



**Mapping patterns of regional inequality and change in Europe:
The evolution of regional inequalities in Europe (deliverable D2.1)**



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The evolution of regional inequalities in Europe

Introduction

EU cohesion policy has long had a regional focus. Initially, the focus of regional disparities policies was on unemployment, industrial reconversion and agricultural modernisation but has broadened to include disparities in innovation, education levels, environmental quality, and poverty and social exclusion.

From its inception, cohesion policy has had a particular focus on less developed regions and territorial cooperation. The gaps in per capita income had narrowed considerably until the 2008 recession, when the poorer regions lost ground. While the Seventh Cohesion Report states that "*regional disparities are shrinking*" making evident "*the first signs of convergence resuming*" (7th Cohesion report 2017), this appears to be based narrowly on GDP per capita and employment measures. Given that GDP per capita is only an average it will never provide a full evidence picture of reducing levels of inequality (which is one the Treaty's key objectives).

Against this background, this paper aims to contribute to the empirical literature by investigating the following:

1. As much of the literature on regional disparities has rather narrowly focused on GDP per capita we want to *respond to the call to move beyond GDP by extending the focus to include the social dimension of regional disparities*.
2. As much of the previous analysis and much of EU regional targeting is done at the NUTS2 level we want to *increase the geographic granularity* by extending the scope of the database to NUTS3 level.¹

The paper begins with an overview of EU regional policy, regional disparities, and previous academic literature on regional disparities in Europe. This is followed by a description of the set of regional indicators which were collected and the measures which are used to analyze regional disparities across European regions. The main section of the paper is the analysis of regional disparities across different dimensions. A final section concludes with a discussion of the policy implications of current regional disparities in Europe.

This paper is one output of an EU Horizon 2020 research project titled RELOCAL 'Resituating the local in cohesion and territorial development' (<https://relocal.eu/>), specifically one work package which examines and maps patterns of regional inequality and change over time. It was a response to a call for proposals on 'Spatial justice, social cohesion and territorial inequalities' (REV-INEQUAL-07-2016). As part of the work package, approximately fifty key socio-economic indicators are collected at the NUTS3 level for 12

¹ The Nomenclature of Territorial Units for Statistics (NUTS) system: The Nomenclature of Territorial Units for Statistics (NUTS) was drawn up by Eurostat over 30 years ago in order to provide a breakdown of the economic territory of the European Union into territorial units for the production of regional statistics and for targeting political interventions at a regional level.

large countries in Europe which encompass 70 percent of the population. A smaller set of indicators are collected for the remaining countries. Surprisingly, there are only a limited set of comparable indicators available from Eurostat to be able to measure disparities across the 1,342 regions at NUTS 3 level. These are limited to GDP, GDP per capita, and selected demographic indicators. This paper contributes to the goal of this special session by examining the evolution and patterns of regional economic, social or environmental dimensions of well-being disparities and how the different dimensions are correlated or not. A key question in the analysis is, given the persistent regional disparities in GDP per capita, what are the implications for people living on lower-income regions? A crucial issue is whether differences among regions are growing wider or narrowing. Another issue is whether poorly performing regions are still able to provide a minimally acceptable package of services of general interest.

One component of social justice in Europe is spatial justice. While the goal is not equal outcomes across all regions, providing more equal opportunities is sought after. The first part of this paper is to measure regional disparities across the range of indicators listed above. This will answer the question of whether the gaps between better-off regions and less well-off regions are increasing or narrowing. The analysis will measure disparities both within EU countries and across the EU to the extent possible. The second part of the paper examines linkages between regional conditions and outcomes. For instance, does a high GDP per capita always lead to better health and education outcomes, or are there other factors at work?

EU policy and regional inequalities

As laid down in Article 174 of the Treaty on the Functioning of the European Union, the EU Cohesion Policy aims at promoting the "*overall harmonious development*" and reducing "*disparities between the levels of development of the various regions and the backwardness of the least favoured regions*". And this goal has a long history. Regional differences were first mentioned in 1957 in the Treaty of Rome which established the European Economic Community (EEC). In 1993, the Maastricht Treaty established the Cohesion Fund and the Committee of the Regions. This was the beginning of the period when support was to be concentrated on the poorest parts of the EU. Currently, one-third of the EU budget is devoted to Cohesion Policy for the current period of 2014-2020. The bulk of Cohesion Policy is devoted to less developed European countries and regions with the explicit aim of assisting them to catch up and reduce the economic, social, and territorial disparities that still exist across the EU. Successive enlargements of the EU have made reducing regional disparities even more challenging as more regions with lower (in some case significantly) levels of GDP per capita have been included.

Until 2007, there was sustained economic growth across Europe, income levels were rising, employment was growing, poverty and social exclusion were diminishing, and regional disparities were shrinking. This changed with the economic crisis of 2008, as regional disparities in employment, unemployment, and GDP per capita have widened or stopped narrowing. According to the seventh cohesion report, regional disparities are narrowing

again as GDP per capita in the less well-developed regions increase towards the EU average. However, many of these regions have a manufacturing base and will rely on structural change towards higher-value sectors to remain competitive.

With territorial cohesion as an explicit objective of Cohesion Policy since the signing of the Lisbon Treaty in 2009, there has been a stronger emphasis on access to services, functional geography, territorial analysis and sustainability. While the Lisbon Treaty expresses the goal of reducing regional disparities, it does not explicitly define what type of disparities are being referred to. Related to these objectives, in the Europe 2020 goals is the importance of moving beyond GDP when assessing territorial development. Already in the 2007-2013 period, a number of different measures of progress were being employed and in the current 2014-2020 period, there is increased emphasis that cohesion policy should '*also move beyond GDP*'.

The Europe 2020 strategy is the guiding policy for the programme period 2014-2020. Because of this, the new cohesion policy is fully aligned with the Europe 2020 strategy. The overall goal is to ensure a smart, sustainable, and inclusive future. To achieve these, eight headline targets have been developed in five areas – employment, research and development, climate change and energy, education, and poverty and social exclusion.

There is obviously an important regional component to achieving the eight Europe 2020 targets. For this reason, the regional data collected and analysed at the NUTS3 level include the eight targets or some proxy. The number of regions and number of people living in regions far below the targets are identified and analysed. Like EU cohesion policy, the emphasis in this analysis will be on those regions with indicators far below the EU average in order to identify policy measures needed to improve their performance.

As a region goes into decline, the labour, land and capital become cheaper, and the market equilibrium model evens out the inequalities (for example, people move or a place becomes an attractively cheap location for business or industry).

Yet geographers, economists and other social scientists soon began to apply endogenous growth theory to understanding development at subnational scales, and in particular cities and regions (see Cheshire and Magrini, 2000; Acs and Armington, 2004).

Going beyond economic disparities

Why do we need to go beyond economic indicators?

- Because a lot of details are overlooked
- If policies are based on data from national and NUTS 2 levels: then it is not sufficiently aligned with the reality of less-favoured regions
- The idea is to recognise "territorial diversity": not handicaps – but potentials
- The aim is to reduce disparities and promote growth. But how do they have to grow? How do you know which incentives should be used to promote growth (if you have only the label "lagging", "underperforming")? It is very much a policy question?

The academic interest in regional and spatial inequalities stems from the ongoing debate on growth of an economy. The neoclassical school of thought claims that “spatial inequalities are bound to decrease” (Petraikos et al, 2016, p.700) because of catch-up growth of less advantageous economies resulting from a higher marginal rate of return on invested capital in faster-growing economies.

Other critical schools of thoughts including endogenous growth theories “understand growth as a cumulative process that tends to increase inequalities” (Petraikos et al 2015). In this framework, growth is perceived as a cumulative process that strongly depends on “initial conditions”, and requires a minimum scale (or quality) of resources and activities in order to take place” (ibid). They place innovation and knowledge accumulation “central to explaining economic performance and competitiveness”. This implies that inequality patterns can be explained by differences in the knowledge bases and not by differences in factor proportions (as standard neoclassical theory would assume) (Lundvall 1998).

In order to achieve “a complete understanding of the determinants of long-run economic success” (Romer 1990) a broader set of “economic attributes’ should be considered including institutional arrangements, levels of education, investment in research and development and the like. In his work, Lucas (1988) focuses on the role of human capital as “the engine of growth” and divergence in growth rates between leading and lagging economies. This implies that regional disparities will not be reduced by a mere equalization of capital-output ratios but also market incentives and government policies should play a role in reducing disparities and bring about “discovery, diffusion, and technological advance” (Romer 1990).

How best to overcome inequalities between regions is also subject to fierce debate. The New Economic Geography school, favoured among others by the World bank, emphasises the “superior efficiency of large metropolitan areas and the need to support them for the sake of aggregate wellbeing ...with favour openly expressed for the efficiency goal and “space-blind” policies” (Camagni and Capello, 2015, p26). The opposite strategy, place-based regional policy, supported by such organisations as OECD and the Barca Report (2009) is based on “place specificities and territorial assets, designed in a transparent and inclusive way by local actors” (Camagni and Capello, 2015, p.26/27) with the support from multi-level governance.

