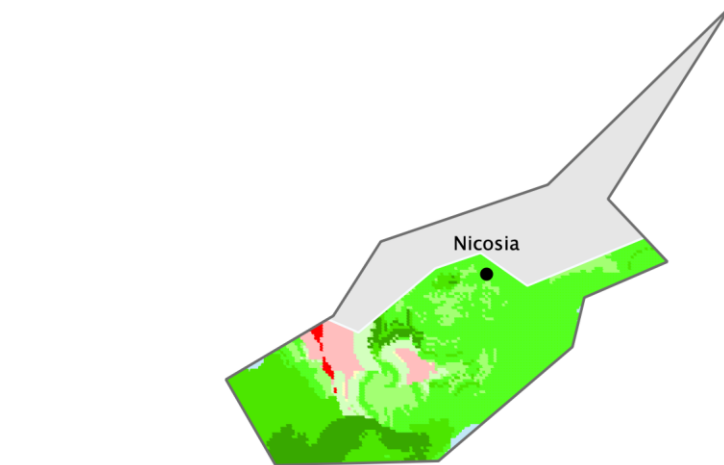
Origin of data: CLC 2012, Copernicus HRL Impervious 2012, OSM 2017, Natura 2000 (EEA, 2012), Emerald Network 2012, MAES (2011, 2015), HNMF (EEA 2015), Ecosystem types of map (ETC-SIA 2015)
Definitions: Multifunctionality in GI planning means that multiple ecological, social and also economic functions 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.

Low level of 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 in both rural and urban areas. GI development can be a component of different policies i.e. (1) Biodiversity, (2) Climate Change and (3) 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 Cyprus, potential green infrastructures tend to provide two different types of ecosystem services, but contribute only to one of the three above-mentioned policies. This means that synergies between ecosystem services are rather low, compared to regions in green on the map. In practical terms, the improvement of ES tends to only contribute the policy objective these are designed for. Implementation of GI could therefore have higher ecosystemic return if synergies between ecosystem services were enhanced.

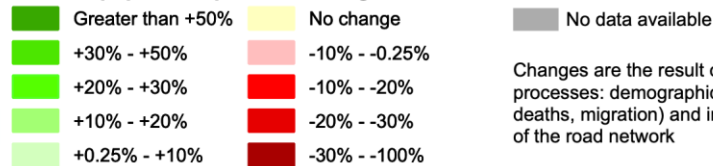
Relative population potential change in islands (2001-2011)



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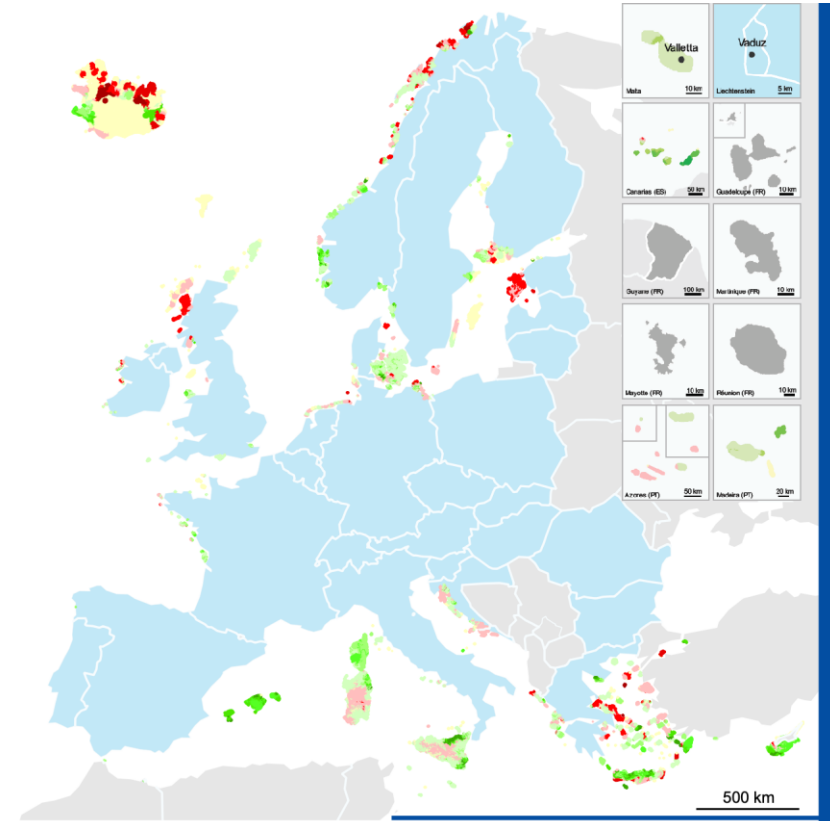
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Regional level: 1x1 km grid cells
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Relative population potential change in islands between 2001 and 2011



Changes are the result of two processes: demographic trends (births, deaths, migration) and improvements of the road network

