



# European Innovation Scoreboard & Regional Innovation Scoreboard 2021

**Grupo de Trabajo Innovación - Red IDI**

**European Commission**

**Ignacio Baleztena & Tiago Pereira**

DG Research & Innovation

Unit G1 – “Common R&I Strategy & Foresight Service”

**Xosé-Luís Varela-Irimia**

DG Internal Market, Industry, Entrepreneurship and SMEs

Unit A1 – “Chief Economist Team”

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# What's the European Innovation Scoreboard?

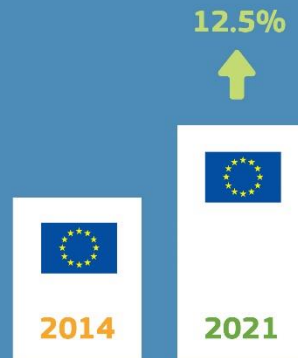


- **Comparative analysis** of innovation performance in EU countries, other European countries and regional neighbors
- Assesses relative **strengths and weaknesses** of national innovation systems and helps countries identify areas they need to address
- First European innovation scoreboard was **released in 2001**

# Measuring EU's Innovation Performance

## EUROPEAN INNOVATION SCOREBOARD 2021

EU's innovation performance has **increased by 12.5%** on average, compared to 2014.

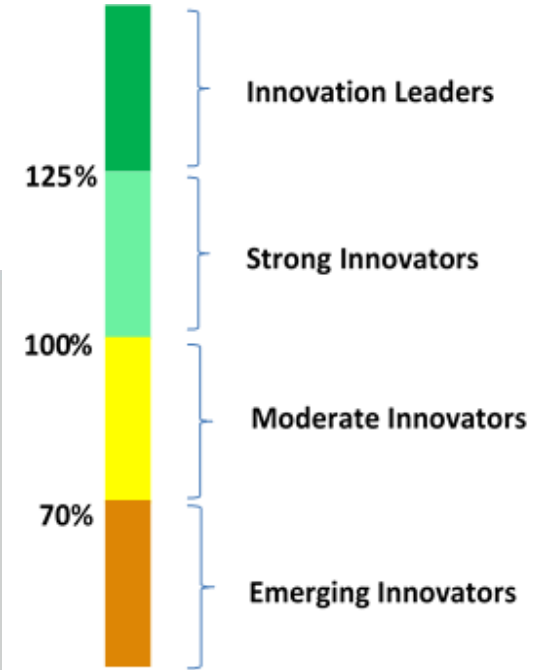
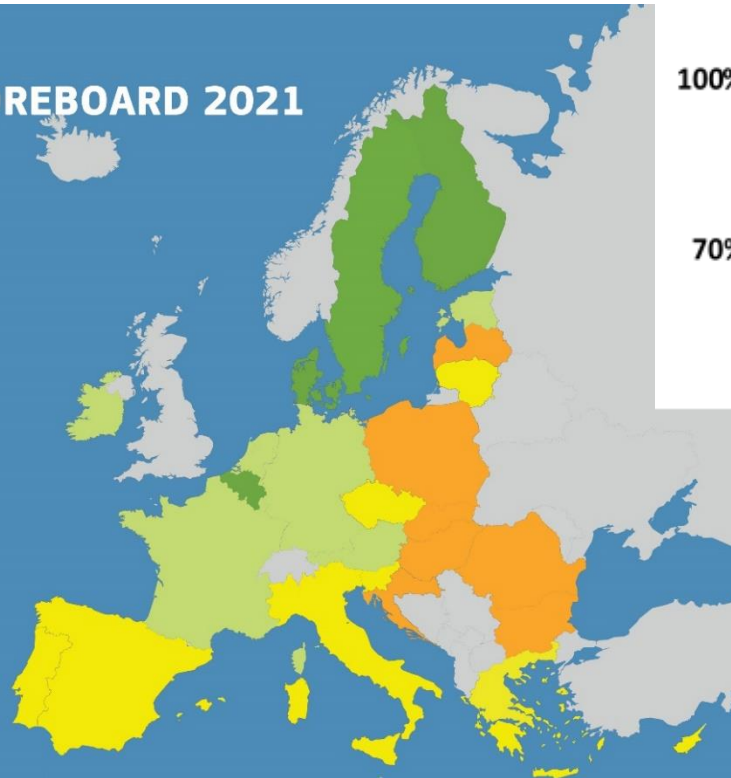


# 4 Performance groups

## EIS 2021 map

### EUROPEAN INNOVATION SCOREBOARD 2021

-  Innovation Leaders
-  Strong Innovators
-  Moderate Innovators
-  Emerging Innovators



# New measurement framework

## EIS 2020



*4 Main groups*  
*10 Dimensions*  
*27 Indicators*

## EIS 2021



*4 Main groups*  
*12 Dimensions*  
*32 Indicators*

## FRAMEWORK CONDITIONS

- Human resources
    - \* 1.1.1 New doctorate graduates (in STEM)
    - 1.1.2 Population aged 25-34 with tertiary education
    - 1.1.3 Lifelong learning
  - Attractive research systems
    - 1.2.1 International scientific co-publications
    - 1.2.2 Top 10% most cited publications
    - 1.2.3 Foreign doctorate students
  - Digitalisation
    - 1.3.1 Broadband penetration
- 1.3.2 Individuals who have above basic overall digital skills

