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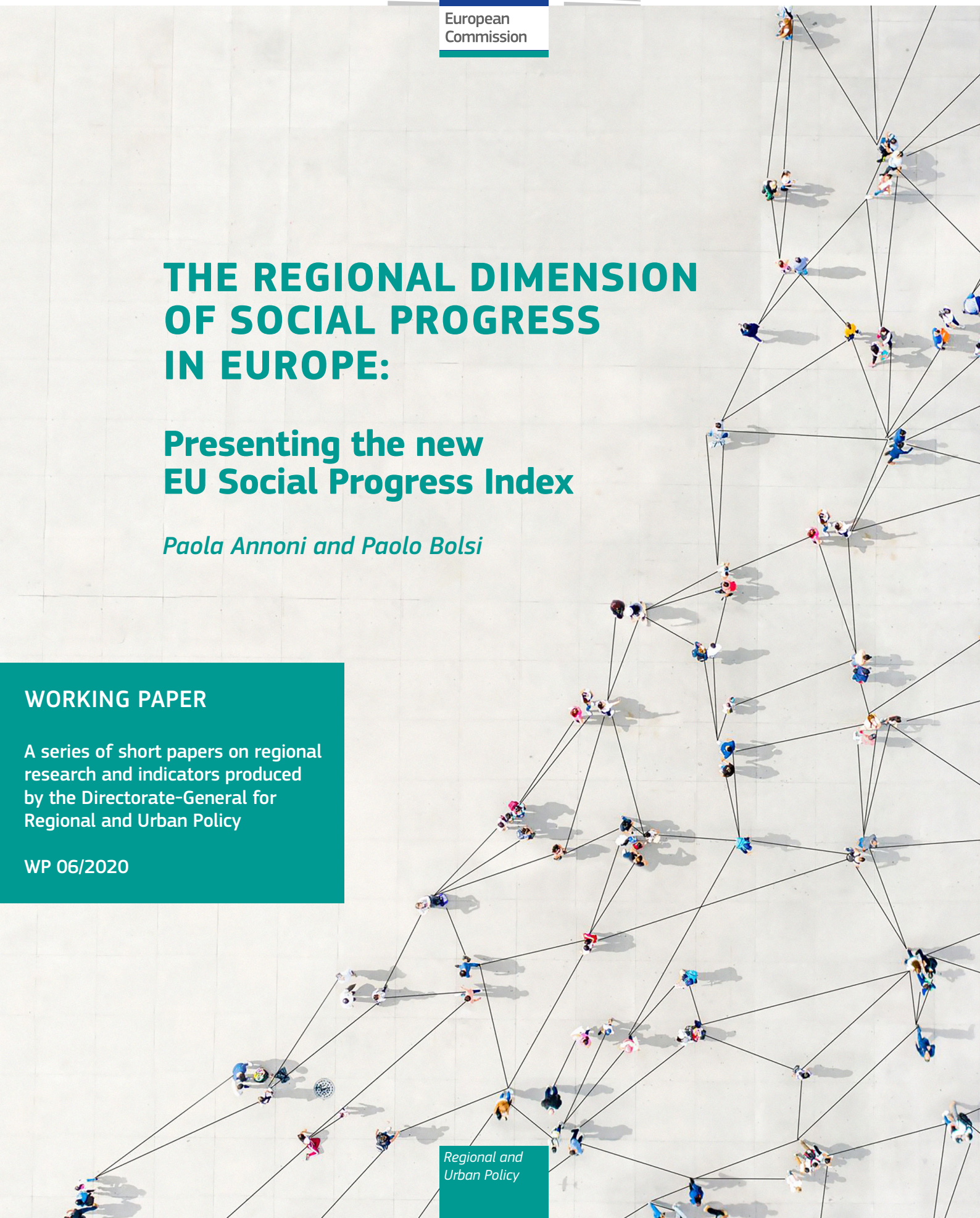

THE REGIONAL DIMENSION OF SOCIAL PROGRESS IN EUROPE:

Presenting the new EU Social Progress Index

Paola Annoni and Paolo Bolsi

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1. WHY WE NEED COMPARABLE METRICS FOR SOCIAL PROGRESS

The definition of societal progress is not straightforward. It is a complex concept encompassing many aspects that can be interpreted differently by different societies. Over the last century, progress has been largely reduced to a single figure: the growth of the gross domestic product (GDP). This aggregate monetary measure was first developed in the 1930s as a tool to assess the policies implemented in the United States to foster economic recovery after the Great Depression. Simon Kuznets, the main architect of the national accounting system and GDP in the United States, cautioned against equating GDP growth with economic or social well-being. Instead, he warned that: 'The valuable capacity of the human mind to simplify a complex situation in a compact characterization becomes dangerous when not controlled in terms of definitely stated criteria. […] Measurement of national income are subject to this type of illusion and resulting abuse, especially since they deal with matters that are the centre of conflict of opposing social groups where the effectiveness of an argument is often contingent upon oversimplification' (in Lepenies, 2016, p. 71). Despite his warnings, GDP growth became the paramount goal pursued by policymakers all over the world as a means of summarising development and well-being.

Social aspects only began to be included in the debate from the 1960s, when the need to widen the concept of development became evident. However, it was not until the 1990s that the debate gained momentum with the appearance on the measurement landscape of a serious contender to GDP: the Human Development Index (HDI). The HDI derives from Sen's capability approach (Sen, 1985) and includes simple indicators of health, education and income (UNDP, 2019). Probably due to its simplicity, HDI neglects key elements that have become increasingly prominent in recent times, especially following the recommendations in the report by the Commission on the Measurement of Economic Performance and Social Progress (Stiglitz, Sen and Fitoussi, 2009). The report stimulated a multitude of initiatives all focusing on replacing and/or complementing GDP. Relevant examples include:

- the European Commission, with its initiative on 'GDP and beyond'[1], together with various initiatives on sustainable development in the EU (see, for example, Eurostat, 2020); the United Nations (UN) with the Sustainable Development Goals and Agenda 2030[2];
- the International Labour Organization with the 'decent work' initiative[3];
- the World Bank with its framework for measuring sustainable wealth, including 'the voices of the poor' (Lange et al., 2018);
- the Organisation for Economic Co-operation and Development's Better Life Initiative[4], and the Territorial Approach to the Sustainable Development Goals (OECD, 2020).

From a measurement perspective, various types of proposals have recently arisen embracing the shift from purely economic metrics. They include money-denominated databases[5], such as the Genuine Progress Indicator (Kubiszewski, 2018) and the Inclusive Wealth Index (United Nations Environment, 2018), both taking into account the expenditure portion of GDP reflecting non-market work and environmental depletion. Other initiatives provide indicator scoreboards without combining them into a single, scalar value. A prominent example is the European Union Social Scoreboard[6] which aims to monitor the European Pillar of Social Rights by means of a collection of more than 90 indicators and their time series at the country level.

Finally, various examples of aggregate measures include:

- the Human Development Index (UNDP, 2019);
- the Canadian Index of Wellbeing (CIW, 2016);
- the World Happiness Index (Helliwell et al., 2020);
- the Sustainable Economic Development Assessment[7];
- the Global Social Progress Index by the Social Progress Imperative[8] and the European regional Social Progress Index, EU-SPI, the focus of this paper.

So, why do we need comparable metrics for social progress? Because to measure is to know and, if you know, you can compare and help decision-makers.

1. https://ec.europa.eu/environment/beyond_gdp/index_en.html
2. https://sdgs.un.org/goals
3. http://www.ilo.org/global/topics/decent-work/lang--en/index.htm
4. http://www.oecdbetterlifeindex.org/
5. As these measures include components that could be valued in monetary terms, we call them 'money-denominated'
6. https://composite-indicators.jrc.ec.europa.eu/social-scoreboard/
7. https://www.bcg.com/publications/2019/seda-measuring-well-being
8. https://www.socialprogress.org/

2. THE EU REGIONAL SPI: AN OVERVIEW

The EU-SPI was first published in 2016 by the European Commission as the result of a collaborative project with the Social Progress Imperative and Orkestra, a research institute on competitiveness in Spain's Basque region. Here we present the 2020 edition of the index. It builds on the definition of social progress in the global Social Progress Index, published yearly at the country level by the Social Progress Imperative [9]:

Social progress is the capacity of a society to meet the basic human needs of its citizens, establish the building blocks that allow peoples and communities to enhance and sustain the quality of their lives, and create the conditions for all individuals to reach their full potential.

The definition refers to three broad dimensions of social progress: basic human needs, the foundations of well-being, and opportunity [10]. Each dimension is further broken down into four underlying components (Figure 1): 1. nutrition and basic medical care, 2. water and sanitation, 3. shelter, and 4. personal security, in the basic human needs dimension; 5. access to basic knowledge, 6. access to information and communication technologies (ICT), 7. health and wellness, and 8. environmental quality, included in the foundations of well-being dimension; 9. personal rights, 10. personal freedom and choice, 11. tolerance and inclusion, and 12. access to advanced education, in the opportunity dimension.

The methodological concept supporting the index framework is based on the assumption that three nested dimensions are necessary to describe social progress. Basic components are necessary, even if not sufficient, to achieve good levels of social development. The components of the foundation dimension go a step further and measure more advanced factors of social and environmental progress. The opportunity dimension includes the 'most advanced' components of a cohesive and tolerant society. From a policy point of view, these three dimensions involve different levels of difficulty: it is relatively easier to achieve good results on the basic aspects of the EU-SPI than to improve societal attitude.

The EU-SPI uses the same framework as the Global Social Progress Index but is specifically designed for the regions of the EU, at the NUTS2[11] level. In so doing, it adapts and enhances the indicators used to construct the index which are contextual and uniquely related to regional strategies within the 27 EU Member States.

Candidate indicators are selected on the basis of the following criteria:

Indicators must:

- measure outcomes, not inputs;
- be relevant and comparable across all the EU regions;
- cover matters that can be addressed by policy intervention, either at the EU or national/local levels;
- describe social and environmental aspects exclusively (no economic indicators are included).

By excluding economic indicators, the EU-SPI represents a direct metric of social progress, rather than an indirect one through economic proxies, facilitating an analysis of the relationship between economic development and social development. Metrics that mix social and economic indicators, such as the Human Development Index, make it difficult to disentangle cause and effect. The EU-SPI is designed to complement GDP in such a way that it can be used as a robust, comprehensive and practical measure of inclusive growth in the European regions.

FIGURE 1: Framework of the European regional Social Progress Index

Basic human needs	Foundations of well-being	Opportunity
Nutrition and Basic Medical Care	Access to Basic Knowledge	Personal Rights
Water and Sanitation	Access to Information and Communication	Personal Freedom and Choice
Shelter	Health and Wellness	Tolerance and Inclusion
Personal Security	Environmental Quality	Access to Advanced Education

Source: 2020 EU-SPI

9. https://www.socialprogress.org/
10. Hereinafter, the three dimensions are called basic, foundation and opportunity for the sake of brevity.
11. The geographical level of the indicators included in the EU-SPI is the NUTS2, defined as the level 2 of the Nomenclature of Units for Territorial Statistics, the hierarchical system defined by Eurostat for dividing up the EU territory.

The 2020 EU-SPI is an improvement on the first edition, as always happens with composite measures of this complexity. This is all the more valid for the EU-SPI as it includes social and environmental indicators, most of which come from surveys, describing people's perceptions and needs. The 2020 EU-SPI includes 55 indicators (Figure 2), selected from a starting set of 73 candidate indicators. This edition features regional estimates with remarkably improved reliability, especially for those indicators from Eurostat's EU Survey on Income and Living Conditions, and the Gallup World Poll survey, representing, 22% and 25% respectively of the indicators included in the 2020 EU-SPI. More detail on this is set out in Section 7.1. Fourteen indicators are new to this edition, which is more than 25% of the total number of indicators. Most of them enrich the opportunity dimension, as shown in Section 7.2.