Much of the academic literature on regional disparities has rather narrowly focused on GDP per capita (see Banerjee and Jesenko 2015; Istrate and Horea-Serban 2016), instead of addressing the suite of inequalities that might exist in different places. However, spatial inequality has to be defined more broadly in order to “explain the engine of growth”. Work on territorial capital emphasises the range of assets that a place might have. It also contributes to the current switch in EU thinking from seeing the differences as ‘deficits’ in weaker regions/countries to conceptualising them as ‘potentials’ that exist in all regions/countries. Disparities between member states and between regions have increased

since the economic crisis, with some member states, particularly in the south, being particularly badly affected.

Literature review on regional disparities in the EU

The following is from the theoretical framework for the project and explains the role of analysis of regional disparities. "Although, as explained above, there are many conceptualisations of territorial cohesion, the fact that not all territories in the EU are equal is a fundamental premise: "the ambition to reduce the development gaps between regions dates back to the foundation of the European Economic Community in 1957" (European Commission, 2014b, p.193). Cohesion Policy has long had responsibility for addressing 'regional disparities' (ibid), and funded programmes of Cohesion Policy have always favoured the 'less developed regions' (ibid), albeit under different names in earlier programming periods.

But inequality of what? For Cohesion Policy, "the nature of regional disparities being tackled ... has changed over the years" and the initial focus on unemployment, industrial reconversion and the modernisation of agriculture has broadened to include disparities in innovation, education levels, environmental quality and poverty" (European Commission, 2014b, p.200). This would suggest a wide range of inequalities, ranging from the social and economic to the institutional, technological and environmental. However, the means by which funding allocations are made under the Structural and Investments Funds are still dependent on calculating GDP per capita in each NUTS2 region, and as Medeiros (2014) points out, most analyses continue to focus on socio-economic analysis.

Another way of conceptualising the inequalities that matter is to stress the importance of opportunity rather than of more tangible entities. "In an equal opportunity society, there would be high lifetime mobility (up and down) for individuals, and high intergenerational mobility: children's place in the distribution of lifetime income would be independent of their parents' place" (Birdsall, 2006, p7). A more territorial twist to this equal opportunity argument is given in the literature on 'neighbourhood effects' on an individual's outcomes. Children and adolescents who have extensive exposure to 'poverty neighbourhoods' have poorer outcomes in terms of a number of indicators (e.g, education, health), and even when they leave the parental neighbourhood are very likely to end up in similarly impoverished neighbourhoods later in life (Hedman et al, 2015).

There are two ways of conceptualising inequality between territories: that certain of them contain more impoverished entities, or that the territories themselves are in some ways impoverished. Both of these are addressed under Cohesion Policy, with different periods emphasising different types of need. For example, in the 1960s, the focus was on training and mobility (of people in places); enlargement from the 1980s onwards brought in many Member States with low per capita GDP, and policy was oriented towards developing their key infrastructure, so emphasising the development of territories (European Commission, 2014b).

Some commentators stress socio-spatial inequalities. Here we see people from similar socio-economic backgrounds congregating in particular areas, typically of a city, which in themselves are exclusive. There are areas of gentrification, there are gated communities, there are immigrant enclaves, and areas with poor quality housing stock, for example (e.g, Cassiers and Kesteloot, 2012), which lead to segregation of the population. Quite how this geography plays out “varies widely in European cities. Basically, many southern and northern European cities have a rich centre and poorer peripheries, while western European cities tend to display a poor centre and rich suburbs” (p.1910).

‘Territorial capital’ has been an important indicator for territorial inequality. This includes a range of ‘capitals’, from the “geographical (accessibility, agglomeration economies, natural resources), economic (factor endowments, competences), cognitive (knowledge, human capital, co-operation networks), social (solidarity, trust, associationism) and cultural assets (“understandings, customs and informal rules that enable economic agents to work together under conditions of uncertainty”: OECD 2011, p.15)“

This leads to the testing of spatial justice using quantitative methods: If justice is a comparative notion, quantitative methods will be best placed to compare different localities, especially regarding distributive justice. Quantitative methods will be especially used in this paper.

A methodological challenge is determining the focus and level of comparison. Should comparisons be made within the same country or across countries? Do we compare a remote rural area in a less affluent country with a core metropolitan region in a more affluent country? If we do, what are the parameters that are to be used in such a comparison? The OECD has developed a regional index of wellbeing, based on 11 indicators: housing, income, jobs, community, education, environment, civic engagement, health, life satisfaction, safety, and work-life balance. This paper aims to measure inequalities as a means of measuring one aspect of spatial justice.

Data and measures

The analysis of regional development levels that follows is based on the official data published by the statistical office of the European Union (EUROSTAT). Regional data on a wide range of socio-economic indicators were collected for the EU28 countries plus the EFTA4 countries. Approximately fifty key socio-economic indicators (Appendix) are collected at the NUTS level for twelve large countries in Europe which compass seventy percent of the population, as shown in Figure 1. (explain a bit more about project and why 12 case study countries, how this task links to others)

The indicators were chosen to be able to measure progress towards the five Europe2020 goals at low geographic levels. It was not possible to collect data exactly matching those

targets at the national level, so in many cases, proxy indicators were collected and analysed. The basis of the RELOCAL project is 33 case studies of spatial justice in 12 countries in Europe. Thus, NUTS3 data were collected for these 12 countries which encompass 70 percent of the population of Europe.

This paper uses the region as the unit of measure which some rightly criticize. However, as the call for the Horizon project states 'location matters'. In this case, it is important to choose the most appropriate regional level in order to measure both disparities and outcomes. There can be influences on the standard of living of people at various geographic levels. The NUTS 2 level has typically been the unit used for analysis and policy interventions by the EU. However, at levels ranging from the national to the neighbourhood level also matter for peoples' lives. For this reason, this paper package seeks to collect regional data at smaller geographic levels, primarily at the NUTS 3 level to be used in the analysis of disparities.

Several different measures of regional disparity were computed from these data in order to measure their evolution over time. Disparities are examined among all European regions, among countries, and among regions within countries. Regional disparities are analysed of GDP and income, employment and unemployment, employment structure, health, education, infrastructure, demographic structure, poverty, crime, and investment. The links between initial geographic and economic conditions of regions and social outcomes are also examined.