50 km



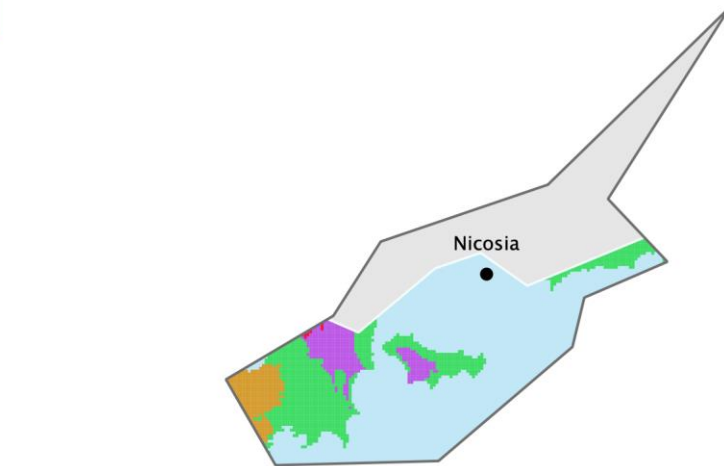
Source: ESPON BRIDGES, 2019
Origin of data: TCP International, 2019; ESPON GEOSPECS, 2012; RRG GIS Database, 2018

Growing population potential in most of the country, except Troodos

Europe covers a diversity of islands each with their own characteristics and governance arrangements, in close proximity or far away from the mainland. A common challenge to islands refers to a lack of critical mass for resource inputs or consumer base. This often restricts the capacity of island SMEs to exploit economies of scale, scope and diversification. A decreasing population may enhance such negative aspects of insularity. Population potential measures the number of people that one can reach in a 45-minute travelling area. Smaller islands or non-tourism island experienced decline in population potential between 2001 and 2011. Examples of islands with a decreasing population can be found all across Europe.

In Cyprus, population has grown between 2001 and 2011 from 698,000 to 840,000 persons. This growth has been concentrated in Nicosia and in main urban centres along the coast. This explains why population potential has grown quite significantly in Cyprus and especially on the coast. The only exception is found in two areas in the northern part of Troodos mountain range which have experienced a population decline and have weak road connection to the coast. This coast-mountain pattern is also seen in other large Mediterranean islands such as Sardinia and Sicilia.

Sparsely populated areas and areas at risk of becoming sparsely populated



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Current SPAs (population potential < 100,000 residents)

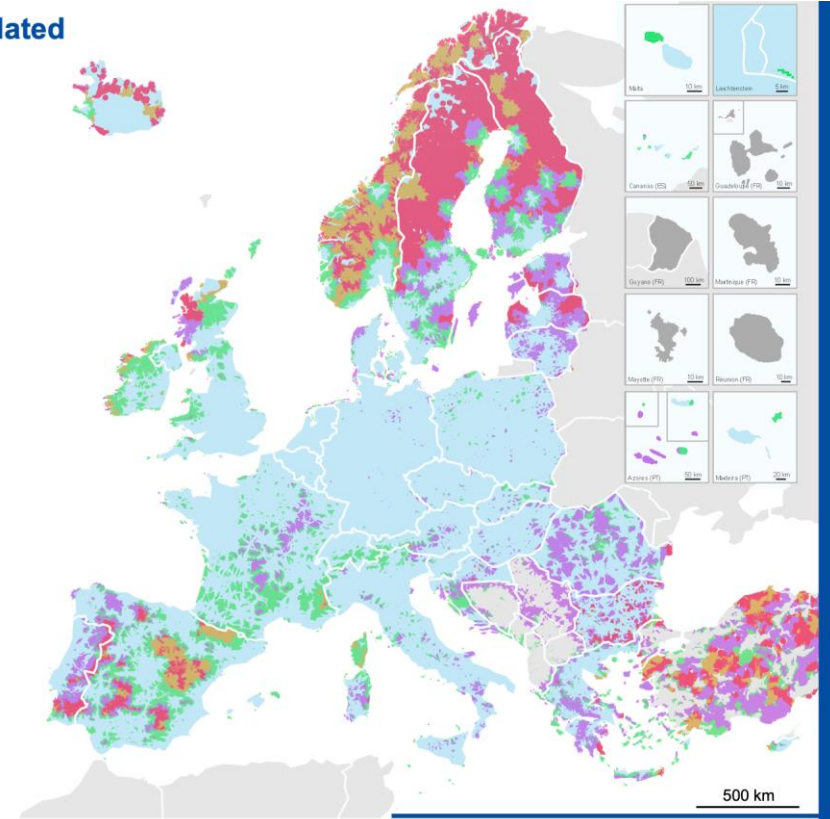
- Red: SPA in decline
- Orange: SPA with stable *or growing *population potential

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

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

Grey: No data available

50 km



Source: ESPON BRIDGES, 2019
Origin of data: TCP International, 2019, ESPON GEOSPECS, 2012, RRG GIS Database, 2018

SPA around Akamas peninsula, Troodos at risk of becoming SPA

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 Cyprus, in the westernmost part of the island, being located further away from the main centres of Nicosia and Limassol are "SPAs with stable or growing population potential". In the centre of the island, large parts of the Troodos range are considered as areas with "low population potential". The largest part (in green) has stable or growing population potential due to their connection to the coastal suburbs but two areas have decreasing potential and are therefore, "at risk of becoming SPAs".