## INVESTMENTS

- Finance and support
    - 2.1.1 R&D expenditure in the public sector
    - 2.1.2 Venture capital expenditures
- 2.1.3 Direct government funding and government tax support for business R&D
- Firm investments
    - 2.2.1 R&D expenditure in the business sector
    - 2.2.2 Non-R&D innovation expenditures
- 2.2.3 Innovation expenditures per person employed in innovation-active enterprises
- Use of information technologies
- 2.3.1 Enterprises providing training to develop or upgrade ICT skills of their personnel
- 2.3.2 Employed ICT specialists

## INNOVATION ACTIVITIES

- Innovators
    - \* 3.1.1 SMEs with product innovations
    - \* 3.1.2 SMEs with business process innovations
  - Linkages
    - 3.2.1 Innovative SMEs collaborating with others
- \* 3.2.2 Public-private co-publications
- 3.2.3 Job-to-job mobility of Human Resources in Science & Technology
- Intellectual assets
    - 3.3.1 PCT patent applications
- \* 3.3.2 Trademark applications
- 3.3.3 Design applications

## IMPACTS

- Employment impacts
    - 4.1.1 Employment in knowledge-intensive activities
- 4.1.2 Employment in innovative enterprises
- Sales impacts
    - 4.2.1 Medium and high-tech product exports
    - 4.2.2 Knowledge-intensive services exports
    - 4.2.3 Sales of product innovations
- Environmental sustainability
- 4.3.1 Resource productivity
- 4.3.2 Air emissions by fine particulates PM2.5 in Industry
- 4.3.3 Development of environment-related technologies

# Calculating the SII

## 1) Imputing missing values:

- Use previous year (general rule)
- No imputation if all years missing

## 2) Replacing outliers:

- $x_i$  outlier if  $x_i \notin [\bar{x} - 2\sigma_x, \bar{x} + 2\sigma_x]$
- Replace outliers by the corresponding extreme of the interval

## 3) Correcting excessive asymmetry ( $\sqrt{\quad}$ transformation)

## 4) Normalizing values:

$$x_i^n = \frac{x_i - x^{\min}}{x^{\max} - x^{\min}} \Rightarrow x_i^n \in [0,1]$$

## 5) Compute the SII: Unweighted average of normalized values

# Regional dimension

*The same revised measurement framework has been applied*

*However:*

- ***Estimates** have been used for three indicators*
- *A **correction** is applied to align the RIS to the EIS results*



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- Attractive research systems
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  - ~~1.2.3 Foreign doctorate students~~

### Digitalisation

- ~~1.3.1 Broadband penetration~~
- Est. → 1.3.2 Individuals who have above basic overall digital skills

## INVESTMENTS

- Finance and support
  - 2.1.1 R&D expenditure in the public sector
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  - Adj. Adj. → 2.2.3 Innovation expenditures per person employed in innovation-active enterprises

### Use of information technologies

- ~~→ 2.3.1 Enterprises providing training to develop or upgrade ICT skills of their personnel~~
- Est. → 2.3.2 Employed ICT specialists