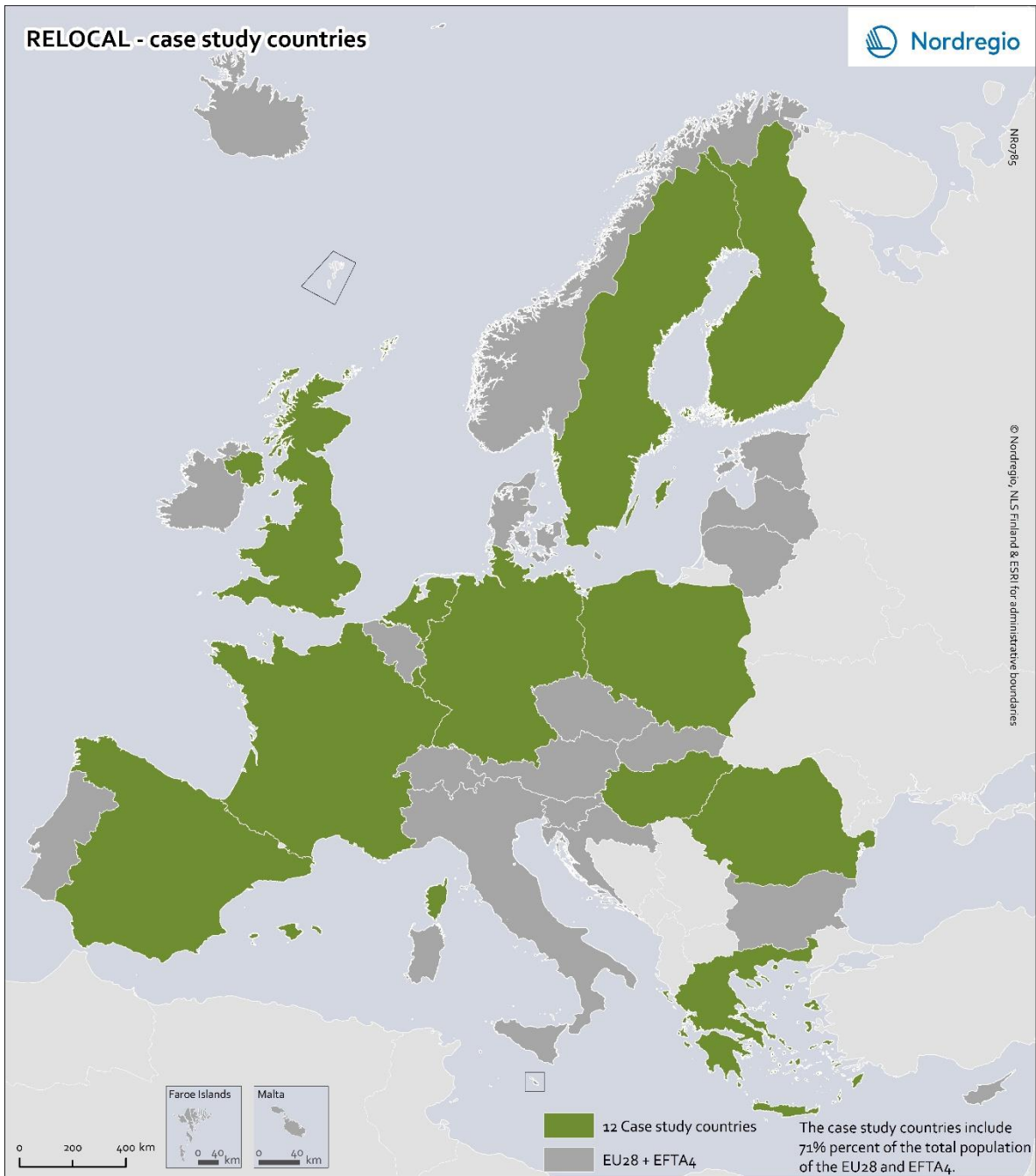


Figure 1: Twelve selected countries.

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The index which decomposes disparities into a component which measures disparities between states and one which measures disparities within state. Much of the recent reduction in disparities has been driven by declines between states, as there has been slight increases within member states.²

Results

The analysis of disparities is based on the Europe 2020 targets.

Theme 1: Employment

Headline indicator 1: Employment rate

According to the statistics from Eurostat, among the selected 12 countries, Germany and Sweden have reached their national 2020 targets since 2013 and 2014 respectively, with regard to employment rate. On the contrast, Greece and Spain are the farthest away from their national 2020 targets – the employment rate of Greece in 2017 is 12.2 percent lower than its target in 2020, and Spain is 8.5 percent lower. They are followed by France and Finland, which are 4.4 percent and 3.8 percent away from their national targets. Except for UK whose national target is unknown, all the other 5 countries are approaching their 2020 targets with no more than 2 percent difference, of which Poland's employment rate in 2017 is only 0.1 percent lower than its 2020 target.

² Sixth cohesion report, p. 5

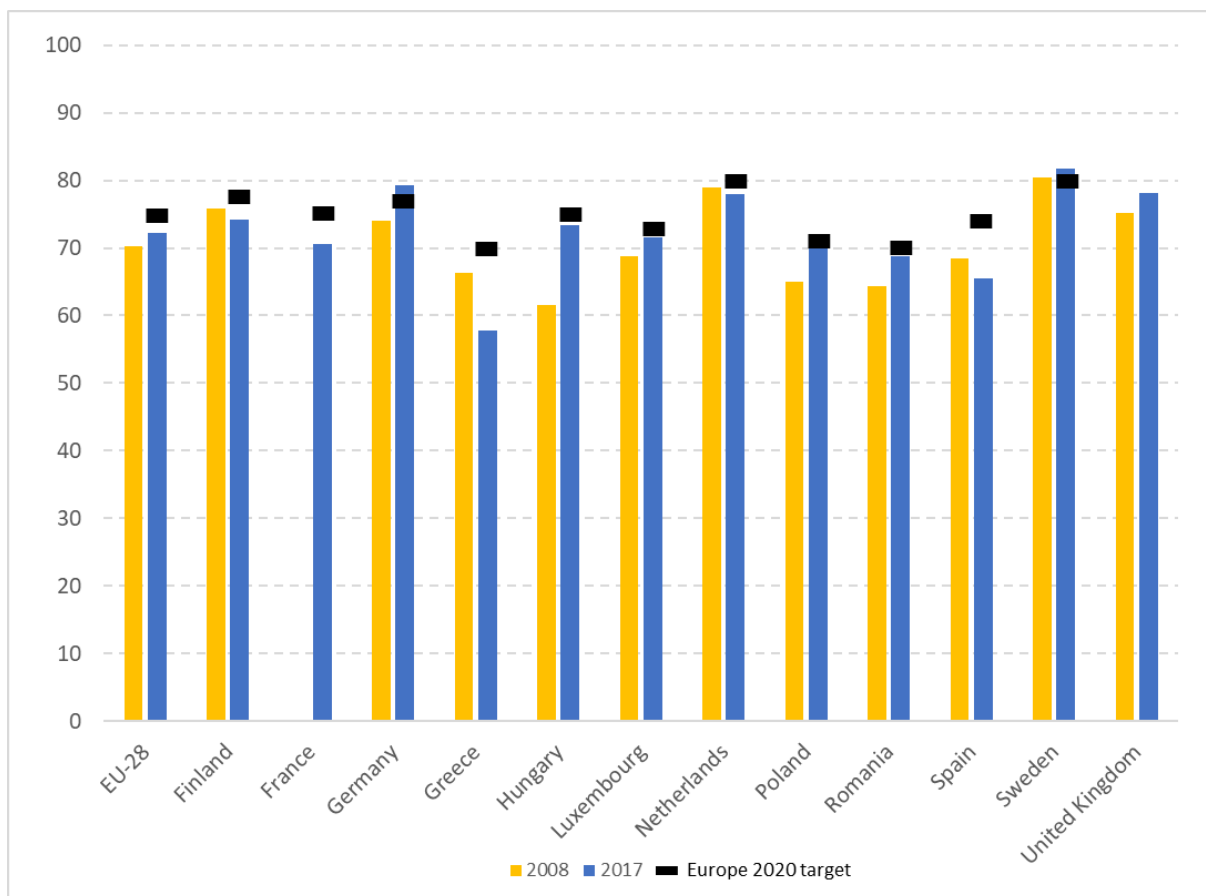


Figure 2: Employment rate age-group 20 to 64, by country, 2008 and 2017

Although Germany exceeded its national 2020 target back to 2013, regional disparities among NUTS₃ regions are clearly observed in Figure 3 with a proxy indicator. The south-eastern part of Germany in general had higher employment rates than the north-western part, and the inequalities remained with a stronger pattern in 2015.

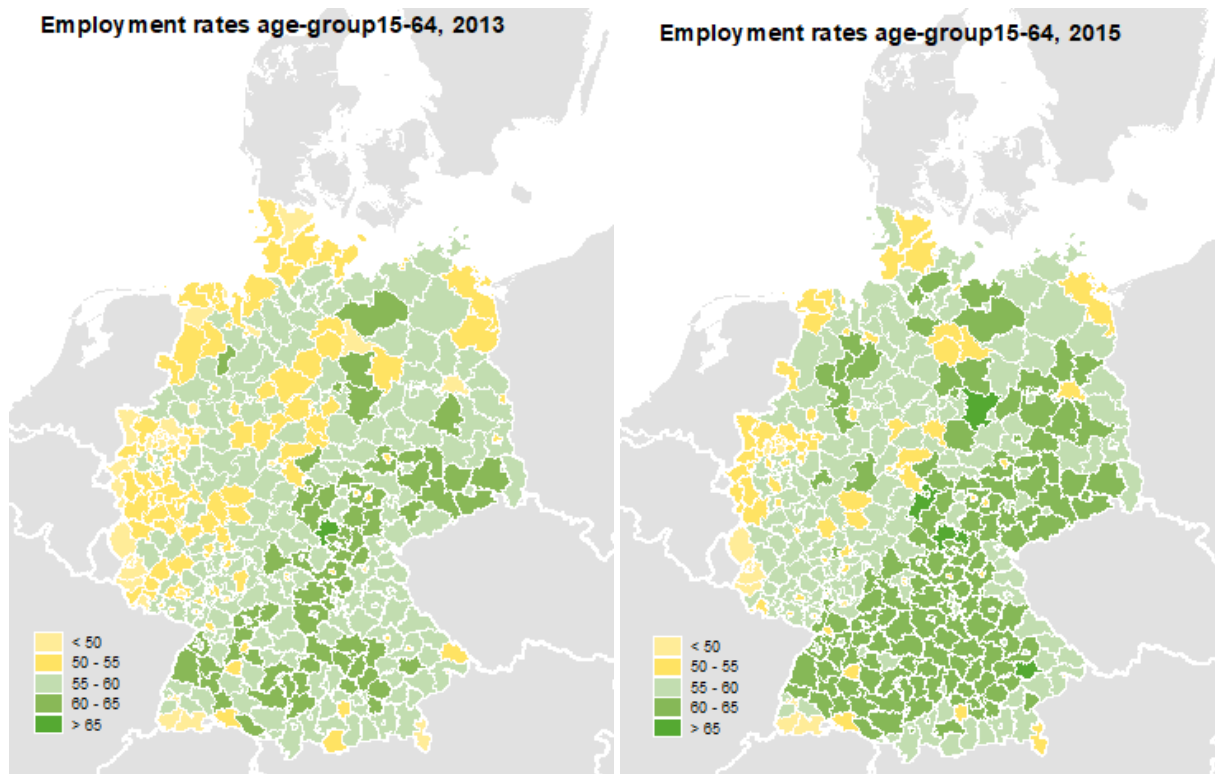


Figure 3: Employment rate age-group 15-64, by NUTS3 region, 2013 and 2015, Germany

The data on the proxy indicator for 51 NUTS3 regions in Spain are shown in Figure 4. As one of the lagging behind country in terms of labour force performance, the regional disparities are existed as well. For Spain as a country, the employment rate in 2016 is lower than that in 2002, which is the same case for 27 NUTS3 regions in Spain. For the remaining 24 NUTS regions, the employment rate has increased during the past one decade and a half. The economic crisis stroke Spain, from which regions are recovering with varied economic resilience, as illustrated in Figure 5.

