

# Overview

# A new EU Regional Index initiated by the EU Commission

As the world faces increasingly complex economic and social challenges a new type of leadership is required; one that looks beyond the bottom line, restores public trust in business and contributes to the betterment of society.



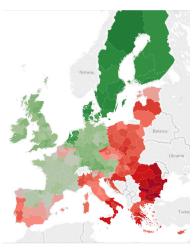
Deloitte has long had an active voice on the role of business in society. In 2013 it seized the opportunity to take action, entering into a three year sponsorship with the Social Progress Imperative (SPI).

SPI is changing the way we solve the world's most pressing challenges by redefining how the world measures success and putting the things that matter to people's lives at the top of the agenda.

Developed as a counter-weight to GDP, their Social Progress Index measures social progress across three dimensions: Basic Human Needs, Foundations of Wellbeing, and Opportunity. SPI's data and framework revolutionise social problem solving by enabling leaders to systematically identify and prioritise societal issues



### **EU Regional Social Progress Index:**



- The EU Regional Social Progress Index is a three-year collaborative project carried out by the Directorate-General for Regional and Urban Policy of the European Commission (DG Regio), SPI and Orkestra (a Basque competitiveness institute).
- The Index builds on the Social Progress Index framework and will provide comparable and actionable measures of social and environmental issues for the 272 regions in the 28 EU member states.
- The beta version of the Index was released 15 February 2016 and the formal launch of the alpha version of the index is expected to happen at the EU Open Days in October 2016.
- Deloitte is supporting the Index. The Deloitte EU Policy Centre has worked with SPI to convene 40+ MEPs and other influencers to create a network of supporters.

# Framework

# Adapted from SPI's global framework

### **European Union Regional Social Progress Index**

### **Basic Human Needs**

#### **Nutrition and Basic Medical Care**

- Mortality rate before age 65
- Infant mortality
- Unmet medical needs
- Insufficient food

#### **Water and Sanitation**

- Satisfaction with water quality
- Lack of toilet in dwelling
- Uncollected sewage
- Sewage treatment

### **Shelter**

- Burdensome cost of housing
- Satisfaction with housing
- Overcrowding
- Lack of adequate heating

### **Personal Safety**

- Homicide rate
- Safety at night
- Traffic deaths

### **Foundations of Wellbeing**

### Access to Basic Knowledge

- Secondary enrolment rate
- Lower secondary completion only
- Early school leaving

# Access to Information and Communications

- Internet at home
- Broadband at home
- Online interaction with public authorities

### **Health and Wellness**

- Life expectancy
- General health status
- Premature deaths from cancer
- Premature deaths from heart disease
- Unmet dental needs
- Satisfaction with air quality

### **Ecosystem Sustainability**

- Air pollution-pm10
- Air pollution-pm2.5
- Air pollution-ozone
- Pollution, grime or other environmental problems
- Protected land

### **Opportunity**

### **Personal Rights**

- Trust in the political system
- Trust in the legal system
- Trust in the police
- Quality and accountability of government services

#### **Personal Freedom and Choice**

- Freedom over life choices
- Teenage pregnancy
- Young people not in education, employment or training
- Corruption

### **Tolerance and Inclusion**

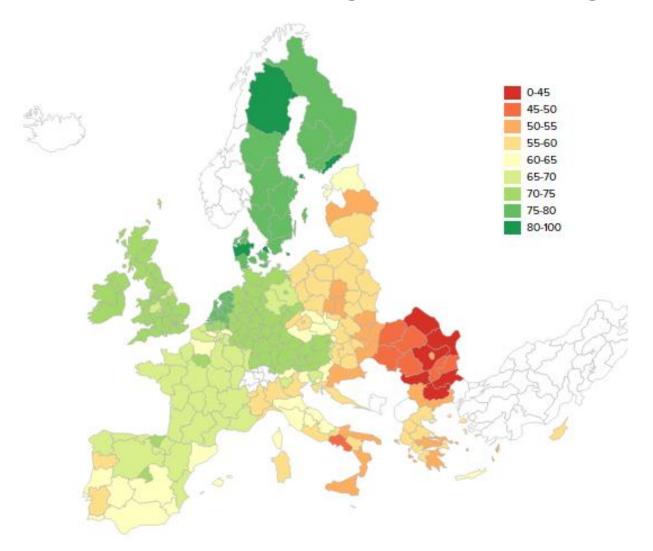
- Impartiality of government services
- Tolerance for immigrants
- Tolerance for minorities
- Attitudes toward people with disabilities
- Tolerance for homosexuals
- Gender gap
- Community safety net

