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Working Paper

Territorial Economic Data viewer: An introduction to the industrial module

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JRC WORKING PAPER

Territorial Economic Data viewer: An Introduction to the Industrial module

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Territorial Modelling and Analysis

No 02/2025



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Abstract

This paper introduces the new module of the European Commission's Territorial Economic Data viewer (TEDv) namely, the Industrial Module. The aim is to present the data sources and the methodological approach employed to generate the various dashboards included in this new module. Its usefulness is exhibited via an extensive analysis of the current states of the economic sectors and industrial ecosystems identified as the most prominent ones.

Acknowledgements

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Executive summary

This paper introduces the “Industrial Module” of the European Commission’s Territorial Economic Data viewer (TEDv) – a tool designed to support policymaking by offering an integrated and interactive visualization of key economic, sectoral, and territorial data. In the context of the EU’s dual transition toward a greener and more digital economy, the “Industrial Module” aims to bridge existing data gaps and enhance the ability of policymakers to assess the evolving structure of regional economies across Europe.

The “Industrial Module” builds on the concept of Industrial Ecosystems, as introduced in the 2020 Communication “A New Industrial Strategy for Europe”. These ecosystems capture complex interdependencies between sectors that are critical for understanding value chains and regional specializations. The module consolidates a diverse range of indicators – from macroeconomic variables such as gross value added and employment, to institutional quality metrics and EU funding data from Horizon 2020 and cohesion policy.

A key innovation lies in the construction of a new dataset covering 60 economic sectors at the NUTS2-level, significantly enhancing the granularity and relevance of territorial economic information. This dataset is made accessible through a series of interactive dashboards that allow users to explore and compare regional and sectoral dynamics across Member States and industrial ecosystems.

By providing timely, comparable, and user-friendly insights into the economic performance of regions and sectors, the “Industrial Module” equips policymakers with the tools needed for evidence-based decision-making. It supports a more nuanced understanding of regional resilience and industrial transition and contributes to more targeted and effective policy responses in support of the EU’s long-term strategic goals.

1. Introduction

The European economy is currently at a crossroads. Having largely recovered from a series of large shocks (such as the Covid-19 pandemic-induced crisis, the ongoing war in Ukraine, etc.), the EU is facing an ongoing process of structural change aimed at transforming the European economy into a more efficient, environmentally sustainable economy that will take full advantage of digitalization. For this ongoing – green and digital – transition to be successful, policymakers need to be able to assess the state of the economy based on accurate statistical information.

Assessing the state of the regional economies in the EU is a cumbersome process, partly due to the lack of a single repository that brings together all the relevant information and presents them in an intuitive, user-friendly and easily accessible way. Of particular importance is access to data that can reveal the interdependencies and cross-country/cross-regional correlations that have emerged across combinations of sectors of economic activity. These economic structures, referred to by the European Commission as the industrial ecosystems, are an important unit of analysis as they allow the systematic analysis of emerging pan-European value chains. In particular, the concept of industrial ecosystems in the context of EU policy was introduced European Commission in the 2020 communication on “A New Industrial Strategy for Europe”. It refers to aggregate sectors of economic activity constructed as a combination of pre-existing sectors (based on the NACE classification). The ecosystems are designed in such a way that they capture the interdependencies, interlinkages and overall correlations that emerge with the incorporation into value chains (for further details on the construction of the ecosystems and the list of the fourteen ecosystems designed by the European Commission see Appendix A).

This paper presents a recent attempt to collect, integrate and visualize a set of indicators that can be used to assess regional economic performance along a number of dimensions, ranging from standard macroeconomic indicators like output and employment to the amounts received by regions in the context of the Horizon 2020 program and indices of regional government quality. In particular, this report describes the newest update of the European Commission’s Territorial Economic Data viewer (TEDv), introduced in Marques Santos et al. (2023), the Industrial module. More specifically, it documents the data visualized in a series of interactive dashboards designed to enhance the ability of policymakers to assess the relative position of EU Member States and NUTS2 regions in a timely manner. These dashboards will be regularly updated based on Eurostat’s planned updates of the regional data series and the publication of the relevant European Commission reports, taking into account the time needed to process and develop the indicators.

The rest of the report is organized as follows: section 2 provides an overview of the information available in the dashboards, while section 3 presents the data sources and the methodological approach. Section 4 gives a closer look at the available dashboards, together with examples that illustrate the usability of the interactive maps and section 5 draws some concluding remarks. Lastly, a series of appendices provide some more in-depth analysis of the main developments in the most important ecosystems (in terms of output and employment).

2. Overview of the dashboards

This section focuses on describing the data collection process for territorial statistics, covering a wide range of policy-relevant topics that would allow the user to gain insights into the state of the economy of the EU Member States and regions.

Broadly, the collected data can be organized across the following dimensions:

- Economic dimension: this dimension includes data on output produced - Gross Value Added (GVA) and Gross Domestic Product (GDP) - and the rate of employment;
- Policy dimension: here the data include the classification of the region according to cohesion policy criteria, the programmed amounts of cohesion policy for the ongoing programming period (2021-2027), Horizon 2020 amounts and the regional state aid intensities;
- Institutional dimension: this includes the regional Quality of Governance (QoG) index, the Regional and National Innovation Scoreboard Index.

The country- and regional-level statistics collected are organized in two main dashboards, depending on the type of aggregation:

- The Sectoral-Industrial dashboard, which displays the information on a wide range of variables covering all of the above-mentioned dimensions;
- The Ecosystems dashboard, which provides a snapshot of the relative importance of the 14 industrial ecosystems in terms of GVA and employment across the EU Member States and regions.

3. Data sources

The dashboards are generated using information from different official sources. In particular, we have collected both micro- and macro-level data from the following sources:

- Eurostat, from which we obtain data from various datasets including the national and regional economic accounts and the Structural Business Statistics.
- Territorial Economic Data viewer (TEDv) for the amount of Horizon 2020 funds distributed to the EU territories.
- Firm-level financial data from the BvD ORBIS database has been extensively used to obtain auxiliary variables for the generation of disaggregated data at regional level – for more details on the methodological approach see section 4.
- European Commission’s European Innovation Scoreboard (see European Commission, 2024) and the Regional Innovation Scoreboard (see European Commission, 2023).
- The Single Market Report of 2021 was used to recover the definitions of the industrial ecosystems.
- The QoG Institute from which we obtain the Regional Quality of Government Index (see Charron et al., 2024).