Ecosystems and renewables

Total waste per capita (2014)

Road Transport Sector, final energy consumption (2012)

Decoupling Domestic Material Consumption from GDP (2006-2014)

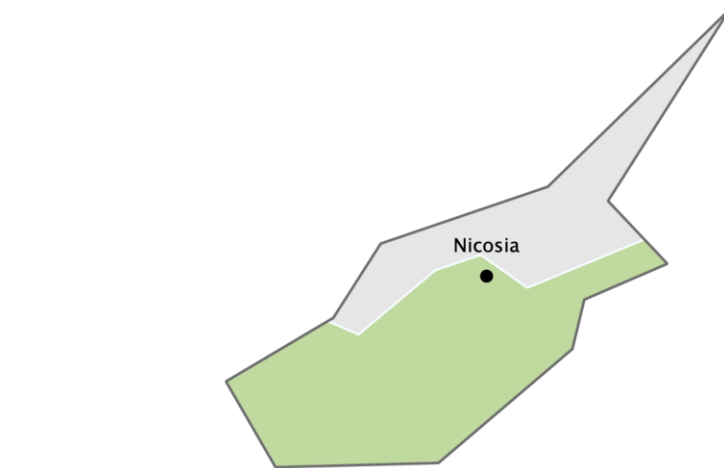
Renewable energy consumption (2014)

Installed capacity and potential of wind power (2016)

Installed capacity and potential of photovoltaic energy (2014)

Aggregated potential impact of climate change

Total waste per capita (2014)

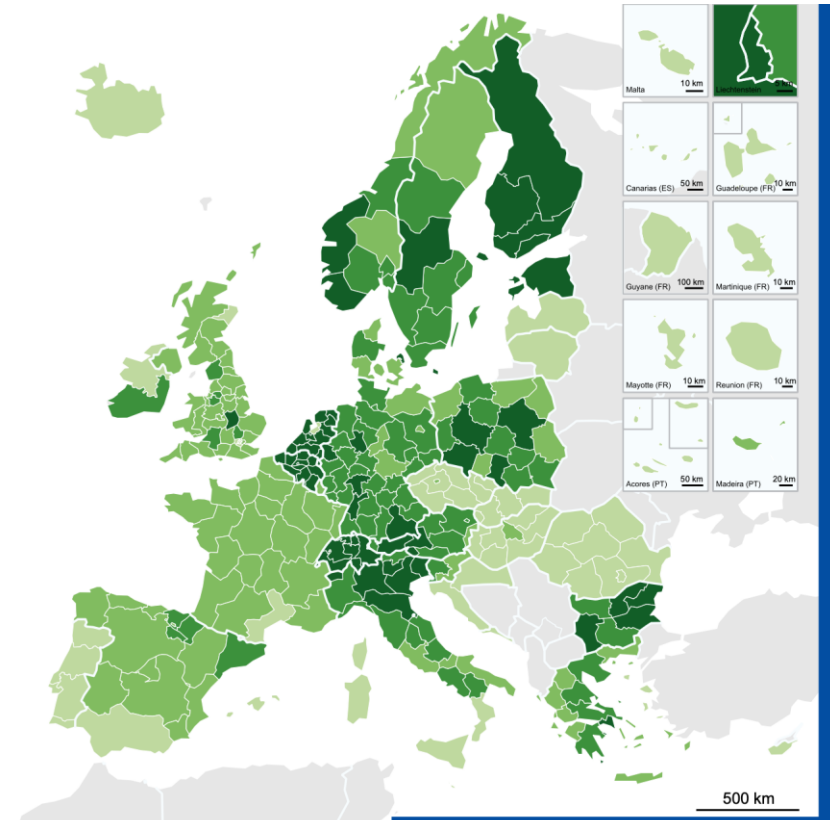


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Total waste in kg per capita (2014)



