

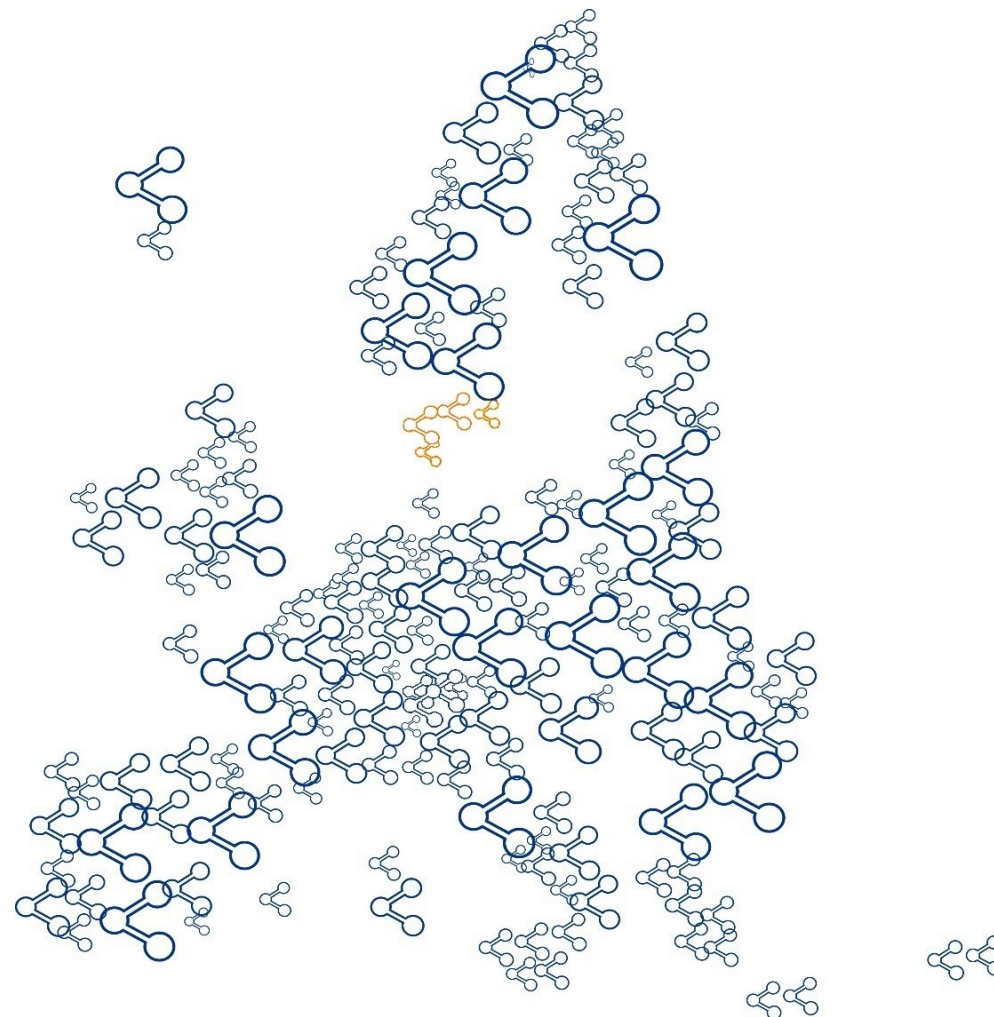
Inspire Policy Making with Territorial Evidence

Territorial fiche

Territorial patterns and relations in Denmark

- Economy
- Accessibility
- Environment
- Energy
- Social
- Urbanisation

Interactive version: www.espon.eu/denmark



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. Its main goal is to showcase the wide range of ESPON research and, by zooming-in on a specific country, raise interest for the scientific results at a national and regional scale.

The indicators and analyses in this document represent the data availability at the time when the research was undertaken and are not based on the most recent data. 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.



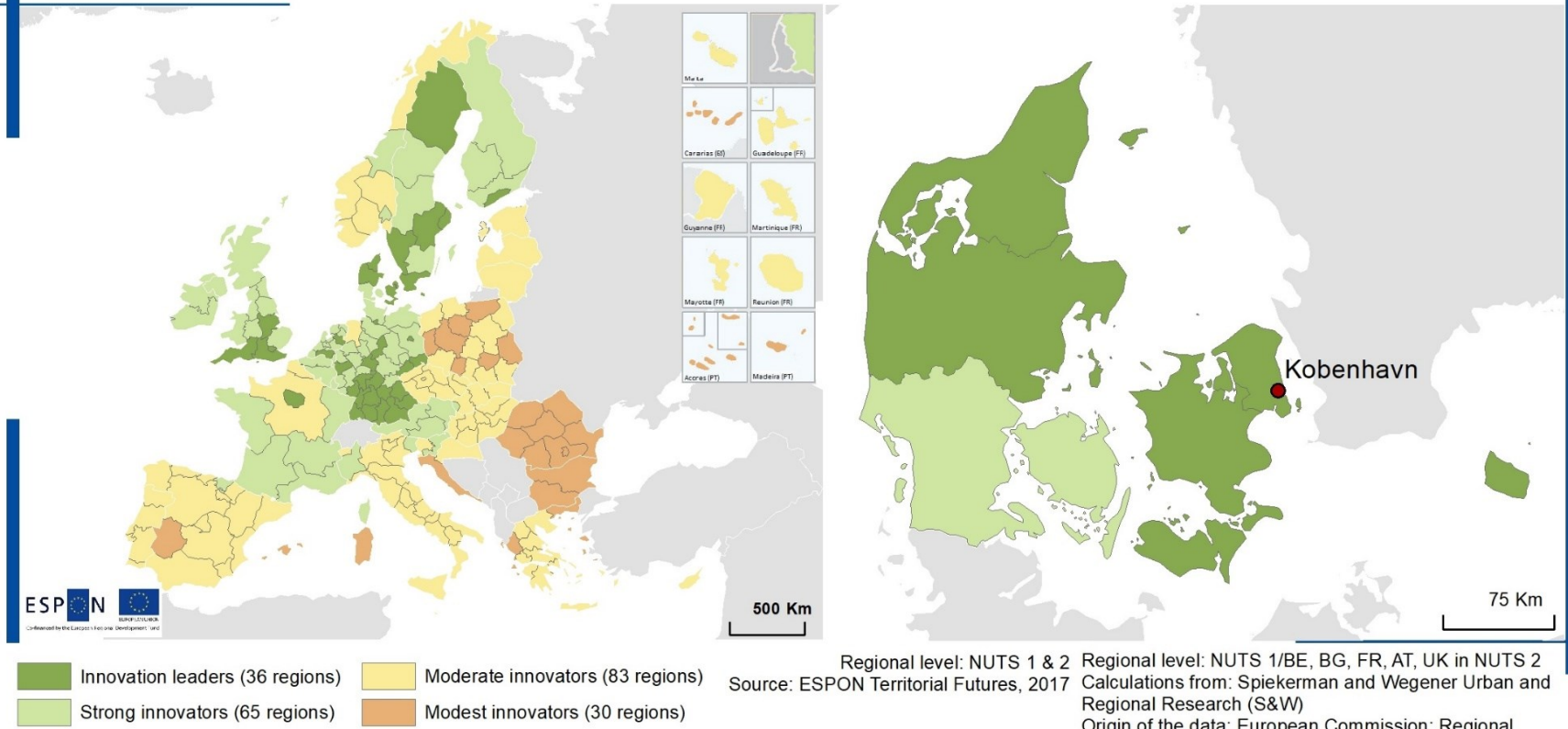
Economy

Regional innovation
Knowledge economy
Micro-enterprises
Small and medium enterprises

Gross value added of tourism
Tourism accommodation
Tourism and climate change

Denmark is considered to be one of the most economically successful countries in Europe. This is also indicated in the following maps and descriptions. In terms of innovation, Denmark stands out as one of the leaders in Europe and has a remarkable span in the orientation of its innovative activities. In the knowledge economy, the Copenhagen area is leading in Denmark and is among the best in Europe. The share of persons employed in microenterprises (1-9 employees) is relatively low in Denmark, while the share of persons in small-medium sized enterprises (10-249 employees) is slightly above the European average. Tourism is a growing sector in Denmark, with a noticeable increase during the last few years and with projections that climate change might only have an overall marginal impact on Denmark. However, this is considered to be a balance between some sizeable negative and positive effects that need to be taken into account.

Regional innovation scoreboard 2016



The regional capacity to innovate is an essential parameter for meeting a range of fundamental challenges, such as climate and demographic changes and transformation of energy and production sectors. There is a tradition in Europe of excellence in R&D and innovation, however this is unevenly distributed. Northwestern countries tend to be the strongest innovators, while innovation in southern and eastern countries is comparatively modest. During 2007-2013 the gap between innovation leaders narrowed, with a convergence of innovation performance for all regions. However, from 2014 to 2016 innovation performance declined for all regions, due to weakening in SME sectors.

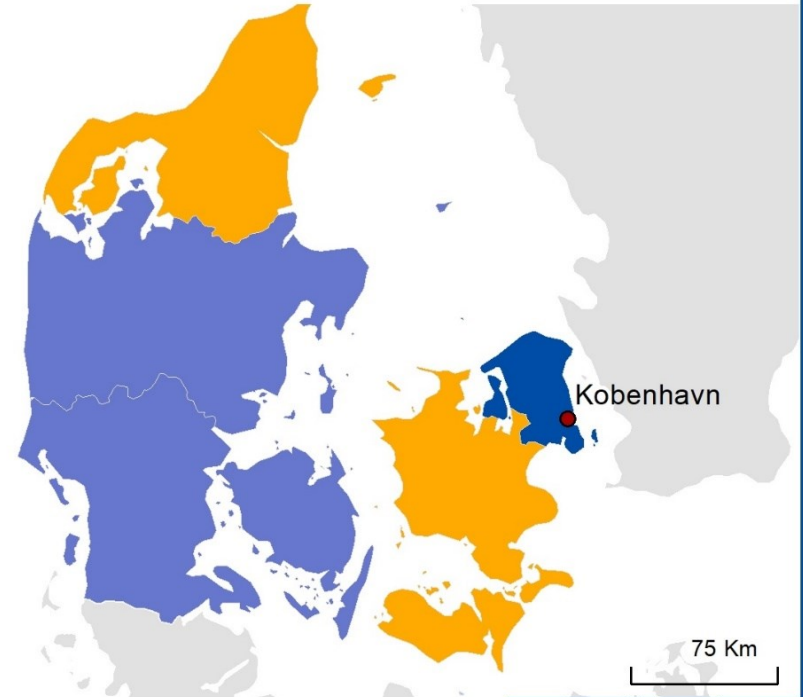
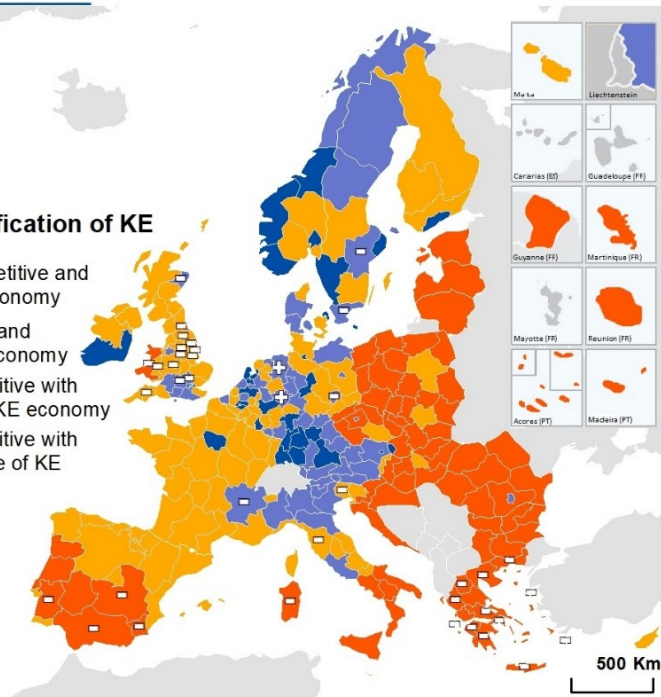


Denmark is considered among Europe's innovation leaders, together with southern England, southern Germany, metropolitan Paris and Sweden. In Denmark, the regions of Copenhagen, Sealand, North Denmark and Central Denmark are among the best in Europe, and the Southern Denmark region is also considered a strong innovator. Concerning the orientation of innovation, the regions of Copenhagen and Sealand are characterised as applied science areas, north and central Denmark regions as smart technological application areas, and southern Denmark as a European science-based area. All regions in Denmark have high levels of R&D intensity, which fosters a favourable environment for attracting start-ups and qualified personnel.