### **Access to Advanced Education**

- Tertiary education attainment
- Tertiary enrolment
- Lifelong learning

# Results

# Mapped Results of EU Regional Social Progress Index



# EU Regional Social Progress Index

- Ranks 272 regions of the EU, across 28 countries
- Initiative is led by the EU Commission's Directorate-General for Regional and Urban Policy (DG REGIO)

# Results

# Top 10 ranking

	EU REGIONAL SPI	
	Country: Region	Score
	Sweden: Östra Mellansverige	81.33
	Denmark: Hovedstaden	80.89
	Finland: HelsinkiUusimaa	80.37
	Denmark: Midtjylland	80.27
TOP 10	Finland: Åland	80.26
(Ranked 1-10)	Denmark: Nordjylland	79.77
	Netherlands: Utrecht	79.48
	Netherlands: Gelderland	78.99
	Netherlands: Groningen	78.96
	Finland: LänsiSuomi	78.87
	Romania: NordVest	47.54
	Romania: SudVest Oltenia	45.30
	Bulgaria: Severen tsentralen	44.99
	Bulgaria: Severoiztochen	44.40
BOTTOM 10	Bulgaria: Yuzhen tsentralen	43.08
(Ranked 263-272)	Romania: NordEst	42.29
	Romania: SudEst	41.93
	Romania: Sud Muntenia	40.92
	Bulgaria: Severozapaden	39.39
	Bulgaria: Yugoiztochen	38.66

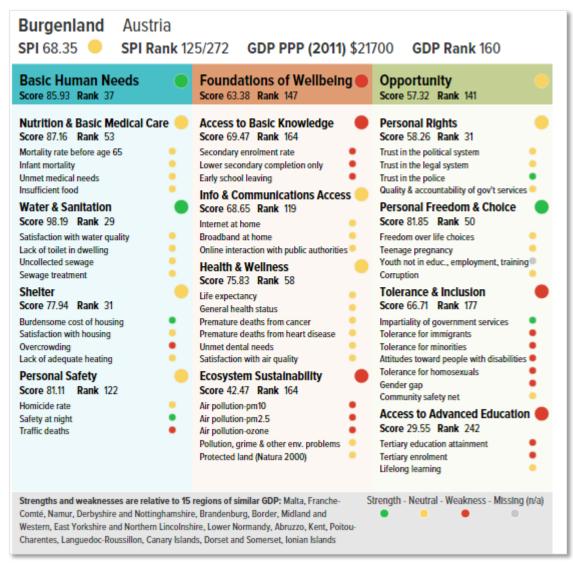
# Results

# Top 10 ranking by dimension

	Basic Human Needs		Foundations of Wellbei	ng	Opportunity	
	Country: Region	Score	Country: Region	Score	Country: Region	Score
	Netherlands: Drenthe	90.34	France: Guadeloupe	76.07	Denmark: Hovedstaden	84.61
	Netherlands: Zeeland	89.93	Finland: Pohjois ja ItäSuomi	75.95	Finland: HelsinkiUusimaa	82.64
	Netherlands: Friesland	89.93	France: Martinique	75.05	Sweden: Övre Norrland	81.01
	Netherlands: Overijssel	89.89	Denmark: Nordjylland	74.27	Denmark: Midtjylland	80.32
TOP 10	Netherlands: Utrecht	89.88	Finland: HelsinkiUusimaa	74.03	Sweden: Stockholm	80.04
(Ranked 1-10)	Netherlands: Gelderland	89.81	Sweden: Övre Norrland	73.92	Finland: LänsiSuomi	79.90
	Netherlands: NoordBrabant	89.81	Netherlands: Gelderland	73.66	Finland: Åland	79.75
	Netherlands: ZuidHolland	89.65	Finland: LänsiSuomi	73.32	Finland: EteläSuomi	79.36
	Sweden: Norra Mellansverige	89.62	Denmark: Midtjylland	73.23	Netherlands: Utrecht	78.91
	Netherlands: NoordHolland	89.50	Finland: Åland	72.78	Sweden: Östra Mellansverige	78.16
	Romania: NordVest	49.12	Italy: Campania	48.13	Italy: Campania	37.31
	Romania: SudVest Oltenia	47.88	Malta: Malta	47.99	Romania: SudEst	37.17
	Bulgaria: Yuzhen tsentralen	47.86	Romania: SudVest Oltenia	47.88	Italy: Sicilia	37.14
BOTTOM 10	Bulgaria: Severen tsentralen	47.33	Portugal: Região Autónoma dos Açores	47.03	Croatia: Kontinentalna Hrvatska	36.11
(Ranked 263-	Bulgaria: Severoiztochen	46.28	Bulgaria: Severozapaden	46.97	Romania: Sud Muntenia	35.81
272)	Bulgaria: Severozapaden	44.71	Romania: Severoiztochen	46.67	Greece: Peloponnisos	35.25
	Romania: Sud Muntenia	43.91	Bulgaria: Yugoiztochen	45.80	France: Guyane	34.24
	Romania: NordEst	43.35	Romania: Sud Muntenia	43.91	Bulgaria: Yuzhen tsentralen	32.71
	Romania: SudEst	43.34	Romania: NordEst	43.35	Bulgaria: Yugoiztochen	28.83
	Bulgaria: Yugoiztochen	42.46	Romania: SudEst	43.35	Bulgaria: Severozapaden	27.97