European Commission own data provided by Directorate-General Regional and Urban policy (2021–2027 cohesion policy funds allocation) and the Directorate-General for Competition (2021–2027 regional state aid intensity). Data on 2027 cohesion policy funds allocation are approximations of the actual amounts to be received by the EU regions. The data have been “regionalised” on the basis of the population of the NUTS 2 regions covered. Regional state aid intensities do not include the SME and STEP bonuses that might be available.

Table 1 summarizes the variables included in the dashboards and their respective source.

Table 1. Dimensions included in the dashboard

Dimension	Source
Economic	
GVA by NACE sector	Authors’ calculations based on data obtained from the Eurostat Structural Business Statistics and regional economic accounts (nama_10r_3gva), as well as the BvD ORBIS databases – see Section 4 for details
Employment by NACE sector	Authors’ calculations based on data obtained from the Eurostat Structural Business Statistics (sbs_r_nuts06_r2) and regional economic accounts (nama_10r_3empers), as well as the BvD ORBIS databases – see Section 4 for details
GDP per capita	Eurostat (nama_10r_2gdp) - Euro per inhabitant

(Continued in the next page)

Table 1. Dimensions included in the dashboard (Continuation)

Dimension	Source
<i>Policy</i>	
Horizon 2020 funding	European Commission's Territorial Economic Data viewer (TEDv) – Marques Santos et al. (2023)
2021-2027 Cohesion policy planned amount	Own estimation by the European Commission's Directorate-General Regional and Urban policy
2021-2027 State aid intensities	European Commission's Directorate-General for Competition
<i>Institutional</i>	
2021-2027 Cohesion classification criteria	European Commission, Implementing Decision 2021/130
Quality of Governance	Quality of Governance Institute, University of Gothenburg
Innovation Scoreboard	European Innovation Scoreboard and Regional Innovation Scoreboard

Source: Authors' own elaboration.

4. Methodological approach

The main methodological contribution of this report is the calculation of disaggregated data on GVA and employment at the NUTS2 level (version 2021). Currently, sectoral data at regional-level on GVA are available only for 11 economic activities on Eurostat's regional economic accounts (nama_10r_3gva) and for 10 economic activities in the Annual Regional Database of the European Commission (ARDECO - SUVGZ.2021). Data on persons employed are available at a higher level of disaggregation in Eurostat's regional structural business statistics (sbs_r_nuts06_r2) dataset. We note here that the concept of persons employed is slightly differently defined in the context of the Structural Business Statistics compared to the Labour Force Survey. However, there are still missing data for some key economic activities. To fill this data gap, we therefore develop a methodological approach that combines micro-level data from Bureau van Dijk (BvD) ORBIS with macro-level data from Eurostat's regional structural business statistics (SBS) and national and regional economic accounts to generate NUTS2-level data for GVA and employment for a total of 60 economic activities based on the NACE Rev. 2 classification. For the list of sectors see Appendix B. This is an important contribution to the analysis of regional economies as, to our knowledge, this is the first report to provide a decomposition of GVA with such a disaggregation of economic activities at the NUTS2 level.

To ensure harmonisation in terms of the employment concept, our starting point is the employed persons' data from Eurostat's regional economic accounts (nama_10r_3empers). From this dataset, we keep the employment data for the following economic activities:

- [A] Agriculture, forestry and fishing;
- [F] Construction;
- [K] Financial and insurance activities;
- [L] Real estate activities;
- [O-Q] Public administration, defence, education, human health and social work activities;
- [R-U] Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies.

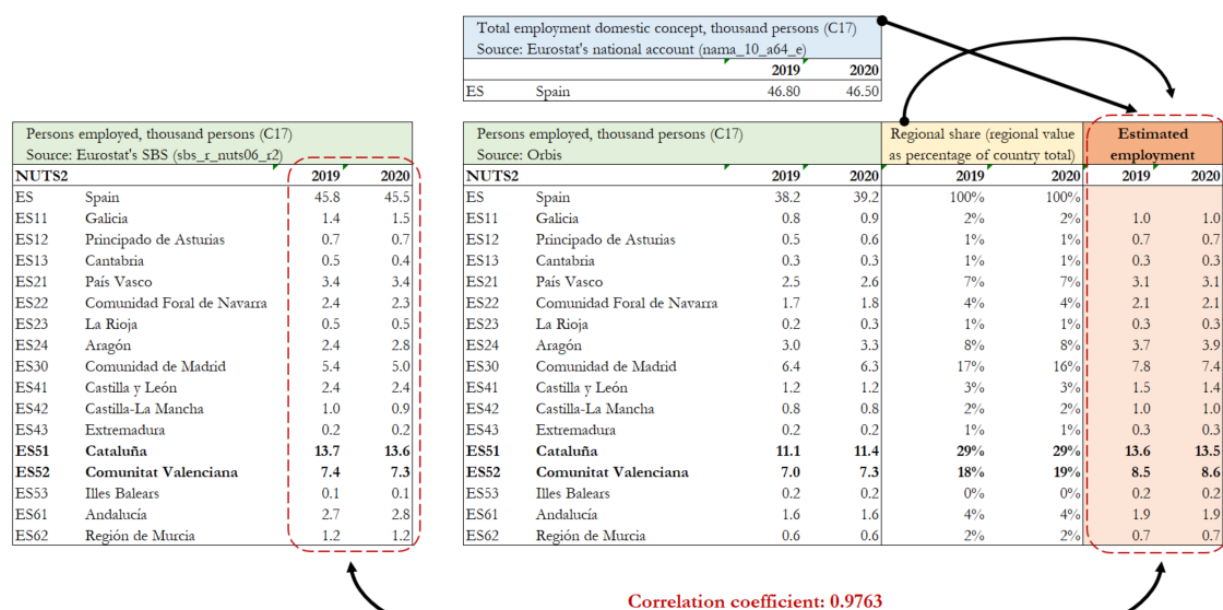
For the remaining aggregates in Eurostat's regional economic accounts (NACE: B-E; C; G-I; J; M-N), the following procedure is used to obtain data at the NACE 2-digit level or, when this is not possible, at the NACE section level:

- When a NUTS2 region refers to a mono-region (i.e. CY; EE; LU; LV and MT), we use data from the national accounts employment data by industry (nama_10_a64_e).
- When SBS employment data (sbs_r_nuts06_r2) are available, we use them. As not all SBS data are expressed in the latest 2021 NUTS version, we use the Joint Research Centre NUTS Converter (see JRC (2022)) to harmonize the data when needed.
- If the data are not available in the SBS, we extract unconsolidated data on employment from the BvD Orbis database for all EU countries for which data are missing at the NUTS 2 level for specific NACE codes in order to estimate the regional-sectoral shares of these economic activities. These shares are then applied to the employment data in the national accounts (nama_10_a64_e) corresponding to the same NACE codes in order to estimate the values of employment at NUTS 2 level by NACE codes. To confirm that this approach is reliable and a good proxy for estimating missing data, we compared the results obtained with the use of BvD

Orbis regional-sector shares and Eurostat's SBS when the latter also contains regional data for the same economic activity. In the illustrative example in Figure 1, which shows employment in the Spanish regions in the manufacture of paper and paper products (C17) sector, we can see a correlation of 97.6% between the two sets of data. Looking at the region with the highest value of employment in C17 sector (ES51 - Cataluña), we can also notice that the values in the SBS (13.7 and 13.6) are very close to those estimated using BvD Orbis shares: 13.7 and 13.6 versus 13.6 and 13.5, respectively. We also acknowledge that in some regions we have higher differences, probably due to the way the regional statistics or accounting is done. On average, however, this technique can be considered reliable, at least for identifying sectoral concentration and key economic activities at the regional level, which is the main purpose of the new dashboard in the TEDv.

The last step lies on using the Generalised RAS (GRAS) method (Temurshoev et al., 2013) to ensure consistency between the estimated regional-sectoral values with the known regional totals and country total at sectoral level. The final step in its application ensures that the estimated regional and sectoral data sum correctly to the known totals, both regionally and by sector. By iteratively adjusting the data matrix through row and column operations, the GRAS method produces a consistent dataset.

Figure 1. Testing the reliability of BvD Orbis regional-sectoral shares to estimate sectoral-regional data: Example Spain, Manufacture of paper and paper products (C17)



Source: Authors' own elaboration based on BvD Orbis and Eurostat data (sbs_r_nuts06_r2).

5. A closer look into the dashboards

The dashboards are generated using information from different official sources. In particular, we have collected both micro- and macro-level data from the following sources:

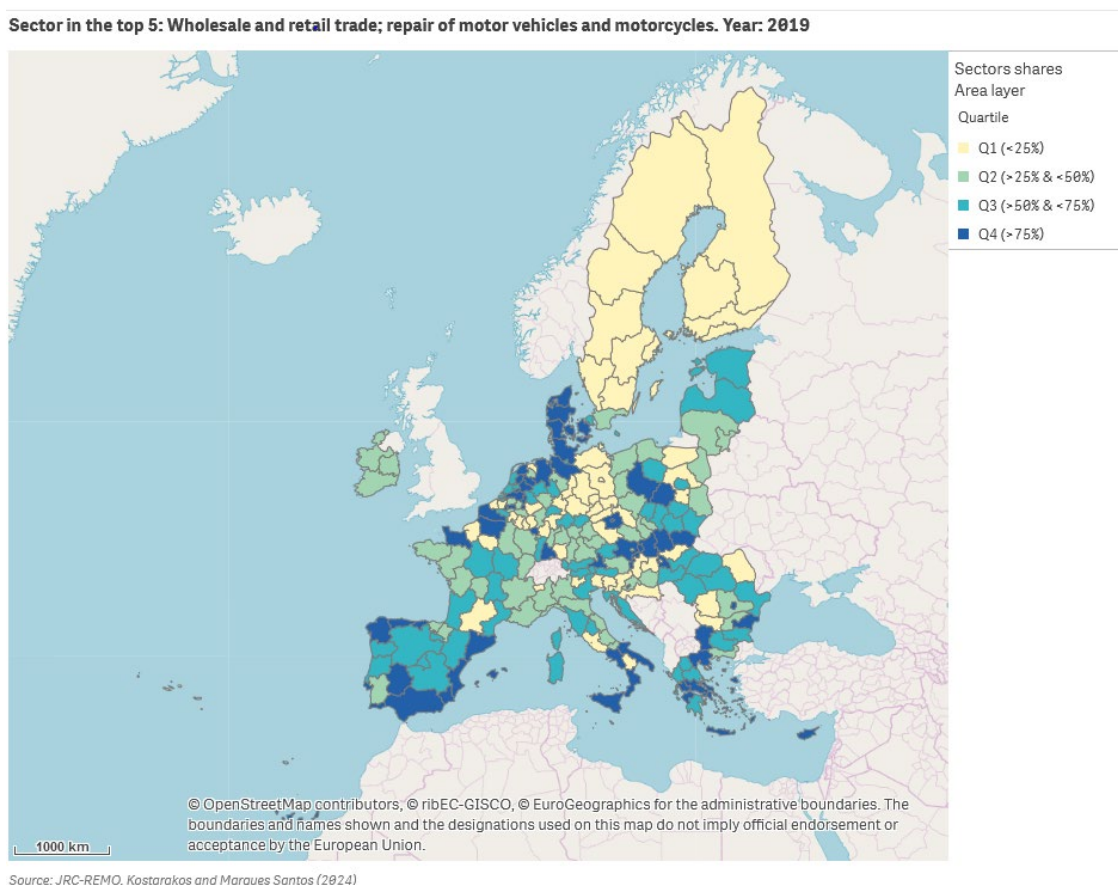
5.1. Sectorial dashboard

The “Sectorial dashboard” presents a wide range of information related to GVA and employment shares, both at the country and the regional level (NUTS2, version 2021), for all sectors of economic activity (and the 14 industrial ecosystems – see next subsection). This is combined with information on the Cohesion classification criteria, the classification of the country and/or region based on the Innovation Scoreboard of the European Commission, the relative position in terms of GDP per capita with respect to the EU average etc.