Knowledge economy (KE) clusters, 2012 - 2015

Regional classification of KE

- Highly competitive and KE based economy
- Competitive and KE related economy
- Less competitive with potential in KE economy
- Less competitive with low incidence of KE
- No Data



Change in typology

- Change towards a more KE based typology
- Change towards a less KE based typology

The classification is based on labour market conditions, KE potential, population and migration dynamics and context indicators from the years 2012 and 2015. For more information: ESPON EMPLOY, 2017

Regional level: NUTS 2
Source: ESPON EMPLOY, 2017
Origin of the data: Eurostat, IRS Milano, IES Brighton and IRS Erkner, 2017

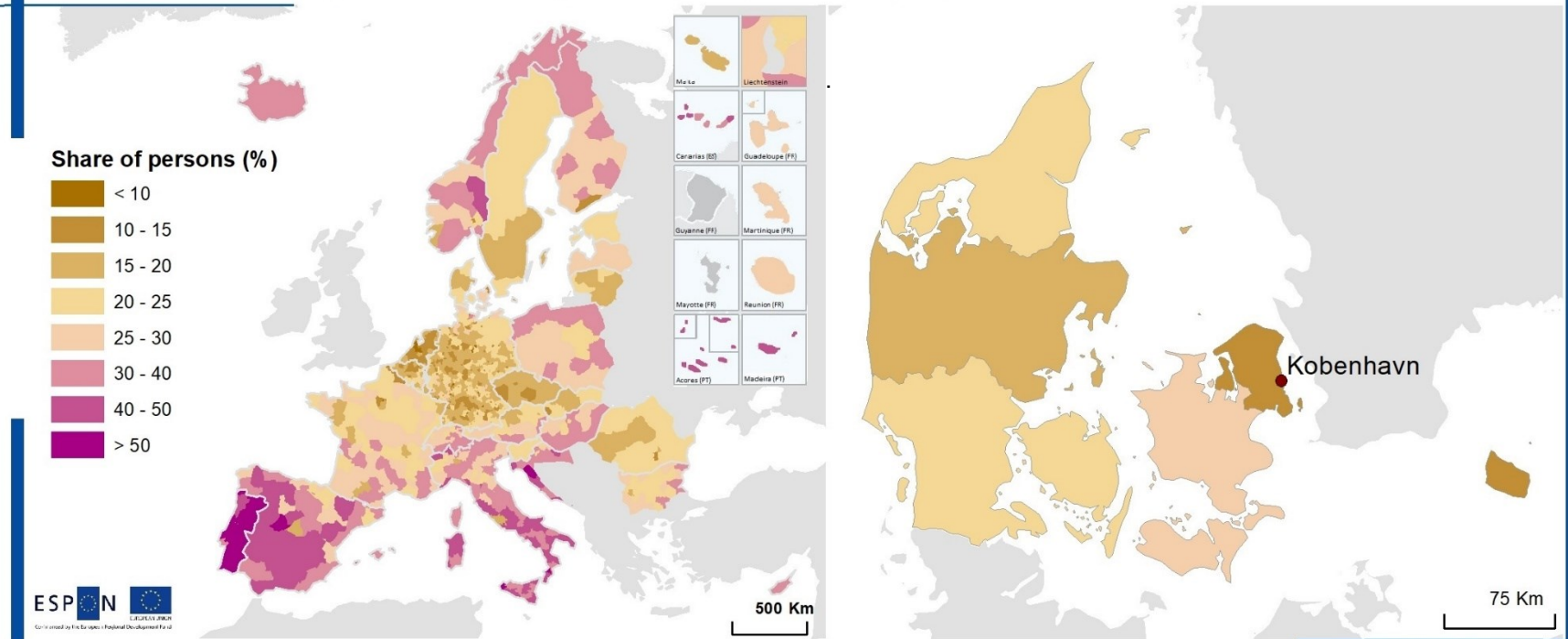


The knowledge economy plays an important part in Europe's increasing reliance on technological development. A few metropolitan regions in northern and western Europe have a high concentration of knowledge economy parameters, which implies high R&D expenditure, high employment in technology sectors, and a capacity to turn innovation into regional growth. There is a clear core-periphery polarisation at the territorial level, resulting from existing mechanisms of producing knowledge. It is the already developed regions that tend to innovate and facilitate growth, which widens the development gap across Europe.



In Denmark, the Copenhagen region is highly competitive and well-situated in the European knowledge economy. The regions of central and southern Denmark are considered competitive and well-related to the knowledge economy, while the regions of northern Denmark and Sealand are less competitive and have further potential for exploitation of the knowledge economy. Hence, there is some differentiation in the Danish knowledge economy, ranging from advanced positions in pharmaceuticals, science, and human capital, to networking approaches relying more on external sources of knowledge, interactive learning and interaction in innovation. Integrated cross-border cooperation and a focus on functional regions to reduce the urban-rural divide is encouraged.

Share of persons employed in micro-enterprises in 2014 (1 - 9 employees)



Regional level: NUTS 2 & 3
Source: ESPON SME, 2018

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 Statistical 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, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)

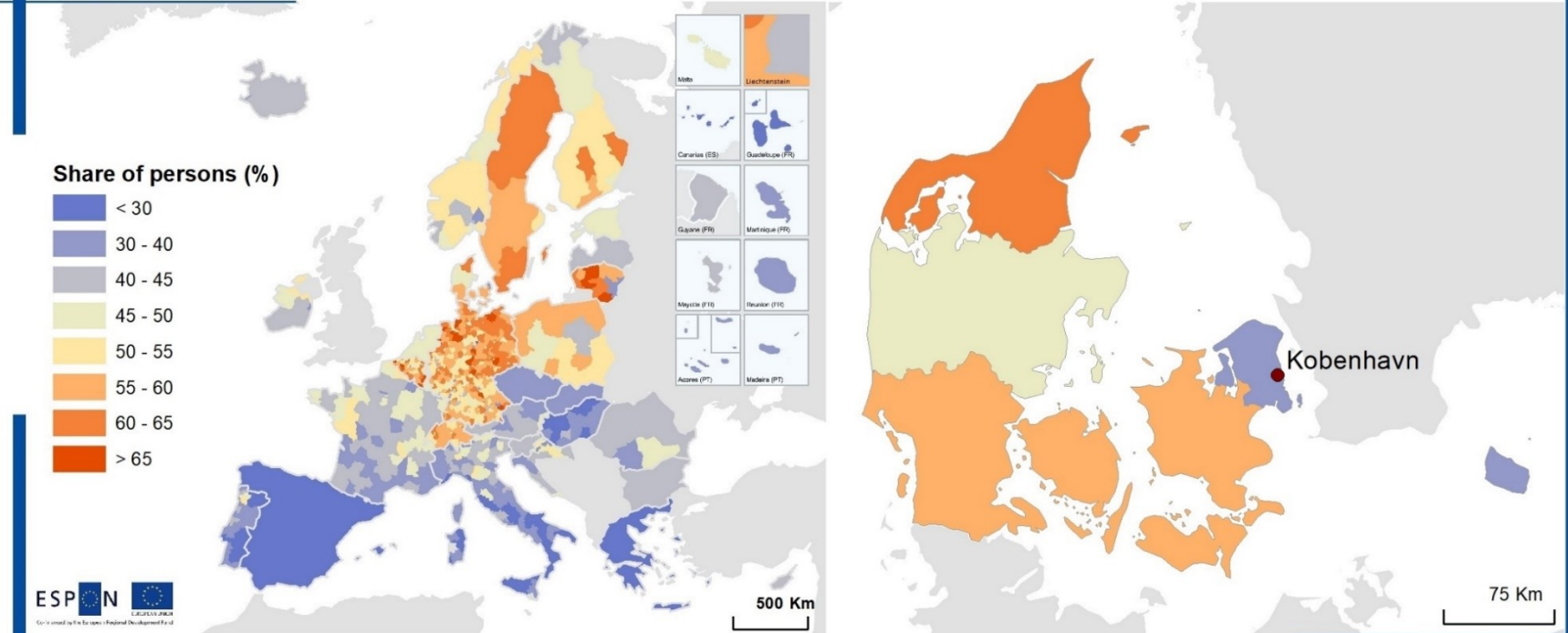


Micro-enterprises are a common part of Europe's employment profile. One-person enterprises or sole entrepreneurs without employees are often concentrated in the capital or tourism regions. Enterprises with 1-9 persons employed show a less urbanised distribution pattern and have the highest share in the Mediterranean, Norway, Finland, Iceland, parts of UK, Switzerland, Poland, and Hungary. The relative importance of micro-enterprises has changed during 2008-2014, with increases in Finland, the Baltic States, Portugal, Spain, the Czech Republic, Bulgaria, and Croatia, while it has decreased in many central parts of Europe. The changes are often associated with the general employment development in a country.



Denmark has a low share of persons employed in enterprises with 1-9 persons. However, there are internal differences with the lowest share in Copenhagen region, followed by central Denmark, northern and southern Denmark, and finally Sealand with the largest share. Inside the central Denmark region, there is a hidden difference, with a low share to the east and a much higher share in the western part of the region. This demonstrates a common tendency for rural areas to have higher shares than urbanised areas. During 2008-2014, East Jutland, Fyn and northern Sealand experienced a slight increase, while the share was reduced in the rest of Denmark.

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



Regional level: NUTS 2 & 3
Source: ESPON SME, 2018

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 - 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, Small Enterprises' Institute of the Hellenic Confederation of Professionals, Craftsmen and Merchants (IME GSEVEE)

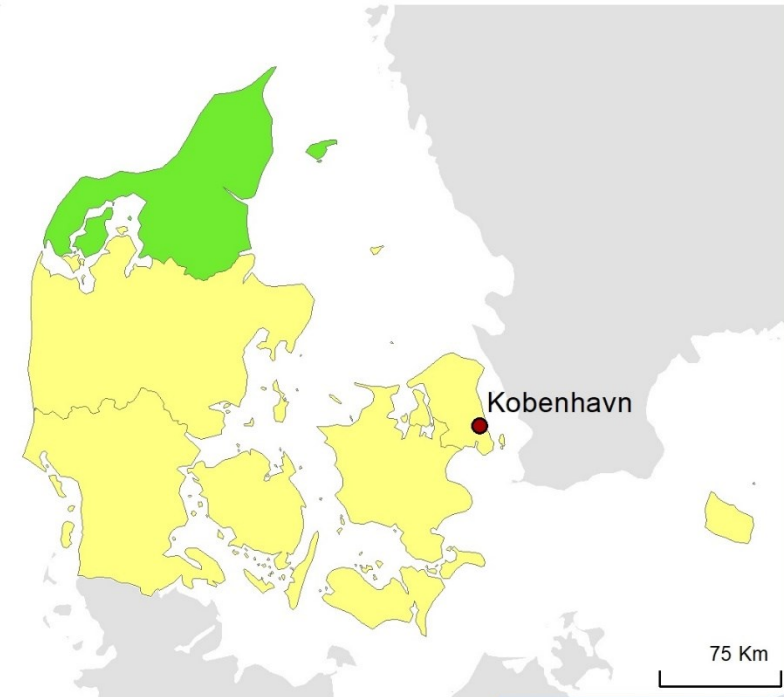
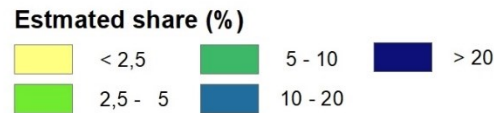
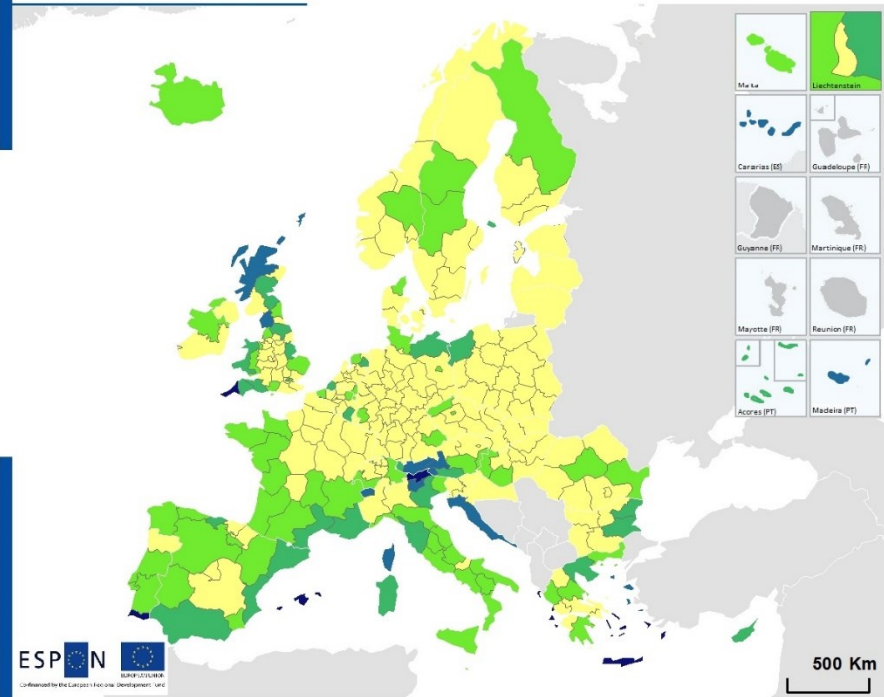