# EU Regional Social Progress Index

### Scorecards



Scorecards highlight regions' social progress strengths and weaknesses by comparing their performance against 15 other regions with a similar GDP per capita.

- Strength
- Average Performance
- Weakness

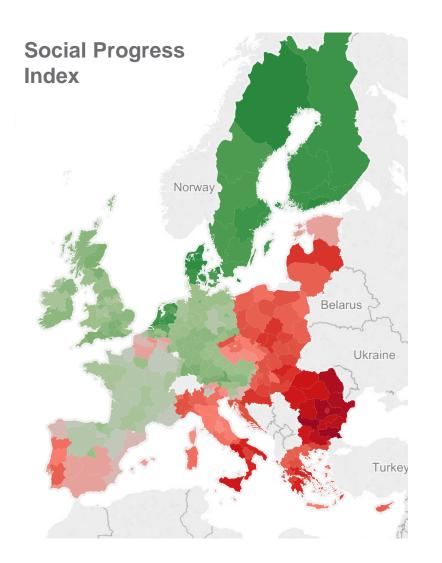
By comparing performance on a relative rather than absolute basis, SPI's scorecards give a more indepth view of regional performance.

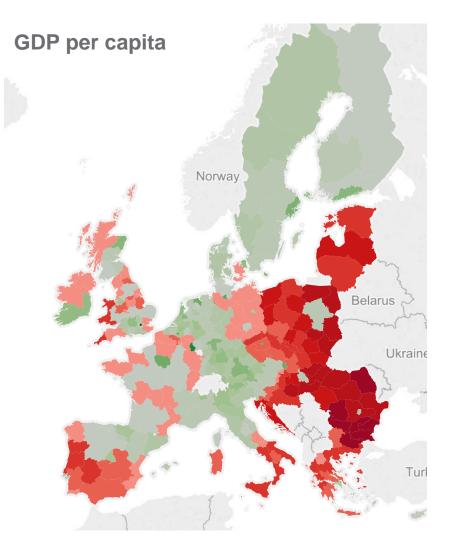
See the full set of scorecards here.

(http://ec.europa.eu/regional\_policy/en/information/maps/social\_progress)

# **Findings**

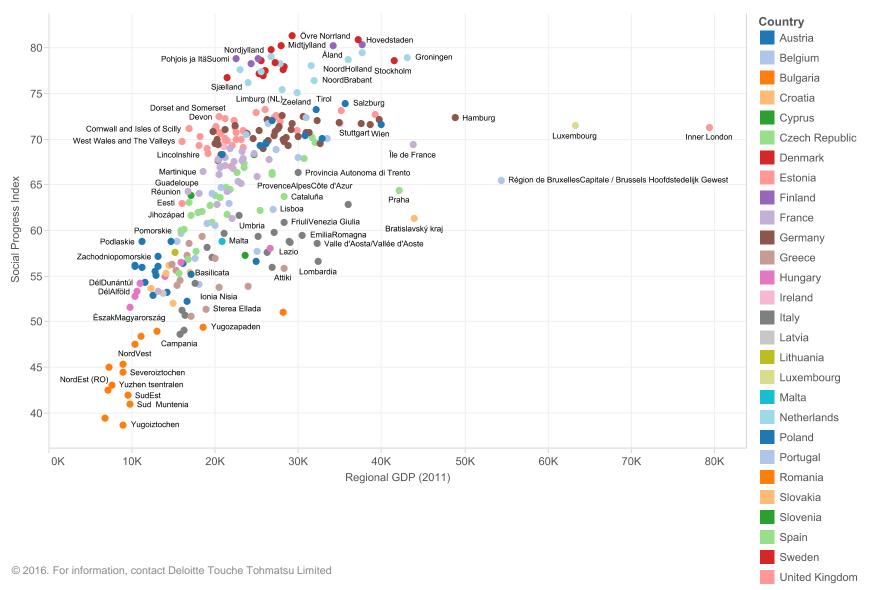
# Social Progress and GDP per capita diverge substantially