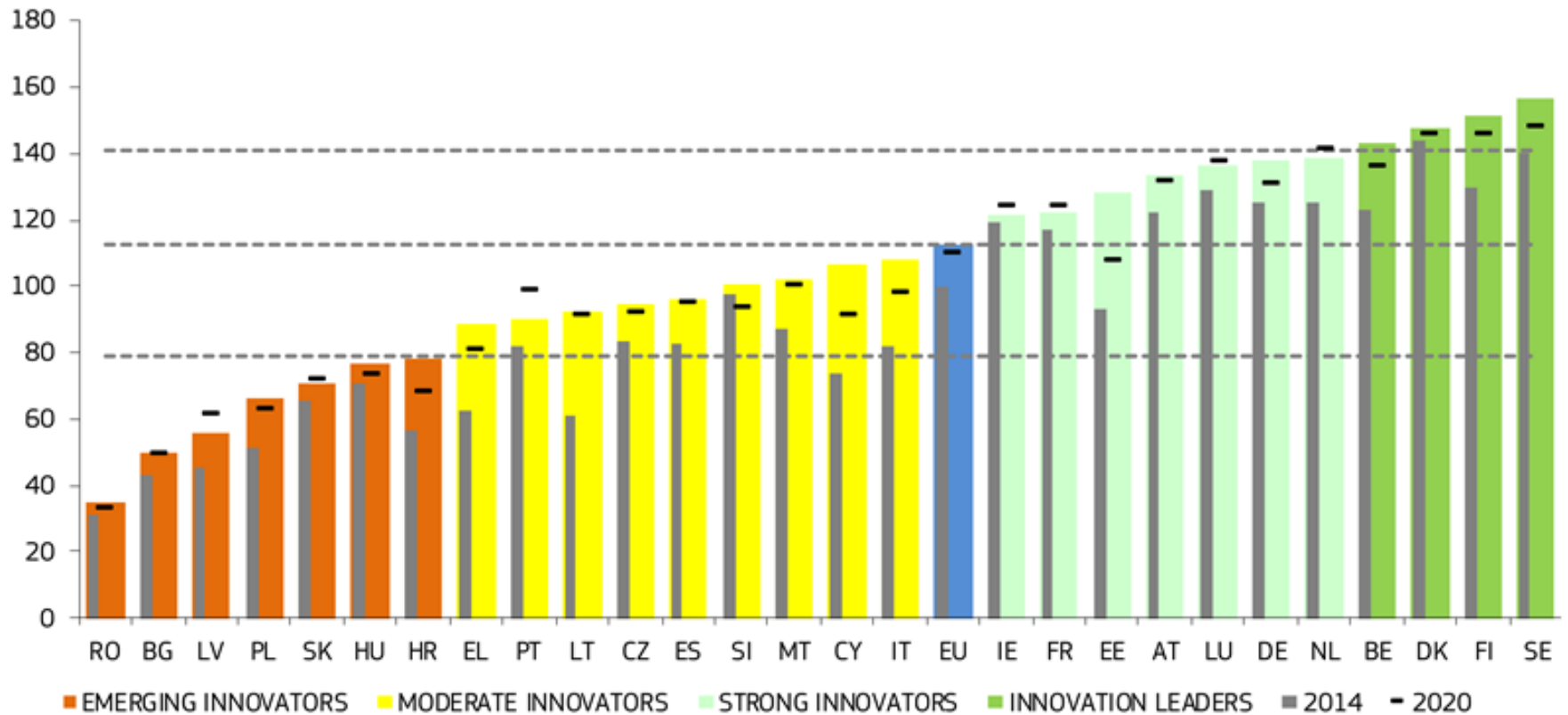
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  - 4.3.2 Air emissions by fine particulates PM2.5 in Industry
  - Adj. → ~~4.3.3 Development of environment related technologies~~

# EIS 2021 ranking (EU)



# EIS Innovation Leaders





European  
Commission

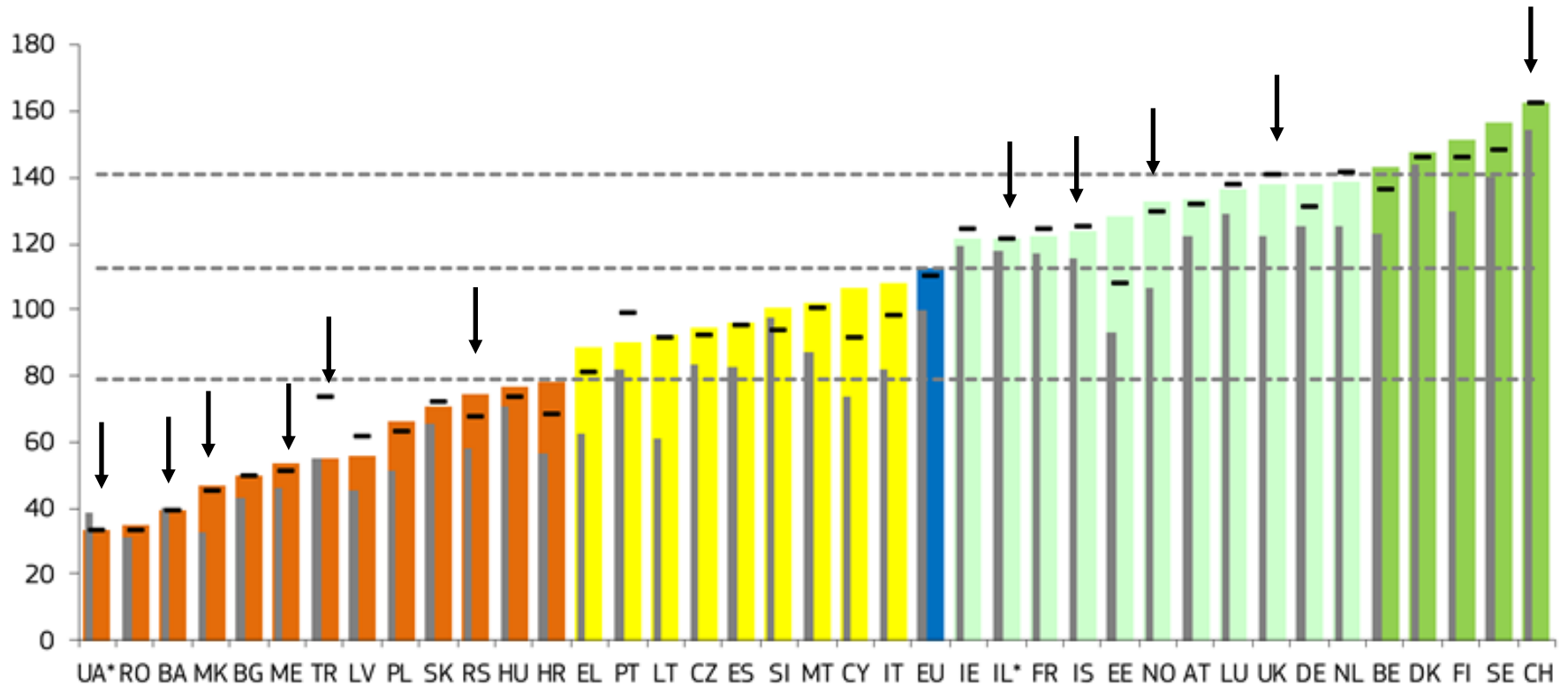
# Countries with most growing performance