SME's play a crucial role in economic growth, innovation, job creation and social integration in Europe. SMEs account for a high employment share in many regions in Nordic and Baltic countries and parts of central Europe. The Mediterranean and parts of eastern Europe have comparatively low shares. On average, the evolution between 2008 and 2014 showed a decrease in the share of SME employment, except in central, and some northern and southeastern parts of Europe. Urban regions show significantly lower SME employment in comparison to rural areas. This in general depicts the opposite picture compared to microenterprises as shown on the previous page.



Consistent with trends in the other Nordic countries, Denmark's capital region Copenhagen is home to fewer SMEs compared to the rest of the country. The differences in the rest of Denmark are also noticeable with less than a 50% share in central Denmark, 55-60% in southern Denmark and Sealand, and more than 65% in northern Denmark. This correlates with the general trend, that urbanised areas tend to have a lower share than rural areas. Interestingly, when considering the development 2008-2014, the share of persons employed in SMEs in Denmark has increased equally across the country with 0-2,5% per year.

Estimated share of tourism to the gross value added in 2017



Regional level: NUTS 1 & 2
 Source: ESPON Territorial Futures, 2017

Regional level: NUTS 1/BE, BG, FR, AT, UK in NUTS 2
 Calculations from: Spiekerman and Wegener Urban and Regional Research (S&W)
 Origin of the data: Regionalized estimates based on Eurostat, 2017

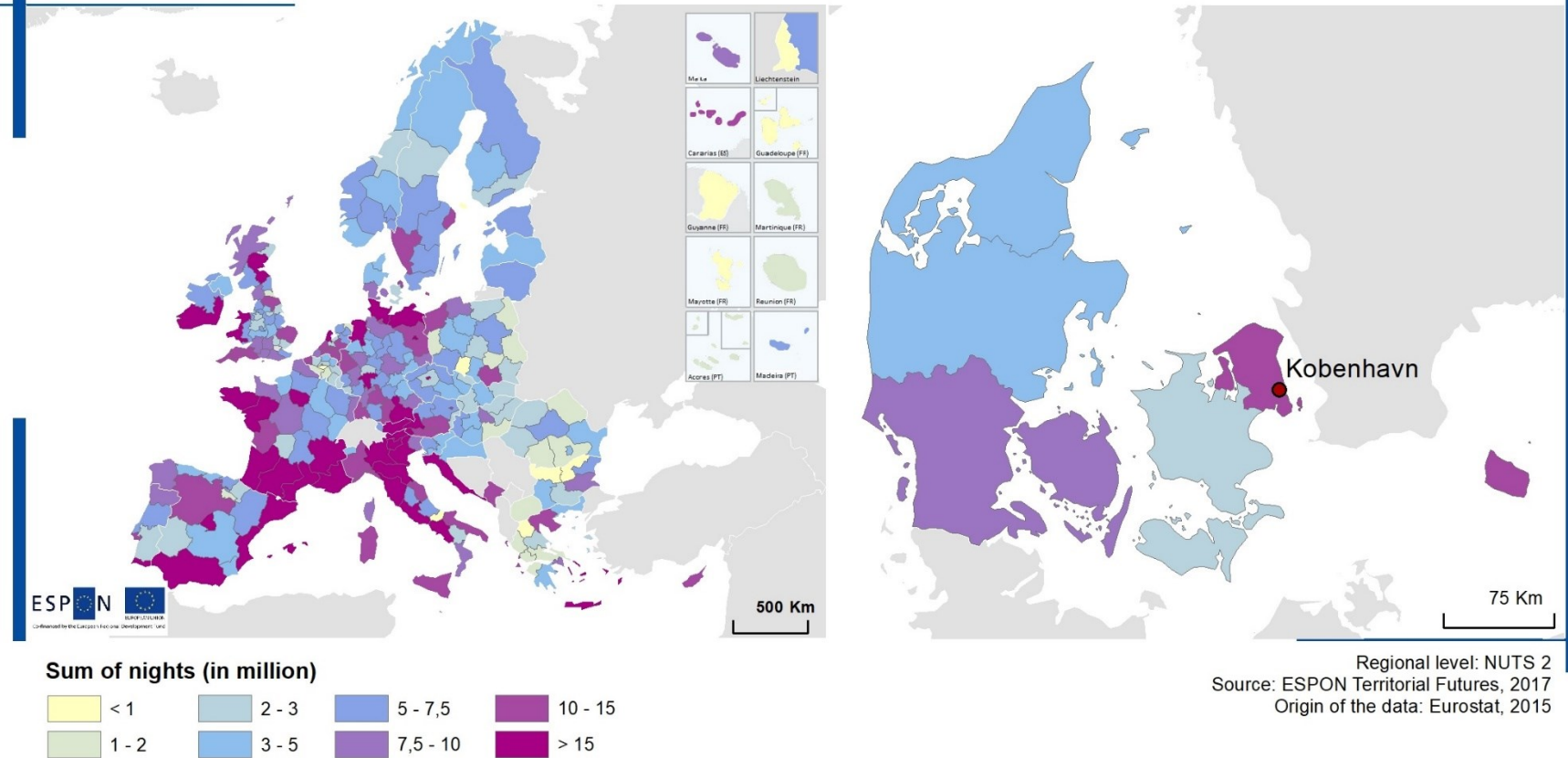


The tourism sector has a noticeable importance for European economic development, especially in southern countries and some remote regions. In a few regions this plays an essential part of their socioeconomic profile. It should also be noted that tourism is a very location-sensitive activity, which means that some localities inside many regions all over Europe can be almost entirely dependant on tourism. This is often the case in peripheral places, which in particular puts those places in risk of various factors with potential negative influence on tourism, such as accessibility and transport costs.



In Denmark, the estimated share of tourism as part of the overall economy is 2,5-5% in North Denmark and less than 2,5% in the rest of Denmark. Tourism, and the economic importance of tourism, is increasing in Denmark, with significant growth during 2009-2018. Coastal and nature-oriented tourism accounts for the largest part, however, lately tourism in larger urban areas has had the largest increase. In addition, tourism in Denmark is a very localised activity, which means that some places have a much higher economic dependency on tourism and sensitive to changes in tourism. ESPON studies in general indicate a good potential for eco-based tourism (Territorial Futures, 2017).

Nights spent in tourist accomodations in 2015

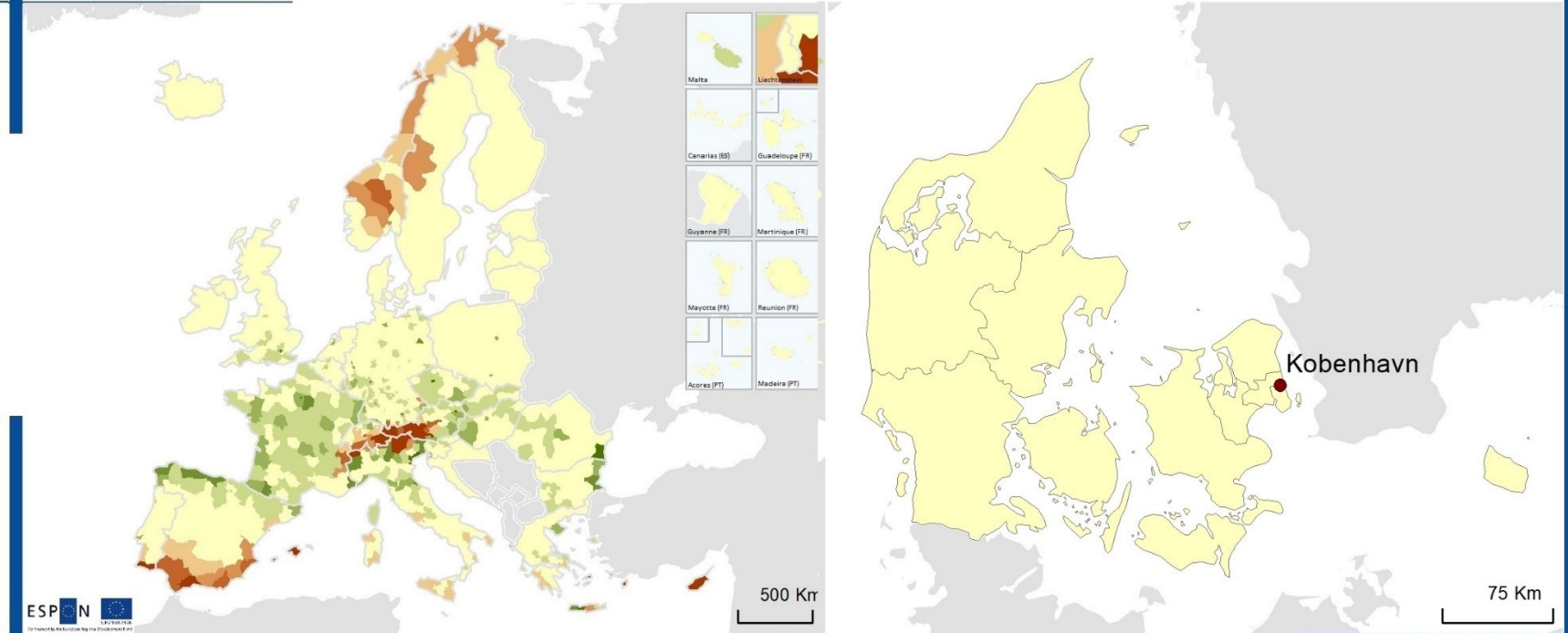


A common indicator of tourism development is the number of nights spent in tourist accomodations. Here, coastal regions tend to dominate in most parts of Europe, particularly in southern Europe. ESPON studies indicate that in order to lessen sensitivity to economic lock-in effects, homeowners can, for instance, try to temporarily let or rent their homes to tourists. However, this is difficult in peripheral regions, while coastal and urban regions have the best opportunities. In some urban areas, tourism seems to have met the carrying capacity, which currently spurs new quality-over-budget oriented trends in urban tourism.