# **Findings**

# Social Progress and GDP per capita diverge substantially



# Full ranking 2016 beta results

# EU Regional Social Progress Index – 2016 beta results Overall ranking (1/6)

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
1	81.33	Sweden	Övre Norrland	18	78.10	Netherlands	ZuidHolland	35	72.89	United Kingdom	Eastern Scotland
2	80.89	Denmark	Hovedstaden	19	77.96	Sweden	Västsverige	36	72.70	United Kingdom	North Eastern Scotland
3	80.37	Finland	HelsinkiUusimaa	20	77.63	Sweden	Mellersta Norrland	37	72.62	Germany	Freiburg
4	80.27	Denmark	Midtjylland	21	77.58	Netherlands	Flevoland	38	72.55	United Kingdom	Bedfordshire and Hertfordshire
5	80.26	Finland	Åland	22	77.49	Sweden	Småland med öarna	39	72.49	Germany	Tübingen
6	79.77	Denmark	Nordjylland	23	77.42	Netherlands	Friesland (NL)	40	72.45	United Kingdom	Devon
7	79.48	Netherlands	Utrecht	24	77.19	Sweden	Norra Mellansverige	41	72.40	United Kingdom	Surrey, East and West Sussex
8	78.99	Netherlands	Gelderland	25	76.92	Sweden	Sydsverige	42	72.36	Belgium	Prov. VlaamsBrabant
9	78.96	Netherlands	Groningen	26	76.77	Denmark	Sjælland	43	72.34	Germany	Hamburg
10	78.85	Finland	LänsiSuomi	27	76.41	Netherlands	NoordBrabant	44	72.26	United Kingdom	Dorset and Somerset
11	78.80	Finland	Pohjois ja ItäSuomi	28	76.21	Netherlands	Drenthe	45	72.15	Germany	Oberbayern
12	78.76	Netherlands	NoordHolland	29	75.46	Netherlands	Limburg (NL)	46	72.14	Germany	Gießen
13	78.65	Sweden	Östra Mellansverige	30	75.13	Netherlands	Zeeland	47	72.01	Germany	Karlsruhe
14	78.57	Sweden	Stockholm	31	73.92	Austria	Salzburg	48	71.98	Austria	Steiermark
15	78.38	Denmark	Syddanmark	32	73.24	United Kingdom	Hampshire and Isle of Wight	49	71.98	United Kingdom	North Yorkshire
16	78.25	Finland	EteläSuomi	33	73.24	Austria	Tirol	50	71.88	United Kingdom	Gloucestershire, Wiltshire and Bristol/Bath area
17	78.24	Netherlands	Overijssel	34	73.13	United Kingdom	Berkshire, Buckinghamshire and Oxfordshire	51	71.81	Germany	Stuttgart