50 km



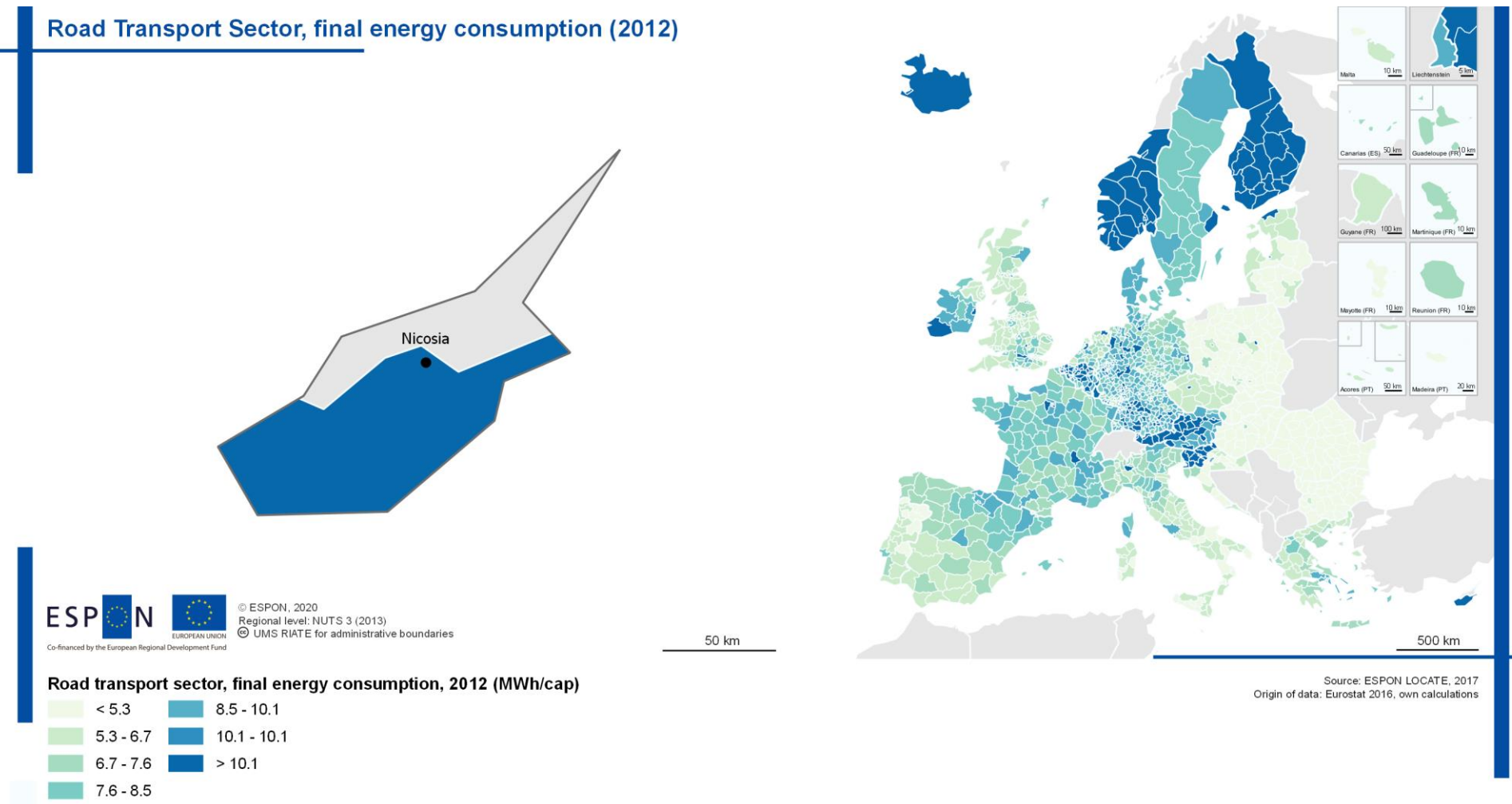
Source: CIRCTER, 2018
Origin of data: Eurostat, CIRCTER, 2018

Low total waste per capita compared to EU regional average

The European Commission promotes a transition to a circular economy. This entails an economic model in which waste becomes obsolete and in which materials can be reduced or re-used. In that sense, the share of waste produced per inhabitant in European region provides an indication on the challenges and opportunities for such a transition, keeping in mind that data origins and collections methods differ largely by country. Per capita more waste is produced in Europe's most populous and industrial regions in 2014, among which regions in the Netherlands, Belgium, Switzerland, Finland, Italy, Poland, Norway, Estonia and Bulgaria.

In Cyprus, waste generation (excluding main mineral wastes) per capita and year, amounted to 752 kg which is among the lowest in the EU. Similar figures are only found in Croatia (723 kg) and Malta (946 kg) while most EU countries generate between 1200 to 2000 kg. Beyond discrepancies in data collection, differences could be related to levels of industrial development (esp. manufacturing).

Road Transport Sector, final energy consumption (2012)

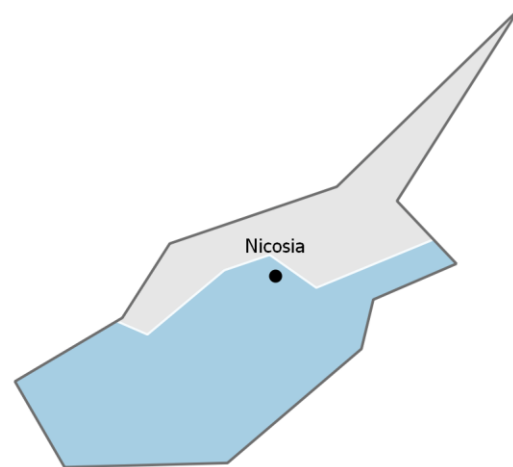


Dependence on private cars leads to high energy consumption for road transport

Road transport is among the main energy consumer in the transport sector. It includes passenger transport by car or bus and transport of goods by trucks. Hence, regional variations of energy consumption follow population, GDP and employment patterns. The energy consumption of road transport is particularly high in Nordic regions as well as in regions in Central Europe. In addition, areas of fuel tourism can be observed. Energy consumption of road transport is considerably lower in most eastern European countries as well as some regions in Portugal and southern Italy.

In Cyprus, energy consumption for road transportation in 2012 is 11.01 MWh/cap which is significantly higher than the European average and also higher than other large Mediterranean islands. The size of the island, the absence of railway for freight and human transport, the weakness of public transportation systems and the regular congestion of main inter-urban road connections are the main factors that explain these high figures. In 2018, Cyprus was the country with the third highest number of passenger car per inhabitant in the EU (629 cars for 1,000 inhabitants) just behind Luxembourg and Italy.