Denmark is the largest tourist destination in Scandinavia with 27.6 million nights spent in tourist accomodations by international tourists in 2018, compared to 17.3 in Sweden, 10.1 in Norway and 6.8 in Finland (VisitDenmark numbers). This share has been stable since 2008. As for overall nights spent in tourist accomodations, the Copenhagen area stands out, followed by southern Denmark. The share of international tourists is largest in western Jutland, followed by Copenhagen and southern Denmark. Currently, the trend is also for tourists to spend more money per day, which could indicate a potential for a more quality-oriented tourism.

Potential impact of climate change on tourism from 2071 to 2100



Climate change impact on tourism

< -30: High positive impact	-7,5 - -3: Very low positive impact	7,5 - 15: Low negative impact
-30 - -15: Medium positive impact	-3 - 3: Marginal impact	15 - 30: Medium negative impact
-15 - -7,5: Low positive impact	3 - 7,5: Very low negative impact	> 30: High negative impact

Source: CCLM A1B Lautenschlager et al. 2009

Impact calculated as combination of regional exposure to climatic change. The climatic changes were derived from comparison of 1961-1990 and 2071-2100 climate projections from the CCLM model for the IPCC SRES A1B scenario.



Research shows that climate change might lead to a gradual shift of summer tourist destinations further north and higher up the mountains. Mountainous parts of France, Italy and Spain could become more popular because of their relative coolness. However, for summer and winter seasons combined, Norway, the Mediterranean region and the Alps will experience the most negative impact. For Norway, this is mainly due to heavy rainfall and flooding. The Mediterranean will face excessive temperatures in the summer. The Alps currently are the second most favoured holiday destination in Europe, both in terms of summer and winter tourism.



Despite the fact that projected climate changes are also sizeable for Denmark, the impact on tourism is regarded to be marginal. This is likely to be a consequence of negative and positive effects balancing out. Changes in rain patterns and sea level rise are likely to challenge coastal, urban and harbour areas negatively, while increasing temperatures might attract more tourists. In particular, sea level rise and flooding may be a threat to many coastal and urban areas in Denmark, with effects on some infrastructures and hence indirectly on tourism opportunities. Erosion in north Denmark is considered to be increasing significantly.

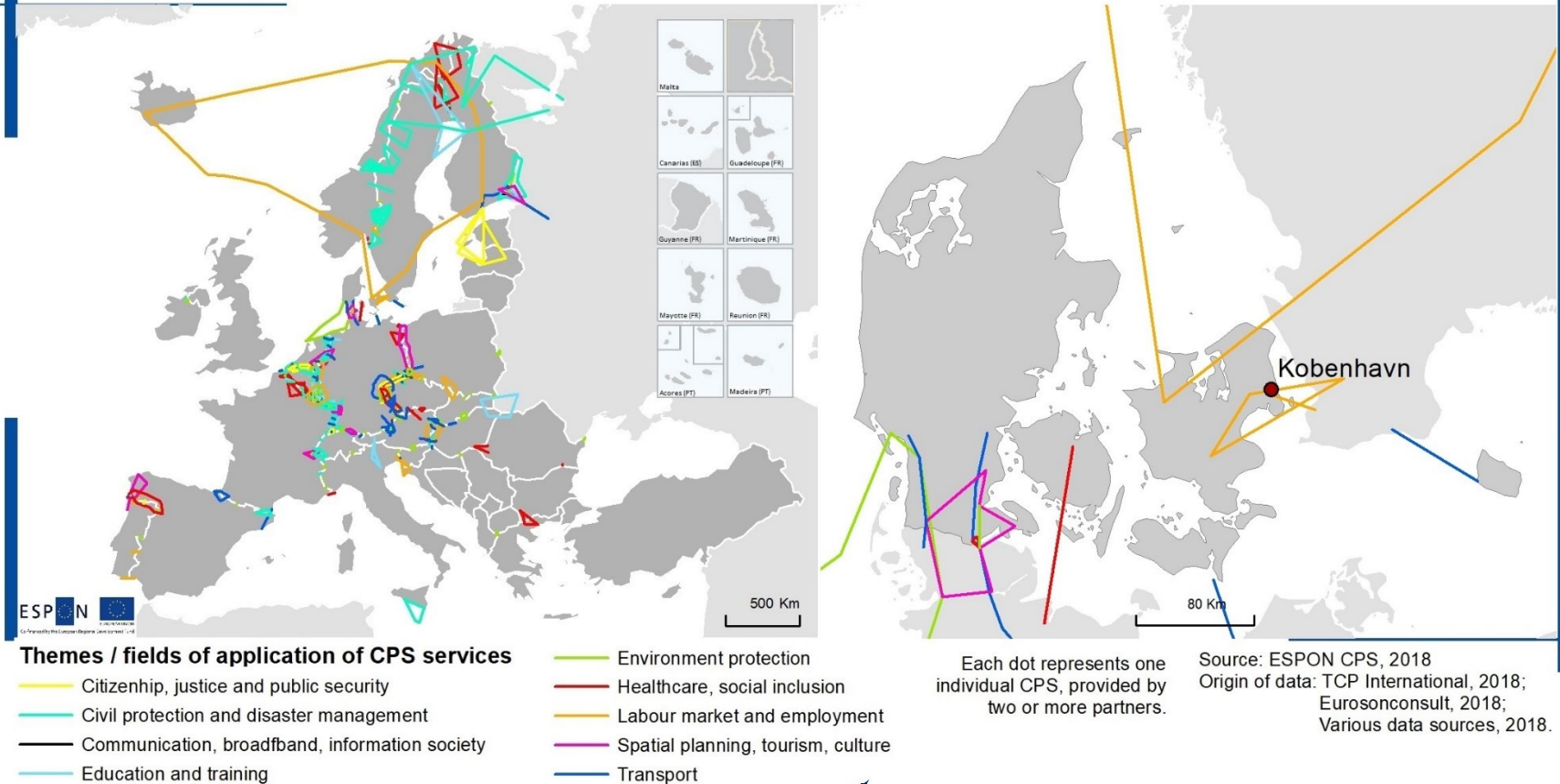



Accessibility


Cross-border public services

Cross-border public services (CPS) addresses challenges and opportunities concerning general services in nation state border regions. CPS are long-term and oriented towards benefits for the general public through different types of infrastructure provisions. In Denmark, the Danish-German border region cooperation has drawn particular attention in a European context. Here, there is a high density of themes addressing a variety of target groups, which is considered an advantage to spreading added-value of cross-border cooperation widely among the residents. A specific ESPON case study and report, from the ESPON CPS project, has elaborated more details concerning the Danish-German border region.

Cross-border public services: Types of services



 Cross-border public services (CPS) are a form of services of general interest that addresses challenges and opportunities in nation state border regions. CPS are long-term and oriented towards benefits for the general public through different types of infrastructure provisions. The highest share of CPS provision is between Benelux countries, France, Germany and Nordic countries. It indicates a long tradition of cross-border cooperation in those areas in particular. The distribution of CPS themes is uneven across Europe, with some borders focusing on only 1-2 themes while others have a wider array of themes.

 In Denmark, CPS has a long tradition in the Danish-German border region, while Danish-Swedish border cooperation is more recent. The Danish-Swedish border region is primarily focused on labour market and employment. The Danish-German border region has a high density of themes addressing different target groups (general public, job seekers, cross-border commuters and employers, emergency response teams, pupils and school kids, households, research and universities, and public authorities and NGOs). This is considered an advantage to spreading added-value of cross-border cooperation widely among the residents.



Environment

Spatial distribution of Green infrastructure

Domestic material consumption

Climate change economic impact

Climate change physical impact

Climate change social impact

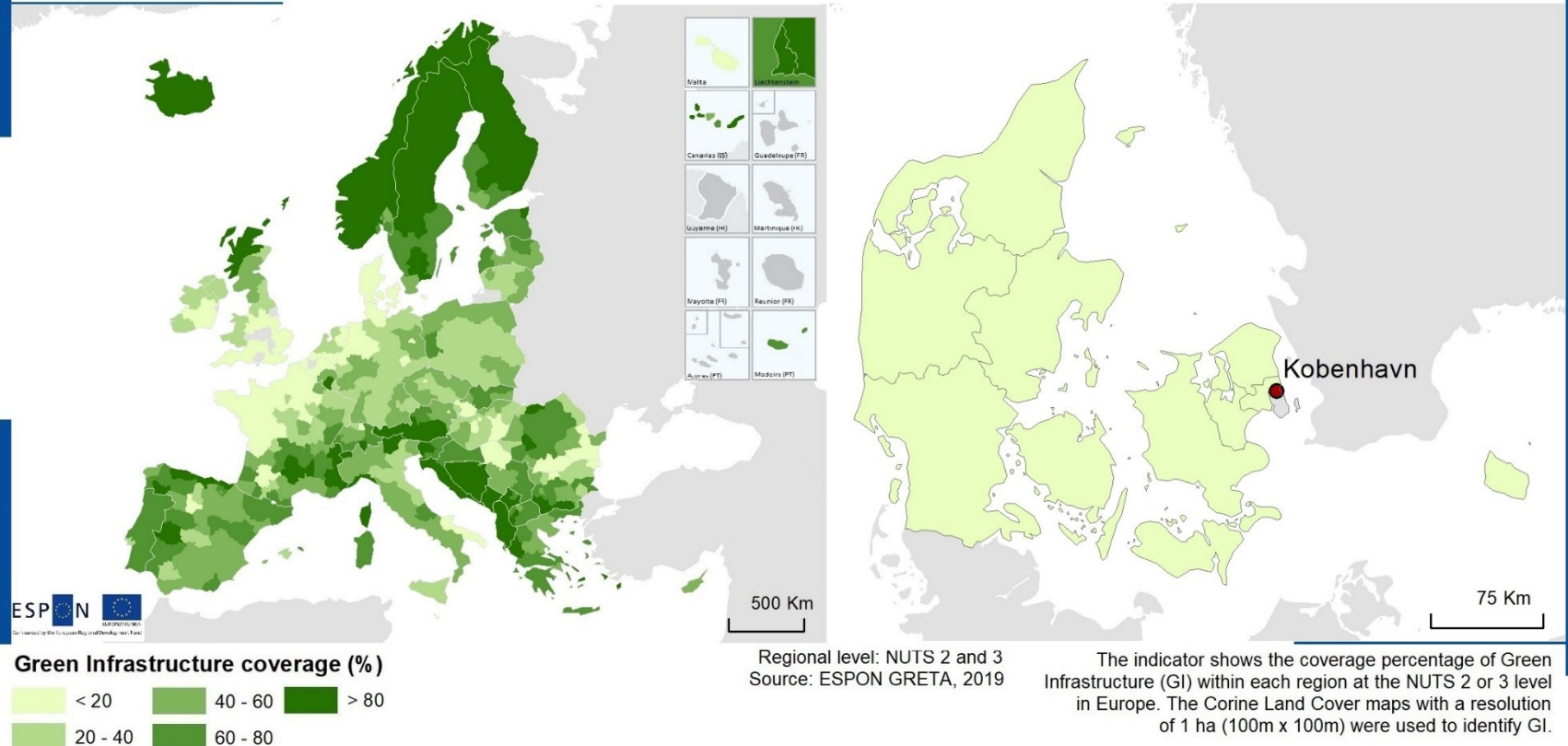
Climate change environmental impact


Climate change cultural impact


Denmark has often been considered an international front-runner concerning attention to as well as actions taken on environmental issues. The first two maps below indicate some clear incentives for such a focus. Being a densely populated country with very good conditions and land intake for agriculture, Denmark has a low coverage of green infrastructures in comparison with the rest of Europe. In addition, the material consumption rate in Denmark is among the highest in Europe. However, both factors have been improved during the last decades.

As for the projected impacts of climate change, the various maps below in general indicate that Denmark will experience only limited negative effects, and even some positive economic effects. It is important to note, however, that climate change impacts will be very localised, which indicate a need for very place-specific approaches.