The EU-SPI and the European Pillar of Social Rights are two different projects. The former is an aggregate measure of purely social and environmental indicators at the regional level; the latter is a scoreboard including 94 time series focusing on the labour market and social protection at the national level. However, some of the EU-SPI indicators are also part of the Pillar of Social Rights, namely: self-reported unmet need for medical care ('unmet medical needs'); early leavers from education and training ('early school leavers'); tertiary educational attainment; adult participation in learning ('lifelong learning'); young people not in employment, education or training ('NEET'); and the gender employment gap[12]. This table provides a short description of these indicators.

In line with the Global SPI, the EU-SPI scores at the overall, dimension, and component levels are all based on a scale of 0-100, with 0 indicating the worst performance, and 100 the best, ideal performance. This scale is determined by identifying the best and worst global (possible) performance on each indicator by any region. To set these boundaries, we sometimes use: 1. theoretical utopian and dystopian values, when meaningful; 2. maximum and minimum values across a time series, when available; or 3. guidelines or projection data. Table A 1 in the Appendix shows the boundary values for the 2020 EU-SPI. These boundaries are based on data observed for the EU regions and, consequently, enable a comparison to be made between regions in the EU but not with the rest of the world. This type of normalisation allows the EU-SPI scores to benchmark against realistic rather than abstract measures and track absolute, not just relative, performance of the regions on each component of the model.

All the indicators are oriented in order to have high values representing high levels of social progress; most of them span the period 2016-2018 with some as recent as 2020. This table provides all the details on the indicators while Section 8 presents the statistical methodology for constructing and assessing the index.

Below, we summarise the main 2020 EU-SPI results. The datasets, methodological paper, interactive maps and charts are all available here.

FIGURE 2: Indicators included in the 2020 EU-SPI

2020 European Union Regional Social Progress Index

Basic Human Needs

1. Nutrition and Basic Medical Care
- Mortality rate before 65
- Infant mortality
- Unmet medical needs
- Insufficient food

2. Water and Sanitation
- Satisfaction with water quality
- Lack of toilet in dwelling
- Uncollected sewage
- Sewage treatment

3. Shelter
- Burden cost of housing
- Housing quality due to dampness **NEW**
- Overcrowding
- Adequate heating

4. Personal Security
- Crime **NEW**
- Safety at night
- Money stolen **NEW**
- Assaulted/Mugged **NEW**

Foundations of Wellbeing

5. Access to Basic Knowledge
- Upper secondary enrolment rate age 14-18
- Lower secondary completion rate
- Early school leavers

6. Access to Information and Communications
- Internet at home
- Broadband at home
- Online interaction with public authorities
- Internet access **NEW**

7. Health and Wellness
- Life expectancy
- Self-perceived health status
- Cancer death rate
- Heart disease death rate
- Leisure activities **NEW**
- Traffic deaths

8. Environmental quality
- Air pollution NO2 **NEW**
- Air pollution ozone
- Air pollution pm10
- Air pollution pm2.5

Opportunity

9. Personal Rights
- Trust in the national government
- Trust in the legal system
- Trust in the police
- Active citizenship **NEW**
- Female participation in regional assemblies **NEW**
- Quality of public services

10. Personal Freedom and Choice
- Freedom over life choices
- Job opportunities **NEW**
- Involuntary part-time/temporary employment **NEW**
- Young people not in education, employment or training NEET
- Corruption in public services

11. Tolerance and Inclusion
- Impartiality of public services
- Tolerance towards immigrants
- Tolerance towards minorities
- Tolerance towards homosexuals
- Making friends **NEW**
- Volunteering **NEW**
- Gender employment gap

12. Access to Advanced Education and LLL
- Tertiary education attainment
- Tertiary enrolment
- Lifelong learning
- Female lifelong education and learning **NEW**

55 indicators
14 new to this edition

Maximum number of indicators by component: **7** in Opportunity/Tolerance and Inclusion

Minimum number of indicators by component: **3** in Foundations of Well-being/Access to Basic Knowledge

Source: 2020 EU-SPI

12. One additional indicator – gender pay gap – that is also part of the Pillar of Social Rights Scoreboard was tested for the EU-SPI but then discarded because it did not fit, statistically, with the other indicators in the component.

3. THE UNFOLDING FAN

Social disparities vary greatly across both regions and different aspects of social progress. Nordic countries perform quite well while south-eastern countries lag behind (Map 1). All the top-10 regions are Swedish, Finnish or Danish. The Swedish region of Övre Norrland is estimated as having the highest level of social progress in the EU, which was also the case in the 2016 version (Table 1). Regions in the bottom 10 are Bulgarian or Romanian, together with two French outermost regions – Guyane and Mayotte. The results of the French outermost regions must be interpreted with caution because some indicators were not available for these regions and due to their specific context far from the European mainland.

MAP 1: 2020 EU-SPI results (0-100 scores). EU average = 67

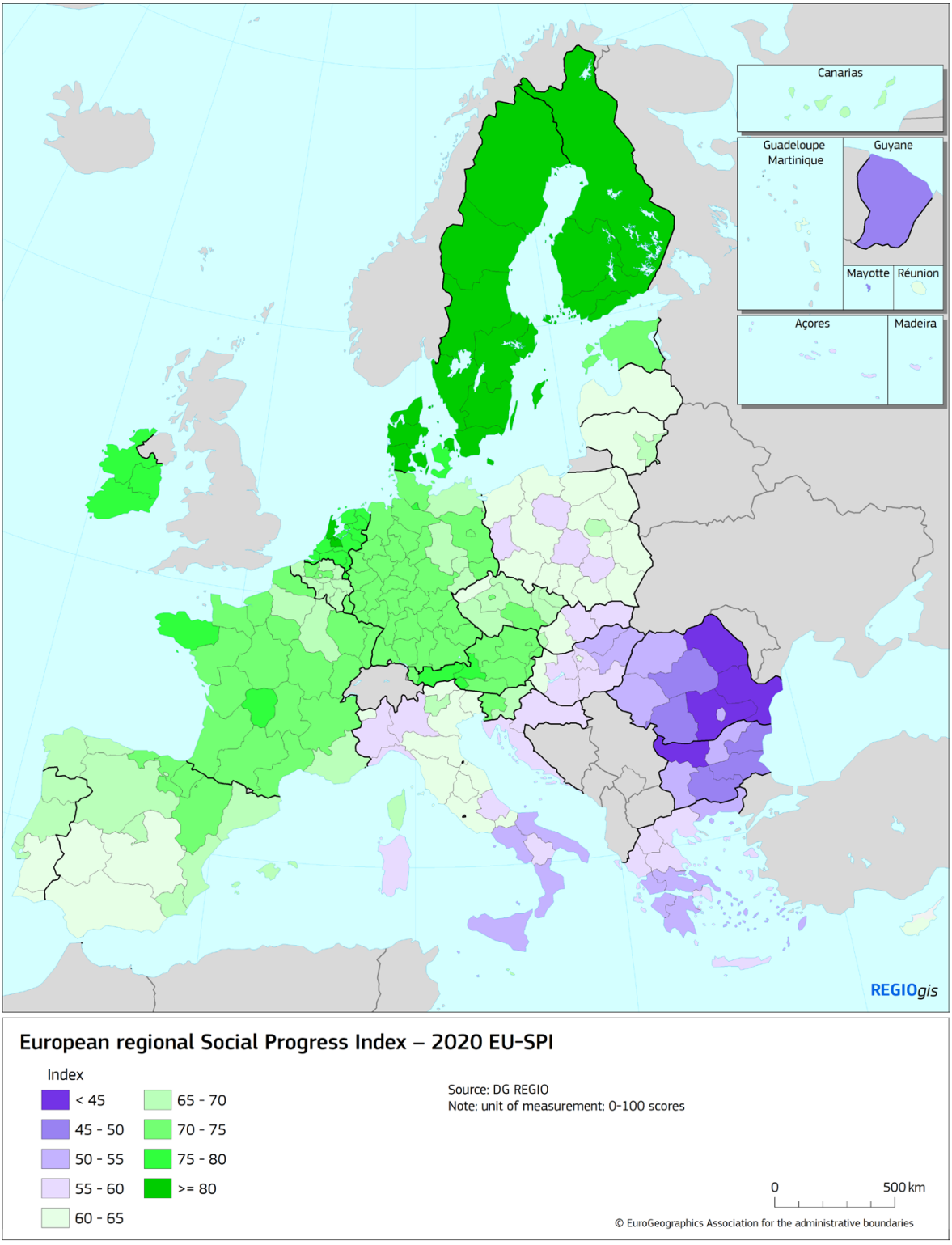


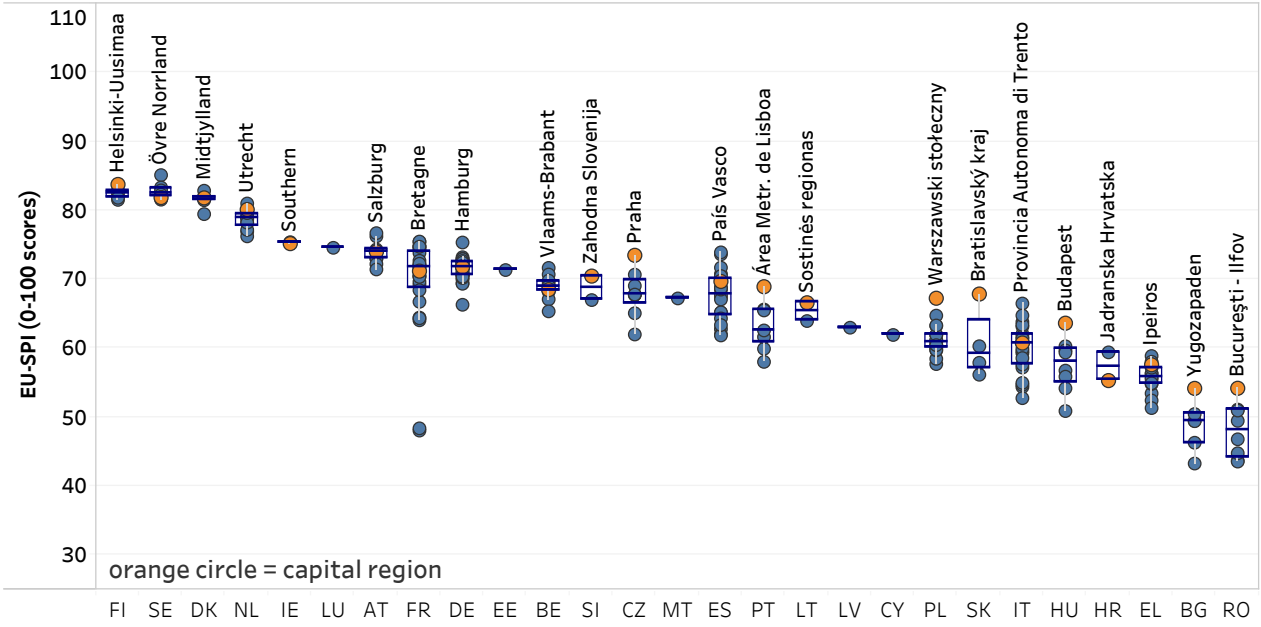
TABLE 1: Top and bottom 10 regions on 2020 EU-SPI scores (0-100).