In particular, in the Sectorial dashboard, the user is presented with three filters: initially, the choice is related to the level of aggregation, namely the country- or the NUTS2-level. Then, the user chooses whether to visualize data for GVA or employment shares. Lastly, one of the sectors of economic activity needs to be selected. Given that we have data for a total of 60 sectors of economic activity, making them all available for visualization for each unit would result in a rather heavy display that would not convey the necessary information to the user. As a means of facilitating a better visualization, the relevant data are presented based on their ranking. In particular, the dashboard provides information for the top-5 sectors in terms of their shares in the country total. By focusing on the top-5 sectors by country/region, the interested user is able to obtain a first insight into the economic structure of the geographical unit selected. Additionally, to further improve the visibility of the results and the potential emergence of spatial patterns, the regions have been split into quartiles depending on the relative size of the sector (or, industrial ecosystem) under examination. That is, the regions are split into four equally sized groups, with the first group (first quartile) containing the lowest 25% of the values and so on.

As a means of demonstrating the usability of the dashboard, in the following Figure 2, we present an example where we have selected the region-level option and focus on GVA. The dashboard provides us with the number of regions in which the Wholesale and Retail Trade sector is one of the top-5 in terms of its share of GVA produced. As can be gleaned from the Figure, a number of interesting spatial patterns emerge. In particular, for the year 2019, the Wholesale and Retail sector appears to be more prominent in south-eastern Member States and, in particular, in Greece, Latvia, Lithuania, Romania and Poland, with Slovakia, Slovenia and Netherlands also exhibiting relatively high GVA shares. On the contrary, the relative importance of the Wholesale and Retail ecosystem appears to be relatively lower in Germany, Ireland, Italy and Sweden.

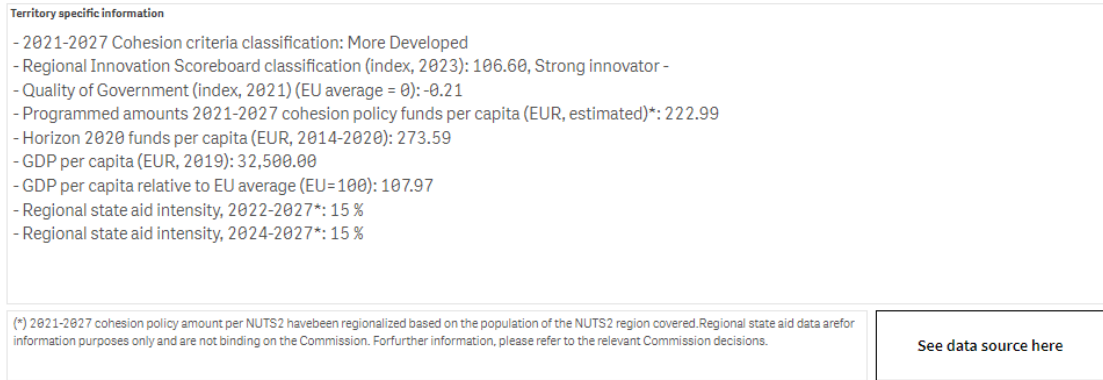
Figure 2 . Example of TEDv visualisation: EU regions with “Wholesale and retail trade; repair of motor vehicles and motorcycles” in the top 5 most important sectors for regional employment



Source: TEDv (extracted on 05/12/2024).

Additionally, by choosing a particular region, we can obtain a series of additional variables that appear on the right-hand side of the dashboard. For the purposes of this example, we select the Spanish region of Madrid. After the selection, we observe in Figure 3 that according to the cohesion classification criteria, Madrid belongs to the group of More Developed regions. Moreover, the region is expected to receive almost 213 euros per capita from the cohesion policy envelope over the 2021-2027 period, while the corresponding amounts from the Horizon 2020 program is 274 euros per capita. As regards the innovation capabilities of the region as measured by the European Commission’s Regional Innovation Scoreboard classification (see European Commission 2024), Madrid is a strong innovator. Additionally, we observe that in terms of the quality of institutions, the region is in a relatively worse position with respect to the EU average as indicated by the negative value of the Quality of Governance index. Lastly, the selection provides the region’s GDP per capita level for 2019, along with the value relative to the EU27 average. In this case, we observe that Madrid performs better with respect to the EU27 average.

Figure 3. Example of TEDv visualisation: Economic and additional information for the Spanish region “Comunidad de Madrid”

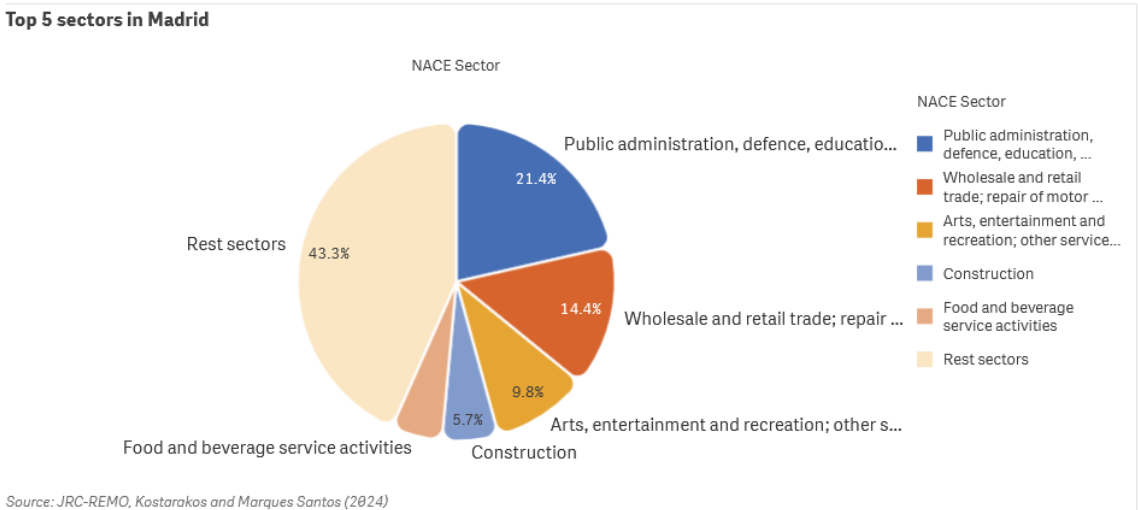


Source: TEDv (extracted on 05/12/2024).