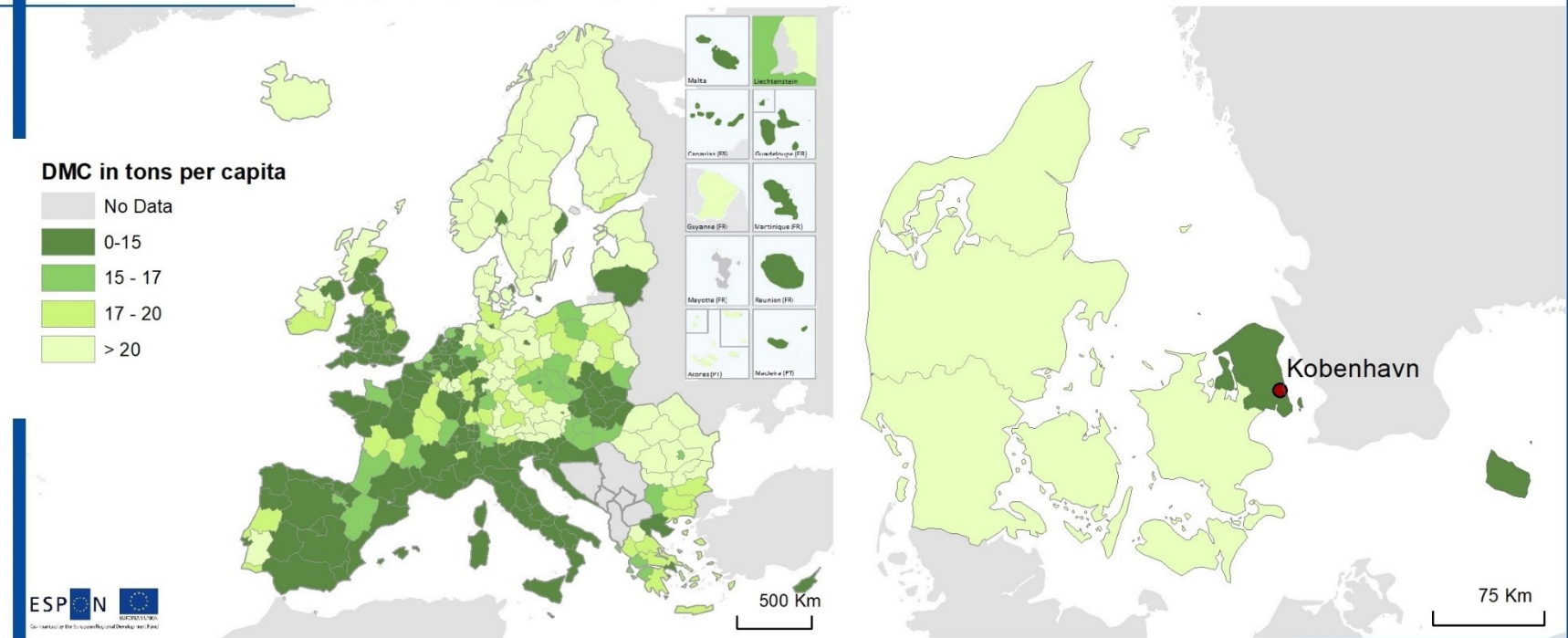
Spatial distribution of green infrastructure in 2012.



 Green infrastructure (GI) is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces and other physical features in terrestrial (including coastal) and marine areas. The spatial distribution of GI clearly reflects population density, infrastructure development, climatic and topographic conditions, as well as the distribution of agricultural areas in the EU territory. The coverage of green infrastructure is lowest for regions in north-western France and Germany, south-eastern UK and Ireland, and Denmark. It is relatively high for Nordic countries, the Balkan countries along the Adriatic Sea and the eastern Alpine region.

 Denmark is among the lowest ranking in Europe concerning the map of the country. Denmark is a densely populated country with 135 inhabitants/km², is highly urbanised and dominated by highly specialised and industrialised agriculture. Land use is divided into 61% agriculture, 15% forest, 12% nature and areas for climate adaption, and 12% urban areas and infrastructures (incl. energy). Historically, the shares of forest and nature have been significantly lower, and for decades the common trend has been to improve those shares. Attention to ecosystem services is not yet predominant in Denmark.

Domestic Material Consumption (DMC) per capita in 2014



Regional level: NUTS 2
 Source: ESPON Circter, 2018
 Origin of data: ESPON Circter, 2018

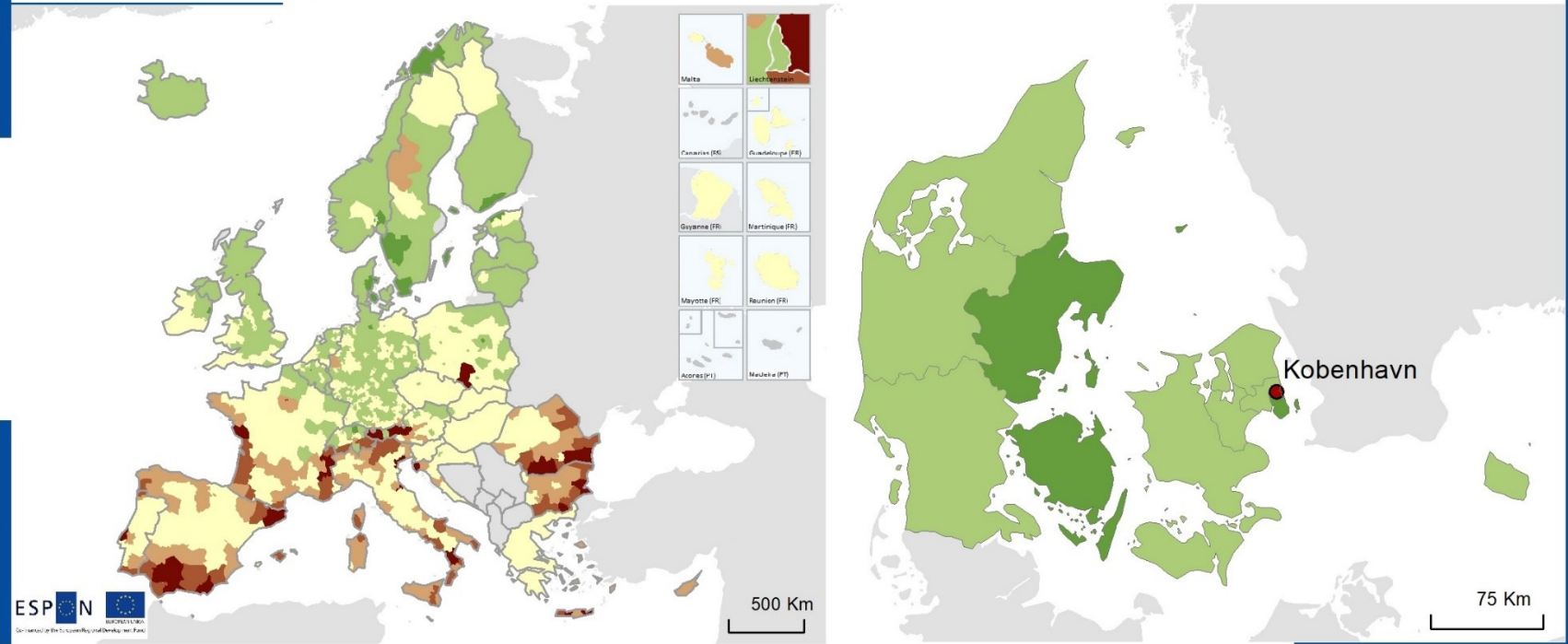


In order to be able to discuss circular economy potentials, material resource use can be measured in terms of domestic material consumption in tons per capita. There are some differences across Europe with high consumption in the Nordic countries, Estonia, Latvia, Austria and Romania and parts of Germany, Poland, and Portugal. High consumption is often linked to the use of natural resources, e.g. forestry, mining and agriculture, or to less densely populated areas, e.g. due to materials for building and infrastructures being distributed among fewer people. Also, the trend is for metropolitan and capital areas to have lower consumption rates.



In general, Danish material consumption is among the highest in Europe. This can be related to agricultural production as well as to a general high consumption rate. The Copenhagen region stands out with a significantly lower level of consumption, which correlates well with other capital and densely populated regions in Europe. When considering the changes during 2006-2014, Denmark has managed to decrease its material consumption in all of its regions by 15-30%, hence indicating a decoupling to economic growth, while neighboring countries, Sweden, Norway, Poland, and Germany have increased their consumption.

Potential economic impact of climate change from 2071 to 2100



Impact index

 -0,5 : High decrease	 -0,1 - 0,1 : No/Marginal impact
 -0,5 - -0,3 : Medium decrease	 0,1 - 0,3 : Low increase
 -0,3 - -0,1 : Low decrease	 0,3 - 0,5 : Medium increase
	 0,5 - 1 : High increase

Combined potential impacts of changes in annual mean evaporation, summer days, snow cover days, changes in 100 year flood events and sea level rise on agriculture, forestry, summer and winter tourism, energy supply and demand.

Origin of data: own calculations based on CCLMA1B Lautenschlager et al., 2009
Source: ESPON CLIMATE updated, 2015

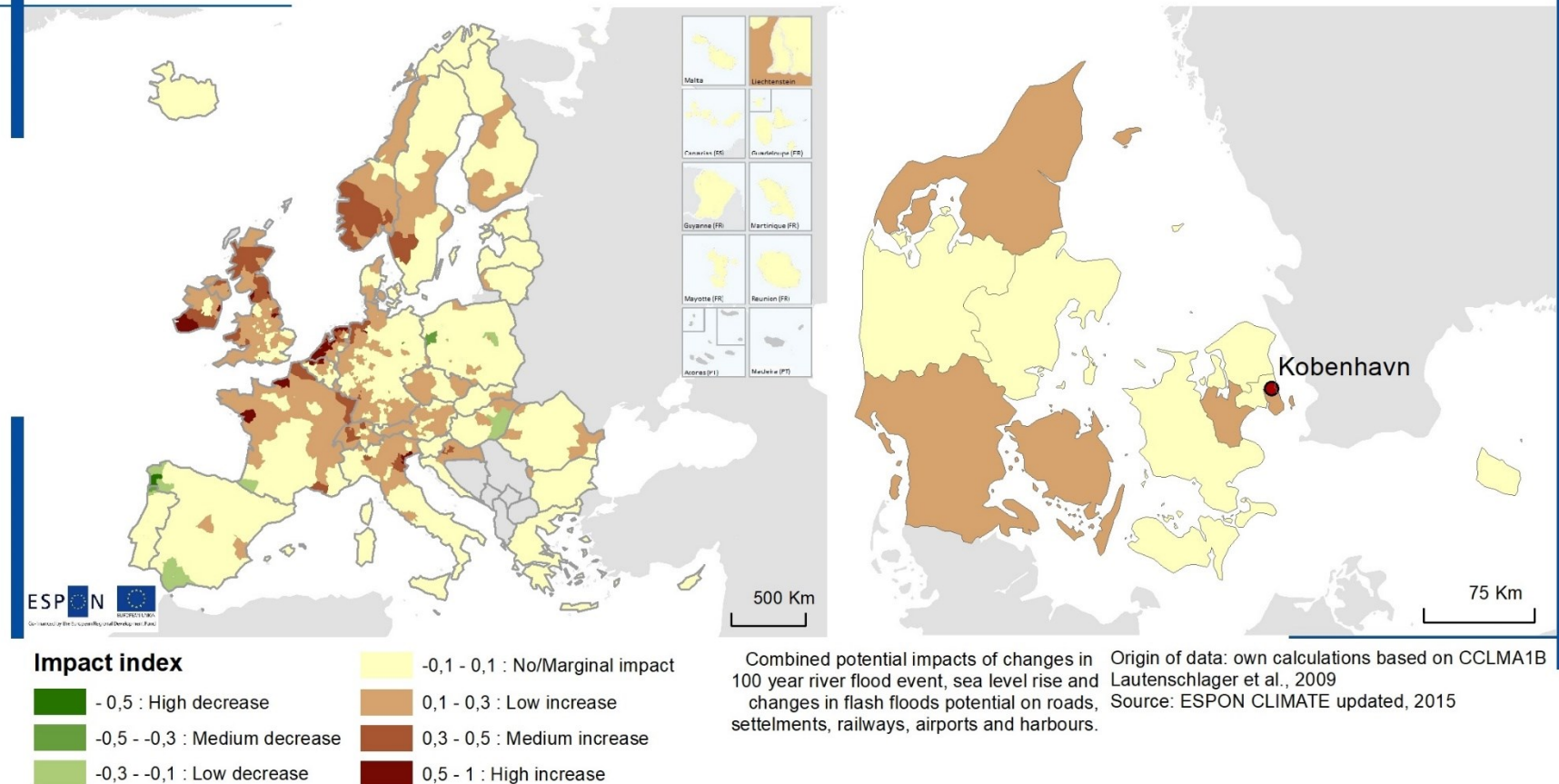



Climate change will have significant economic impact in Europe during the 21st century. Some sectors are more sensitive to climate change than others, such as agriculture, forestry, tourism (both summer and winter), and the energy sector. When considering the potential economic impact, there is a clear north-south difference in Europe. To the north, projections are primarily a low decrease in economic impact due to improved environmental conditions for agriculture and lowered demands for heating. To the south, the economic impact is expected to increase due to worsened conditions for agriculture and tourism and increased demand for cooling.