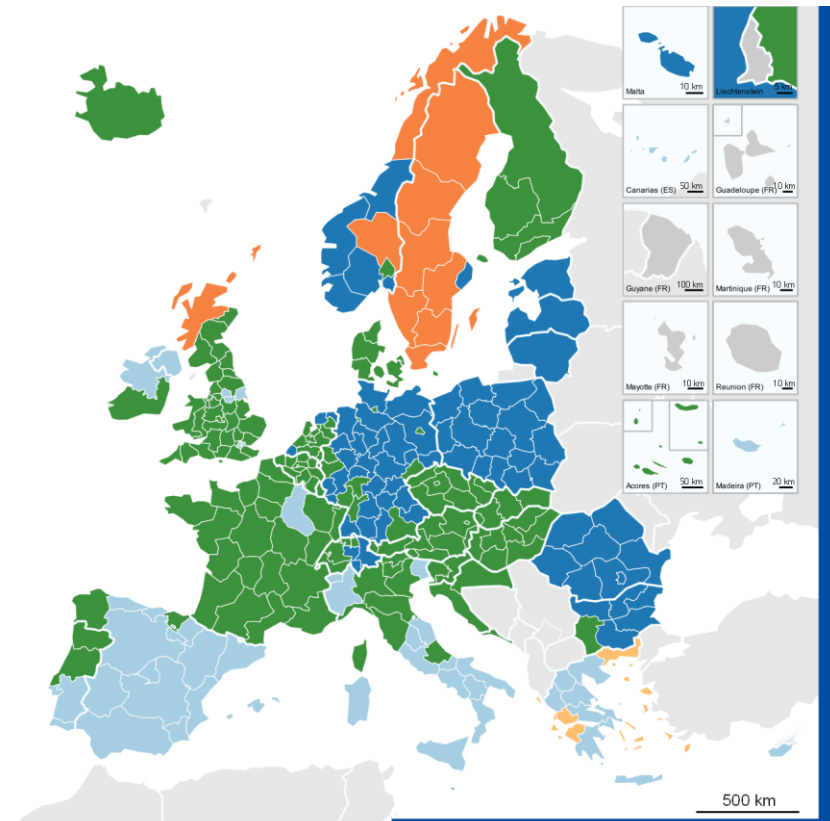
Decoupling domestic material consumption from GDP (2006-2014)



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Decoupling DMC per capita from GDP per capita

- | | |
|---|---|
|  $0 < \text{Change GDP} < \text{Change DMC}$ |  $\text{Change DMC} < \text{Change GDP} < 0$ |
|  $\text{Change GDP} < \text{Change DMC} < 0$ |  $\text{Change DMC} < 0 < \text{Change GDP}$ |
|  $0 < \text{Change DMC} < \text{Change GDP}$ |  no data |



Source: ESPON CIRCTER, 2018
Origine of data: CIRCTER, 2018

DMC: Domestic Material Consumption
GDP: Gross Domestic Product

Growing resource efficiency in a context of economic downturn

Decoupling of material consumption from GDP refers to increasing economic growth and decreasing use of resources. Many European regions decreased their domestic material consumption (DMC) and saw an increase of GDP between 2006 and 2014 (green). These regions used resources more efficiently without harming GDP growth. Regions in Spain, southern Italy, Greece and Cyprus decreased their DMC but saw also a decrease in GDP. Resource efficiency has increased but through an economic downturn. Regions in Baltic countries, Germany, Bulgaria and Romania saw an increase in DMC which was lower than the increase in GDP. Regions in orange had greater increase of DMC than GDP. These economies did thus not become more resource efficient between 2006 and 2014.

Decoupling domestic material consumption from GDP has only partially been reached in Cyprus between 2006 and 2014. In a shrinking economic context for all southern European countries resulting from the economic and financial crisis, the country managed to decrease the level of Domestic Material Consumption more than the decrease of GDP. This suggests that resource-intensive activities (e.g. manufacturing production, agriculture) have suffered more from the crisis than less resource-intensive activities (e.g. services).

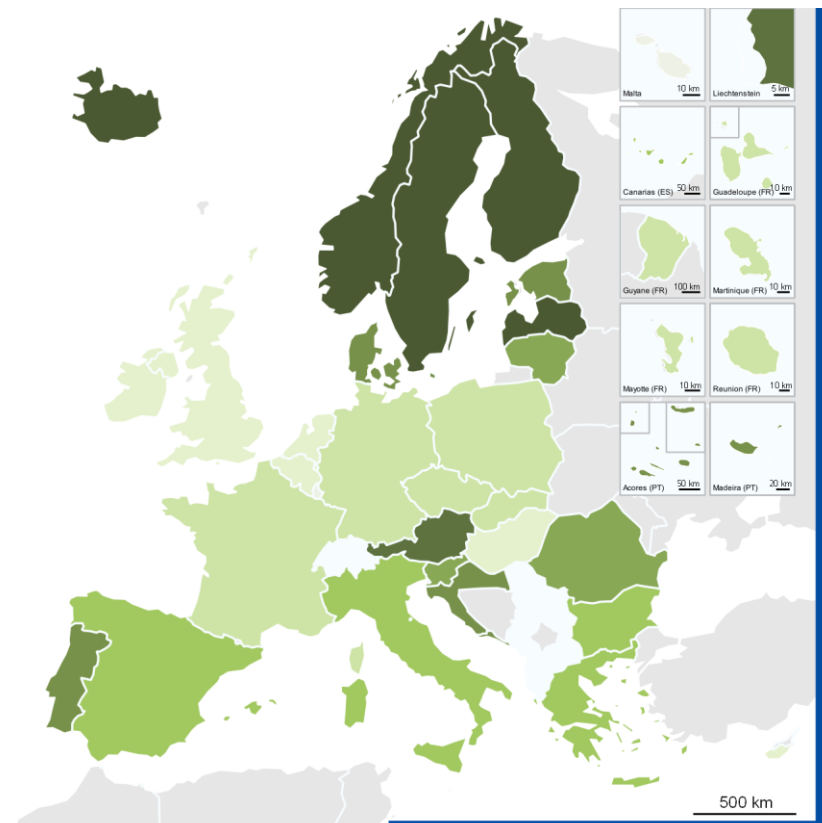
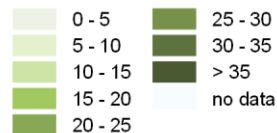
Renewable energy consumption (2014)