Country	Region code	Region name	2020 EU-SPI (0-100)	Country	Region code	Region name	2020 EU-SPI (0-100)
SE	SE33	Övre Norrland	85.1	BG	BG42	Yuzhen tsentralen	49.4
FI	FI1B	Helsinki-Uusimaa	83.8	BG	BG33	Severoiztochen	49.4
SE	SE32	Mellersta Norrland	83.3	FR	FRY3	Guyane	48.4
SE	SE21	Småland med öarna	82.9	FR	FRY5	Mayotte	48.1
FI	FI19	Länsi-Suomi	82.9	RO	RO41	Sud-Vest Oltenia	46.8
DK	DK04	Midtjylland	82.8	BG	BG34	Yugoiztochen	46.3
SE	SE23	Västsverige	82.6	RO	RO21	Nord-Est	44.8
SE	SE31	Norra Mellansverige	82.4	RO	RO31	Sud - Muntenia	43.7
FI	FI1D	Pohjois- ja Itä-Suomi	82.3	RO	RO22	Sud-Est	43.6
SE	SE12	Östra Mellansverige	82.3	BG	BG31	Severozapaden	43.3

Note: The region's ranking on the EU-SPI and scores on all dimensions and components can be accessed here.
Source: 2020 EU-SPI

How do capital regions compare with the rest? Does living in the national capital and typically largest city in a country ensure greater social progress? The answer is not straightforward. Of the 22 Member States with more than one NUTS2 regions, 10 have a capital city region that scores better than the other regions in their country (Figure 3, capital regions shown as orange circles). Several capital regions, including Brussels, Paris (Île de France), Berlin and Madrid, are not the top performers in their country.

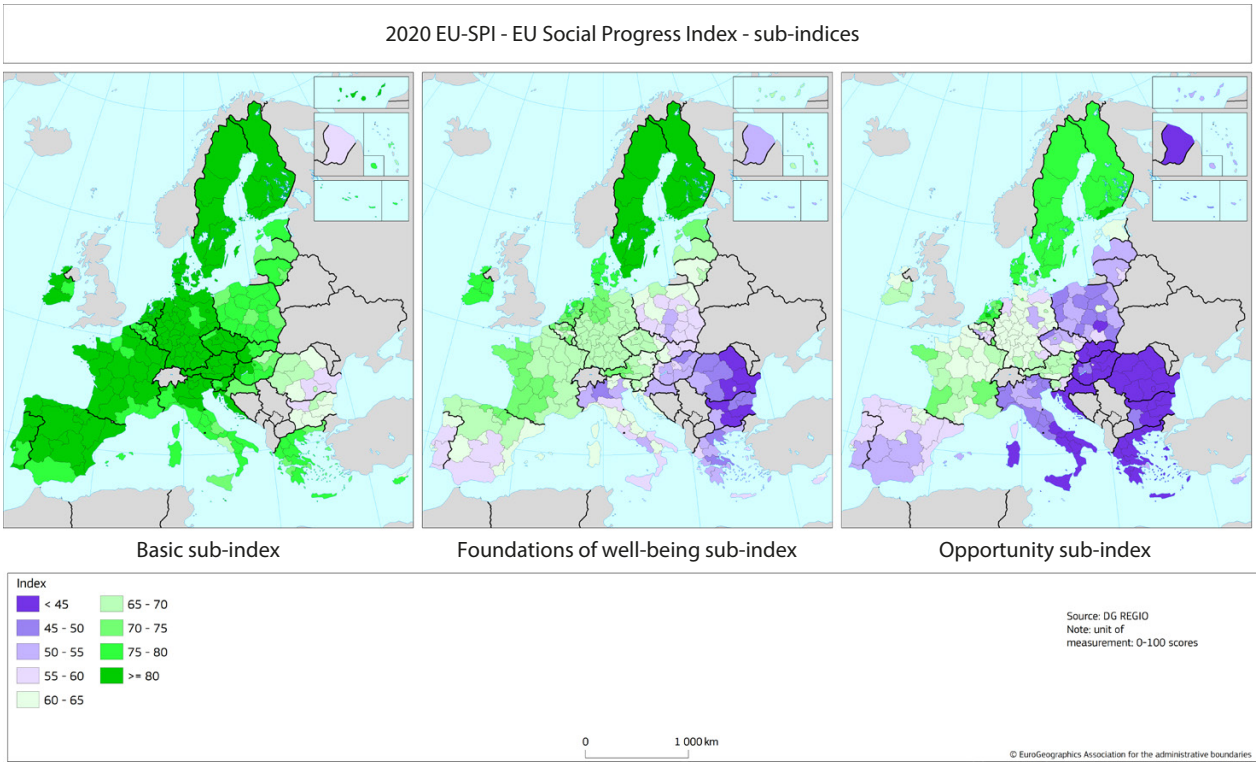
FIGURE 3: Boxplots of 2020 EU-SPI regional scores by country (0-100 scale).



Note: Countries are ordered from best to worst according to their national EU-SPI score (50% of regions included in the black rectangles). Capital regions shown in orange.
Source: 2020 EU-SPI

A closer look at the three dimensions shows quite different patterns. Most regions are doing well on 'basic human needs', with the exception of Romanian and Bulgarian regions that are well below the EU average (Map 2-left). Within-country variability is quite limited, apart from France due to the outermost regions, as shown by the height of the boxes in Figure 4-top which include 50% of the region's scores in each country. In general, a capital region does not excel in basic aspects of social progress within its own country; personal security, as well as housing quality and affordability, are the main factors preventing capital regions from performing well on the basic human needs dimension.

MAP 2: 2020 EU-SPI results on the three dimensions: Basic (EU average = 80), Foundation (EU average = 64) and Opportunity (EU average = 58). Scores on a 0-100 scale

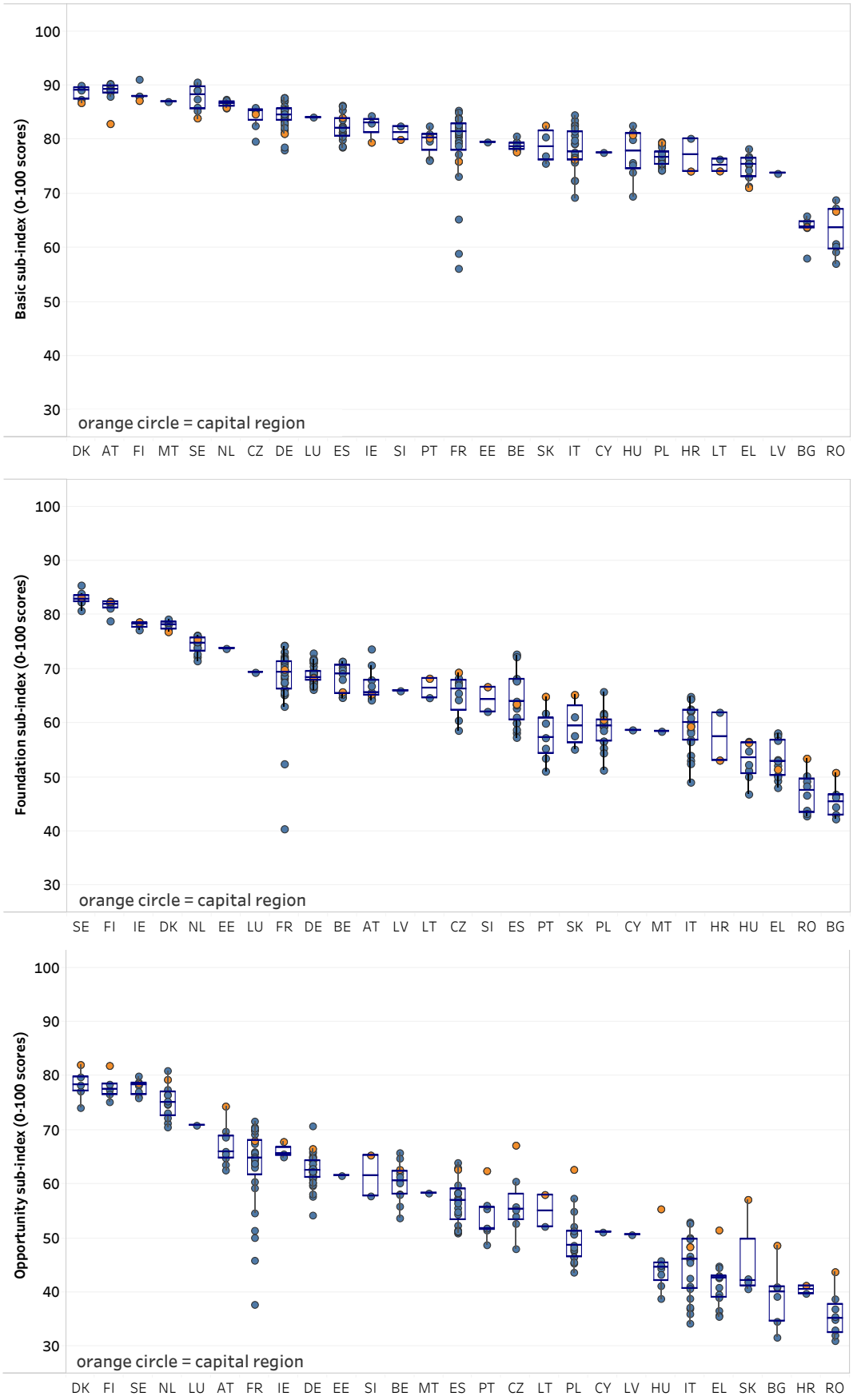


Source: 2020 EU-SPI

Looking at Figure 4 from the basic dimension chart (top) to the opportunity dimension one (bottom) is like looking at an 'unfolding fan'. We observe a wider and wider range of scores across countries and a greater variability of regional scores within each country. Capital regions start to make a difference in the opportunity dimension, scoring highly in most countries (Figure 4-bottom). In general, people living in a metropolitan area have access to more job opportunities, better access to higher education, a greater trust in others and a more inclusive view of minorities.

In line with the 2016 edition of the index, 2020 results show that, on average, EU regions perform better on basic aspects. Good levels can be achieved in basic components, for example, by investing more in waste-water treatment and social housing. The opportunity dimension reveals more variation with some regions performing very well and others quite poorly. This dimension includes more advanced aspects of social progress that are harder to improve, such as fighting corruption in public institutions and helping women to enter and remain in the labour market.

FIGURE 4: Boxplots of basic (top), foundation (middle) and opportunity (bottom) sub-indexes by countries (0-100 scale).



Note: Countries are ordered from best to worst according to their national sub-index score (50% of the number of regions included in the black rectangles). Capital regions shown in orange

Source: 2020 EU-SPI

4. STRENGTHS AND WEAKNESSES

This section presents regional performance across the different components. In so doing, we proceed from the EU macro level to the regional one.

Although the EU performs well on the basic components, its performance gradually deteriorates when moving towards the opportunity components. On a scale between 0-100, it scores 80, 64 and 58, respectively, on the basic, foundation of well-being and opportunity dimensions. With an EU score of 87, water and sanitation aspects score best, while environmental quality has the lowest score at 43 (Figure 5). Compared to the other components, personal rights has the second lowest score at the EU level: 50. Low trust in government, the legal system and police means the EU performs poorly in these key aspects of social progress. Trust is crucial for a society to be both cohesive and efficient. Being 'the one thing that changes everything' (Covey, 2006), enhancing societal trust enables organisations and societies to run more smoothly. Unfortunately, changing trust is generally a slow and complex task involving both long-term public intervention and personal attitudes.