## EUROPEAN INNOVATION SCOREBOARD 2021

Performance has increased the most in

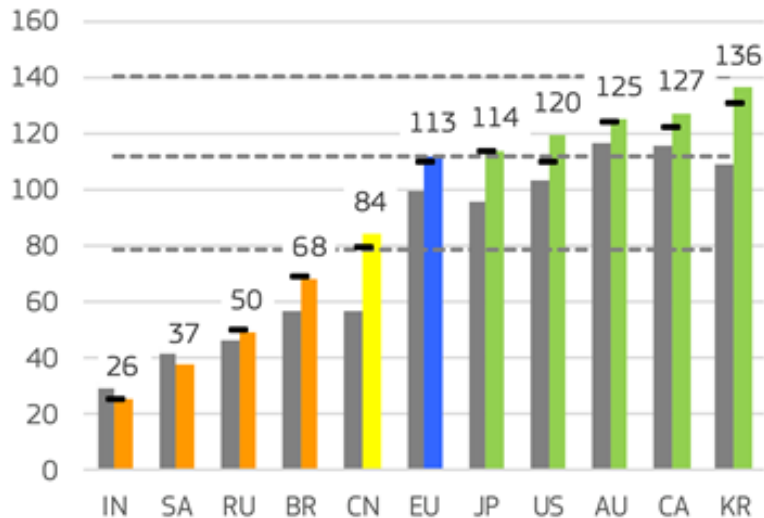


# EIS 2021 ranking (EU + neighbours)

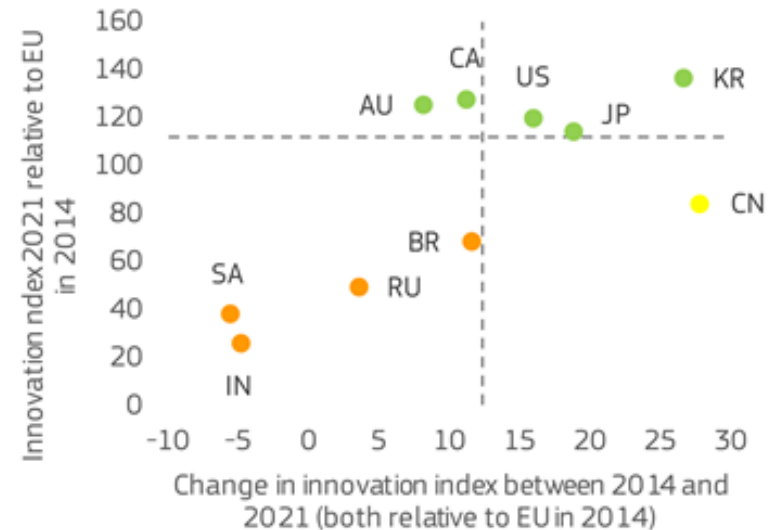


# EIS 2021 international benchmarking

## Global innovation performance



## Global