Then, in Figure 4, we observe the shares of the top-5 sectors of economic performance in Madrid. As is evident from the pie chart, in 2019, the main sectors of economic activity with a share of regional GVA higher than 10% are Public administration, Wholesale and retail trade and Real estate activities.

Overall, this feature of the Industrial module of TEDv provides a concise review of the main indicators characterized the current state of the regional economy, coupled with information regarding the funding stemming from some of the EU’s flagship initiatives.

Figure 4. Example of TEDv visualisation: Top 5 most important sectors for regional employment in the Spanish region “Comunidad de Madrid”



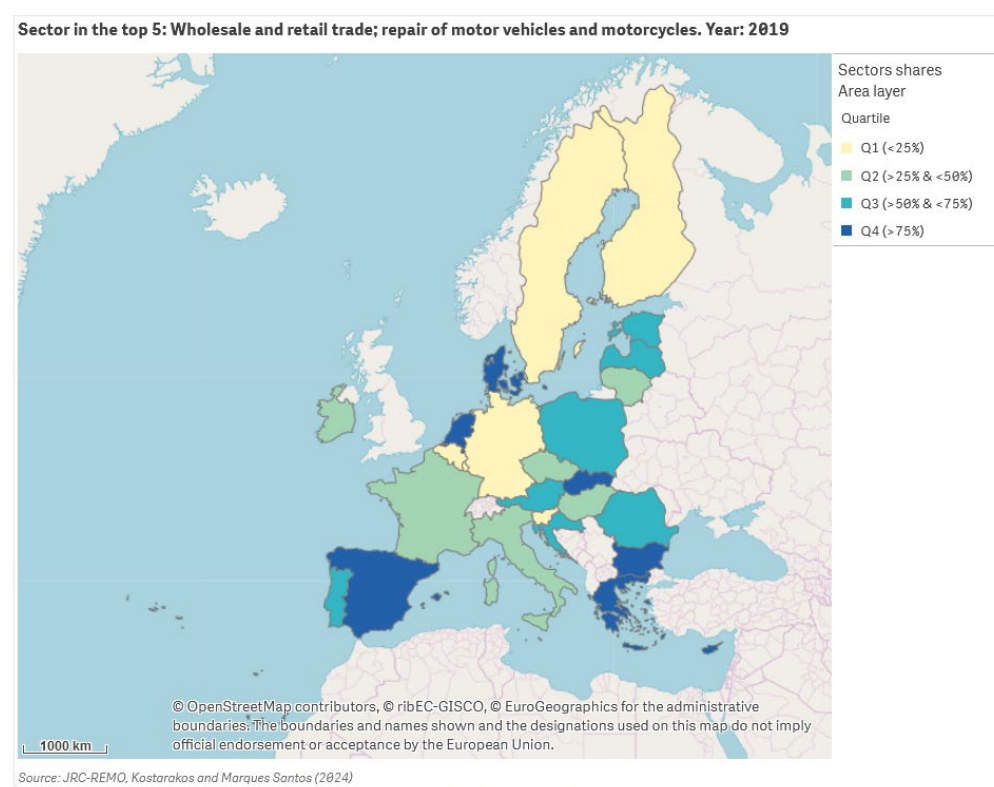
Source: TEDv (extracted on 05/12/2024).

We next turn our attention to the country-level and focus on employment, by selecting the appropriate indicator and keeping the same sector as the unit of analysis. As can be gleaned from Figure 5, the countries in which the Wholesale and retail sectors plays a prominent role are

Bulgaria, Cyprus, Denmark, Netherlands and Spain. On the contrary, the lowest shares appear to be concentrated in the core and northern periphery of the EU and, in particular, in Belgium, Finland, Germany and Sweden.

Overall, we observe that even though the country-level option provides a good first approximation into the relative importance of the particular sector, this analysis should be combined with the more granular, NUTS2-level analysis. The more granular dataset provides an in-depth depiction of the degree of heterogeneity in terms of the sector's performance and of the spatial patterns that emerge across the EU.

Figure 5. Example of TEDv visualisation: EU regions with “Wholesale and retail trade; repair of motor vehicles and motorcycles” in the top 5 most important sectors for national employment



Source: TEDv (extracted on 05/12/2024).