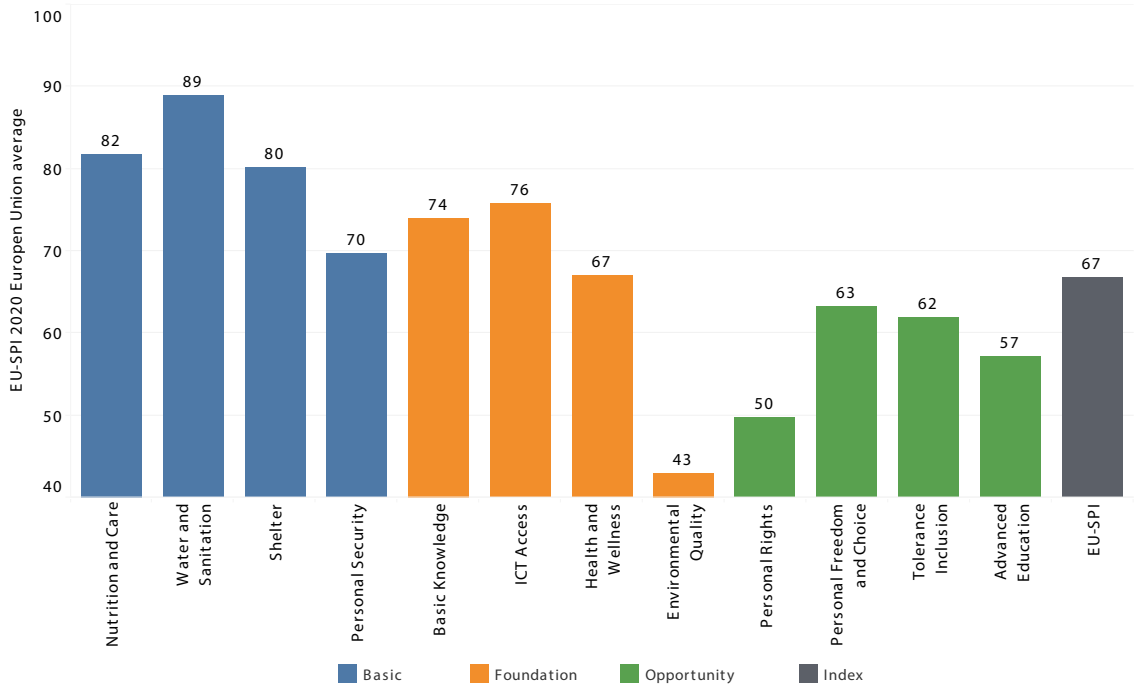
A closer look at the results shows major divergences from the EU profile across countries and, even more so, regions.

In Figure 6, regions are grouped into belonging to either a north-western Member State (Austria, Belgium, Denmark, Germany, Finland, France, Ireland, Luxembourg, the Netherlands and Sweden), a southern Member State (Cyprus, Greece, Italy, Malta, Portugal and Spain) or an eastern Member State (the remaining EU countries). This classification approximately reflects the three broad areas with different EU-SPI levels in Map 1. Almost all the north-western regions score between 80 and 92 on the nutrition and basic care component. The degree of variation among southern regions is higher with most of them scoring between 70 and 92, while eastern regions show the highest variation with an even spread from 50 to 90. The water and sanitation component follows a similar pattern with the highest score and the least variation in north-western regions, followed by slightly lower scores but a similar spread in the southern regions, and the lowest scores with the largest spread in the eastern regions. For both these components, the lowest-scoring regions are located in Romania and Bulgaria. The shelter component follows a different pattern. All north-western regions score above 80 while, in contrast, the southern and eastern regions are evenly spread between 60 and 90. The lowest-scoring regions are found in Bulgaria, Greece and Italy. The personal security component has the lowest average score in this dimension with a broad and similar spread in the three groups, mainly between 60 and 90. In contrast to the previous three components, the average score in the north-western region is lower than in the other groups. For this component, the lowest-scoring regions are found in Bulgaria, Germany and France.

The four components in the foundation of well-being dimension tend to have lower scores and more variation, as also shown by Map 2 and Figure 4. The access to basic knowledge component is lowest in the southern regions. This is the only component where the top five highest-scoring regions are in eastern Member States. The access to ICT component declines from north-western to southern and finally to eastern regions. The lowest-scoring regions are located in Bulgaria and Romania. On the health and wellness component, north-western and southern regions score equally highly with a limited spread, while eastern regions score lower and have a significantly wider spread. Environmental quality is the only component with a score below 50 at the EU level. Both eastern and southern regions score low, but with large variations. North-western regions score higher, especially in the Nordic regions.

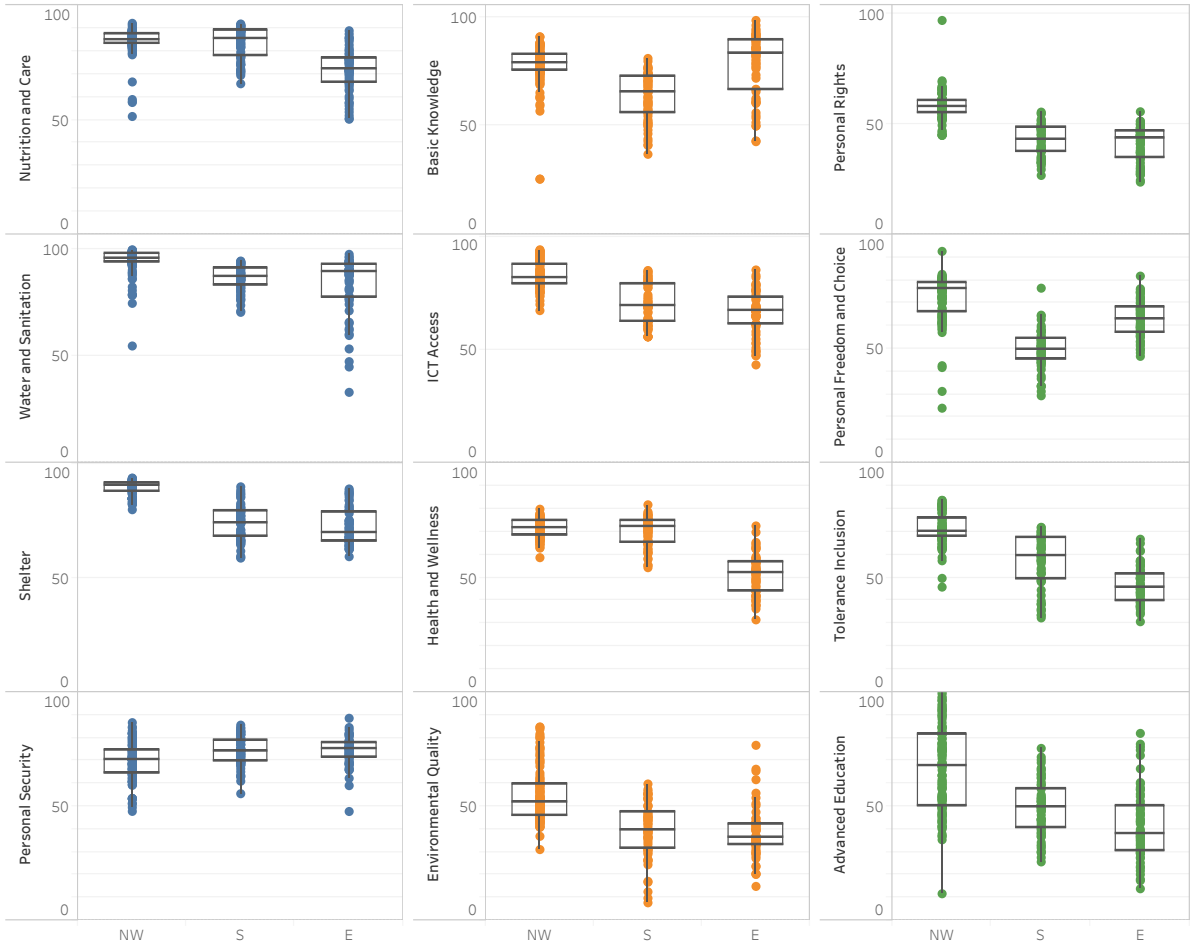
The opportunity dimension includes the components with the widest variation, following the unfolding fan pattern seen at the dimension level. The personal rights component, which has questions on trust in institutions, among others, is highest in north-western regions although, with an average score of 58, there is still significant room for improvement. The average southern and eastern regions both score poorly (42 and 41) with most scoring below 50.The personal freedom and choice component is highest in north-western regions and lowest in southern regions. Southern regions score particularly poorly on perceived employment opportunities and the involuntary part-time or temporary work included in this component. Eastern regions score better than southern regions but are still below the north-western regions. The tolerance and inclusion component follows the recurring pattern of highest in north-western regions, followed by southern regions and lowest in eastern regions. This component includes indicators on the impartiality of public services, the gender employment gap, and whether their area is a good place to live for immigrants, minorities and homosexuals, among others. The variation among north-western regions is limited, while in southern and eastern regions it is much higher. The last component in the opportunity dimension, access to advance education, has the most variation of all components. North-western regions score highest, followed by southern then eastern regions. On this component, the capital regions typically score substantially higher than the other regions, which was also noted at the dimension level. This component captures the share of the tertiary educated, the relative number of tertiary students, lifelong learning and female lifelong learning. Capital regions tend to have high shares of tertiary educated attracted to the large and specialised labour market. The high concentration of universities in the capital also provides more lifelong learning opportunities and attracts many students.

FIGURE 5: EU average scores (0-100) across the 12 components and 2020 EU-SPI (different colours represent the three dimensions and the final index)



Source: 2020 EU-SPI

FIGURE 6: Component-by-component analysis.



Note: Grey rectangles include 50% of the regions that are regrouped according to the north-western (NW), southern (S) and eastern (E) classification, as explained in the main text. Colours correspond to the three dimensions

Source: 2020 EU-SPI

5. INTERACTIVE WAYS TO DIG INTO THE RESULTS

With this edition of the index, we provide an improved set of scorecards to facilitate the reading of regional results. In addition, the web page suggests other ways to explore the results. For example, interactive maps show the index plus all of its dimensions/components; spider graphs demonstrate the performance of one region across all the components and compare it to other regions; interactive bar charts show the scores for the regions by country and by component/dimension.

5.1. REGIONAL SCORECARDS: COMPARISONS WITH GDP AND POPULATION PEERS

The normalised 0-100 scale used in the EU-SPI allows a region to be compared to the best and worst possible scores – utopian and dystopian states – of social progress across the EU. However, it is also insightful to compare a region's performance on each different component to other regions at similar levels of economic development. For example, a lower-income region may have a low absolute score on a certain component but could outperform regions with similar income per capita. Conversely, a high-income region may have a high absolute score on a component but still fall short of what is typical for comparably wealthy regions.

Similarly to the approach to the 2016 EU-SPI, we developed regional scorecards to present a region's strengths and weaknesses on a relative basis, too, comparing its performance to its 15 most-similar regions in terms of GDP per capita (in purchasing power standards – PPS), that is, its *peer* regions. Once the 15 peer regions were established, the region's performance was compared to the average performance of regions in the group. If the region's score was greater than (or less than) one standard deviation from the average of the comparator group, it was considered a strength (or weakness). Scores within one standard deviation were within the range of expected scores and considered neither strengths nor weaknesses. Colours were used to facilitate comparison between each region and its 15 peers: yellow indicates a region's performance which is typical for regions at its level of economic development, green shows when the region performs substantially better than its peer group, and red when the region performs substantially worse than its peer group.

We then upgraded the peer comparison with an additional feature based on the feedback received by regional authorities on the first edition of the EU-SPI (see the pilot project in Section 9). Of the 15 peer regions selected in line with the above approach, we also chose the two regions closest to that being analysed in terms of population. The underlying idea was to compare a region's score not only with its average peers in terms of economic wealth, but also to those similar in terms of population size. This has been a useful additional distinction as a government's policy scope for a region with a small population differs from one with a large population [13]. In the bar chart at the bottom of the scorecards, each region score is compared to both the EU average and to the two closest peer regions in terms of population size.

For example, Figure 7 shows the scorecard for Malta. The country has an EU-SPI score of 67, ranking it in 133rd place out of 240 EU regions. However, Malta excels in the basic sub-index where it scores almost 87, well above the EU average. When comparing Malta with its 15 peer regions in terms of GDP per capita, a different picture of Maltese performance emerges. Its performance is similar to the average of its 15 peer regions for the basic dimension but worse in the foundation and opportunity dimensions, especially for the components linked to education: 'access to basic knowledge' and 'access to advanced education'. This is also confirmed by looking at the two peer regions closest to Malta in terms of population – Trier in Germany and Flevoland in the Netherlands – which generally have higher scores than Malta across all components other than those in the basic dimension.