innovation growth rates





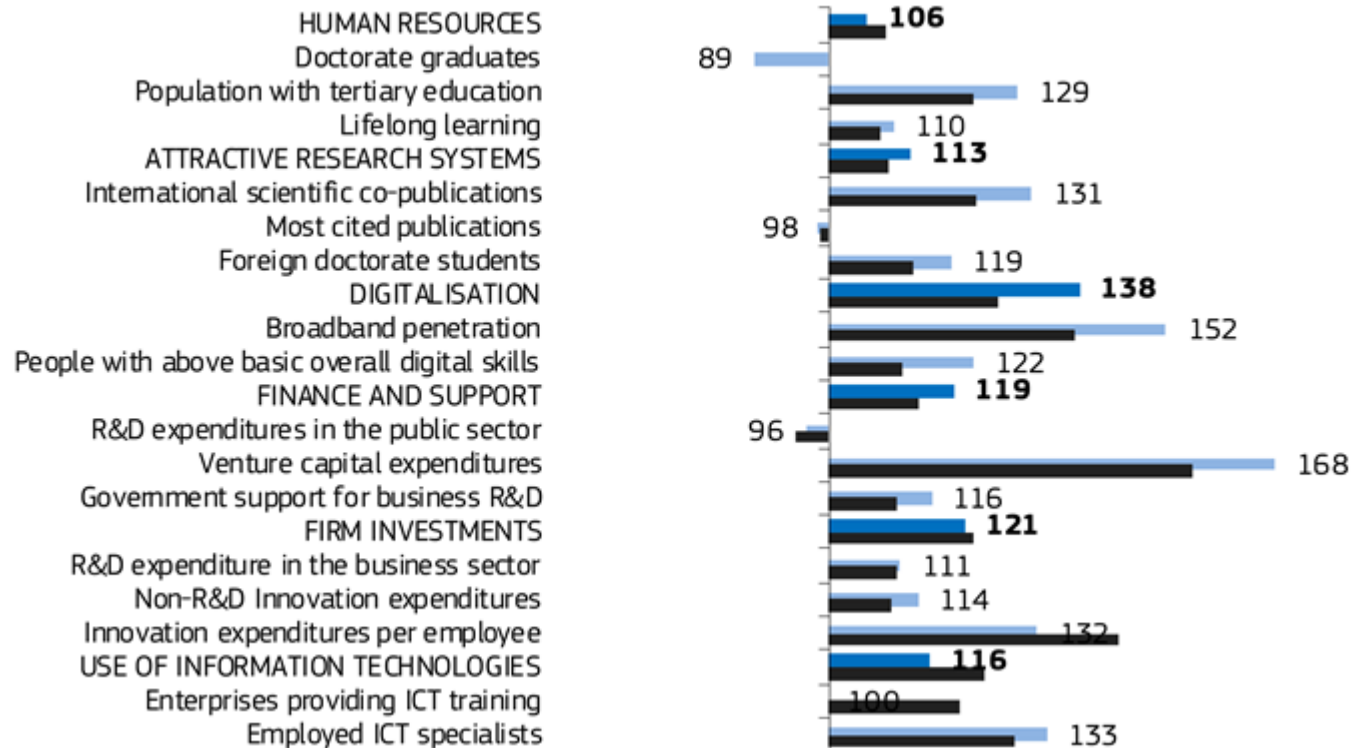
# Innovation Leaders by categories





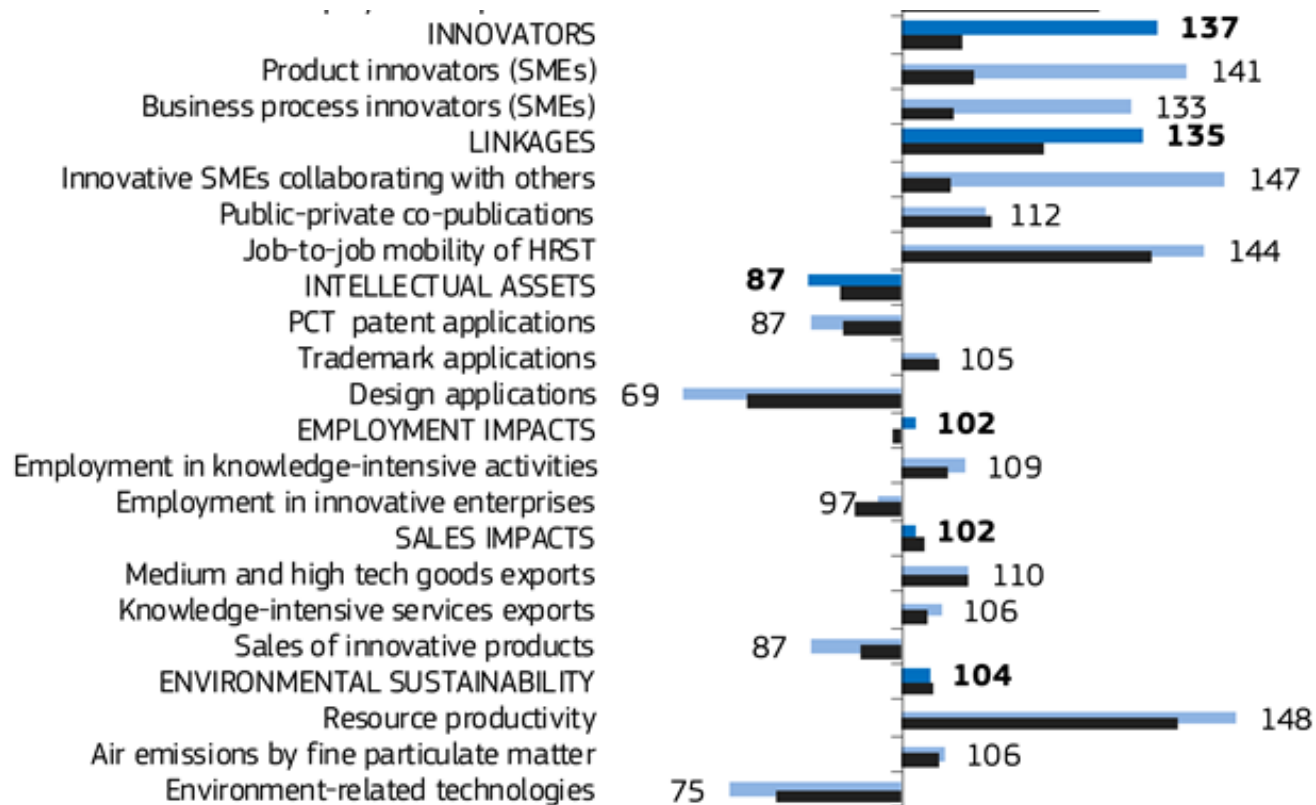
European  
Commission

# EU innovation performance by indicator and dimension (I)





# EU innovation performance by indicator