In Denmark, climate change is, in general, expected to have an overall marginal impact, with a tendency towards a decrease in economic impact, especially in central areas of the country. It is important to view this as an aggregated impact, resulting from a wide range of factors that varies from region to region. For instance, some regions in Denmark will be more threatened than others by changes in sea level and coastal erosion, while most parts will benefit from rising temperatures. Hence, the map indicates an overall delicate balance that needs further investigation into specific place-based sensitivities as well as sectors.

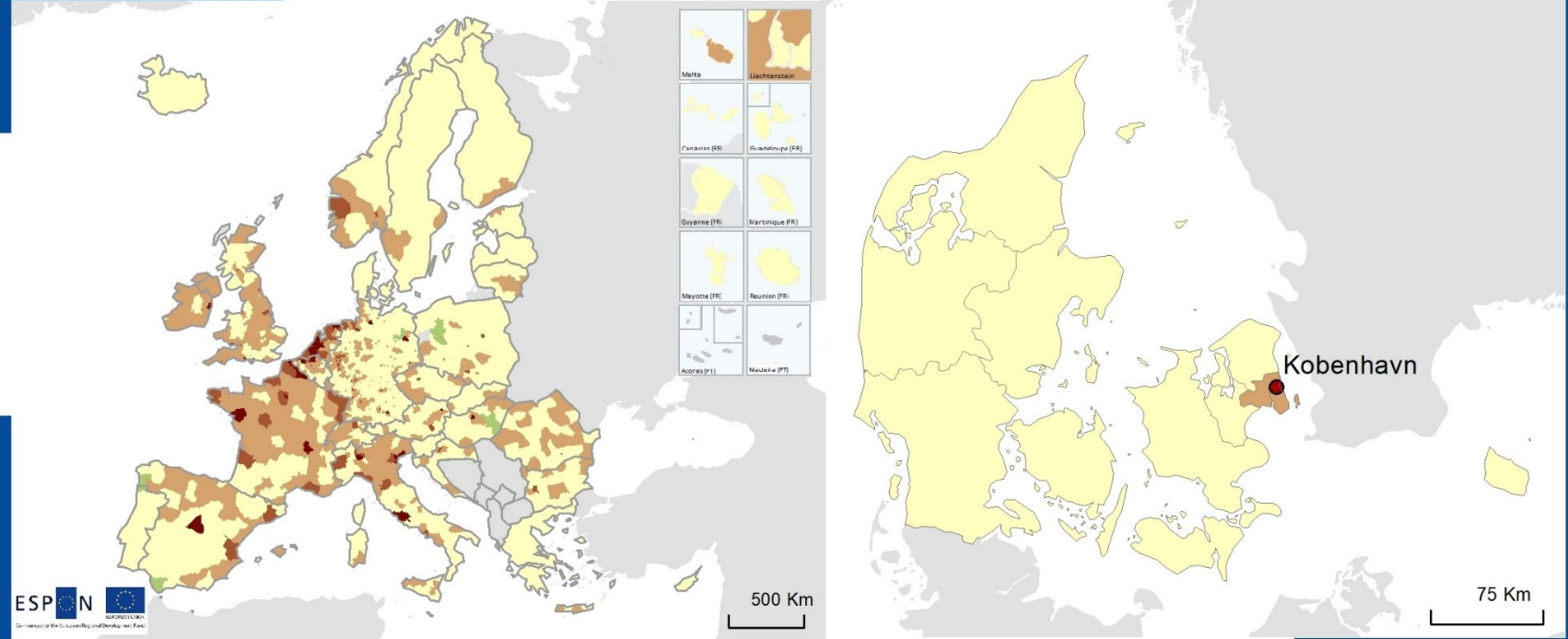
Potential physical impact of climate change from 2071 to 2100



 A range of physical human artefacts are important to territorial development and can be affected by climate change. These include settlements, roads, railways, airports and harbours. They can be sensitive to extreme weather events, such as floods and storms, which are projected to increase in many areas. In terms of the potential physical impact of climate change, north-western Europe, regions in and around the Alps and in some parts of central-eastern Europe are expected to experience an increase, particularly in coastal areas. The rest of Europe is expected to see only marginal effects.

 The potential physical impact of climate change on settlements and infrastructures in Denmark is expected to be marginal in central Denmark, most of Sealand and Bornholm. In northern and southern regions of Denmark and in the Roskilde, Køge Bugt, and Copenhagen areas a low increase in impact is expected. This reflects a general estimate that many coastal and harbour areas may be affected by sea-level rise, and that some areas may be at risk of flooding from extreme weather events, both along streams and in cities. In addition, large parts of the 'soft' Danish coasts are at risk of increased erosion.


Potential social impact of climate change from 2071 to 2100




Impact index

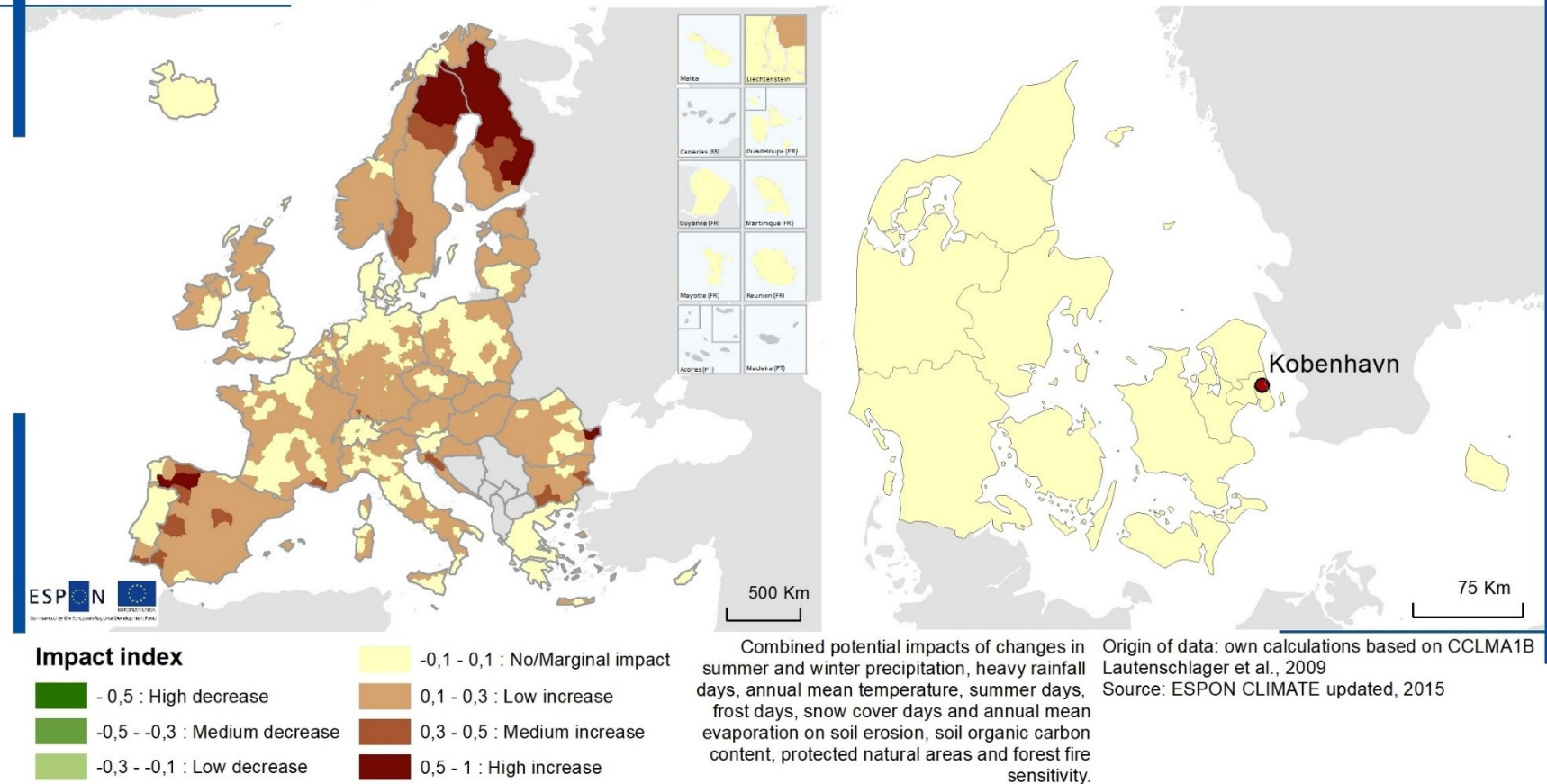
	-0,1 - 0,1 : No/Marginal impact
	-0,5 : High decrease
	0,1 - 0,3 : Low increase
	-0,5 - -0,3 : Medium decrease
	0,3 - 0,5 : Medium increase
	-0,3 - -0,1 : Low decrease
	0,5 - 1 : High increase

Combined potential impacts of changes in 100 year river flood events, sea level rise, changes in flash floods potential and summer heat on population. Origin of data: own calculations based on CCLMA1B Lautenschlager et al., 2009 Source: ESPON CLIMATE updated, 2015

 Human populations may themselves be affected by climate change, for instance concerning public health and personal mobility. This implies attention to river and coastal flooding, flash floods and heat islands in urban areas threatening senior citizens. The potential social impact of climate change is projected to increase in many parts all over Europe, although somewhat more in western regions, coastal areas and river bassins. However, large parts will also experience no effects or the effects will be only marginal.

 In Denmark, the potential social impact of climate change is projected to be limited, with marginal or no effects in most of Denmark. The exception is Copenhagen where a small increase in impact is expected. The density and size of Copenhagen, combined with sea level rise and flooding from extreme rain water events, are likely causes for this. It should be noted, however, that impacts can be very local, which indicates a need for a more place-tailored approach to estimate effects across the country. Current detailed risk assessments in Denmark are helpful for this purpose, however they might benefit from more attention to social dimensions.