The Southern Ireland region, which includes the country's Mid-West, South-East and South-West regions, is placed in the upper rankings of the EU-SPI, in 35th place out of 240 regions considered with a score of 75 (Figure 8). It performs remarkably better than the EU average in the foundation dimension, in particular thanks to its performance under the 'environmental quality' component which is more than 30 points higher than the EU average. The picture drawn from the comparison with the peer regions is similar, as Southern Ireland outperforms the 15 peer regions in terms of GDP per capita under the same dimension. Among the peer regions, the two closest to Southern Ireland in terms of population are Hovedstaden, the capital region of Denmark, and the region of Hamburg in Germany. Southern Ireland's performance is similar to its 15 peers in the opportunity dimension, although the regions of Hovedstaden and Hamburg tend to perform better, especially for the 'personal rights' and 'access to advanced education' components.

Through the scorecards, available here, the user can interactively select and view all results related to their regions of interest.

13. According to the regional authority index, the key regional government level equals the NUTS2 regions in 13 Member States. In 9 Member States, it equals the NUTS3 regions. In the remaining 4 Member States, it is larger than the NUTS2 regions.

FIGURE 7: 2020 EU-SPI scorecard for Malta (MT)

Malta	Malta								MT
SPI 2020	Score 0-100	Rank	EU score 0-100	GDP per head PPS - EU-27=100	Value	Stage of development (1 = Lowest; 5 = Highest)	4		Population
	67.2	133/240	66.7		98				477 000

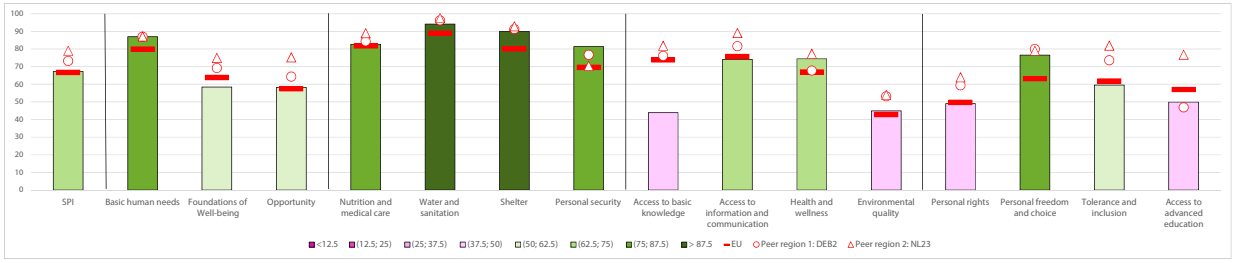
Peer Regions: La Rioja; Länsi-Suomi; Flevoland; Limburg; Etelä-Suomi; Provence-Alpes-Côte d'Azur; Trier; Norra Mellansverige; Alsace; Leipzig; Midi-Pyrénées; Illes Balears; Aragón; Dresden and Schleswig-Holstein

	Score MT	Score EU	Peers comparison
Basic human needs	86.9	80.0	
Nutrition and medical care	82.7	81.7	
Water and sanitation	94.1	88.9	
Shelter	89.9	80.1	
Personal security	81.3	69.6	

	Score MT	Score EU	Peers comparison
Foundations of well-being	58.4	63.9	
Access to basic knowledge	43.8	73.9	
Access to information and communication	74.1	75.7	
Health and wellness	74.4	67.0	
Environmental quality	44.9	42.9	

	Score MT	Score EU	Peers comparison
Opportunity	58.3	57.5	
Personal rights	49.0	49.8	
Personal freedom and choice	76.5	63.2	
Tolerance and inclusion	59.6	61.8	
Access to advanced education	49.9	57.1	

Overperforming with respect to its peers | Similar to peers | Underperforming with respect to its peers



EU averages for the SPI, the sub-indexes and dimensions are indicated by a red bar in the above bar chart

Closest peer regions in terms of population: Trier (DEB2, pop. 530 000, red circle) and Flevoland (NL23, pop. 412 000, red triangle).

Source: 2020 EU-SPI

FIGURE 8: 2020 EU SPI Scorecard for Southern Ireland (IE05)

Ireland	Southern								IE05
SPI 2020	Score 0-100	Rank	EU score 0-100	GDP per head PPS - EU-27=100	Value	Stage of development (1 = Lowest; 5 = Highest)	5		Population
	75.4	35/240	66.7		219				1 607 000

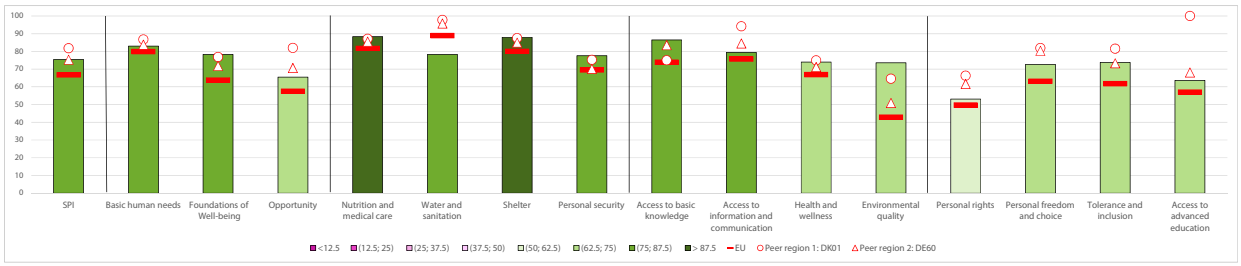
Peer Regions: Rég. de Bruxelles-Cap./Brussels Hfst. Gew.; Hamburg; Eastern and Midland; Praha; Oberbayern; Île de France; Bratislavský kraj; Luxembourg; Noord-Holland; Stockholm; Hovedstaden; Darmstadt; Stuttgart; Utrecht and Prov. Autonoma di Bolzano/Bozen

	Score IE05	Score EU	Peers comparison
Basic human needs	82.9	80.0	
Nutrition and medical care	88.3	81.7	
Water and sanitation	78.3	88.9	
Shelter	87.9	80.1	
Personal security	77.5	69.6	

	Score IE05	Score EU	Peers comparison
Foundations of well-being	78.3	63.9	
Access to basic knowledge	86.4	73.9	
Access to information and communication	79.4	75.7	
Health and wellness	74.0	67.0	
Environmental quality	73.5	42.9	

	Score IE05	Score EU	Peers comparison
Opportunity	65.5	57.5	
Personal rights	53.1	49.8	
Personal freedom and choice	72.6	63.2	
Tolerance and inclusion	73.7	61.8	
Access to advanced education	63.6	57.1	

Overperforming with respect to its peers | Similar to peers | Underperforming with respect to its peers



EU averages for the SPI, the sub-indexes and dimensions are indicated by a red bar in the above bar chart

Closest peer regions in terms of population: Hovedstaden (DK01, pop. 1 822 000, red circle) and Hamburg (DE60, pop. 1 827 000, red triangle).

Source: 2020 EU-SPI

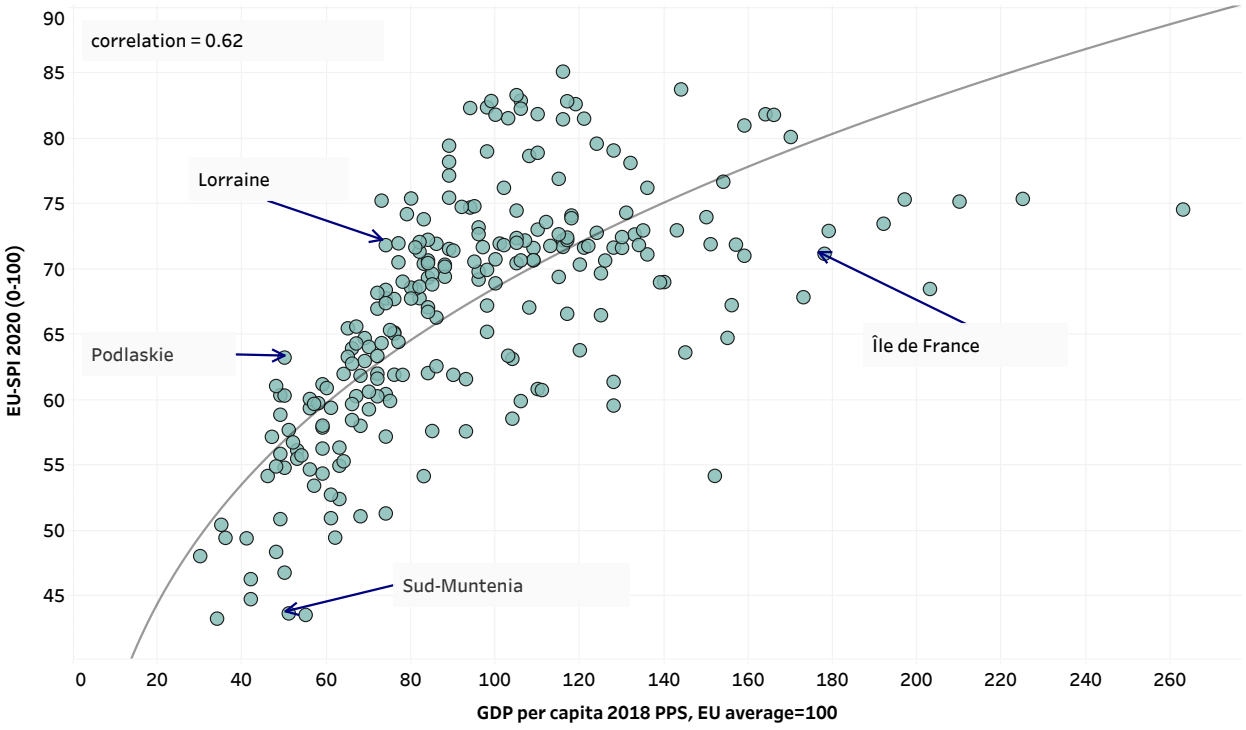
6. SOME INTERESTING RELATIONSHIPS

When it comes to quality of life, it is clear that GDP cannot be the sole measure of well-being. While there is a significant positive correlation of 0.62 between GDP per capita in PPS (EU average = 100) and the 2020 EU-SPI, Figure 9 shows that the richest regions are not the top performers in social progress; similarly, the poorest regions are not always last when it comes to social progress. Two scenarios can be identified: regions achieving similar levels of GDP but vastly different social progress outcomes, and regions achieving similar levels of social progress at vastly different levels of GDP. Both situations can provide valuable information. By identifying regions with similar levels of GDP and different outcomes of social progress, and vice versa, we can identify the lessons learned and emulate best practices.

Île de France, the Paris region, with a GDP per capita almost 80% higher than the EU average (in 2018), is among the richest regions in the EU (GDP per capita index = 178). Yet, this economically privileged region does not score particularly well on social progress, reaching just 71 out of 100. Lorraine, a French eastern region on the border with Germany, has a GDP per capita in PPS reaching only 74% of the EU average while achieving an almost identical EU-SPI score of 72. The Polish region of Podlaskie has a social progress level 20 points higher than the Romanian region of Sud-Muntenia (63 vs. 43) despite both regions having the same GDP per capita in PPS, equal to half the EU average.