and dimension (II)



# Regional innovation performance

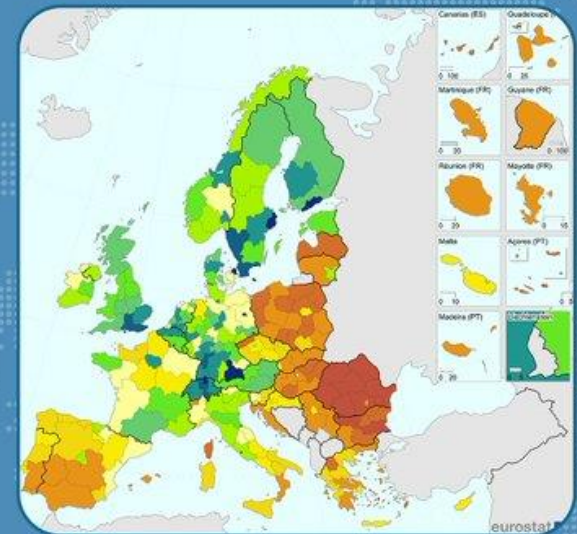
**38** regional *Innovation Leaders*

**67** regional *Strong Innovators*

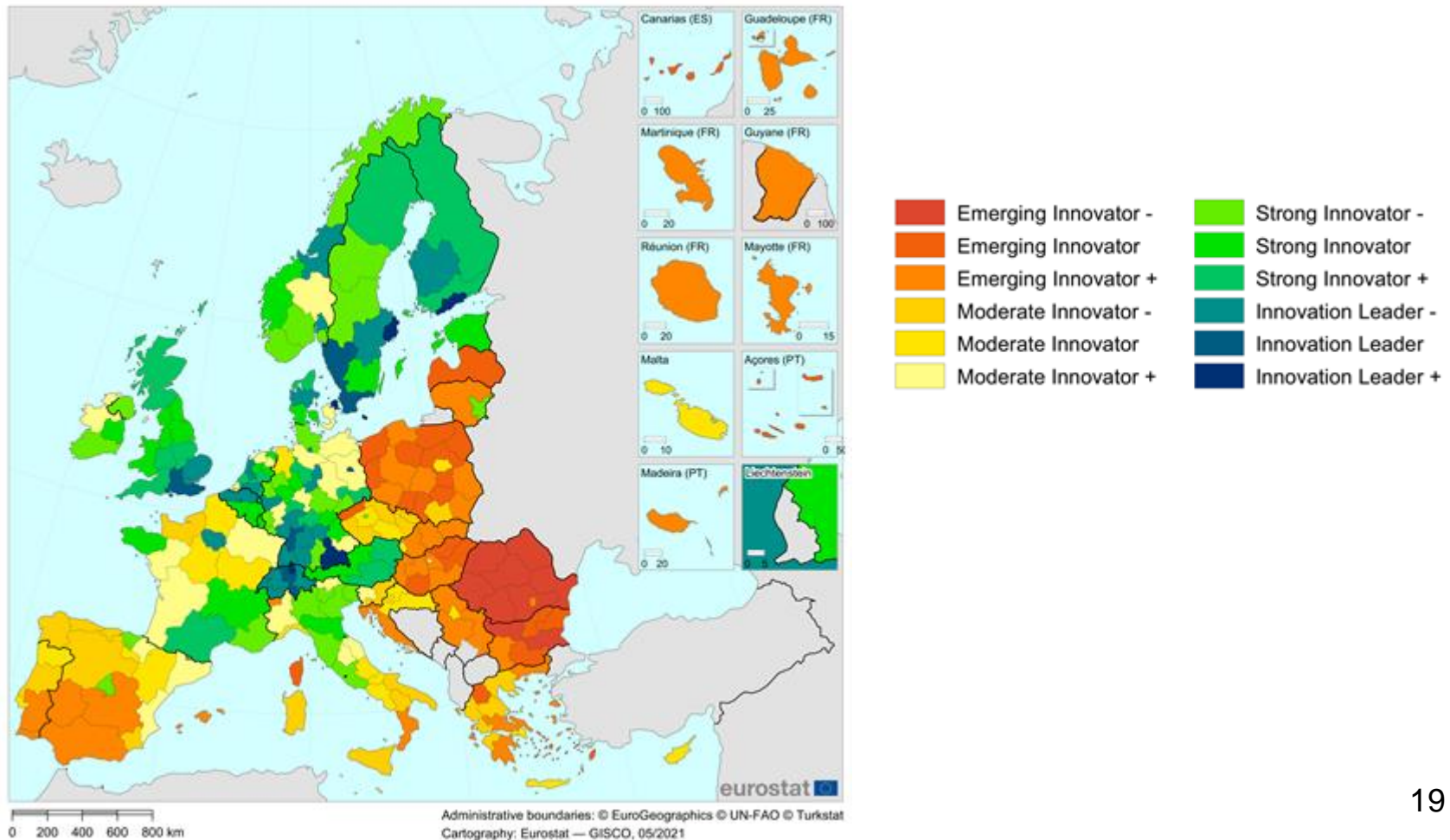
**68** regional *Moderate Innovators*

**67** regional *Emerging