Overall	ranking	(2/6)
---------	---------	-------

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
52	71.75	Germany	Unterfranken	69	70.99	United Kingdom	Leicestershire, Rutland and Northamptonshire	86	70.26	United Kingdom	Tees Valley and Durham
53	71.75	Ireland	Southern and Eastern	70	70.94	Germany	Koblenz	87	70.17	Germany	Detmold
54	71.72	Belgium	Prov. OostVlaanderen	71	70.92	United Kingdom	Cheshire	88	70.17	Spain	Comunidad de Madrid
55	71.66	Germany	Bremen	72	70.88	Germany	Berlin	89	70.09	United Kingdom	Cumbria
56	71.65	Austria	Wien	73	70.87	United Kingdom	Lancashire	90	70.08	Germany	SchleswigHolstein
57	71.62	Germany	Darmstadt	74	70.86	United Kingdom	East Anglia	91	70.07	Belgium	Prov. Antwerpen
58	71.48	Germany	Leipzig	75	70.85	Germany	Thüringen	92	70.04	Austria	Vorarlberg
59	71.45	Luxembourg	Luxembourg	76	70.74	United Kingdom	Northumberland and Tyne and Wear	93	69.97	Germany	Chemnitz
60	71.43	Germany	Kassel	77	70.70	Germany	Mittelfranken	94	69.96	Germany	Braunschweig
61	71.41	United Kingdom	Highlands and Islands	78	70.69	United Kingdom	South Western Scotland	95	69.95	United Kingdom	East Wales
62	71.32	United Kingdom	Outer London	79	70.67	Germany	Köln	96	69.90	United Kingdom	Greater Manchester
63	71.28	United Kingdom	Inner London	80	70.65	Germany	Trier	97	69.84	United Kingdom	Kent
64	71.18	Germany	RheinhessenPfalz	81	70.59	United Kingdom	Derbyshire and Nottinghamshire	98	69.84	Germany	Arnsberg
65	71.14	United Kingdom	Northern Ireland	82	70.55	Belgium	Prov. Limburg (BE)	99	69.81	United Kingdom	Essex
66	71.11	United Kingdom	Cornwall and Isles of Scilly	83	70.40	Austria	Oberösterreich	100	69.74	United Kingdom	West Wales and The Valleys
67	71.10	Germany	Schwaben	84	70.37	Germany	Oberfranken	101	69.72	Germany	Hannover
68	71.07	Germany	Dresden	85	70.32	Germany	Oberpfalz	102	69.65	Spain	País Vasco

# EU Regional Social Progress Index – 2016 beta results Overall ranking (3/6)

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
103	69.64	Germany	Münster	120	68.84	Belgium	Prov. WestVlaanderen	137	67.52	France	Centre
104	69.54	Austria	Kärnten	121	68.59	France	MidiPyrénées	138	67.34	Spain	Cantabria
105	69.54	United Kingdom	Merseyside	122	68.47	France	Alsace	139	67.11	France	PoitouCharentes
106	69.50	Germany	Düsseldorf	123	68.47	United Kingdom	Shropshire and Staffordshire	140	66.99	France	BasseNormandie
107	69.48	Germany	MecklenburgVorpommer n	124	68.36	Germany	Brandenburg	141	66.99	United Kingdom	West Midlands
108	69.36	France	Île de France	125	68.35	Austria	Burgenland (AT)	142	66.92	Spain	Castilla y León
109	69.36	Germany	Lüneburg	126	68.30	France	FrancheComté	143	66.87	France	LanguedocRoussillon
110	69.35	United Kingdom	Herefordshire, Worcestershire and Warwickshire	127	68.29	Slovenia	Zahodna Slovenija	144	66.83	France	Bourgogne
111	69.34	Austria	Niederösterreich	128	68.03	France	Auvergne	145	66.41	France	Martinique
112	69.34	United Kingdom	Lincolnshire	129	68.01	United Kingdom	East Yorkshire and Northern Lincolnshire	146	66.35	Spain	Principado de Asturias
113	69.32	Germany	Niederbayern	130	67.98	Belgium	Prov. Brabant Wallon	147	66.31	Italy	Provincia Autonoma di Trento
114	69.21	Ireland	Border, Midland and Western	131	67.91	Spain	Comunidad Foral de Navarra	148	66.29	Spain	Aragón
115	69.12	United Kingdom	West Yorkshire	132	67.91	France	Pays de la Loire	149	66.15	Spain	La Rioja
116	69.09	Germany	Saarland	133	67.82	France	Limousin	150	66.13	France	Lorraine
117	69.01	Germany	WeserEms	134	67.74	France	RhôneAlpes	151	65.95	France	ProvenceAlpesCôte d'Azur
118	68.96	United Kingdom	South Yorkshire	135	67.65	France	Aquitaine	152	65.49	Belgium	Région de BruxellesCapitale / Brussels Hoofdstedelijk Gewest
119	68.95	France	Bretagne	136	67.62	Germany	SachsenAnhalt	153	65.34	France	ChampagneArdenne