Potential environmental impact of climate change from 2071 to 2100

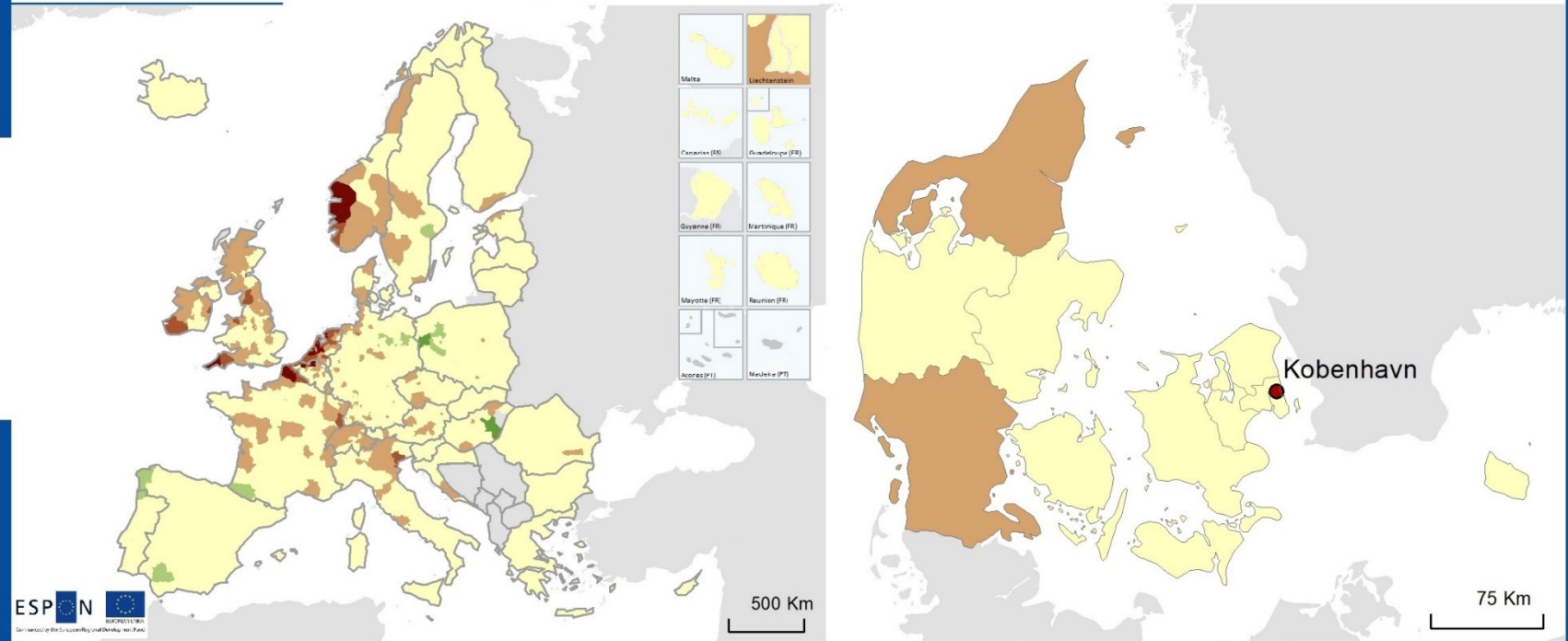


Climate change will affect all parts of nature. Many plants and animals will adapt to this, while in some cases protected natural areas, soils or forests may be more sensitive to the changes. The potential environmental impact of climate change is expected to increase mostly in Finland, Sweden, Spain, Croatia, Bulgaria, and Romania. Large parts of the rest of Europe will experience either a low increase or no/marginal impact. Important factors that will determine the severity of this impact are steep mountain slopes and associated soil erosion, risk of forest fires, soil in rivers deltas, and sensitive northern ecosystems.










In Denmark, the combined potential environmental impact of climate change is estimated to be very limited throughout all regions. However, this is an aggregated assessment that balances pros and cons as well as produces an average across larger areas. Draft versions of the ESPON CLIMATE project have also indicated a low increase in impact in western Denmark and northern Sealand. In addition, Danish studies indicate potential threats from changed precipitation patterns and coastal erosion. Finally, the impacts in specific localities may be very different, both positively and negatively, from this aggregated illustration.


Potential cultural impact of climate change from 2071 to 2100




Impact index

 -0,5 : High decrease	 -0,1 - 0,1 : No/Marginal impact
 -0,5 - -0,3 : Medium decrease	 0,1 - 0,3 : Low increase
 -0,3 - -0,1 : Low decrease	 0,3 - 0,5 : Medium increase
	 0,5 - 1 : High increase

Combined potential impacts of changes in 100 year river flood events and sea level rise on World heritage sites and museums. Origin of data: own calculations based on CCLMA1B Lautenschlager et al., 2009 Source: ESPON CLIMATE updated, 2015

 Material cultural assets may also be threatened by climate change. This encompasses assets such as museums and internationally recognized historic sites. The risk of extreme weather events like various forms of flooding may threaten cultural assets particularly. This also helps to illustrate the distribution of areas in Europe with an expected increase in cultural impact of climate change. River deltas, valleys and some coastal areas are particularly at risk. However, most of Europe will experience a minimal effect.

 The potential cultural impact of climate change in Denmark is expected to increase in the region of north Denmark and in southern Jutland, while the rest of the country is expected to experience marginal or no impact. The projected increases in Jutland are primarily due to flooding events. However, across the country actual impacts will be very place-specific, which indicates a need for assessments related to each individual cultural site. For instance, in lower parts of harbour or urban areas some historical buildings or museums may be endangered, such as the Viking Museum in Roskilde. More detailed information on cultural heritage risks and planning in Denmark and other countries can be found in the PERICLES project, www.pericles-heritage.eu.



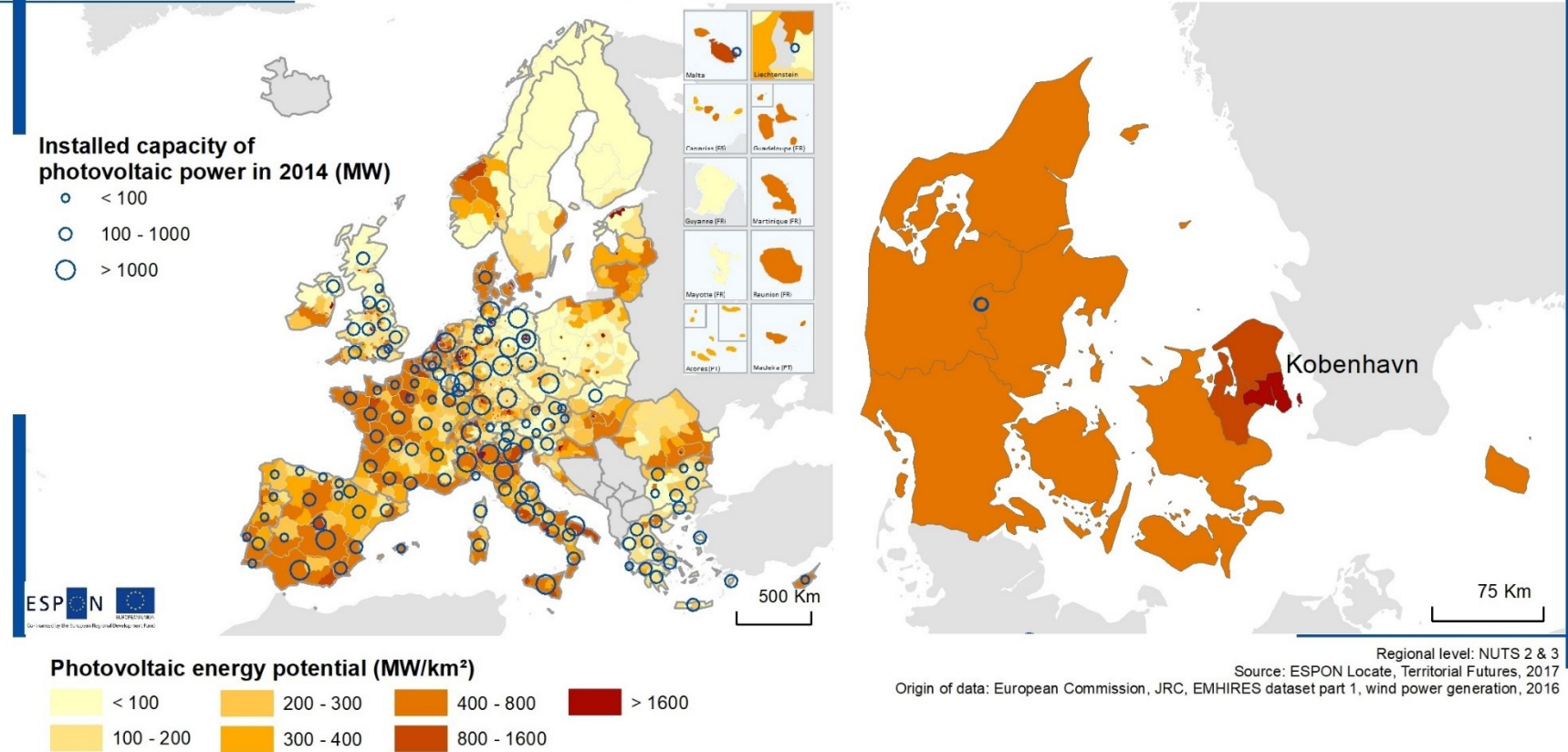
Energy


Potential solar energy production and installed capacity


Potential onshore wind energy production and installed capacity

The Danish energy sector has experienced significant changes over the last few decades. Attention to decarbonisation of energy production is now the main mode of energy policy and planning. Most attention has been given to wind power, where Denmark is among the world leaders, but solar energy has also gained some influence in later years.

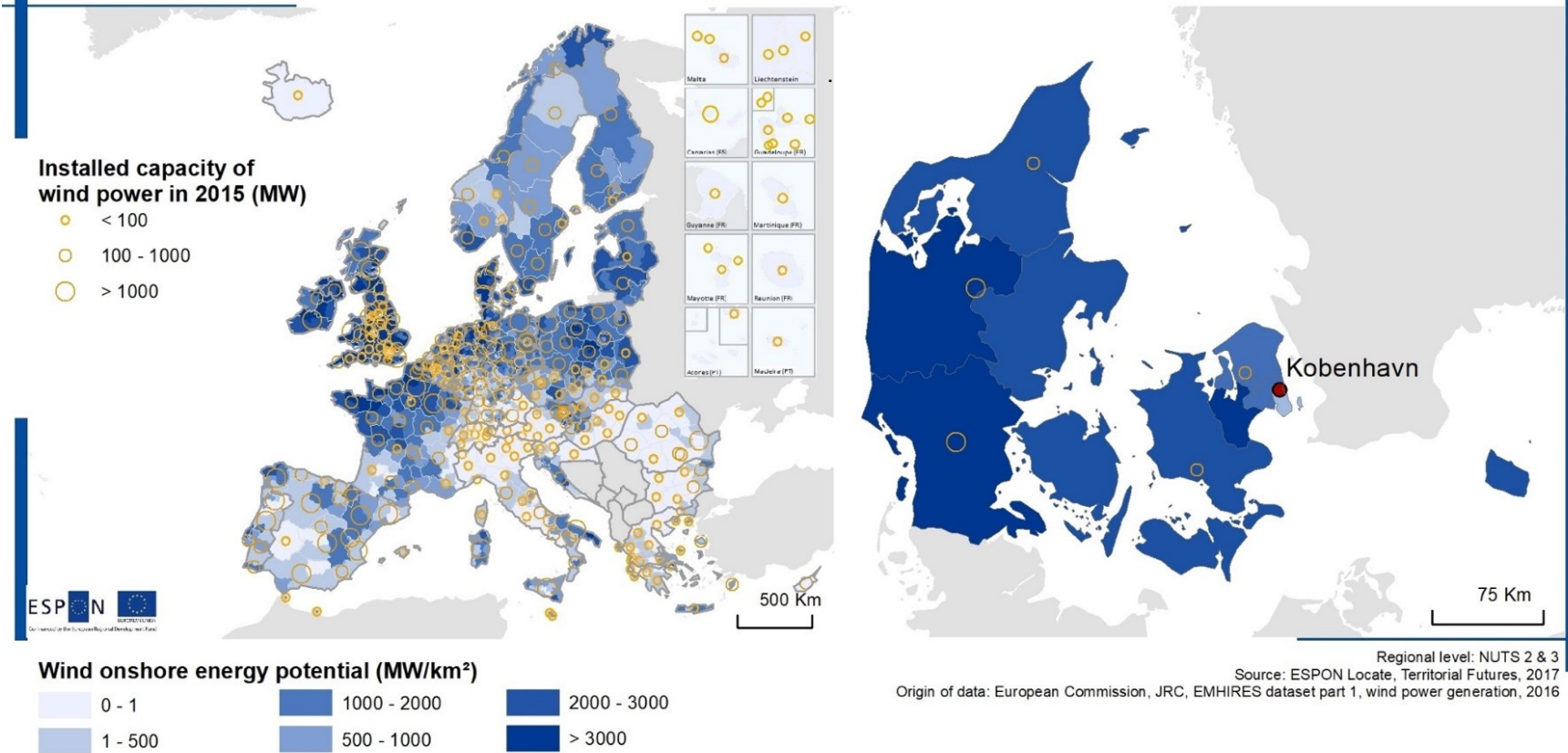
Potential photovoltaic energy and installed capacity in 2014




 Solar power currently accounts for only approximately 7% of EU's renewable electricity production. However, it has a high power density and biophysical potential, so it is considered an important element in Europe's energy supply. The potential of solar power is dependant on local irradiation and is generally higher in southern Europe, but also in many coastal areas. The lowest potential is found in the northern-most areas and in some central and eastern European regions. As for the installed capacity, Spain, Germany and Italy stand out as leaders.