Innovators*

**225** out of **240**  
regions increased  
their innovation  
performance  
since 2014



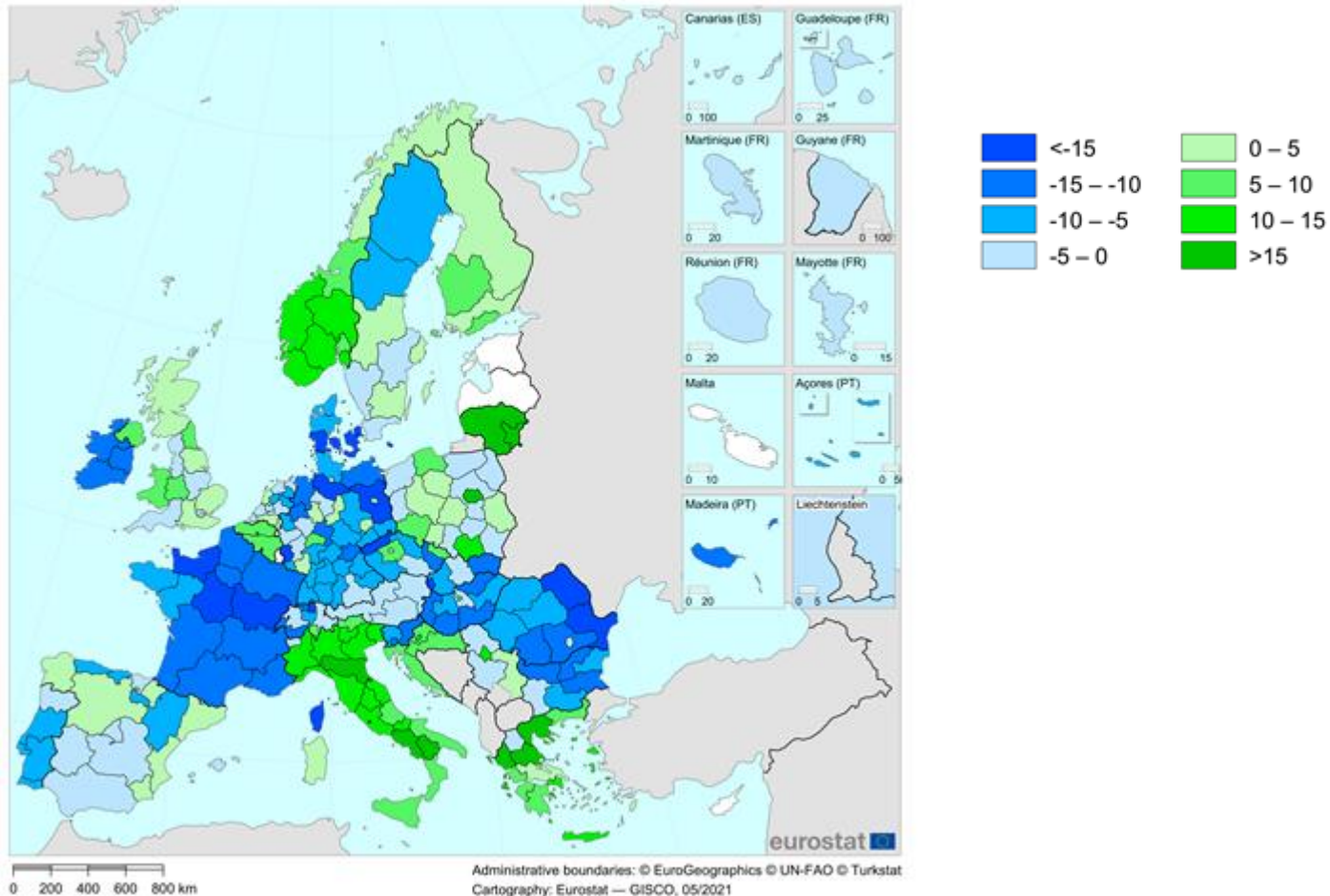
# Regional innovation performance





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# Regional innovation performance change 2014-2021

