

# **Centro Region of Portugal**



**Preparatory work for the webinars on  
"Assessment of Smart Specialisation Strategies  
implementation and impact"**

**September 2020**



## Assessing the potential impact of Centro's Smart Specialisation Strategy

### 1.1. Enhanced quality of policy governance resulting from the implementation of the Smart Specialisation Strategies

#### ➤ **New institutional arrangements (new coordination mechanisms between government bodies, allocation of responsibilities)**

To meet the ex-ante conditionality, Portugal decided to have a multilevel strategy: a National Smart Specialisation Strategy and seven Regional Smart Specialisation Strategies – one by each of the Portuguese regions. Thus, to assure this multi-level governance, a Coordinating Council was established. However, this body only met twice (back in 2015 and in 2017). Although the collaborative work among national agencies and the regions has not been that efficient, the existence of two national networks, created to operationalise some instruments of Portugal 2020 (the partnership agreement between Portugal and the European Commission), has allowed a certain level of coordination between all the current smart specialisation strategies in what concerns the implementation of Thematic Objectives 1 and 3. These are the Incentives Schemes Network and the Science Network - that gather representatives of all Regional Operational Programmes.

Presently, in the framework of the RIS3 revision, and acknowledging that this coordination should be improved, the entity responsible for Coordinating the National Smart Specialisation Strategy (ANI - National Innovation Agency) has created a working group where all the regions and the national entity meet to discuss and coordinate the revision process of all the existing RIS3 (the national and regional ones). Even though this working group has a rather informal structure, it assures a good level of communication and exchange of practices and ideas, besides allowing the harmonisation of concepts and timeframes.

Moreover, we must stress that in Centro, with the existing RIS3 governance model, the participation of the relevant national stakeholders was assured. Additionally, with the creation of the national working group and the recognition of the importance of an inter-regional cooperation and articulation, invitations (to open Centro RIS3 meetings) started to be sent to representatives of all the other Portuguese regional RIS3.

Related to governance, another important remark should be made. In Portugal, RIS3 is implemented through TO1 (Strengthening research, technological development and innovation), TO3 (Enhancing the competitiveness of small and medium-sized enterprises), TO8 (Promoting sustainable and quality employment and supporting labour mobility) and TO10 (Investing in education, training and vocational training for skills and lifelong learning). However, as mentioned, there are national networks coordinating the management of TO1 and TO3.

This national coordination means that most TO1 and TO3 calls are jointly launched by all regions and on the national thematic OP (for the so called convergence regions which, in Portugal are three: Centro, Norte and Alentejo). This does not mean that the managing authority of an Operational Programme, like Centro 2020, is forbidden to launch a TO1 or TO3 call, independent from all other OPs. This means that all decisions related to these TOs are discussed in these networks and should be highly consensual. When the MA of an Operational Programme wants to open a new and different call, that is more unusual and that seeks to address specific needs (e.g. when the MA of the ROPs want to target regional stakeholders needs), there is a very complicated and discouraging process that hampers this possibility.

The Science Network manages TO1 calls for research, development and innovation (in the scientific dimension) and it is coordinated by the President of the Operational Programme of Competitiveness & Internationalization (Compete 2020). The network also incorporates representatives of the Regional Operational Programmes of the mainland, the representative of the involved intermediate bodies (including the national agencies for science and innovation) and of the Development Financial Institution, as well as the General Director of the General-Direction of the European Affairs.

The Incentives Scheme Network manages all TO3 calls and TO1 calls for the companies and, again, it is coordinated by the President Compete 2020. This network also incorporates the Presidents of each one of the Regional Operational Programmes of the mainland, the representative of the involved intermediate bodies and of the Development Financial Institution, as well as the General Director of the General-Direction of the European Affairs.

➤ **New governance system and approach, new infrastructure**

In Centro a governance system was created only for the management of RIS3 (more details can be found on section three of the annex to this document). New bodies were established and work as platforms where stakeholders from different types of organisations can meet and discuss freely – we will never be able to properly assess the impact of the establishment of these bodies: how many new networks came out from here? How many new projects ideas were born in here? It is impossible to keep a track of all this, because sometimes actors might not even recognise that these were the spaces where their “relationship” actually began. A positive indicator that we have – and that tells us that stakeholders have some positive output from their participation in these bodies – is the number of participants (which until now is always been growing) and the fact the we have new comers but few withdrawals.

About the regional infrastructures one can say that:

- They seem to be more involved in the development and implementation processes of policies;
- By their nature, they are aware of the need of cooperation with enterprises and participate in all the EDPs events being active and committed members;

- The fact that most of their funding comes from ESIF, and that the specific calls to support technological infrastructures have as an admissibility criterion the alignment with RIS3, makes them to have a more strategic thinking to assure a higher alignment with the regional priorities.

It's worth referring the fundamental role of the existing clusters in the implementation and communication of Centro RIS3. Being recognised platforms of connection between companies and between companies and entities from the research and innovation ecosystem and, especially, having an easy access and already established communication channels with all these entities, clusters are privileged partners to support the development of activities related to RIS3. Having this as a fact, the Regional Coordination and Development Commission (CCDRC) has tried to involve, as much as possible, the clusters based in the region, as well as the national clusters that represent value chains important for the region, in the development and implementation of the regional strategy. Furthermore, from the other side, these clusters understood, at an early stage, that the alignment of regional enterprises' strategies and innovation plans with Centro RIS3 (as well as their own strategies) is primordial to assure their growth and competitiveness in a sustainable way and with an important link to the territory where they are based.