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Share of energy consumption (in %)



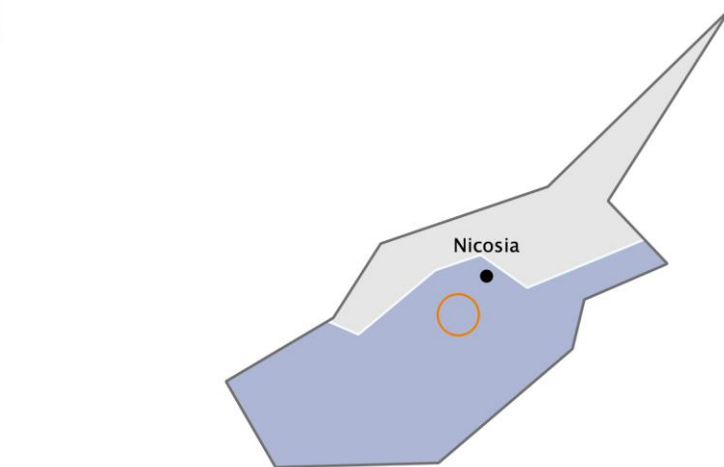
Source: Spiekermann and Wegener Urban and Regional Research (S&W), Territorial Futures, 2017
Origin of data: Eurostat (online data code: t2020_31), 2014

Low renewable energy consumption and production compared to Cyprus' renewable energy potential

The level of energy consumption in European countries depends on the local availability of renewable energy sources and the capacities in place to make this energy accessible. Domestic renewable energy consumption in 2014 ranges between 2% for Malta and 35.5% for Sweden. It is highest in Scandinavian countries, Iceland, Latvia and Austria (>30%) and moderately high (>20%) in Portugal, Lithuania, Estonia, Croatia, Slovenia and Romania. Regions with a particularly low share of domestically produced renewable energy are the British Isles, the Benelux countries and Hungary. The most challenged regions toward energy transition will be those with a low share of domestic renewable energy production and significant extraction or production of fossil or nuclear-based energy.

In Cyprus, the level of renewable energy consumption in 2014 is low (9.2%). The situation of the country has improved during the period 2015-2018. In 2018, Cyprus surpassed its EU2020 national objective of 13% of gross energy consumption from renewable sources (13.8%). The renewable energy roadmap for the Republic of Cyprus (IRENA, 2015) highlights that Cyprus has a major production potential for photovoltaic energy (which could provide 25% to 40% of Cyprus total electricity supply in 2030) and for wind energy (which could provide 5 to 9% of Cyprus total electricity supply in 2030). Such a transition implies substantial investments in renewable energy production capacities.

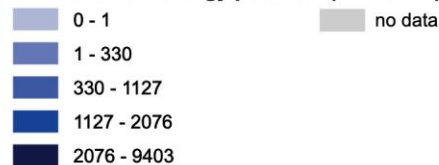
Installed capacity and potential of wind power (2016)



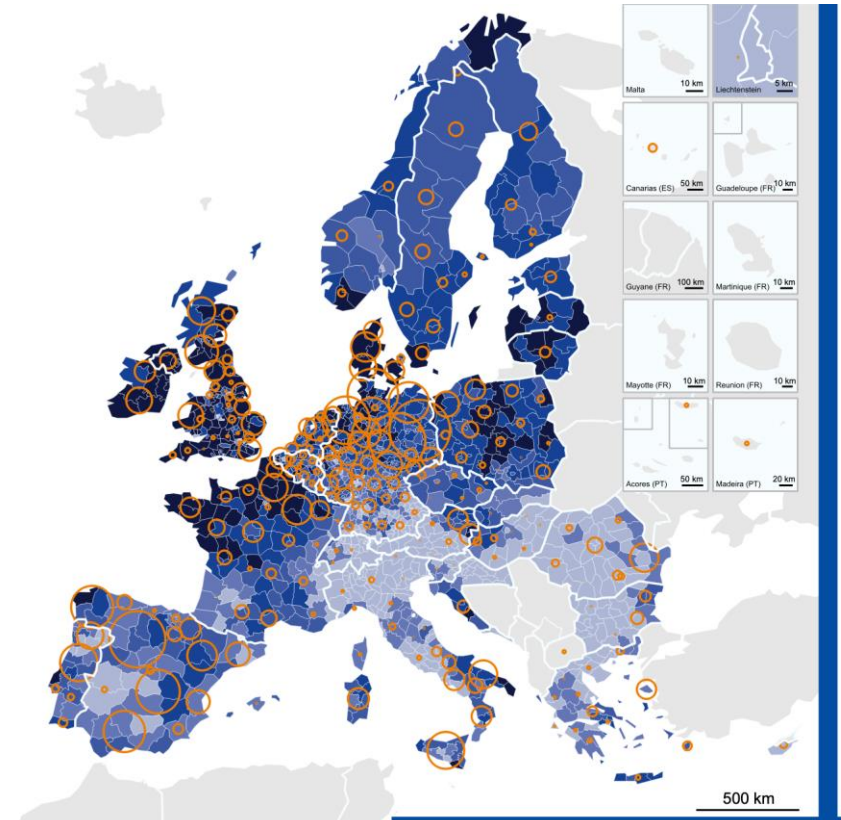
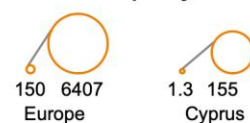
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Wind onshore energy potential (MWh/km²) - NUTS3