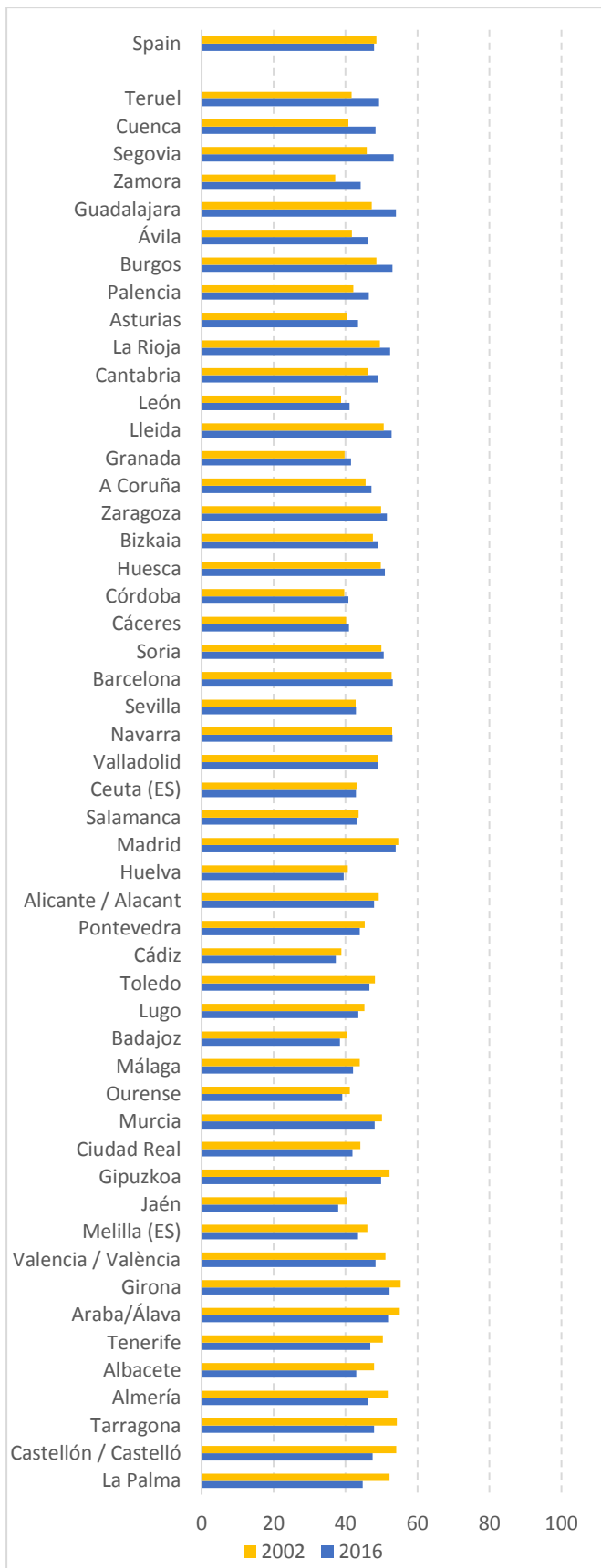


Figure 4: Employment rate age-group 15-64, by NUTS3 region, 2002 and 2016, Spain

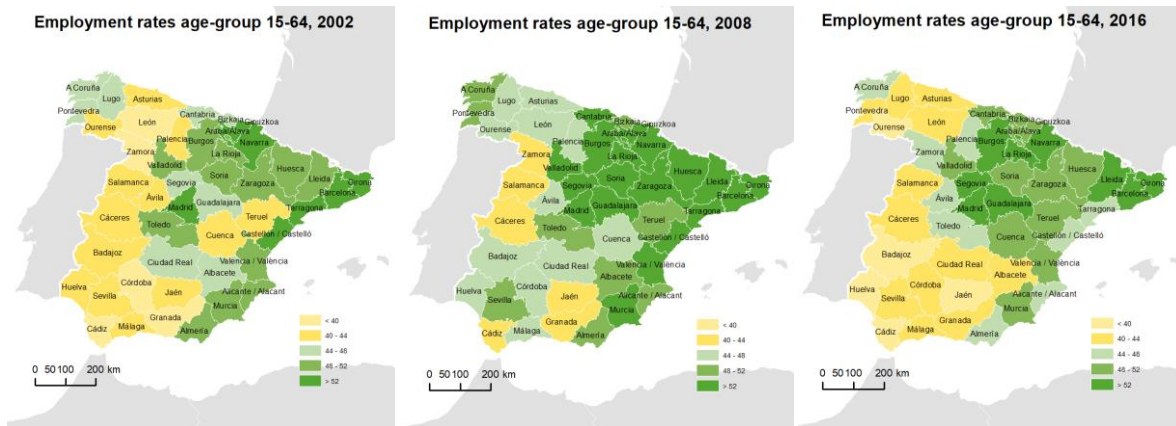


Figure 5: Employment rate age-group 15-64, by NUTS3 region, 2002, 2008 and 2016, Spain

Theme 2: R&D and innovation

Headline indicator 2: Gross domestic expenditure on R&D

The statistics indicate that until 2016, none of the selected 12 countries reached its national 2020 targets, in regards of gross domestic expenditure on R&D as a percentage of GDP. Except for Germany very close meeting its target and Greece relatively close, the other 9 countries are relatively far away from their national targets (UK has no national target).