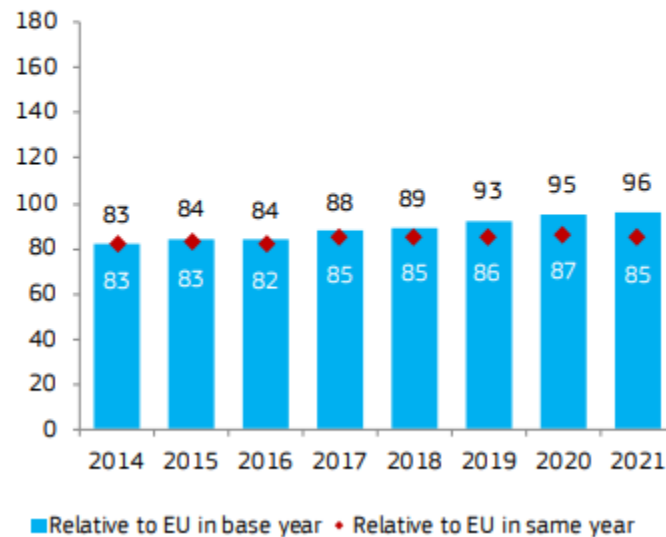


# Innovation Performance in Spain



**Spain** is a **Moderate Innovator**.

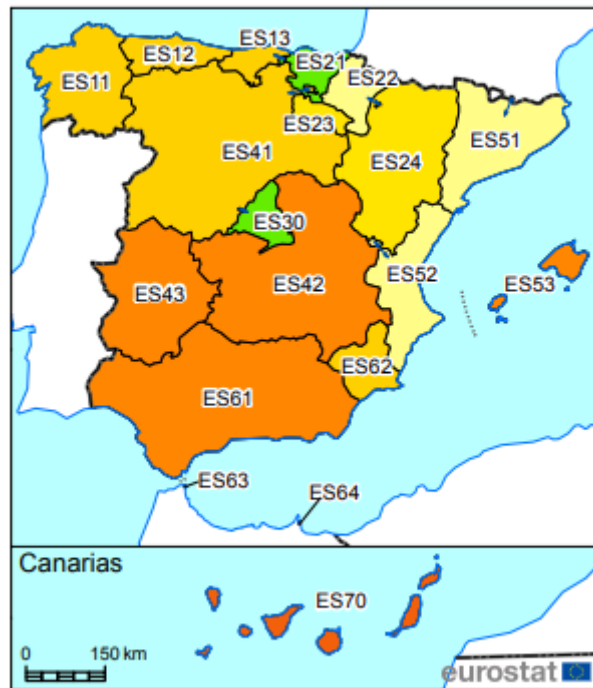
Over time, performance relative to the EU has increased.



# Innovation Performance in Spanish Regions



SPAIN



Map administrative boundaries: ©EuroGeographics ©UN-FAO ©Turkstat

NUTS	Region	RII	Rank	Group	Change
ES11	Galicia	78.9	156	Moderate -	16.0
ES12	Principado de Asturias	73.7	166	Moderate -	8.9
ES13	Cantabria	73.5	168	Moderate -	9.5
ES21	País Vasco	103.6	93	Strong -	14.7
ES22	Comunidad Foral de Navarra	98.1	114	Moderate +	17.5
ES23	La Rioja	80.7	150	Moderate	7.9
ES24	Aragón	80.9	148	Moderate	9.1
<b>ES3</b>	<b>Comunidad de Madrid</b>	101.0	100	Strong -	13.7
ES41	Castilla y León	76.9	160	Moderate -	17.4
ES42	Castilla-la Mancha	64.4	183	Emerging +	12.3
ES43	Extremadura	61.1	188	Emerging +	14.1
ES51	Cataluña	98.9	108	Moderate +	16.9
ES52	Comunitat Valenciana	91.3	128	Moderate +	18.3
ES53	Illes Balears	67.4	178	Emerging +	9.9
ES61	Andalucía	67.5	177	Emerging +	10.6
ES62	Región de Murcia	76.3	161	Moderate -	17.5
ES63	Ciudad de Ceuta	33.6	231	Emerging -	4.2
ES64	Ciudad de Melilla	40.6	226	Emerging	12.5
ES7	Canarias	48.8	216	Emerging	10.7



# Interactive tool

## European and Regional Innovation Scoreboards Edition 2021

The European Innovation Scoreboard provides a comparative assessment of the research and innovation performance in EU countries, other European countries, and regional neighbours. It assesses relative strengths and weaknesses of national innovation systems and helps countries identify areas they need to address.

The European and Regional Innovation Scoreboards Interactive Tool allows for custom comparisons of performance scores, for country profiles comparisons, as well as for testing of correlations between scores.



### Overview

This module allows the users to visualise the performance of all countries with respect to one indicator.

Discover



### Country/Region Profile Over Time

This module allows the users to compare the performances of selected countries with respect to selected indicators, either a subset of countries for multiple indicators, or all countries with respect to a single indicator.

Discover



### Country/Region Profile

This module allows the users to view all data related to a specific country, either for a given year or evolution over the years.

Discover



### Country/Region Comparison

This module allows the users to compare the performances of selected countries with respect to selected indicators, either a subset of countries for multiple indicators, or all countries with respect to a single indicator.

Discover

### Information

The scoreboard has been technically upgraded on May 2021. Some functionalities have been enhanced. See help for more information.

Help

For best viewing performance please use a recent and modern browser such as [Google Chrome](#), [Firefox](#), [Safari](#) or [MS Edge](#).

Feedback? Found an error in the data? Suggestion?

Let us know

<https://ec.europa.eu/research-and-innovation/en/statistics/performance-indicators/european-innovation-scoreboard/eis>