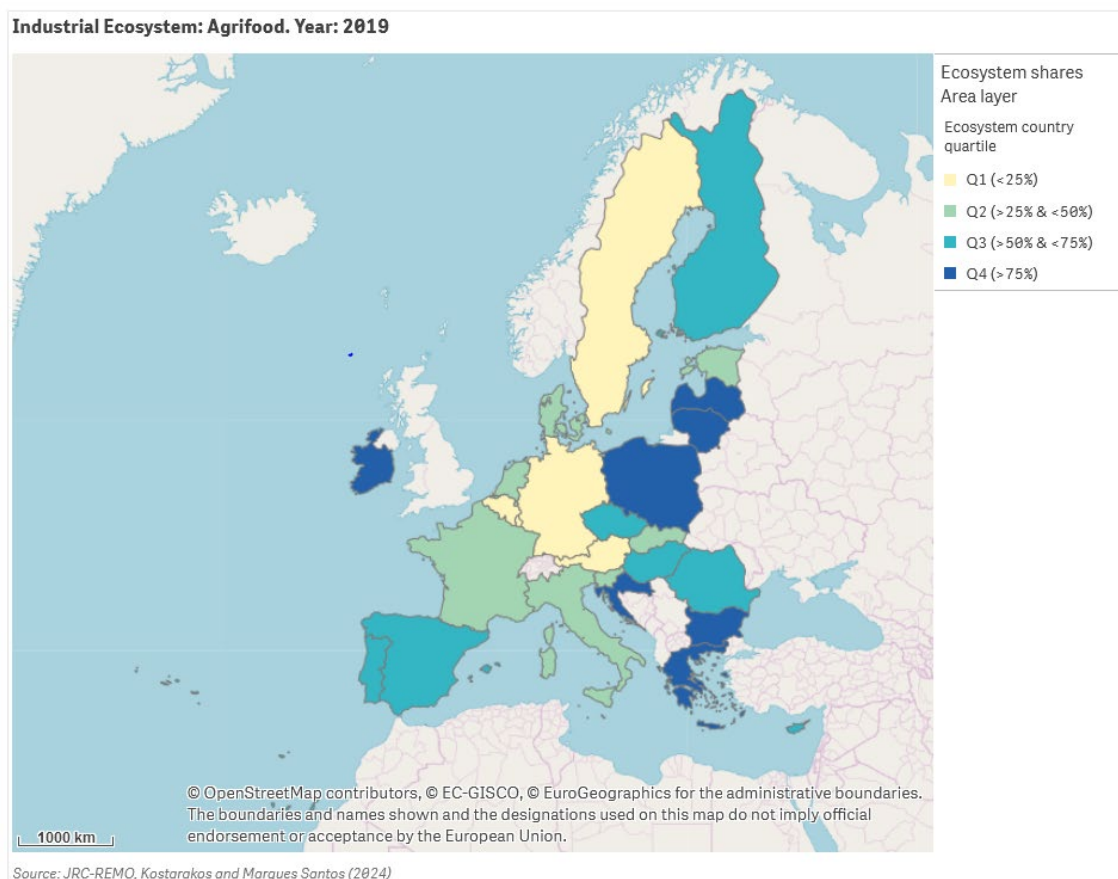
5.2. Ecosystems dashboard

The Ecosystems dashboards presents visualizes data regarding GVA and employment for the 14 Ecosystems across all EU Member States and NUTS2 regions. As in the case of the sectoral dashboard, the data are expressed as shares of the country's total GVA or level of employment as a means of facilitating comparisons.

The user is presented with three filters: firstly, he can choose whether to visualize country- or NUTS2-level data, and then whether the variable of interest is GVA or employment shares. Finally, the user can choose each of the 14 Ecosystems available in order to inspect the geographical patterns that emerge.

In the following Figure 6, we present a visualization for the country-level distribution of GVA shares for the Agrifood ecosystem. As is evident from the Figure, a significant degree of heterogeneity emerges across the Member States. In particular, the largest contribution of the Agrifood ecosystem in terms of GVA produced is located in Greece, Ireland, Latvia, Lithuania and Romania.

Figure 6. Example of TEDv visualisation: EU regions dispersion of GVA shares within the “Agrifood” ecosystem

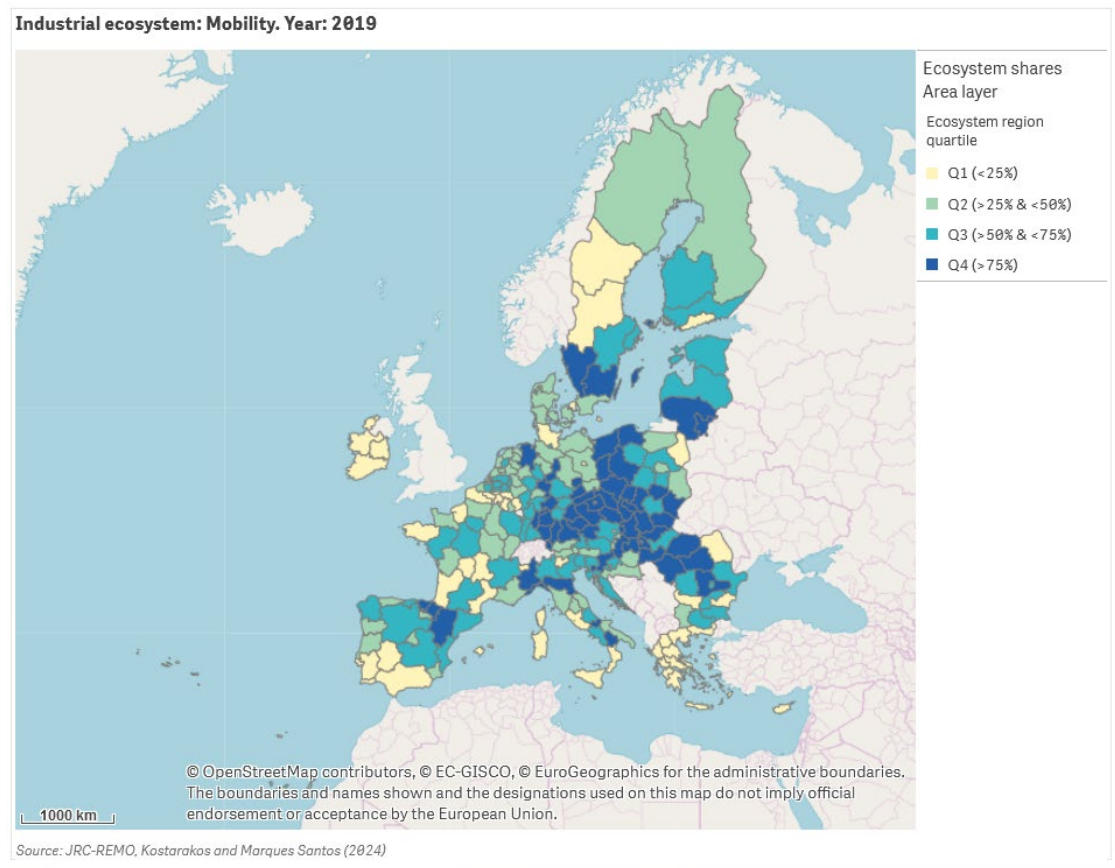


Source: TEDv (extracted on 05/12/2024).

On the contrary, countries in the northern periphery – Austria, Germany, Netherlands and Sweden – emerge as the ones exhibiting the smallest contribution.

We now turn to a visualization of the regional-level dispersion of employment shares for the Mobility ecosystem, which is depicted in Figure 7. We observe that some interesting patterns emerge coupled with a large degree of heterogeneity on terms of the regional composition of the ecosystem. In particular, the top-performers in terms of employment are regions located in Central and Eastern European economies, namely in Bulgaria, Czech Republic, Hungary, Poland and Romania.

Figure 7. Example of TEDv visualisation: EU regions dispersion of employment shares within the “Mobility” ecosystem



Source: TEDv (extracted on 05/12/2024).