# Overall ranking (4/6)

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
154	65.14	France	HauteNormandie	171	62.85	France	Picardie	188	59.79	Italy	Toscana
155	64.74	Spain	Comunidad Valenciana	172	62.68	Spain	CastillaLa Mancha	189	59.69	Portugal	Centro (PT)
156	64.66	Belgium	Prov. Namur	173	62.32	Portugal	Lisboa	190	59.66	Italy	Abruzzo
157	64.44	Spain	Galicia	174	62.20	Spain	Illes Balears	191	59.46	Italy	EmiliaRomagna
158	64.39	Czech Republic	Praha	175	62.10	Spain	Andalucía	192	59.36	Greece	Kriti
159	64.26	France	Nord PasdeCalais	176	61.95	Czech Republic	Jihovýchod	193	59.36	Italy	Marche
160	64.24	France	Réunion	177	61.73	Spain	Ciudad Autónoma de Ceuta	194	58.84	Portugal	Norte
161	64.08	France	Guadeloupe	178	61.67	Czech Republic	Jihozápad	195	58.81	Poland	Pomorskie
162	64.02	Belgium	Prov. Luxembourg (BE)	179	61.60	Italy	Umbria	196	58.80	Malta	Malta
163	63.86	Slovenia	Vzhodna Slovenija	180	61.30	France	Corse	197	58.78	Poland	Podlaskie
164	63.78	Spain	Región de Murcia	181	61.28	Slovakia	Bratislavský kraj	198	58.77	Italy	Veneto
165	63.67	Spain	Cataluña	182	60.92	Spain	Ciudad Autónoma de Melilla	199	58.70	Italy	Lazio
166	63.61	Spain	Canarias	183	60.88	Italy	FriuliVenezia Giulia	200	58.62	Greece	Voreio Aigaio
167	63.11	Spain	Extremadura	184	60.77	Belgium	Prov. Hainaut	201	58.54	Italy	Valle d'Aosta/Vallée d'Aoste
168	62.98	Estonia	Eesti	185	60.54	Portugal	Algarve	202	58.16	Italy	Sardegna
169	62.94	Belgium	Prov. Liège	186	60.06	Czech Republic	Severovýchod	203	58.02	Hungary	KözépMagyarország
170	62.89	Italy	Provincia Autonoma di Bolzano/Bozen	187	59.97	Czech Republic	Strední Morava	204	57.75	Portugal	Região Autónoma da Madeira

# Overall ranking (5/6)

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
205	57.67	Czech Republic	Strední Cechy	222	56.04	Poland	Malopolskie	239	54.08	Portugal	Região Autónoma dos Açores
206	57.59	Italy	Liguria	223	56.01	Poland	Podkarpackie	240	53.94	Greece	Anatoliki Makedonia, Thraki
207	57.57	Lithuania	Lietuva	224	55.99	Poland	WarminskoMazurskie	241	53.83	Greece	Notio Aigaio
208	57.27	Cyprus	Kýpros	225	55.91	Italy	Piemonte	242	53.80	Greece	Ionia Nisia
209	57.25	Greece	Kentriki Makedonia	226	55.86	Greece	Attiki	243	53.69	Slovakia	Východné Slovensko
210	57.12	Poland	Zachodniopomorskie	227	55.57	Greece	Thessalia	244	53.37	France	Guyane
211	57.01	Italy	Molise	228	55.50	Poland	KujawskoPomorskie	245	53.28	Hungary	DélAlföld
212	56.97	Portugal	Alentejo	229	55.38	Slovakia	Západné Slovensko	246	53.17	Poland	Lódzkie
213	56.90	Greece	Dytiki Makedonia	230	55.30	Croatia	Jadranska Hrvatska	247	53.10	Latvia	Latvija
214	56.85	Czech Republic	Moravskoslezsko	231	55.27	Czech Republic	Severozápad	248	52.92	Poland	Opolskie
215	56.60	Poland	Mazowieckie	232	55.19	Poland	Dolnoslaskie	249	52.72	Hungary	ÉszakAlföld
216	56.57	Italy	Lombardia	233	55.09	Poland	Lubuskie	250	52.26	Poland	Slaskie
217	56.53	Hungary	NyugatDunántúl	234	54.95	Hungary	KözépDunántúl	251	52.00	Croatia	Kontinentalna Hrvatska
218	56.33	Poland	Wielkopolskie	235	54.50	Greece	Dytiki Ellada	252	51.53	Hungary	ÉszakMagyarország
219	56.27	Greece	Ipeiros	236	54.34	Poland	Swietokrzyskie	253	51.35	Greece	Sterea Ellada
220	56.21	Poland	Lubelskie	237	54.22	Hungary	DélDunántúl	254	51.25	Italy	Calabria
221	56.15	Slovakia	Stredné Slovensko	238	54.21	Italy	Basilicata	255	51.05	Romania	Bucuresti Ilfov