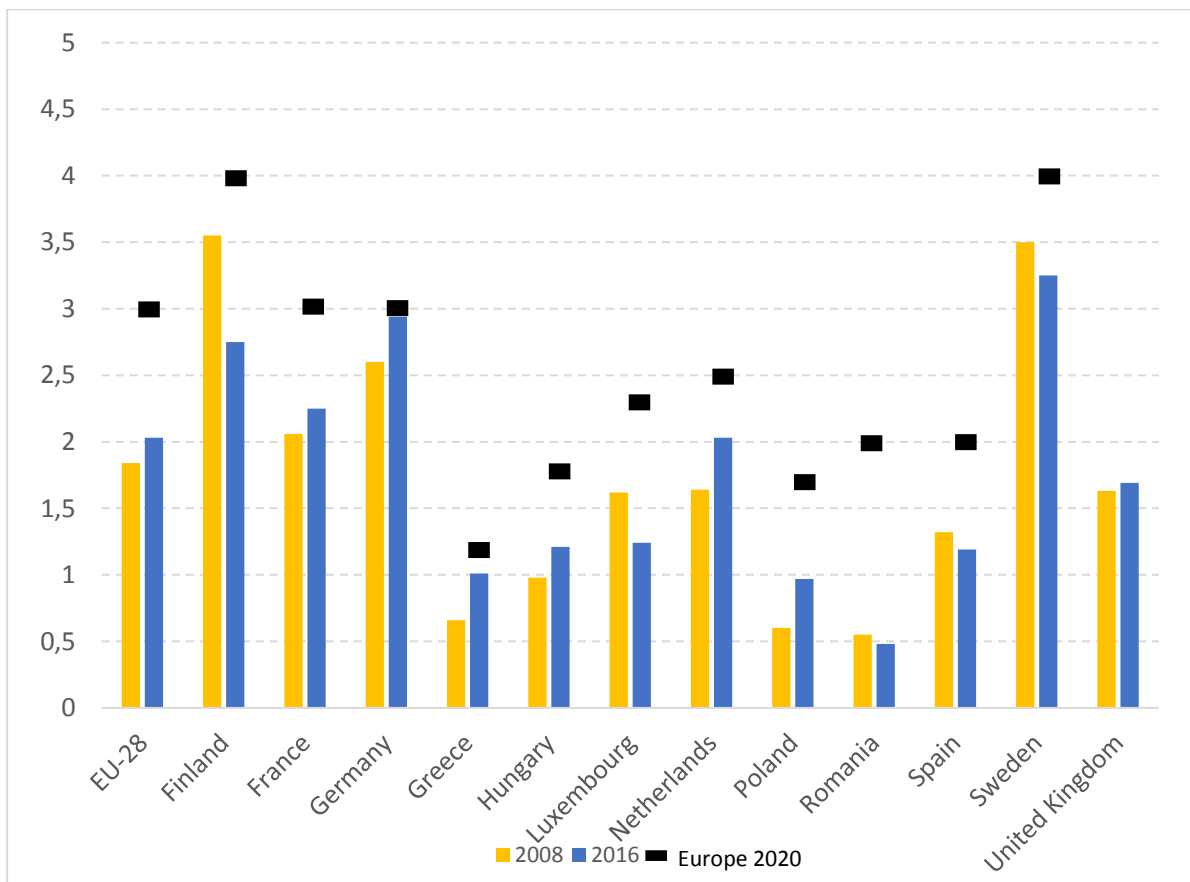


Figure 6: Gross domestic expenditure on R&D, by country, 2008 and 2016

With a moderate-ambitious national target of 1.8%, R&D intensity in Hungary has increased from 0.98% to 1.21% during 2008-2016. The regional disparities are considerable, with lower R&D intensity levels, below 1%, recorded in 16 out of 20 NUTS₃ regions in 2015 (Figure 7). While for Csongrád, the R&D intensity level rocketed during 2012-2015 and exceeded 3% in 2015, which makes it the first place in all the NUTS₃ regions in Hungary, indicating booming innovation-related activities and knowledge-based economic development.

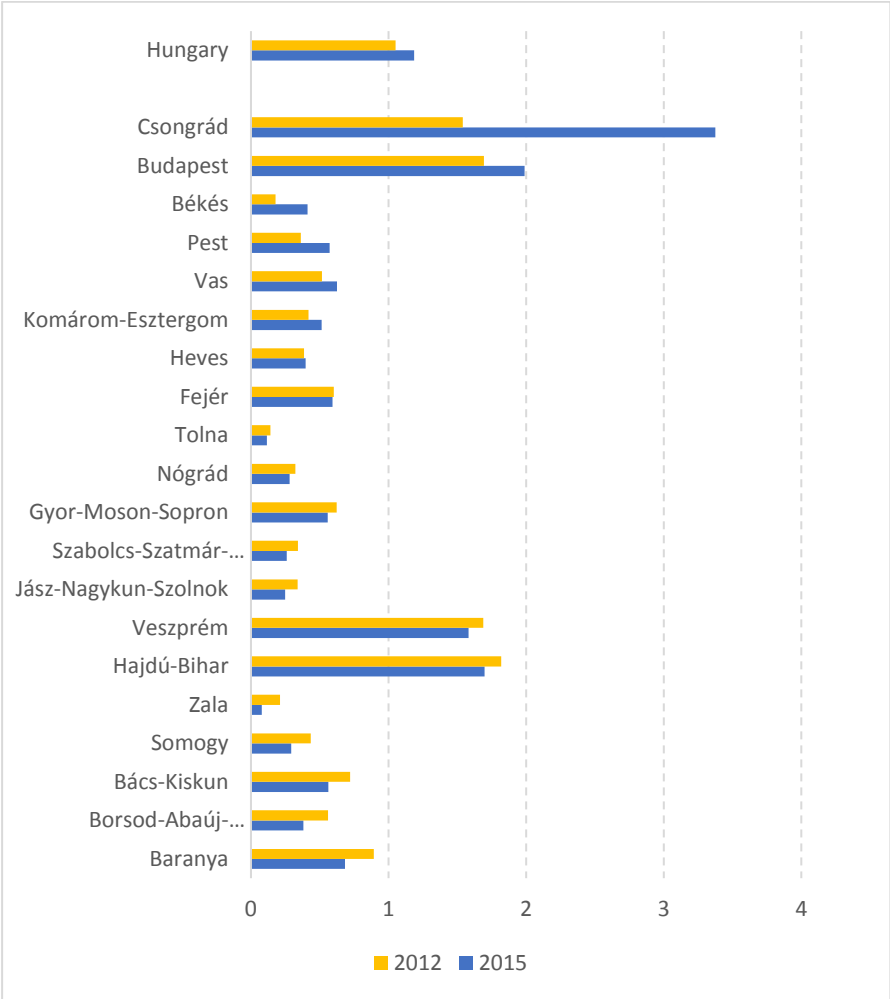


Figure 7: Total R&D expenditure in all sectors (GERD) as percentage of GDP, by NUTS₃ region, 2012 and 2015, Hungary

R&D activities are carried out by four main institutional sectors – business enterprise, government, higher education and the private non-profit sector. For Hungary, R&D expenditure was distributed between these four sectors except the private non-profit sector in 2012 and 2015 (Figure 8). The business enterprise sector was the largest R&D performing sector for most of Hungarian regions, except for Baranya, Békés and Zala, where higher education sector is the largest.

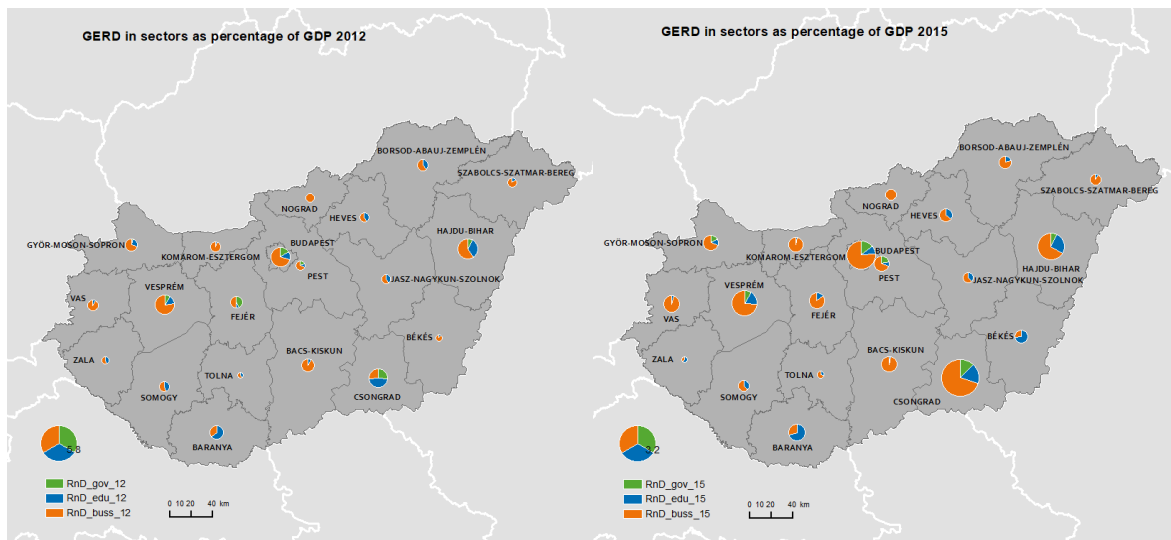


Figure 8: Total R&D expenditure in all sectors (GERD) as percentage of GDP in 2012 and 2015

Theme 3: Climate change and energy

Headline indicator 3: Greenhouse gas emissions

In 2015, the Europe 2020 target of reducing GHG emissions by 20% by 2020 compared with 1990 levels, has been reached taking into account EU-28 average, since the value is 77.88% of the 1990 level. Across the 12 selected countries, half of them – Finland, Germany, Hungary, Romania, Sweden, and UK, have cut man-made GHG emissions by 20%, and Romania stands out with the GHG emissions in 2015 are only 47.7% of its 1990 level. The remaining half still have GHG emissions over 80% of their 1990 levels, and Spain is the only country with more GHG emissions in 2015 than its 1990 level.

Finland has just exceeded the 20% percent with a 20.4% cut from its 1990 level, and the GHG emissions started to drop significantly since 2010. Figure 9 indicates that the contribution of CO₂ emission cut differs between NUTS₃ regions in Finland. All the regions had less CO₂ emission in 2013 than 2010, except one region Päijät-Häme, and the cut in Åland and Kymenlaakso are over 20%.