It is interesting to highlight that the lowest contributions (the ones belonging to the bottom 25%) are mainly found in Belgium, Greece and France, indicating that the north-south distinction that emerged in the analysis up to now does not hold in this case.

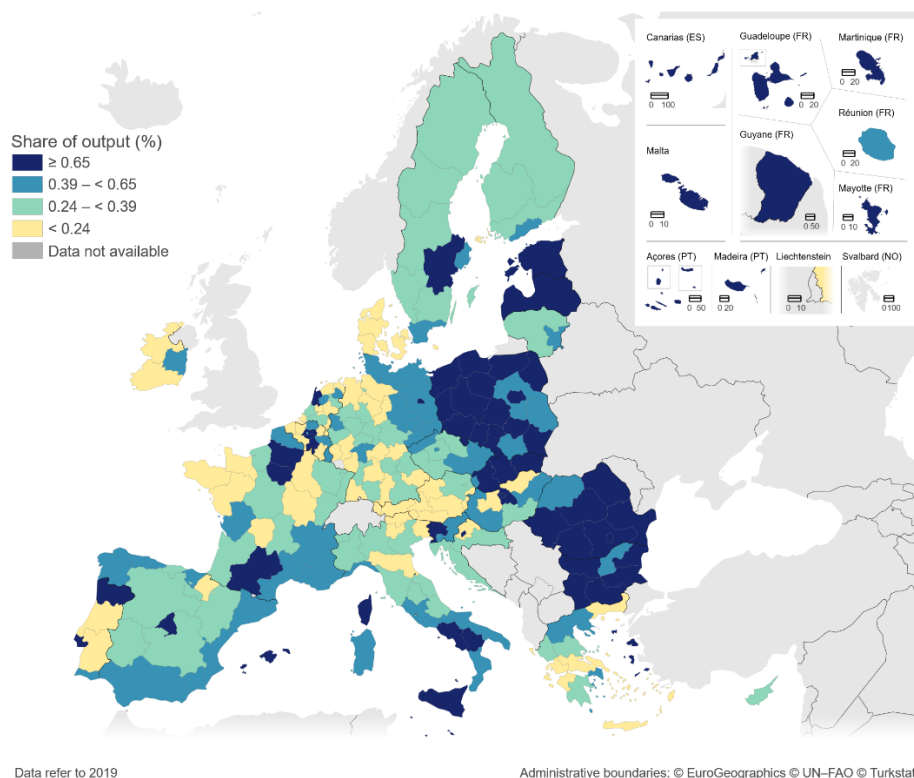
As a means of further showcasing the flexibility of the new module and the visualizations that can be produced using the data available in this new module of the TEDv, we use an example the case of the Aerospace and Defence ecosystem.

Specifically, given that the 2021 Single Marker Report provides the exact definition of each of the ecosystems, we can exploit this information in order to produce a tentative split of the Aerospace and Defence ecosystem into its two main components. In particular, the Aerospace and Defence ecosystem is produced as a weighted average of the following sectors of economic activity (corresponding NACE codes are in parentheses): Manufacture of fabricated metal products, except machinery and equipment (C25), Manufacture of computer, electronic and optical products (C26), Manufacture of electrical equipment (C27), Manufacture of other transport equipment (C30), Repair and installation of machinery and equipment (C33), Air transport (H51), Warehousing and support activities for transportation (H52), Telecommunications (J61) and Security and investigation activities (N80). Of those sectors, the one that appears to be related purely to some sort of defence activity is sector N80.

Of course, this split comes with the caveat that this is an indicative calculation, meant to provide some additional insights into the dependencies that emerge across the relevant sectors. In this specific case, it is highly likely that the estimates constitute the lower bound of the Defence component; nonetheless, they provide some rather interesting insights into the distribution of this economic activity.

As can be seen in the following Figure 8, some interesting spatial patterns emerge. In particular, we observe that the Defence ecosystem is more prominent in the Eastern part of the Union, along with some regions in the southern periphery. On the contrary, in the North-west the Defence ecosystem does not seem to play a relatively important role.

Figure 8. Share of GVA produced by the defence ecosystem, estimated contribution to regional output, 2019



Source: Own elaboration based on data generated using Eurostat and Orbis.

6. Conclusion

In the present paper we provide a detailed description of the data and the methodological approach employed into developing the newest module of the Territorial and Economic Data viewer, the Industrial module.

Specifically, this module provides detailed information across a number of dimensions, ranging from (macro)economic statistics to indices of institutional quality and information regarding the funding that the EU regions are expected to receive from the cohesion policy and Horizon 2020 programs. This information set is available both across sectors of economic activity and across the fourteen industrial ecosystems.

The sectoral information contains the main methodological contribution of this paper, as a new dataset for the NUTS2 regions of the EU is introduced. In particular, combining a number of alternative data sources, a new dataset of GVA and employment for 60 sectors of economic activity was developed, significantly improving upon the availability of sectoral information at the regional level.

This new module of the TEDv allows the user to obtain information regarding the structural composition of the Member States economies, both at the country and at the regional level. The visualizations provided allow the user to compare and contrast the relevant information and thus can support a more informed policy design process.

References

Charron, N., Lapuente, V. and Bauhr, M. (2024). The Geography of Quality of Government in Europe. Subnational variations in the 2024 European Quality of Government Index and Comparisons with Previous Rounds, QoG Working Paper Series 2024:2

European Commission: Directorate-General for Research and Innovation, European Innovation Scoreboard 2024, Publications Office of the European Union, 2024, <https://data.europa.eu/doi/10.2777/779689>

European Commission: Directorate-General for Research and Innovation, Hollanders, H. and Es-Sadki, N., Regional Innovation Scoreboard 2023, Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2777/70412>

Marques Santos, A.; Conte, A.; Ojala, T.; Meyer, N.; Kostarakos, I.; Santoleri, P.; and Shevtsova, Y.; de Quinto Notario, A.; Molica, F. and Lalanne, M. (2023). Territorial Economic Data viewer: A data integration and visualization tool. JRC Working Papers on Territorial Modelling and Analysis No. 04/2023, European

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Annexes

Annex 1. Industrial Ecosystems

The concept of industrial ecosystems was introduced by the European Commission in the 2020 communication on “A New Industrial Strategy for Europe”, as a means of assessing changes in economic activity through the lens of the interdependencies and correlations of the various economic sectors.