# Overall ranking (6/6)

SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region	SPI rank	SPI score	Country	Region
256	50.67	Italy	Puglia	262	48.35	Romania	Centru	268	42.49	Romania	NordEst (RO)
257	50.61	Greece	Peloponnisos	263	47.54	Romania	NordVest	269	41.93	Romania	SudEst
258	49.43	Bulgaria	Yugozapaden	264	45.30	Romania	SudVest Oltenia	270	40.92	Romania	Sud Muntenia
259	49.06	Italy	Sicilia	265	44.99	Bulgaria	Severen tsentralen	271	39.39	Bulgaria	Severozapaden
260	48.90	Romania	Vest	266	44.40	Bulgaria	Severoiztochen	272	38.66	Bulgaria	Yugoiztochen
261	48.64	Italy	Campania	267	43.08	Bulgaria	Yuzhen tsentralen				

# Appendix Methodology

### Indicator Selection

Social Progress Indices are an aggregate index of 50+ social and environmental indicators that capture three dimensions of social progress: Basic Human Needs, Foundations of Wellbeing, and Opportunity.

The image (right) shows the three dimensions each including four components of the Social Progress Index. (The index framework is identical to the one of the global Social Progress Index.)

To find suitable indicators for the EU Index a list of candidate indicators for each of the 12 components was first assembled. Four key principles guided the initial selection of the indicators exactly as for the global Social Progress Index:

- Exclusively social and environmental indicators (no economic measure is included)
- 2. Measure outcomes and not inputs
- Relevant to all the regions
- 4. Cover matters that can be directly addressed by policy intervention.

Besides the four key criteria mentioned above, the availability of a time series and the credibility of the data source have been the additional conditions used for indicator selection.

About two-third of the indicators (36 out of 50) come from EUROSTAT. Other sources are the European Environmental Agency (EEA), the Gallup World Poll, the Quality of Government Institute of the University of Gothenburg and Eurobarometer.

Whenever possible, the indicators have been averaged over three years, 2011-2013, to smooth out erratic changes and limit missing values problems. For consistency across the indicators, the reference period is 2011-2013 even when more recent data is available. In case of ICT indicators, which are rapidly moving, the latest year is taken as reference.

**Basic Human** Foundations Opportunity dimensions needs of Wellbeing Nutrition and Access to Besic Personal Rights Basic Medical Knowledge. Care Access to Personal Water and ormetion and Freedom and Sanitation mmunication components Health and Tolerance and Shulter Wellness Inclusion Ecosystem Personal Safety Advenced Education

The European Union Regional Social Progress Index

### **Exclusively social and environmental indicators**

One of the key differences with other wellbeing indexes is that the EU-SPI, includes social and environmental indicators and excludes GDP or an income-based indicator.

The aim is in fact to measure social progress directly, rather than utilize economic proxies. By excluding economic indicators, the index can systematically analyse the relationship between economic development (measured for example by GDP per capita) and social development.

Measures that mix social and economic indicators, the Human Development Index, make it difficult to disentangle cause and effect.

# Computation



### **Geographical Coverage**

- One of the major challenges of the project is reaching the sub-national, NUTS2 level for such a wide set of indicators from many different sources. The regional coverage depends on both the indicator and the country and follows a variable-geometry pattern across the components.
- A simple rule was adopted within and across the components. The geographical coverage that a certain component can reach for a certain country is the one
  reached by at least half of the indicator for that country.
  - o For instance, if at least 50% of the indicators in the Nutrition and Basic Care are observed at the NUTS2 level for Austria, then Austria is considered to be described at the NUTS2 level for that component. If some of the indicators are not actually observed at the NUTS2 level but at a less disaggregated level for Austria, the NUTS1 or national values are assigned to all the NUTS2 regions within the country. This means that the within-country variability of the Index and sub-indexes is underestimated.
- The "50%-rule" allowed us to reach the NUTS2 level (with the limitations mentioned above) in almost 90% of the cases, the NUTS1 in 6% of the cases and the national level in 5% of the cases.
- The same 50%-rule is then reiterated across the components included in each dimension. Given that more than 50% of the components are measured at the NUTS2 level for all the cases, regional NUTS2 scores are provided all the countries in all the dimensions.

# 2

### Internal statistical consistency of each component

- Internal data consistency within each component is verified by a classical multivariate method, Principal Component Analysis (PCA), which is a dimensionality
  reduction technique designed to capture all relevant information into a small number of transformed dimensions.
- We used PCA to assess which is the best set of indicators to describe a particular component. In the ideal situation each component should show a unique,
  most relevant PCA factor accounting for most part of the variability. Moreover, all the indicators should contribute roughly to the same extent and with the same
  orientation to the most relevant factor. Non-influencing indicators, or indicators describing something else they are supposed to, are easily detected by the
  analysis.
- PCA is then a tool to refine the set of indicators to be retained in each single component. In the revised framework, all the components should show a unique, underlying factor with a well-balanced contribution of each indicator within the component.