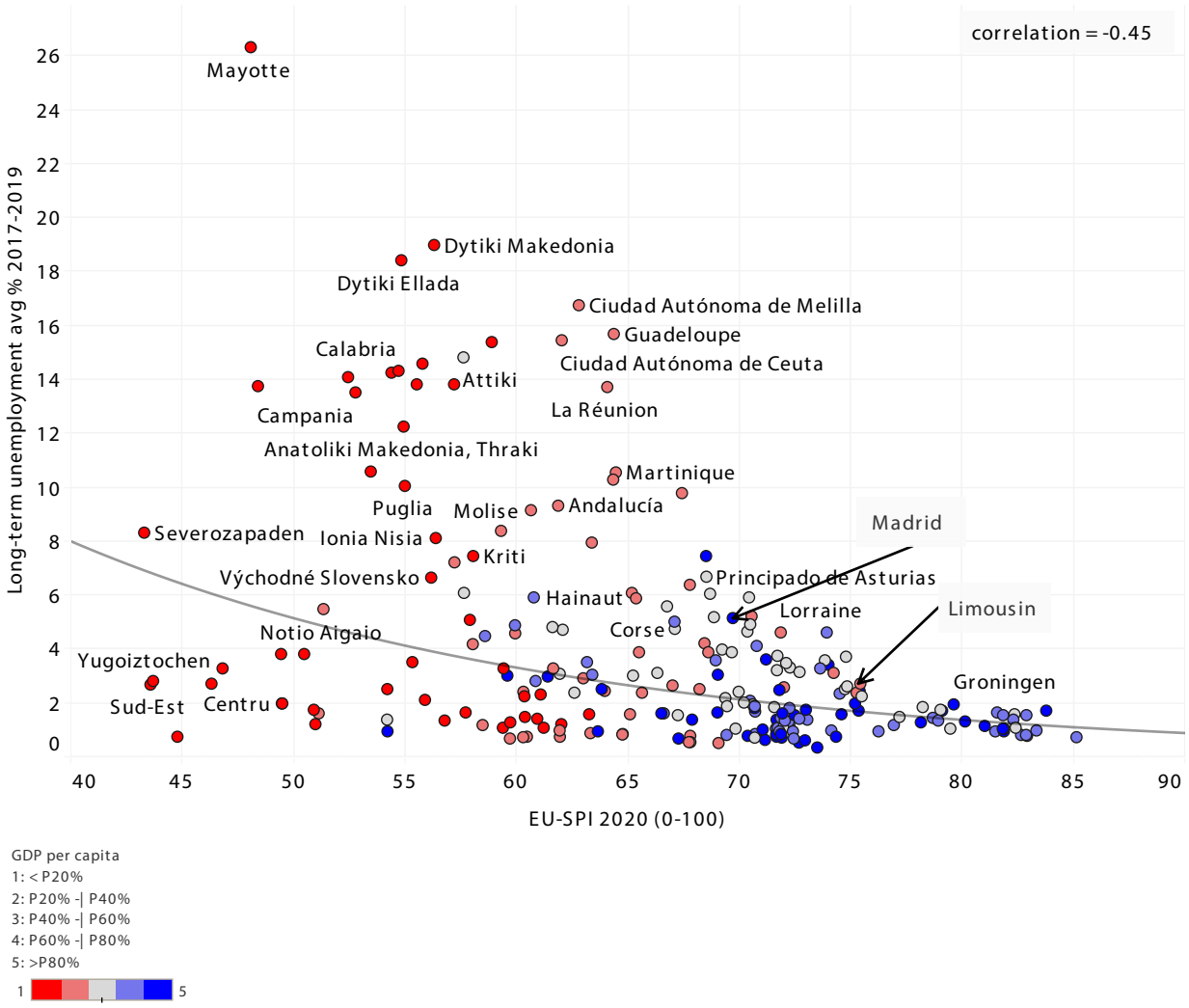
A slightly weaker, yet still statistically significant, correlation exists between social progress levels and long-term unemployment – the percentage of people unemployed for more than one year – an indicator that is not part of the indicator set used for constructing the index (Figure 10). Richer regions are generally more socially developed and have fewer people in long-term unemployment, although there are many exceptions, too (colours in Figure 10 refer to different levels of GDP per capita). As expected, the correlation is in fact negative (-0.44) but with wide variations around the trend line. The region of Limousin (France) has a GDP per capita in PPS reaching only 80% the EU average but performs quite well on social progress – 2020 EU-SPI = 75 – and has low unemployment (long-term unemployment is 2.7%). Long-term unemployment is almost double in Madrid (5.2%) which has a lower EU-SPI score of 69, but is wealthier, with a GDP per capita 25% higher than the EU average.

FIGURE 9: GDP per capita index (PPS, EU average = 100, reference year 2018) and the 2020 EU-SPI (0-100). The correlation coefficient is +0.62 and is statistically significant



Note: GDP per capita is inflated due to commuting in several capital regions, i.e. people who contribute to a region's GDP but are not included in the residential population as they live elsewhere.
Source: 2020 EU-SPI

FIGURE 10: 2020 EU-SPI and long-term unemployment (average 2017-2019).



Note: Colours refer to different levels of GDP per capita (poorest regions in red; richest in blue)
Source: 2020 EU-SPI

7. IMPROVEMENTS AND CHANGES OVER TIME COMPARED TO THE FIRST EDITION

A sub-national aggregate index of this complexity is always subject to modifications and adjustments. The reasons for such changes include revisions of NUTS classification, the availability of new and better indicators at the regional level, and the fact that indicators previously included are no longer updated or reliable (for example, if they are no longer collected or are affected by high rates of missing values).

Despite a stable methodology, this 2020 edition is the result of a careful set of refinements to the indicator set and regional reliability.

The United Kingdom is no longer included in the analysis as it withdrew from the EU on 31 January 2020. Its exclusion has not affected the index scores as the EU-SPI adopts a utopian/dystopian type of normalisation and none of these values depended on UK values. On the other hand, rankings are affected.

Time comparison with the first edition has limited validity. When developing an aggregate index of this complexity at the regional level, each edition unavoidably includes refinements and modifications. This is even more valid for the first editions of an index. Although we always tried to keep changes to a minimum and adopted the same statistical methodology as used in the first edition, the fact that a number of indicators were not available/updated at the regional level and new, better metrics were introduced in most of the components means that the 2020 EU-SPI is not fully comparable with its first edition.

A brief overview of the other changes implemented in the 2020 EU-SPI is given below.

7.1. MORE RELIABLE INDICATORS AT THE REGIONAL LEVEL

The second edition of the EU-SPI includes 55 indicators selected from an initial set of 73 candidate indicators, the majority of which are at the NUTS2 level. About 56% of the indicators (31 out of 55) are sourced from Eurostat, either from the regional database or from ad-hoc extractions from the EU Statistics on Social and Living Conditions (EU-SILC). EU-SILC data extraction at the NUTS2 level was carried out by Eurostat on the request of DG Regional and Urban Policy, following a consultation with the national statistical institutes of all 27 Member States. They all granted permission, with the exception of the Netherlands, where the NUTS1 level is used, and Belgium, where only the country level is used. EU-SILC indicators represent around 22% of the total indicators in the EU-SPI. Thanks to better estimates at the NUTS2 level, significant improvements have been made in the reliability of the index.

Other data sources are the Gallup World Poll ad-hoc survey, the European Environmental Agency (EEA), the Quality of Government Institute of the University of Gothenburg, and the European Institute for Gender Equality's Gender Statistics Database. About 25% of the EU-SPI indicators come from Gallup's ad-hoc 2020 survey, which is based on a larger regional sample size, at NUTS2 or NUTS1 levels.

Most of the indicators are averaged either over three years (2016-2018) or two years (2017-2018) in order to smooth out erratic changes and limit missing value problems. Conversely, the latest available year for ICT indicators was chosen instead because these indicators measure rapidly evolving phenomena.

The full description of all the candidate indicators can be found here.

7.2. BETTER METRICS

This edition of the index includes 14 new indicators. They are mainly aimed at refining concepts such as personal security, gender equality, fairer labour markets and more cohesive societies. Table 2 lists the new entries for the 2020 EU-SPI, with a full description of the indicators available in this table.

TABLE 2: New indicators added to the 2020 EU-SPI

Dimension/Component	Indicator name	Description
BASIC/Shelter	Housing quality - dampness	Percentage of people claiming to live in a dwelling with any of the following problems: a leaking roof, damp walls/floors/foundation, rot in window frames or floor
BASIC/Personal Security	Crime	Percentage of people who declared they had faced the problem of crime, violence or vandalism in the local area
BASIC/Personal Security	Money stolen	Share of people who claimed that, within the last 12 months, they had money or property stolen from themselves or another household member
BASIC/Personal Security	Assaulted/Mugged	Share of people who claimed that, within the last 12 months, they have been assaulted or mugged
FOUNDATION/Access to ICT	Internet access	Share of people who declared they have access to the internet in any way, whether on a mobile phone, a computer or another device
FOUNDATION/Health and Wellness	Leisure activities	Percentage of people who regularly participated in a leisure activity
FOUNDATION/ Environmental Quality	Air pollution NO_2	Population weighted average of annual average concentration of NO_2 in $\mu g/m^3$, interpolated at 1 km^2 grid cell level and combined with GEOSTAT 1 km^2 grid population data.
OPPORTUNITY/Personal rights	Active citizenship	Share of people who claimed they had participated in any of the following activities: activities in a political party or local interest group; public consultation; peaceful protest or demonstration, including signing a petition; writing a letter to a politician or to the media (voting in an election excluded)
OPPORTUNITY/Personal rights	Female participation in regional assemblies	Share of women in Member States' regional assemblies, where appropriate.
OPPORTUNITY/Personal freedom and choice	Job opportunities	Share of respondents who think it is a good time to find a job in the city or area where they live
OPPORTUNITY/Personal freedom and choice	Involuntary part-time/ temporary employment	Share of population aged 20-64 in involuntary part-time or temporary job
OPPORTUNITY/Tolerance and Inclusion	Making friends	Percentage of people who claimed to be satisfied with their opportunities to meet people and make friends
OPPORTUNITY/Tolerance and Inclusion	Volunteering	Percentage of people who claimed they participated in voluntary activities (formal or informal)
OPPORTUNITY/Access to advanced education	Lifelong learning - female	Percentage of females aged 25 to 64 who stated that they had received education or training in the four weeks preceding the survey, with respect to the total population of the same age group.

Source: 2020 EU-SPI

8. HOW THE INDEX IS CONSTRUCTED

The issue of aggregating indicators into a single, composite index is a widely debated topic in social statistics and econometrics, especially in the case of metrics for poverty or quality of life (Annoni and Weziak-Bialowolska, 2016; Decancq and Lugo, 2013; Lustig, 2011; Ravallion, 2011; Wagle, 2008). The aggregation process always implies that the choice of the aggregation function and weights plays a crucial role in determining the trade-offs between the different aspects measured. Various multi-criteria methods are available in the literature which avoid the issue by providing fully or partially non-compensatory techniques, like the counting method proposed by Alkire and Foster (2011) or purely multi-criteria approaches based on partial order (Annoni, 2007; Annoni and Bruggemann, 2009; Bruggemann and Carlsen, 2012).

In line with the approach taken for the first edition of the index, we used the unweighted arithmetic mean within each component and the generalised mean across the EU-SPI components and dimensions. The step-wise approach used for constructing the index is presented below.

8.1 STATISTICAL ASSESSMENT: INTERNAL CONSISTENCY

First, we tested candidate indicators to verify their internal consistency component by component. Internal consistency is verified by a classical multivariate method, principal component analysis (PCA), which is a dimensionality reduction technique designed to capture all relevant information in a small number of transformed dimensions (Morrison, 2005). For each component, PCA identifies the set of indicators that show an acceptable level of internal consistency. Consistency is related to the level of multivariate correlation among indicators and, if verified, mitigates the effect of different weighting schemes on the final, aggregated measure (Decancq and Lugo, 2013; Foster et al., 2013; Hagerty and Land, 2007; Michalos, 2011). High correlation levels also reduce the compensability across indicators that is the undesirable offsetting of low scores in some indicators with high scores in others. Ideally, each component will show a unique, most-relevant PCA factor accounting for most of the variability. Moreover, all the indicators will contribute roughly to the same extent and with the same orientation to the most-relevant factor that can be tested by analysing PCA loadings. Non-influencing indicators, or indicators describing something other than expected, are detected by PCA analysis.