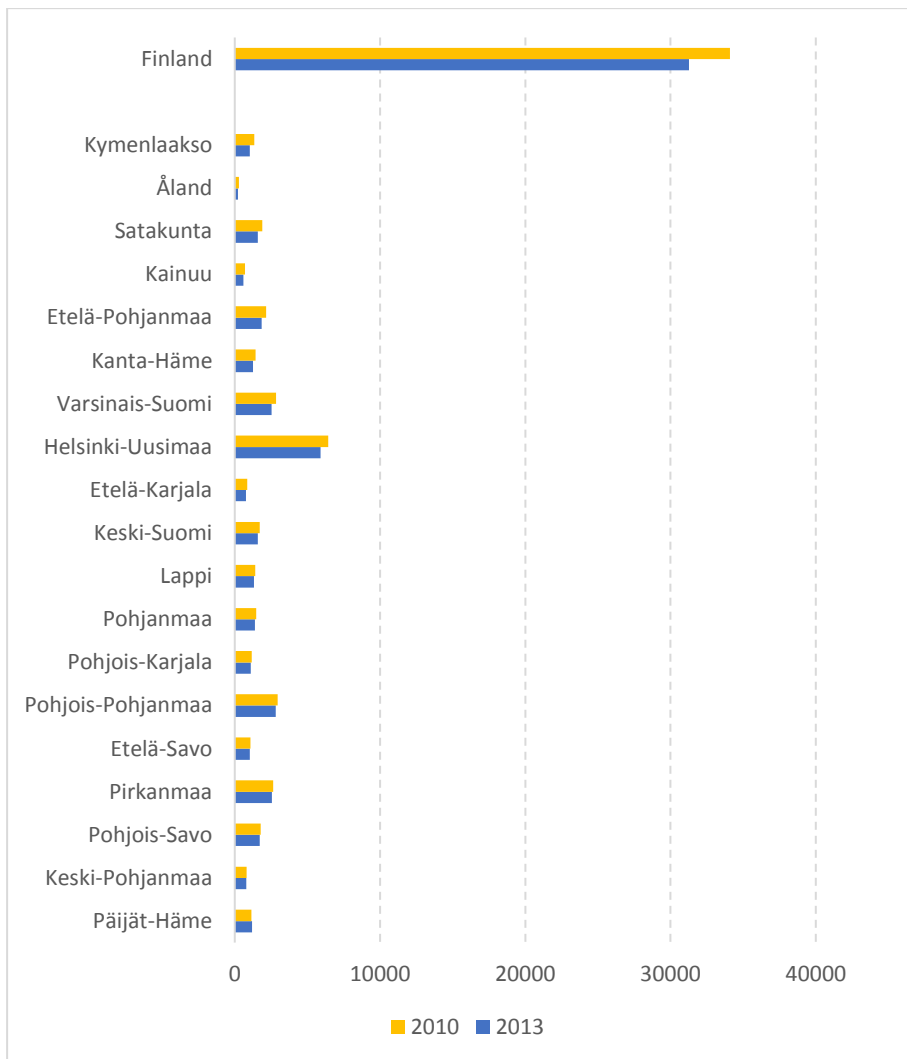


Figure 9: CO₂ emission, thousand tonnes equivalent, by NUTS₃ region, in 2010 and 2013, Finland

Headline indicator 4: Renewable energy

The Europe 2020 strategy's target is to increase the share of renewable energy in gross final energy in gross final energy consumption to 20% by 2020, and each member state has its own target. Among the 12 countries, France, Hungary, Romania, and Sweden exceeded their national targets, as shown in Figure 10. Sweden is the top performer, with over 50% of the gross final energy consumption from renewable energy. The wide range of share of renewable energy stem from variations in natural resources, such as the potential for building hydropower plants and the availability of biomass, but also from the success of national climate and energy policies³.

³ <http://ec.europa.eu/eurostat/documents/3217494/8113874/KS-EZ-17-001-EN-N.pdf/c810af1c-0980-4a3b-bfdd-f6aa4d8a004e>

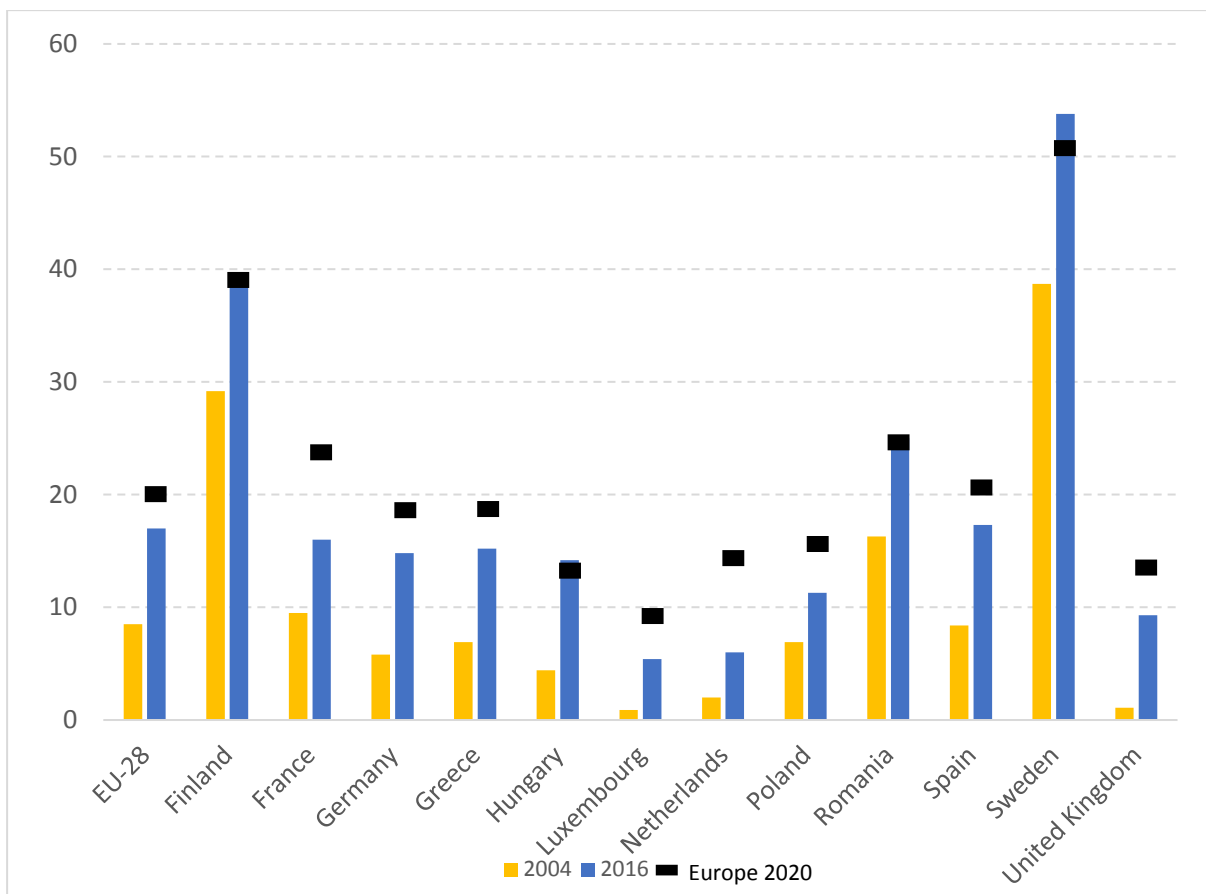


Figure 10: Share of renewable energy in gross final energy consumption, by country, 2004 and 2016

Headline indicator 5: Energy efficiency

The 2020 target of improving energy efficiency by 20% means absolute amount of reduction in primary energy consumption (PEC) and final energy consumption (FEC), which is tailored for each member state. With regard to PEC, Finland, Greece, Hungary, Luxembourg, Poland, Romania and Spain have reached their targets; While Finland, Greece, Netherland, Poland and Romania have lower final energy consumption than their targets.

Theme 4: Education

Headline indicator 6: Early leavers

As shown in Figure 11, France, Luxembourg and Netherlands have already reached their national targets for the rate of early leavers from education and training⁴, and the rate in Greece is 4 percentage points lower than the national target of 10%. In Spain, although the national target hasn't been reached, early leaving from education and training has been

⁴ % of the population aged 18–24 with at most lower secondary education and not in further education or training

falling significantly during the decade 2008-2017. On the other hand, the rate of early leavers has increased in Romania and Hungary during 2008-2017, and Romania is the most lagging behind country in reaching its national target.