Installed capacity of windpower (MW) - NUTS2



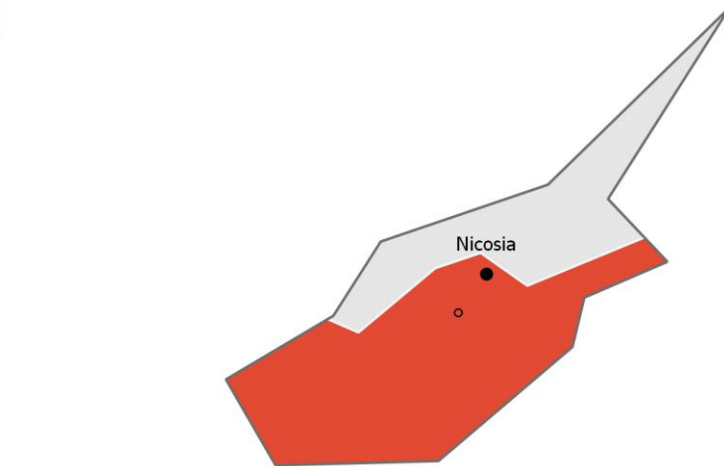
Origin of data: European Commission, JRC, EMHIRE dataset part 1, wind power generation, 2016.
 * Regions without symbols are missing data regarding the installed capacity of wind power.

Increasing wind power production capacities

Regions with the highest potential for wind power production are concentrated in western Europe, close to the English Channel, Irish Sea and North Sea. However, large potentials can also be found in areas around the Baltic Sea, and in large parts of Poland. The wind energy production potential is furthermore significant throughout the territory, as illustrated by the spatial distribution of wind power production facilities. Their development has been particularly important in Germany (capacity of 61.4 GW in 2019), Spain (25.8 GW), the UK (23.5 GW) and France (16.7 GW). In Poland, it is only 5.9 GW, despite the major identified potentials. the highest share of electric production coming from wind power is observed in Denmark.

In Cyprus, according to the project modelling, wind energy potential is very limited (below 1 MWh/km²). However, production capacity is increasing. It developed from 155 MW in 2015 (as shown on the map) to 188 MW in 2020, distributed in seven different facilities. Almost half of the wind energy capacity is concentrated in the Orites farm, located in Paphos district. The most favourable scenario for wind energy production, presented in the renewable energy roadmap for the Republic of Cyprus (IRENA, 2015), highlights that wind energy capacities could be raised to 375 MW in 2030.

Potential photovoltaic energy and installed capacity (2017)

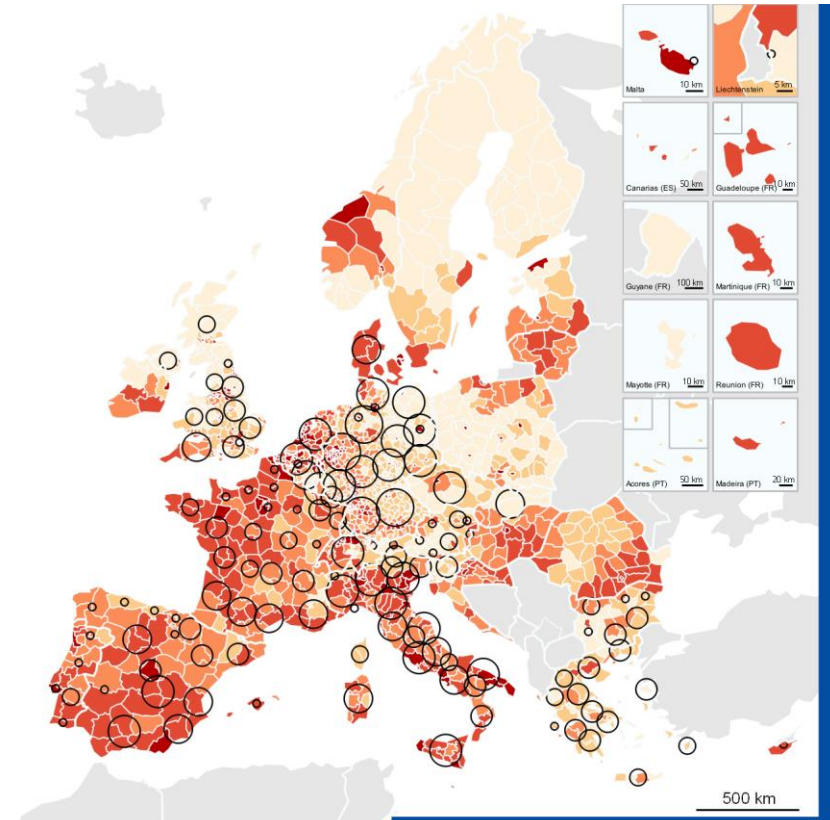


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Photovoltaic energy potential (in MWh/km²) **Installed photovoltaic energy capacity (in MW)**