In the 2020 EU-SPI, the statistical assessment allowed us to identify 17 indicators not consistent with the others in their respective component. All of these were discarded from the analysis apart from 'traffic deaths' this, following a series of statistical tests, was moved from the personal security component to health and wellness. Detailed information about each single misfitting indicator and the reason for its misfit is provided by this table.

With the revised set of indicators, all the components show a unique, underlying factor with the well-balanced contribution by each indicator. This guarantees that the compensability between indicators is limited and that the arithmetic mean is the proper way to aggregate the indicators in the different components.

8.2 NORMALISATION

EU-SPI scores are based on a 0-100 scale because all the indicators included are normalised by using the min-max transformation with indicator-specific boundaries. These boundaries are set based on theoretical utopian and dystopian values, where possible, or with maximum/minimum values across the indicator's time series[14]. This type of normalisation allows for tracking absolute, rather than simply relative, performance of the regions across the index components.

To maintain comparability with the 2016 index, boundaries of indicators included in both editions have remained unaltered as far as possible. It was necessary to modify the boundary with respect to the 2016 edition in just six cases. Table A 1 in Appendix A shows the boundary values for the indicators included in the 2020 EU-SPI (modified boundaries are highlighted).

All the indicators are oriented in order to be positively oriented with levels of social progress, according to the following transformation:

$$x_{\text{norm}} = \begin{cases} \dfrac{100 \cdot (x - x_{\min})}{(x_{\max} - x_{\min})} & \text{if x is positively oriented} \\ \dfrac{-100 \cdot (x - x_{\min})}{(x_{\max} - x_{\min})} + 100 & \text{if x is negatively oriented} \end{cases}$$

where x is the original indicator, $x_{\min}$ and $x_{\max}$ are its boundaries and x_{norm} is the normalised indicator.

8.3 AGGREGATION ACROSS COMPONENTS AND DIMENSIONS

The EU-SPI uses a hybrid aggregation method that includes the simple, unweighted arithmetic mean within each component and the generalised unweighted mean across components and across dimensions (Decancq and Lugo, 2013). As we have seen in Section 8.1, the selection of indicators through PCA guarantees that the arithmetic mean is the correct way to aggregate. Across the components and, even more so, across the dimensions, the possible effect of compensability is generally more accentuated. Thus, an unbalance-adverse type of aggregation function was adopted to mitigate this effect. A deficiency in one component should lead to a general failure, given that social progress levels are ensured if a region performs well enough across all the different aspects of social development. This implies that a shortage in one component cannot be fully or partially compensated for by surpluses in another (Munda, 2008). Full compensability can be avoided, or at least mitigated, by adopting a family of aggregation

14. When boundaries are selected based on a time series, a correction multiplicative factor of 0.95 or 1.05 is applied to the minimum/maximum value to allow for a margin of deterioration/improvement (*buffer*).

functions first introduced by Arrow et al. (1961) to combine different indicators (components, dimensions) into a single index.

Let x_{ji} denote the score of component (or dimension) j for region i ($i = 1, \ldots, n$). By construction, for each region i the set of scores $\{x_{1i},\ldots, x_{qi}\}$ has a positive orientation with respect to the level of social progress. In the EU-SPI, the aggregate index for region i (I_i) is computed as the unweighted generalised power mean of order β of q components (or dimension) (Annoni and Weziak-Bialowolska, 2016; Decancq and Lugo, 2013; Casadio Tarabusi and Guarini, 2013; Ruiz, 2011):

$$I_i^{(\beta)} = \begin{cases} \left(\frac{1}{q}\sum_{j=1}^{q} x_{ji}^{\beta}\right)^{1/\beta} & \beta \neq 0 \\ \left(\prod_{j=1}^{q} x_{ji}\right)^{1/q} & \text{for } \beta = 0 \quad \text{(geometric mean)} \end{cases}$$

where β is a constant that can be adjusted to manage the level of compensability between the index components (or dimensions). For $\beta = 1$, the generalised mean is the simple, arithmetic mean. For $\beta = 0$, the generalised mean is the geometric mean. As in the previous edition, the 2020 EU-SPI employs the functional form $I^{(\beta=0.5)}$ to aggregate its components and dimensions into the final index. The value of $\beta = 0.5$, standing in-between the arithmetic and geometric mean, allows the index to be partially non-compensatory.

8.4 REGIONAL SCORES ANCHORED TO NATIONAL ONES

Component scores are simultaneously computed at the regional level, from regional-level indicators, and at the national level, from national-level indicators. Then, regional component scores are anchored to purely national ones using the following formula:

$$z_{ik} = y_k + (x_{ik} - x_k)$$

where z_{ik} is the final component score for region i in country k, y_k is the component score for country k computed from national indicators, x_{ik} is the unanchored regional score and x_k is the population-weighted average of regional scores for country k. By construction, population-weighted averages of regional scores are equal to national scores for all the components.

9 A NETWORK OF REGIONS

Responding to a European Parliament initiative, immediately after publication of the first edition of the index, the Commission launched a pilot project to encourage regions to test empirically how the index can be used to improve policymaking, in particular for policies supported by Cohesion Policy. The project was carried out over 2019 and 2020 and actively involved 10 regions – *pilot regions* – identified on the basis of the following characteristics: level of economic development; level of economic growth; and them outperforming or underperforming in terms of social progress (measured by the 2016 EU-SPI) relative to the most similar regions in terms of GDP per capita. Pilot regions with a wide range of these characteristics were chosen (Table 3). The EU-SPI Pilot Project web page provides all the information on the pilot regions and related project activities.

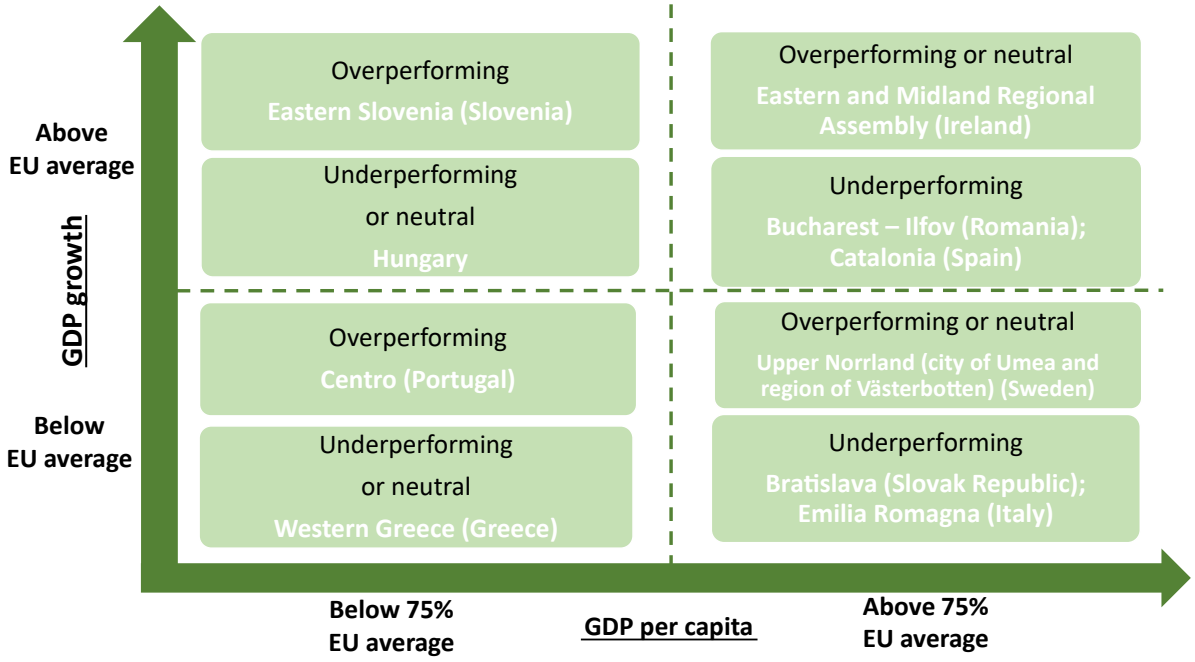
While serving as a guide to other regions on using the results of the EU-SPI, the pilot gathered recommendations on how to improve the 2020 edition. It facilitated the active participation of regional stakeholders in the exchange of knowledge as well as in the assessment of the index. In fact, regional stakeholders were consulted to identify aspects of the index to be improved. They all provided important feedback, stemming from their experience on the field, on various aspects, including:

- Whether the index results translate into the reality of a region;
- If and to what extent the index is useful for monitoring regional social policies;
- If the index can help improve to policymaking;
- What additional criteria and factors are missing in the index framework;
- If and how the index can be adapted to get closer to monitoring the framework defined for the Sustainable Development Goals.

In the new refined edition of the index, where possible, we tried to embed the recommendations provided by the project's pilot regions. For example, new indicators were included on gender equality, the quality and flexibility of the labour market, environmental quality, and people's cohesion and active participation in societal life. Moreover, regional population was added to GDP per capita as a new criterion to identify peer regions in the interactive region scorecards.

With these improvements, we aimed to strengthen the metrics included in the EU-SPI framework to ensure regional governments can adopt the index as a useful monitoring quantitative tool. A continuous exchange with the pilot regions, and all the regions willing to come on board in the near future, helped us to assess the usefulness of the index in real life and to identify the reasons driving best practices. Therefore, cooperation with the regions, as successfully initiated by the pilot project, was a key element in the overall EU-SPI project.

TABLE 3: Regions included in the EU-SPI pilot project



Source: EU-SPI pilot project

10. FINAL REMARKS

The 'Beyond GDP' discussion promotes alternative indicators to reflect better societal development. Indicators and comprehensive metrics of quality of life are key elements for setting objectives, monitoring implementation and benchmarking performances. Over the past century, progress has been largely reduced to a single figure: the growth of GDP. GDP has its advantages: it is simple since it consists of a single number and consequently is easy for the general public, the media and policymakers to understand. The trade-off is oversimplification. As admitted by its creator, it can only capture material well-being. It completely neglects social and environmental negative externalities, such as pollution or crime, and fails to measure other important aspects of quality of life, such as health and education.

As foreseen by Article 174 of the Treaty on the Functioning of the European Union, the EU sets out to promote an 'overall harmonious development' and is aiming at 'reducing disparities between the levels of development of the various regions and the backwardness of the least-favoured regions'. The Treaty therefore advocates a comprehensive approach to economic, social and territorial development, which does not rest solely on monetary and economic achievements.

The EU-SPI was developed as a measure to contribute to the 'Beyond GDP' agenda in the European regional context. It was also designed as a tool to facilitate benchmarking across EU regions on a wide range of criteria to help policymakers and stakeholders assess a region's strong and weak points on purely social and environmental aspects. Many of these aspects are at the heart of the investment supported by EU Cohesion Policy, whether in the area of basic services (health, education, water and waste), access to information and communication technologies, energy efficiency, education and skills, or pollution. Cohesion Policy has set different specific objectives supporting growth for the funding programming period 2021-2027. Table 4 lists all these specific objectives, as they were defined at the time this document was published and associates them to the different EU-SPI components. As can be seen, most of the index components are linked to one or more specific objectives.

The EU-SPI can help policymakers and stakeholders to identify the best policy mix, target resources on the most problematic areas, and fix clear and measurable objectives. Regions can use its region scorecards and peer regions analysis to compare themselves to others, to find regions achieving a similar level of social progress, and to learn from best practices focusing on each aspect included in the index. All of this will help policymakers to fine-tune interventions in regional development programmes.