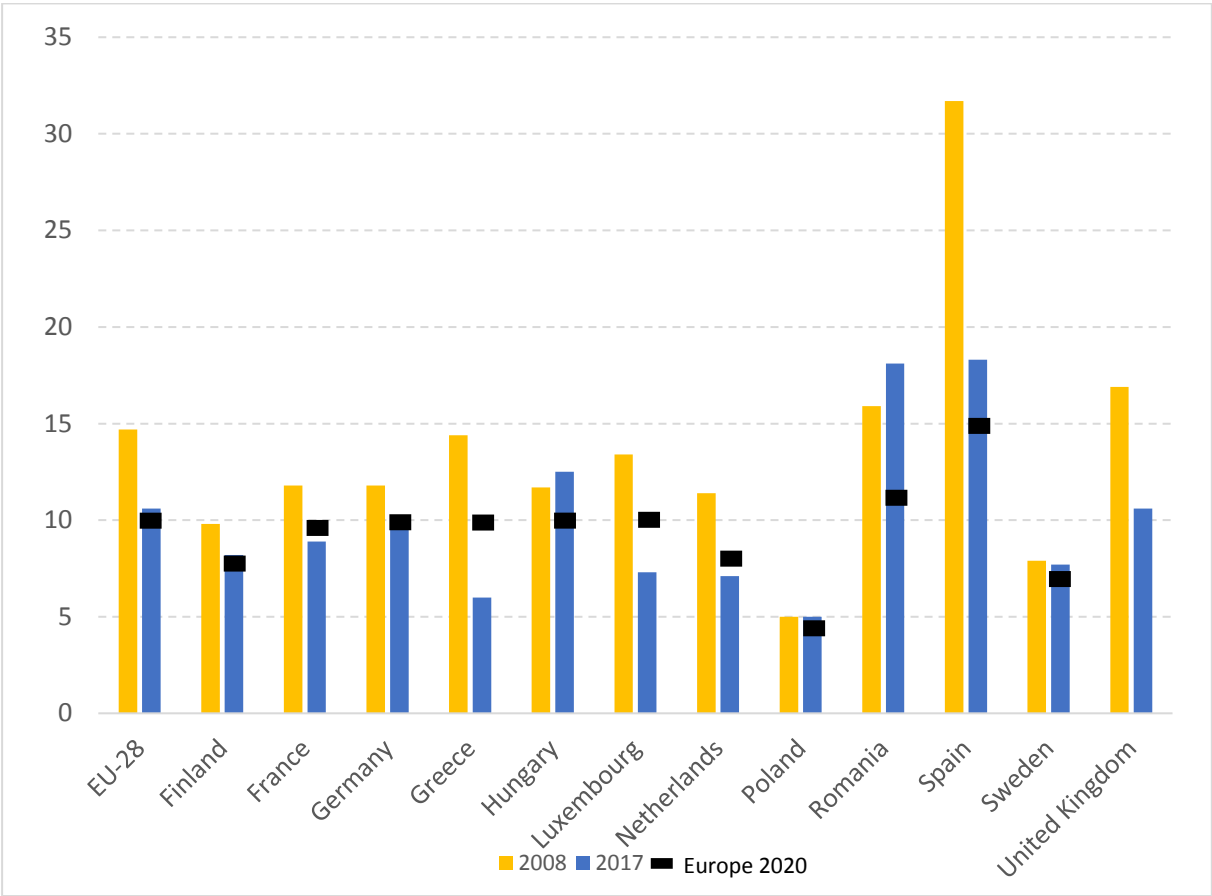


Figure 11: Early leavers from education and training, by country, 2008 and 2017

Headline indicator 7: Tertiary educational attainment

It is displayed in Figure 12 that Finland, Greece, Netherlands, Poland and Sweden have reached their national targets of tertiary educational attainment for the population aged 30-34 years old. All the selected countries witnessed continuous growth in the share of population with tertiary educational attainment, with an exception of Finland. The tertiary educational attainment in Finland increased steadily and reached its peak in 2007, and since then it started to decrease slowly.

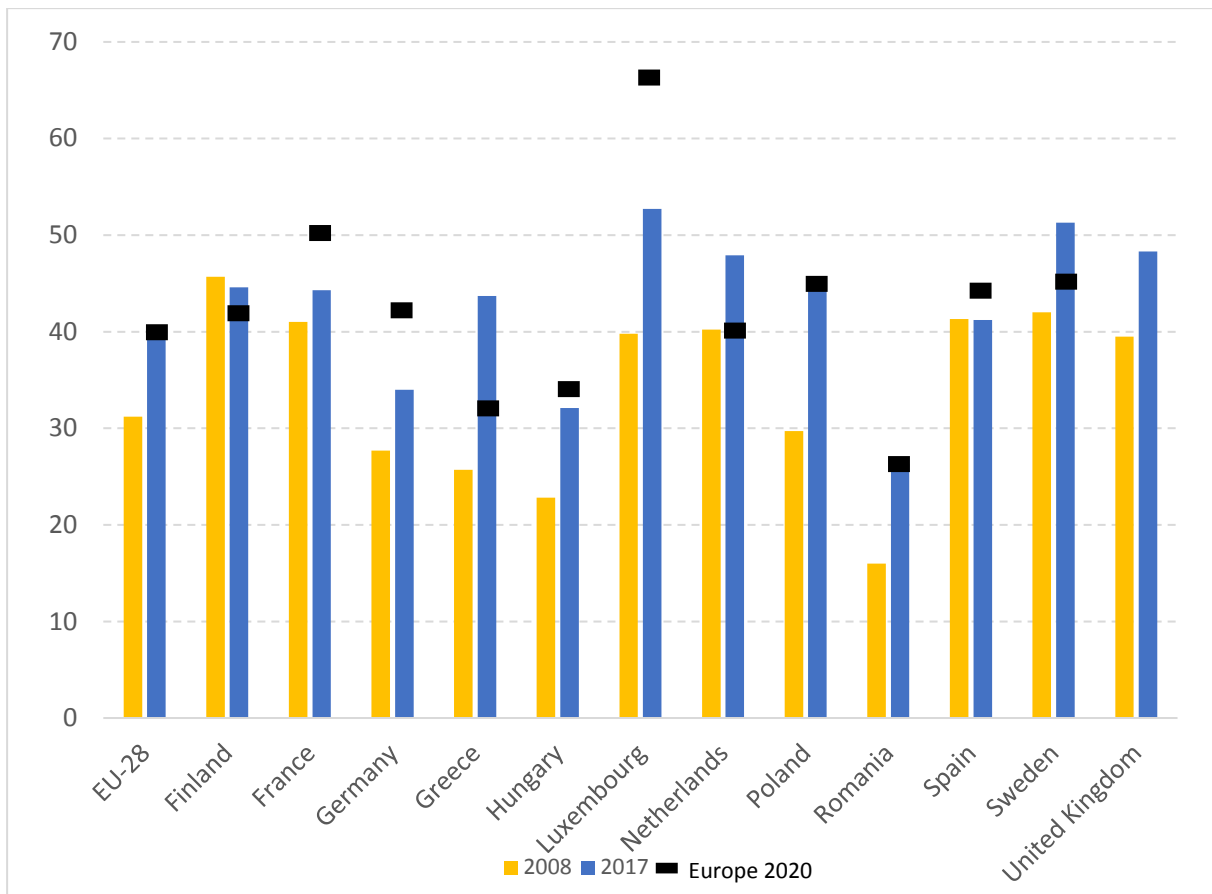


Figure 12: Tertiary educational attainment⁵, by country, 2008 and 2016

Sweden reached its national target already in 2010, however, as shown in Figure 13, there are still more than half of the 21 NUTS₃ regions lagging behind and haven't reached the national target of 45% in 2016. Among those 14 regions which haven't reached Sweden's national target, Jämtland and Västernorrland experienced a drop in the tertiary educational attainment level during 2008-2016 (Jämtland: 40.4% in 2016, 42.6% in 2008; Västernorrland: 40.3% in 2016, 41.6% in 2008). The youth unemployment in Västernorrland is over 25%, and in Jämtland is 15-20%, compared to 18,7% EU average. There is one higher education facility - Mid-Sweden University with two campuses in Östersund and Sundsvall, It has 1 bachelor programme (ecotechnology) and 9 international master programmes in Technology, Natural and environmental sciences, Media and design, Business, Social sciences and Tourism.

Therefore, national performance is relevant for cross-EU comparison, however, it doesn't depict the whole picture, especially for more nuanced phenomena on finer geographical level.