More specifically, the Commission identified 14 Ecosystems, which are generated as a combination of different sectors of economic activity (2-digit NACE sectors) with some sectors being characterized as horizontal; that is, sectors which are assumed to affect all of the ecosystems. As such, each ecosystem is a weighted sum of the relevant economic sectors, with the weights reflecting the relative importance of each sector within the respective ecosystem. The weights are generated using information available from Input-Output statistics. For the purposes of this report, we use the weights included in Annex 4 of the 2021 Single Market report.

The list of the ecosystems along with the sectors that comprise them and their share are contained in the following table:

Ecosystem	NACE code	Weight
Aerospace & Defence	C25	0.01
Aerospace & Defence	C26	0.44
Aerospace & Defence	C27	0.24
Aerospace & Defence	C30	0.68
Aerospace & Defence	C33	0.08
Aerospace & Defence	H51	0.09
Aerospace & Defence	H52	0.18
Aerospace & Defence	J61	0.07
Aerospace & Defence	N80	1
Agri-food	A	1
Agri-food	C10	1
Agri-food	C11	1
Agri-food	C12	1
Construction	C31	1
Construction	F	1
Construction	M71	1
Construction	N81	1
Culturaland Creative Industries	C18	1
Culturaland Creative Industries	C32	0.08
Culturaland Creative Industries	G47	0.01
Culturaland Creative Industries	J58	1
Culturaland Creative Industries	J59	1
Culturaland Creative Industries	J60	1
Culturaland Creative Industries	J62_63	0.004

Culturaland Creative Industries	M71	0.15
Culturaland Creative Industries	M73	1
Culturaland Creative Industries	M74_M75	0.44
Culturaland Creative Industries	N77	0.0001
Culturaland Creative Industries	P85	0.1
Culturaland Creative Industries	R90-R92	0.8
Culturaland Creative Industries	S94	0.02
Culturaland Creative Industries	S95	0.26
Digital	C26	0.29
Digital	J58	1
Digital	J61	0.97
Digital	J62	1
Digital	J63	1
Digital	S95	0.48
Electronics	C26	1
Electronics	C28	0.1
Energy - Renewables	C27	0.38
Energy - Renewables	D35	0.29
Energy Intensive Industries	C16	1
Energy Intensive Industries	C17	1
Energy Intensive Industries	C19	1
Energy Intensive Industries	C20	1
Energy Intensive Industries	C22	1
Energy Intensive Industries	C23	1
Health	C21	1
Health	C32	1
Health	Q86	1
Health	Q87_Q88	1
Mobility - Transport - Automotive	C27	0.03
Mobility - Transport - Automotive	C29	1
Mobility - Transport - Automotive	C30	0.32
Mobility - Transport - Automotive	G45	1
Mobility - Transport - Automotive	H49	0.52
Mobility - Transport - Automotive	H50	0.69
Mobility - Transport - Automotive	H52	0.39
Proximity, Social Economy and Civil Security	G47	0.16
Proximity, Social Economy and Civil Security Civil Security	I	0.14
Proximity, Social Economy and Civil Security	L	0.08
Proximity, Social Economy and Civil Security	N81	0.28
Proximity, Social Economy and Civil Security	N82	0.11
Proximity, Social Economy and Civil Security	Q87_Q88	1
Proximity, Social Economy and Civil Security	S95	1

Proximity, Social Economy and Civil Security	S96	1
Proximity, Social Economy and Civil Security	T	1
Retail	G46	1
Retail	G47	1
Retail	H53	1
Textile	C13	1
Textile	C14	1
Textile	C15	1
Tourism	H49	0.45
Tourism	H50	0.21
Tourism	H51	0.91
Tourism	I	1
Tourism	N79	1
Tourism	N82	1
Tourism	R90-R92	0.67
Tourism	R93	1

Annex 2. List of NACE sectors of economic activity

A	Agriculture
B	Mining and quarrying
C10	Manufacture of food products
C11	Manufacture of beverages
C12	Manufacture of tobacco products
C13	Manufacture of textiles
C14	Manufacture of wearing apparel
C15	Manufacture of leather and related products
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
C17	Manufacture of paper and paper products
C18	Printing and reproduction of recorded media
C19	Manufacture of coke and refined petroleum products
C20	Manufacture of chemicals and chemical products
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
C22	Manufacture of rubber and plastic products
C23	Manufacture of other non-metallic mineral products
C24	Manufacture of basic metals
C25	Manufacture of fabricated metal products, except machinery and equipment
C26	Manufacture of computer, electronic and optical products
C27	Manufacture of electrical equipment
C28	Manufacture of machinery and equipment n.e.c.
C29	Manufacture of motor vehicles, trailers and semi-trailers
C30	Manufacture of other transport equipment
C31	Manufacture of furniture
C32	Other manufacturing
C33	Repair and installation of machinery and equipment
D	Electricity, gas, steam and air conditioning supply
E	Water supply; sewerage, waste management and remediation activities
F	Construction
G	Wholesale and retail trade; repair of motor vehicles and motorcycles
H49	Land transport and transport via pipelines
H50	Water transport
H51	Air transport
H52	Warehousing and support activities for transportation
H53	Postal and courier activities
I55	Accommodation
I56	Food and beverage service activities
J58	Publishing activities
J59	Motion picture, video and television programme production, sound recording and music publishing activities
J60	Programming and broadcasting activities
J61	Telecommunications
J62	Computer programming, consultancy and related activities

J63	Information service activities
K	Financial and insurance activities
L	Real estate activities
M69	Legal and accounting activities
M70	Activities of head offices; management consultancy activities
M71	Architectural and engineering activities; technical testing and analysis
M72	Scientific research and development
M73	Advertising and market research
M74	Other professional, scientific and technical activities
M75	Veterinary activities
N77	Rental and leasing activities
N78	Employment activities
N79	Travel agency, tour operator and other reservation service and related activities
N80	Security and investigation activities
N81	Services to buildings and landscape activities
N82	Office administrative, office support and other business support activities
O_Q	Public administration and defence, compulsory social security, Education, Health
R_U	Arts, entertainment and recreation, Other Services, Activities of households, Activities of extra-territorial organisations and bodies

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