The 2020 EU-SPI is an improved version of the first edition and includes 55 indicators grouped initially into 12 components and then into 3 broad dimensions: basic, foundation of well-being, and opportunity. More than 25 % of the indicators are new to this edition. Similarly to the Global Progress Index, the methodological concept supporting the index framework is based on the assumption that three nested dimensions are necessary to describe social progress. Basic components are necessary but not sufficient to achieve good levels of social development. The components forming the foundation dimension go a step further and measure more sophisticated factors of social and environmental progress. The opportunity dimension includes the most sophisticated aspects of social progress, describing levels of cohesiveness and tolerance within society. From a policy point of view, these three dimensions feature different levels of difficulty: generally speaking, it is easier to achieve good results on the basic aspects of the EU-SPI than to improve societal attitudes and people's trust.

The results show high levels of variation, especially for aspects related to trust, tolerance and people's cohesion, which are described under the opportunity dimension. On average, countries achieve a good level of social progress in basic aspects while the variability increases across and within each country when moving from the basic to the opportunity dimension. This poses quite a challenge for policymakers throughout the EU as changing people's attitudes and perceptions can prove rather complex. It certainly involves long-term policies acting simultaneously on a plurality of aspects.

In general, sufficient and sometimes satisfactory levels of basic social progress have already been achieved consistently across the EU, whilst poorer and more variable levels of the more advanced aspects of social progress have also been observed.

Capitals regions generally perform worse than the rest of the country in the basic dimension of the EU-SPI. They start to play a role, even if somewhat marginal, in the foundation dimension – where eight capital regions, in particular in the eastern countries, score highly within their countries. In the opportunity dimension only, most of the capital regions (15) are the best performers within their country. This indicates that people living in metropolitan areas tend to have more opportunities, and to be more socially inclusive and tolerant, although the divide is not so well defined.

Given the complexity of the index, reading the EU-SPI results is not always straightforward. Consequently, we have provided a series of web tools that enable, in an interactive way, countries and regions to be compared via maps and charts as well as one region's performance to be compared to its most similar regions in terms of wealth (GDP per capita) and population.

We hope this will facilitate digging into the results both at the macro-level – index and dimensions – as well as the micro-level of each single component of social progress, as captured by this index. The final aim is to provide a tool that will help in the preparations of the new EU cohesion programmes.

TABLE 4: Specific objectives of Cohesion Policy for the 2021-2027 period and links with the EU-SPI components (strength of the link in the last column).

Specific Objective (SO) short title	EU-SPI component
DG REGIO SO 1.1 Research and innovation	
DG REGIO SO 1.2 Digitisation of society	Access to information and communication
DG REGIO SO 1.3 SME competitiveness	
DG REGIO SO 1.4 Skills for smart specialisation	Access to advanced education and lifelong learning (LLL)
DG REGIO SO 2.1 Energy efficiency	
DG REGIO SO 2.2 Renewable energy	
DG REGIO SO 2.3 Smart energy systems	
DG REGIO SO 2.4 Climate change adaptation	
DG REGIO SO 2.5 Sustainable water	Water and sanitation
DG REGIO SO 2.6 Circular economy	
DG REGIO SO 2.7 Nature protection and biodiversity	
DG REGIO SO 3.4 Sustainable urban mobility	
DG REGIO SO 3.1 Digital connectivity	Access to information and communication
DG REGIO SO 3.2 Sustainable TEN-T	
DG REGIO SO 3.3 Sustainable transport	
DG EMPL SO 4.1 Access to employment and activation measures for all	Personal freedom and choice
DG EMPL SO 4.10 Integration of marginalised communities such as Roma	Tolerance and inclusion
DG EMPL SO 4.11 Equal access to quality social and healthcare services	Nutrition and basic medical care + Health and wellness
DG EMPL SO 4.12 Social integration of people at risk	Personal right + Tolerance and inclusion
DG EMPL SO 4.13 Addressing material deprivation	Nutrition and basic medical care
DG EMPL SO 4.2 Modernising labour market institutions	
DG EMPL SO 4.3 Gender balanced labour market participation	Tolerance and inclusion
DG EMPL SO 4.4 Adaptation of workers and enterprises to change	Access to advanced education and lifelong learning (LLL)
DG EMPL SO 4.5 Improving education and training systems	Access to basic knowledge + Access to advanced education and LLL
DG EMPL SO 4.6 Quality and inclusive education and training systems	
DG EMPL SO 4.7 Lifelong learning and career transitions	Access to basic knowledge + Access to advanced education and LLL
DG EMPL SO 4.8 Active inclusion and employability	Personal freedom and choice
DG EMPL SO 4.9 Integration of third country nationals	Tolerance and inclusion
DG REGIO SO 4.1 Labour market infrastructure	
DG REGIO SO 4.2 Education and training infrastructure	Access to basic knowledge + Access to advanced education and LLL
DG REGIO SO 4.3 Integration of marginalised communities	Tolerance and inclusion
DG REGIO SO 4.4 Access to health care	Nutrition and basic medical care + Health and wellness
DG REGIO SO 4.5 Culture and tourism	
DG REGIO SO 5.1 Integrated development in urban areas	
DG REGIO SO 5.2 Integrated development in rural and coastal areas	

Note: DG REGIO = DG for Regional and Urban Policy; DG EMPL = DG for Employment, Social Affairs and Inclusion
Source: 2020 EU-SPI

APPENDIX A: ADDITIONAL MATERIAL

TABLE A 1: Boundaries for normalisation of the 2020 EU-SPI indicators

Component	Indicator name	Inverted?	Utopian value	Dystopian value	Utopian type	Dystopian type	Notes
Nutrition and Basic Medical Care	Premature mortality (<65)	Yes	0.07	0.54	best - buffer	worst since 2008 + buffer	dystopia modified
Nutrition and Basic Medical Care	Infant mortality	Yes	0.00	15.80	best possible	worst since 2008	
Nutrition and Basic Medical Care	Unmet medical needs	Yes	0.00	21.62	best possible	worst since 2008	
Nutrition and Basic Medical Care	Insufficient food	Yes	0.00	68.00	best possible	worst since 2008 + buffer	
Water and Sanitation	Satisfaction with water quality	No	1.00	0.00	best possible	worst possible	
Water and Sanitation	Lack of toilet in dwelling	Yes	0.00	62.00	best possible	worst since 2008 + buffer	
Water and Sanitation	Uncollected sewage	Yes	0.00	69.00	best possible	worst since 2008 + buffer	
Water and Sanitation	Sewage treatment	No	100.00	0.00	best possible	worst possible	
Shelter	Burdensome cost of housing	Yes	0.00	100.00	best possible	worst possible	
Shelter	Housing quality – dampness	Yes	0.00	100.00	best possible	worst possible	new
Shelter	Overcrowding	Yes	0.00	67.00	best possible	worst since 2008 + buffer	
Shelter	Lack of adequate heating	Yes	0.00	100.00	best possible	worst possible	
Personal Security	Crime	Yes	0.00	43.93	best possible	worst since 2017 + buffer	new
Personal Security	Safety at night	No	1.00	0.00	best possible	worst possible	
Personal Security	Money stolen	Yes	0.00	0.20	best possible	worst + buffer	new
Personal Security	Assaulted/ Mugged	Yes	0.00	0.20	best possible	worst + buffer	new (boundaries set equal to money stolen)
Access to Basic Knowledge	Secondary enrolment (%)	No	100.00	72.90	best possible	worst since 2008	dystopia modified
Access to Basic Knowledge	Lower-secondary completion only	Yes	0.00	82.00	best possible	worst since 2008	
Access to Basic Knowledge	Early school leavers	Yes	0.00	45.80	best possible	worst since 2008	

Component	Indicator name	Inverted?	Utopian value	Dystopian value	Utopian type	Dystopian type	Notes
Access to ICT	Internet at home	No	100.00	0.00	best possible	worst possible	
Access to ICT	Broadband at home	No	100.00	0.00	best possible	worst possible	
Access to ICT	Online interaction with public authorities	No	100.00	0.00	best possible	worst possible	
Access to ICT	Internet access	No	1.00	0.54	best possible	worst - buffer	new
Health and Wellness	Life expectancy	No	86.02	71.70	same as SPI 2016	worst since 2008	
Health and Wellness	Subjective health status	No	100.00	0.00	best possible	worst possible	
Health and Wellness	Premature deaths from cancer	Yes	0.00	169.10	best possible	worst since 2008	
Health and Wellness	Premature deaths from heart disease	Yes	0.00	217.40	best possible	worst since 2008	
Health and Wellness	Leisure activities	No	100.00	0.00	best possible	worst possible	
Health and Wellness	Traffic deaths	Yes	0.00	258.48	best possible	worst since 2008	new in this component, moved from personal security
Environmental Quality	Air pollution - NO_2	Yes	0.00	40.00	best possible	EU guidelines	new
Environmental Quality	Air pollution - ozone	Yes	70.00	120.00	best - buffer	EU guidelines	
Environmental Quality	Air pollution - $PM_{2.5}$	Yes	0.00	25.00	best possible	EU guidelines	
Environmental Quality	Air pollution - PM_{10}	Yes	0.00	40.00	best possible	EU guidelines	
Personal Rights	Trust in national government	No	1.00	0.00	best possible	worst possible	
Personal Rights	Trust in the legal system	No	1.00	0.00	best possible	worst possible	
Personal Rights	Trust in the police	No	1.00	0.00	best possible	worst possible	
Personal Rights	Active citizenship	No	100.00	0.00	best possible	worst possible	new
Personal Rights	Female participation in regional assemblies (share)	No	0.50	0.00	best possible (gender parity)	worst possible	new
Personal Rights	Quality and accountability of government services	No	3.00	-3.00	best possible (in z-scores)	worst possible (in z-scores)	

Component	Indicator name	Inverted?	Utopian value	Dystopian value	Utopian type	Dystopian type	Notes
Personal Freedom and Choice	Freedom over life choices	No	1.00	0.00	best possible	worst possible	
Personal Freedom and Choice	Job opportunities	No	1.00	0.00	best possible	worst possible	new
Personal Freedom and Choice	Involuntary part-time/ temporary work	Yes	0.00	42.70	best possible	worst since 2016 + buffer	new
Personal Freedom and Choice	Young people not in education, employment or training (NEET)	Yes	0.00	35.90	best possible	worst since 2008	
Personal Freedom and Choice	Corruption index	No	3.00	-3.00	best possible (in z-scores)	worst possible (in z-scores)	
Tolerance and Inclusion	Impartiality of government services	No	3.00	-3.00	best possible (in z-scores)	worst possible (in z-scores)	dystopia modified
Tolerance and Inclusion	Tolerance towards immigrants	No	1.00	0.00	best possible	worst possible	
Tolerance and Inclusion	Tolerance towards minorities	No	1.00	0.00	best possible	worst possible	
Tolerance and Inclusion	Tolerance towards homosexuals	No	1.00	0.00	best possible	worst possible	
Tolerance and Inclusion	Making friends	No	1.00	0.00	best possible	worst possible	new
Tolerance and Inclusion	Volunteering	No	100.00	0.00	best possible	worst possible	new
Tolerance and Inclusion	Gender employment gap	Yes	0.00	33.00	best possible	worst since 2008	dystopia reversed but absolute value is the same (male - female difference)
Access to Advanced Education	Tertiary education attainment	No	40.00	0.00	EU2020 target for tertiary ed. attainment	worst possible	
Access to Advanced Education	Tertiary enrolment (as %)	No	6.20	0.00	P90% across 2014-2017 + buffer	worst possible	utopia modifed
Access to Advanced Education	Lifelong learning	No	21.70	0.00	P90% across 2016-2018 + buffer	worst possible	utopia modifed
Access to Advanced Education	Lifelong learning - female	No	24.60	0.00	P90% across 2016-2018 + buffer	worst possible	new

NOTE: modified values with respect to SPI 2016 are highlighted in grey

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