⁵ % of the population aged 30–34 with completed tertiary education

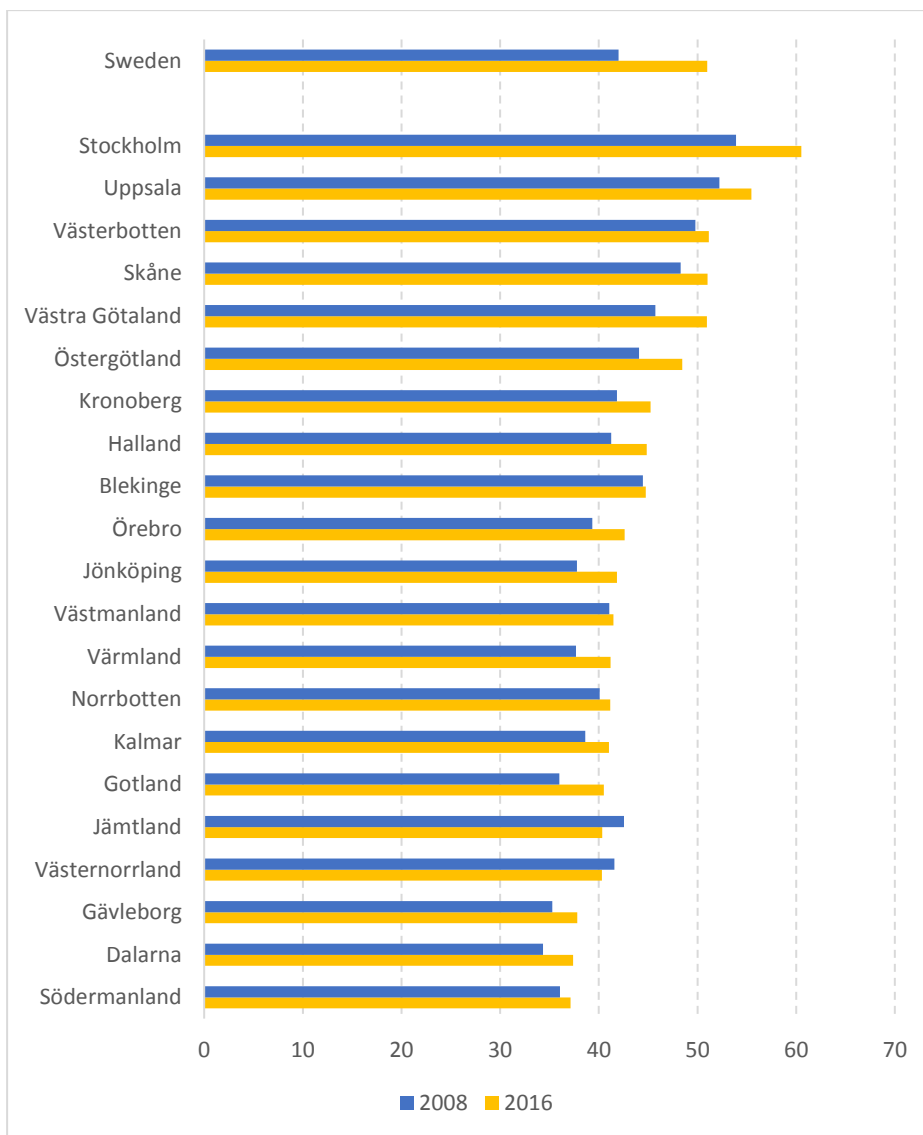


Figure 13: Tertiary educational attainment for the population aged 30-34, by NUTS3 region, in 2008 and 2016, Sweden

Theme 5: Poverty and social exclusion

Headline indicator 8: At-risk-of-poverty

The target has been set to lift at least 20 million people out of the risk of poverty or social exclusion by 2020 compared to the year 2008. According to the statistics from Eurostat, Poland and Romania have met their national targets (the national target is not available for Finland, Germany, Sweden and UK).

It can be observed from Figure 14, which shows the general at-risk-of-poverty rate, that the at-risk-of-poverty rate decreased for all the 19 NUTS3 regions in Finland during 2008-2015. At-risk-of-poverty rate in those regions that had high values in 2008 tend to decrease more than those regions whose values were lower, resulting in the narrowing of regional disparities. However, the regional inequalities are still significant in Finland, with the highest

at-risk-of-poverty rate observed in Pohjois-Karjala (17.8%) more than twice larger than the lowest value in Åland (8.2%). The possible explanation behind the high at-risk-of-poverty rate in Pohjois-Karjala could be the aging problem, with high old-age dependency ratio resulting in more recipients (the elderly) of social assistance.

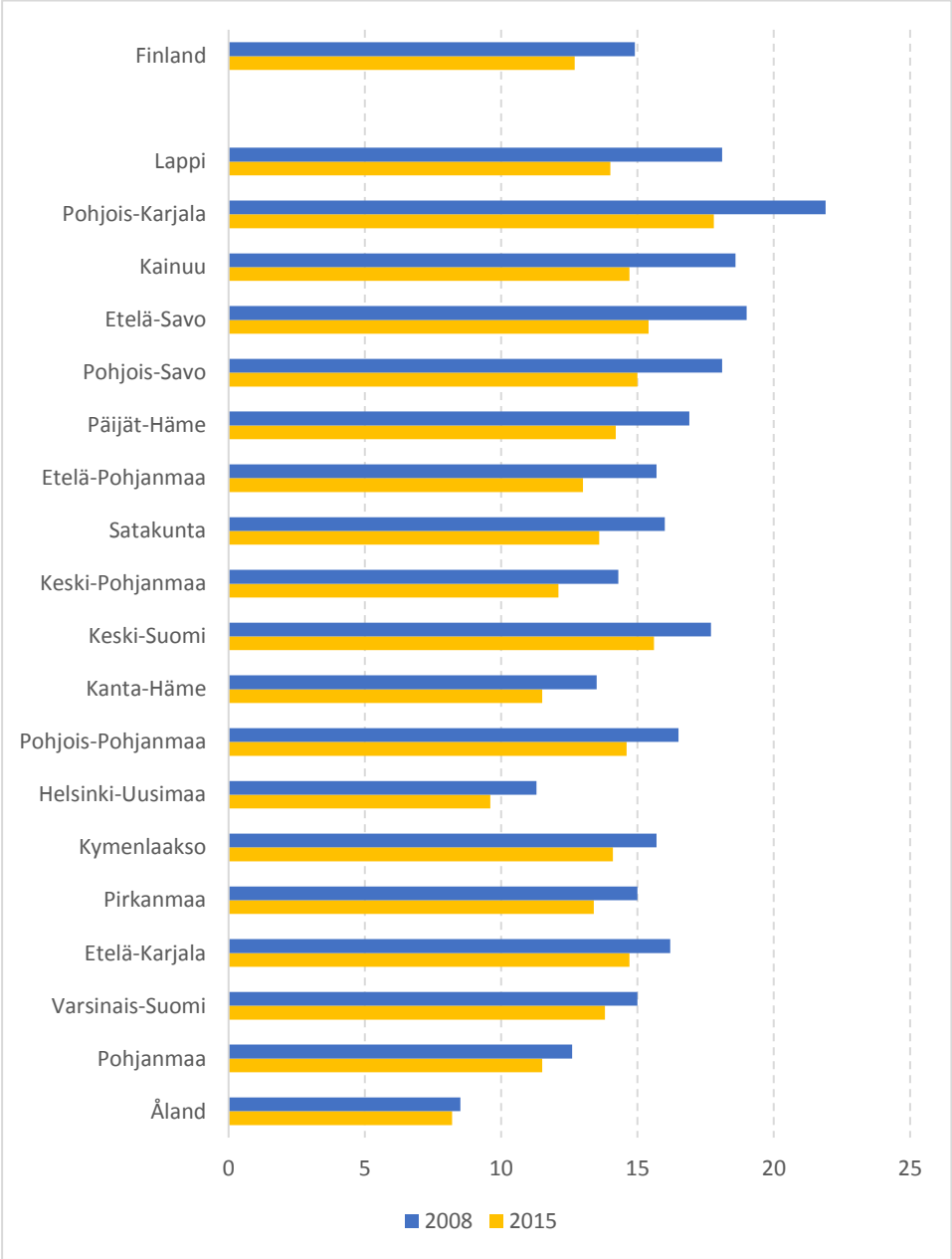


Figure 14: General at-risk-of-poverty rate, by NUTS3 region, in 2008 and 2015, Finland

Discussion

The results contained in this paper are preliminary and based on partial data analysis. However, some preliminary conclusions and areas for further analysis can be identified:

- One common pattern which seems to be emerging from preliminary analysis is that regional disparities within countries have a certain inertia and change slowly over time and that the performance of the country is quite important.
- It is obvious from the preliminary analysis that there is a need to go beyond GDP per capita and to examine trends at the NUTS₃ or lower level and to zoom in on territorial specificities.
- Next steps are to extend analysis to all 12 countries for which we have collected data, to compare commonalities of lagging regions across countries.

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Appendix

GDP and income

- Income of households
- Income of householdsPPP
- GDP per capita
- GDP at PPP per capita
- GVA

Employment and unemployment

- Economic activity rates
- Employment rates
- Unemployment rates
- Youth unemployment rates
- Long term unemployment rates

Employment structure

- Employment in agriculture, fishing, mining and quarrying
- Employment in HTC
- Employment in manufacturing
- Employment in electricity, gas and water supply, construction
- Employment in services

Health

- Life expectancy
- Life expectancy males
- Life expectancy females
- Health personnel per hundred thousand inhabitants
- Hospital beds per hundred thousand inhabitants

Education

- Early leavers from education and training
- Not employed and not in education or training, ages 18 to 24
- Tertiary education attainment ages 25 to 64
- Tertiary education attainment ages 30 to 34

Infrastructure

- Average number of rooms per person
- Motorways
- Total railway lines
- Maritime transport of passengers
- Air transport of passengers
- Households with broadband access
- Households with access to the Internet at home

Demographics

- Median age of population
- Gender ratio
- Age dependency ratio
- Youth dependency ratio
- Old age dependency ratio
- Total population
- Crude birth rate
- Crude death rate
- Crude rate of natural change of population
- Crude rate of net migration plus statistical adjustment
- Crude rate of total population change
- Households composed a lone parent
- Households composed 6 or more members

Poverty

- People living in households with very low work intensity
- People at risk of poverty or social exclusion

Crime

- Crimes reported by the police

Investment

- Total intramural R&D expenditure (GERD)