# Computation



### **Normalization**

- In line with the Global SPI, the EU-SPI scores at the overall, dimension, and component levels are all based on a 0-100 scale. This scale is determined by identifying the best and worst global performance on each indicator by any region. To set these boundaries we sometimes use:
  - Theoretical utopian and dystopian values, when meaningful
  - Maximum and minimum values across a time series, when available
  - · Guidelines or projection data.
- This type of normalization allows the EU-SPI scores to benchmark against realistic rather than abstract measures and to 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. Once the minimum (xmin) and maximum (xmax) values for indicator x have been set, the transformation adopted is then:

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

# Computation



### Type of aggregation

- Two types of aggregating operators were chosen: the arithmetic mean within each component and the generalized mean across components and across dimensions.
- Within the components, the internal consistency assessed through PCA guarantees that the simple arithmetic mean is a proper way to aggregate because the compensability effect across the indicators is limited.
- Across the components and, even more, across the dimensions the effect of compensability is generally more accentuated. To avoid that a surplus in one component can fully compensate a shortage in another, we use a (un-weighted) generalized mean of order β:

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

- where Ij is the aggregated score for region j for a certain component, q is the number of indicators included in the component and xi is the value of indicator i observed for region j. For β = 1, Ii is the arithmetic mean.
- If  $0 < \beta < 1$ , the generalised mean is said to be inequality-adverse: a rise in the level of one indicator in the lower tail of the distribution will increase the overall mean by more than a similar rise in the upper tail, thus giving more importance to low levels.
- For the draft version of the EU-SPI, the generalized mean of order  $\beta$  =0.5 is used to aggregate the components into the dimension scores and the dimension scores into the final, overall EU-SPI score. The effect on regions scores/rankings due to the value of  $\beta$  varying in between the interval [0,1] will be tested by an uncertainty analysis.

# Computation & Scorecards



### Regional scores anchored to national ones

- For each country, component scores are computed at the regional level, when indicators are available at the regional level, but also at the national level from national indicators.
- In order for the regional and national scores to be consistent, regional component scores are rescaled and anchored to the national component scores. In this way, population weighted averages of regional scores are equal to national scores for all the components.

### Region's relative strengths and weaknesses (scorecards):

It is also helpful to compare a region's performance to other regions at a similar level of economic development.

For example, a lower-income region may have a low score on a certain component, but could greatly exceed typical scores for regions with similar per capita incomes. 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.

SPI have developed a methodology to present a region's strengths and weaknesses on a relative rather than absolute basis, comparing a region's performance to that of its economic peers. Within the group of peer regions

- Yellow signifies that a region's performance is typical for regions at its level of economic development
- Green signifies that the region performs substantially better than its peer group
- Red signifies that the region performs substantially worse than its peer group.

We define the group of economic peers as the 15 regions closest in GDP PPP per capita. Each region's GDP per capita is compared to every other region and the 15 regions with the smallest difference on an absolute value basis are selected for the comparator group. After significant testing, we found that groupings larger than 15 resulted in a wider range of typical scores and therefore too few relative strengths and weakness. Smaller groupings become too sensitive to outliers.

Once the group of comparator regions is established, the region's performance is compared to the median performance of regions in the group. The median is used rather than the mean, to minimize the influence of outliers. If the region's score is greater than (or less than) the average absolute deviation from the median of the comparator group, it is considered a strength (or weakness). Scores that are within one average absolute deviation are within the range of expected scores and are considered neither strengths nor weaknesses. A floor is established so the thresholds are no less than those for poorer regions and the minimum distance from median to strength or median to weakness is 1 point.

# Deloitte.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited, a UK private company limited by guarantee ("DTTL"), its network of member firms, and their related entities. DTTL and each of its member firms are legally separate and independent entities. DTTL (also referred to as "Deloitte Global") does not provide services to clients. Please see <a href="https://www.deloitte.com/about">www.deloitte.com/about</a> for a more detailed description of DTTL and its member firms.

This communication is for internal distribution and use only among personnel of Deloitte Touche Tohmatsu Limited, its member firms, and their related entities (collectively, the "Deloitte Network"). None of the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.