 The solar energy production in Denmark has changed significantly during the 2010s. The share of electricity from solar energy in the overall electricity production in Denmark has increased from 0.3% in 2012 to 2.8% in 2018 (Danish data from energinet.dk). However, as indicated on the map and despite its northern location in Europe there is still a remarkably high (and in and around Copenhagen even a very high) potential for increased use of solar energy. This is the case both for the generation of electricity and heating.

Potential wind onshore energy and installed capacity in 2015



 Wind power is currently the second most important renewable energy source in EU. As a technology it has matured significantly and has become very competitive economically. The potential for wind energy is huge in Europe, however, socio-environmental concerns often must also be taken into account. The highest potential exists around the North Sea and Baltic Sea, along the Norwegian and Irish coasts and in specific parts in southern Europe. High offshore potentials exist in northern and western parts in general. Spain and North Sea-facing countries are the biggest onshore producers, while UK and Denmark have the biggest offshore productions.

 In relative terms, Danish wind power production is among the most extensive in the world. Today, more than 40% of Danish electricity production comes from wind turbines. Denmark has a long tradition for developing, using and exporting wind turbine technology, to the extent that the wind sector is now a significant element in Danish economy. Despite an already high level, there is still a significant potential for onshore wind energy, for instance by substituting old turbines with new ones. However, there is more attention paid to further explore and use the potential of offshore wind energy, an industry and sector where Denmark is leading.

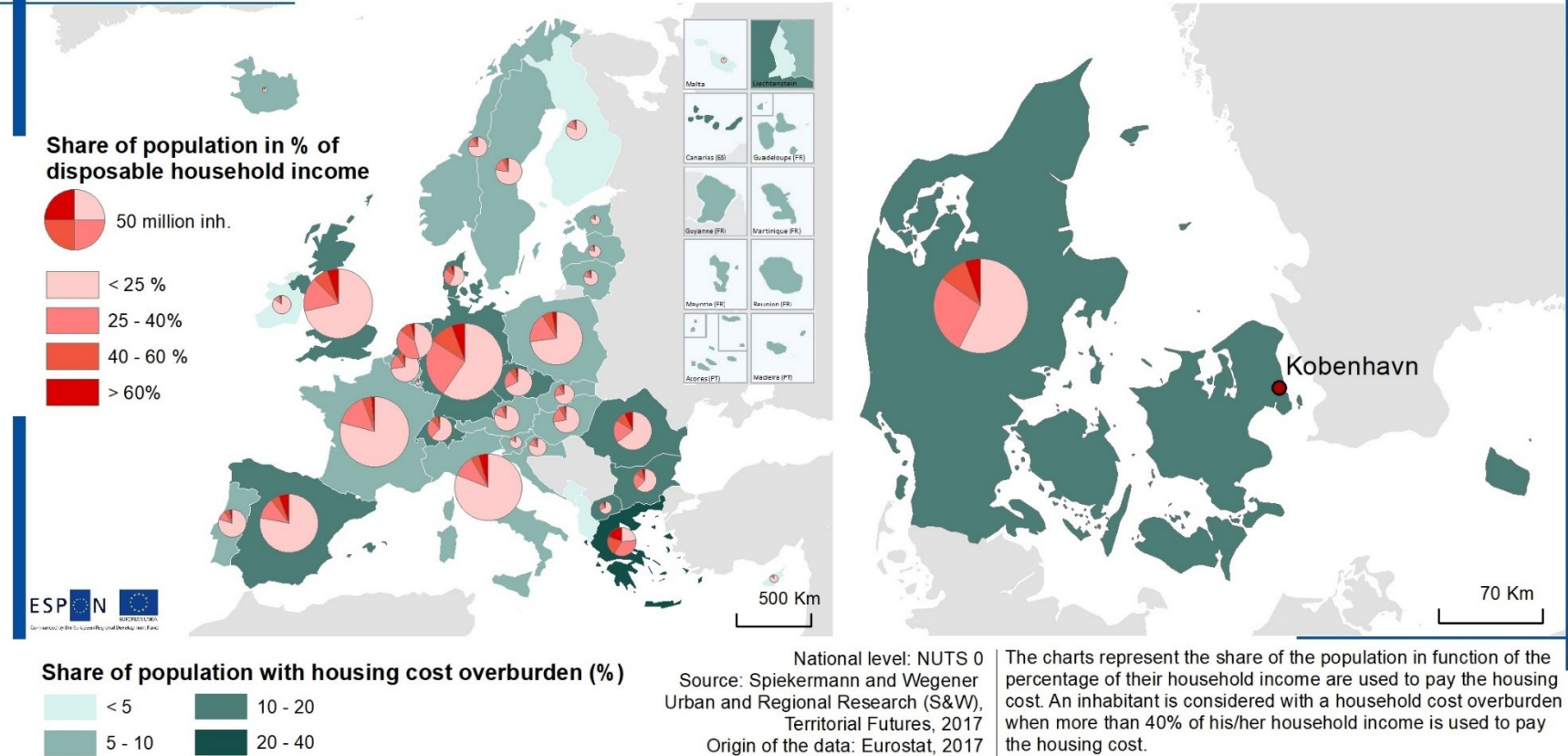


Social

Housing cost burden of population

An increase in the share of population with an overburden housing costs can imply risks of social exclusion or poverty. Data indicate that the share of population with housing cost overburden in Denmark is between 10% and 20%, which is high in a European context. However, other factors such as housing financial systems and savings rates should also be taken into account.

Housing cost burden of population in 2015



The cost of housing plays an essential part in most people's budget. An increase in the share of population with housing costs overburden can imply risks of social exclusion or poverty. In particular, when a larger fraction of the household budget goes to housing costs, then other important living expenses may be at risk. The map shows Greece, Denmark, the Czech Republic, Germany, the Netherlands, Romania, Bulgaria, Macedonia, Spain, Switzerland and the UK as countries with the highest share of population that have 40% or more housing costs compared to household disposable income.

In Denmark, the share of population with housing cost overburden is estimated at between 10% and 20% in all of Denmark, which is high in a European context. Other EU sources, such as housingeurope.eu, indicate that this is at around 18%. As the data is at country level, this will have to be reassessed at regional and local scales in Denmark. This is a relevant phenomenon mostly in the largest urban areas in Denmark, in particular Copenhagen and Aarhus. However, other factors should also be taken into account, such as the unique low rent financing system in Denmark and the very high savings rate among Danes.

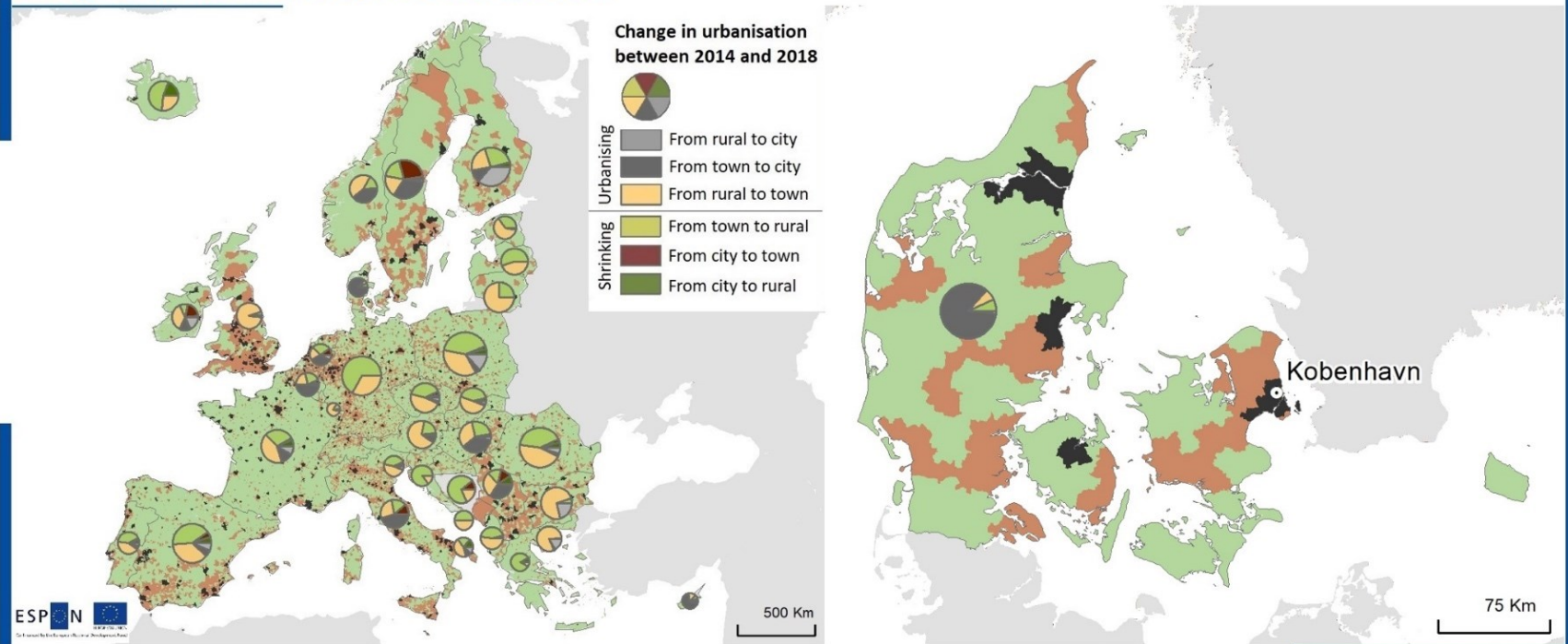


Urbanisation

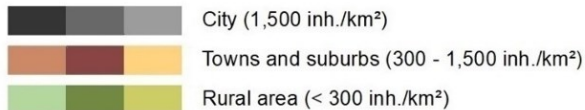
Change in urbanisation degree

Based on the changes in population density, various urbanisation trends in Europe can be observed. In Denmark, densification of the already built-up urban environment tends to become a key element of the urbanisation process.

Change in urbanisation between 2014 and 2018



Urban areas 2018



This dataset contains the difference in degree of urbanisation between 2014 and 2018. The classification is based on a population distribution grid with raster cells of 1 km² that classifies local administrative units into three categories: rural areas (< 300 inh./km²), town and suburbs (300 - 1,500 inh./km²) and cities (1,500 inh./km²).

Local level: LAU2 boundaries
Source: Eurostat, 2018

The data used for these maps come from the Geographic Information System of the Commission (GISCO). The classification is based on population density rather than building density. The difference between 2014 and 2018 can thus give indications of the changes in population flows. For instance, a large portion of rural areas in Europe have shifted towards towns from 2014 to 2018 due to densification. This means there is a tendency of the population to spread over large surfaces. In the Lowlands, Denmark, Norway, Sweden, Finland, Italy, and Hungary however, a higher densification process can be observed with large areas shifting towards cities.

This map was processed based on changes of population densities. From 2014 to 2018, the largest part, by far, of areas in Denmark that have shifted category are town areas that changed into the city category due to a population densification process. This corresponds well with densification policies and actual developments in many towns and cities in Denmark in this period. Consequently, densification of the current urban environment tends to become a key element of the urbanisation process in Denmark.

ESPON EGTC

4 rue Erasme, L-1468 Luxembourg
Phone: +352 20 600 280
Email: info@espon.eu
www.espon.eu

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Disclaimer:

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Authors: Carsten Jahn Hansen, Tom Goosse

With contributions from: Kristian Elleby Sundquist, LGI Consulting

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