50 km



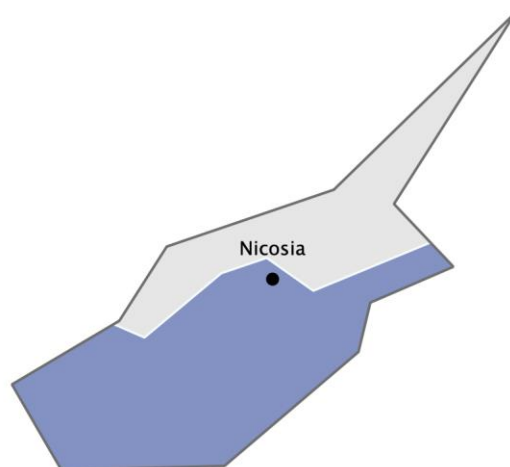
Source: Spatial Foresight, 2020
Origin of data: Fraunhofer-Institut für System- und Innovationsforschung ISI, 2017 and
Spiekermann and Wegener, 2018

Favourable climatic conditions and recent political impulse leads to high photovoltaic energy potential

Solar photovoltaic (PV) energy is a key energy source for southern European countries with long and intense sunshine exposure. Photovoltaic energy potential reflects both these climatic conditions (e.g. number of full load hours) and the more or less favourable administrative and legal context for new installation. Therefore, highest potential for solar energy production are identified in coastal regions in the Mediterranean basin (Italy, France Spain), on the Atlantic coast (France, Portugal) and in the North Sea (Denmark, the Netherlands).

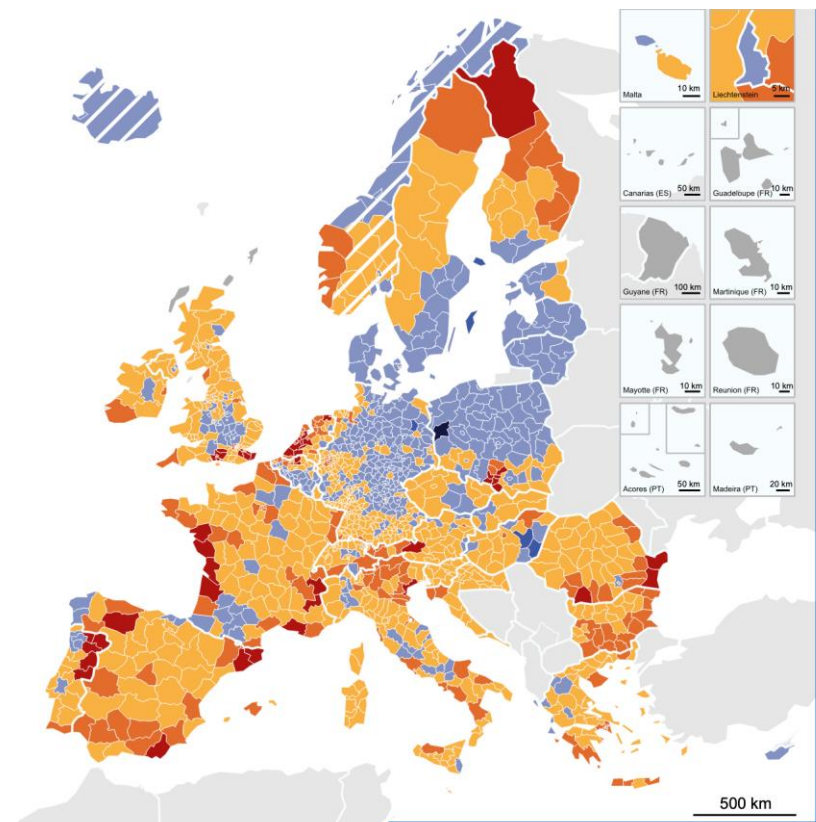
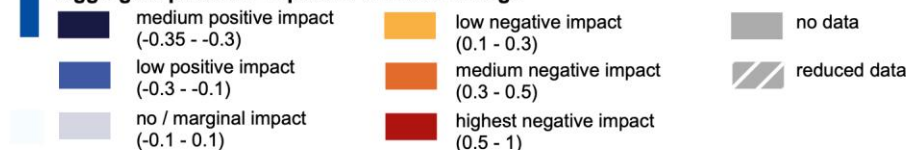
In Cyprus, solar PV energy potential is among the highest in the EU due to the favourable climatic conditions in the eastern Mediterranean basin. Cyprus could produce 495 MWh/km² of PV energy. However, in 2014, installed capacity was still rather limited ((below 100 MW). An acceleration towards energy transition is noticed since 2018 with the administrative approval of more than 80 new solar parks. In 2020, Cyprus is actively looking for new onshore locations to develop large scale solar projects.

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, 2014, 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

Limited aggregated potential impact of climate change in Cyprus

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 German and in most of Poland.

In Cyprus, the aggregated potential impact of climate change is expected to be marginal compared to other EU regions. Although mean temperatures are expected to increase, the overall “sensitivity” of the territory to these changes is relatively low, which leads to no or marginal impact. A negative economic impact is however expected, especially on the tourism and energy sectors.

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Disclaimer:

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