As a result of this dynamic, CCDRC and a set of relevant clusters for the region celebrated an agreement that had as a general objective the capacity building of regional stakeholders, regarding Centro RIS3. More recently, the four clusters based in the region and CCDRC have started working together on the development of a regional Digital Innovation Hub that will have as a primary objective to support the sustainability and competitiveness of companies through their digitalisation. Knowing that more than 99% of regional enterprises are SMEs (with very limited resources) it is expected that this initiative will have a big impact in the activity of these companies, helping them to succeed in their digital transformation and, thus, to thrive economically.

➤ **New forms of stakeholders' involvement, new relationships between relevant actors (Entrepreneurial Discovery Process)**

Information about the Entrepreneurial Discovery Processes developed in Centro can be found in point 3.1. of the annex of this document ("The Entrepreneurial Discovery Process of Centro RIS3").

➤ **Improved administrative capacity, new skills**

The development, implementation, operationalisation and monitoring of the RIS3 brought a set of new challenges for which the Centro Smart Specialisation team was not prepared. The need to adapt and gain new skills led to the search of new forms of capacity building to internalise the (numerous) skills demanded to accomplish this task.

In the context of a Peer eXchange and Learning workshop organised by the JRC, on May 2019, Centro RIS3' technical body has already identified a list of different skills, identified throughout the process, key to properly develop and implement a Smart Specialisation Strategy.

**Skills for the RIS3 technical body** - responsible for coordinating the design, implementation and monitoring of smart specialisation strategies:

- Techno-economic analytical knowledge (framing questions, understanding and selecting evidence)
- **Methodologies to promote participatory workshops (skills for networking, engaging stakeholders)**
- Ability to process the different contributions and visions into a coherent strategic framework (top down approach)
- **Ability to set a long term vision, translated into quantifiable goals**
- Knowledge on funding sources and mechanisms
- Knowledge about funding instruments and their legal framework
- **Ability to design new instruments and propose specific calls**
- Knowledge on monitoring systems (development of conceptual model)
- **Knowledge on data collection (methodologies and sources available)**
- Knowledge on development of information systems (mainly for quantitative data)
- **Knowledge on qualitative data analysis**
- Communication skills
- Management and coordination skills
- Collaborative leadership skills
- Deep knowledge on the territory (strengths, weaknesses and potential)
- **Identification of new opportunities and potential synergies with other regional S3**
- **Expertise on combining different funding streams/instruments, namely ESIF&H2020 (Horizon Europe)**

\* The points in bold are the ones identified as weaknesses in the Centro RIS3 technical body.

**Skills for the regional innovation ecosystem players** (knowledge providers, companies, end users, etc) - responsible for being the promoters of the economic transformation of the region, by producing (scientific and technological) knowledge and promoting innovation, adding value to that knowledge by its incorporation in the economic and social activities:

- Ability to participate in the process of designing the strategy
- Knowledge about funding instruments available
- Ability to provide recommendations on the instruments design

- Ability to provide recommendations on specific calls needed
- Ability to work collaboratively (at regional, national and international level)
- **Ability to use innovative procurement**
- **Identification of new opportunities and potential synergies with other region's value chains**

\* The points in bold are the ones identified as weaknesses by the Centro RIS3 technical body.

In Centro RIS3, the participation of the stakeholders of the triple helix (we were not able to engage ‘citizens’ or their representatives) was very unbalanced: almost no end users, very few companies and mostly knowledge providers and interface entities. As our productive system is mainly composed by micro and SMEs, we cannot expect to be able to engage them much more; therefore, interface entities play a crucial role.

**Specific skills for the RIS3 interface entities** - responsible for bridging knowledge providers and those who may add value by using the science, technology, innovation produced (mainly companies).

- Scientific knowledge on the main priority domains and on the main providers
- Deep knowledge on the productive structure and the economic tissue
- Ability to translate the scientific language for business
- Ability to understand the companies' needs;
- Knowledge of the financing mechanisms and instruments available;
- Ability to promote joint collaboration between players
- Knowledge on the relevant networks (local, regional, national, international)
- Ability to represent regional stakeholders

To try to develop some of the skills identified and to meet this complex challenge CCRDC has, for instance:

- i) Promoted internal capacity building sessions;
- ii) Promoted external capacity building sessions;
- iii) Organised brokerage events;
- iv) Organised EDP events;
- v) Participated in European working groups and projects, as the “RIS3 support to Lagging Regions” project and the “H20204RIS3” working group (from the “Stairway to Excellence project”);
- vi) Participated and promoted the participation of relevant regional stakeholders in different workshops, forums of discussion and events, as the European Week of Regions and Cities, the Smart Regions Conferences and Peer eXchange and Learning workshops;

- vii) Participated and promoted the participation of relevant regional stakeholders in partnerships of the S3 Thematic Platforms.

In conclusion, a true effort has been made to follow all the important discussions and to participate in a committed way in different projects, working groups and events, identified as important, for all the parts involved, to develop the set of skills listed above. As a result of this effort the presence of Centro Region in European forums has increased substantially in the last few years and the different networks created brought uncountable benefits, being some of them easily measurable. For instance, CCDRC, participated, for the first time, as a partner, in projects funded by European Programmes, more specifically, two H2020 projects and two Interreg Europe projects.

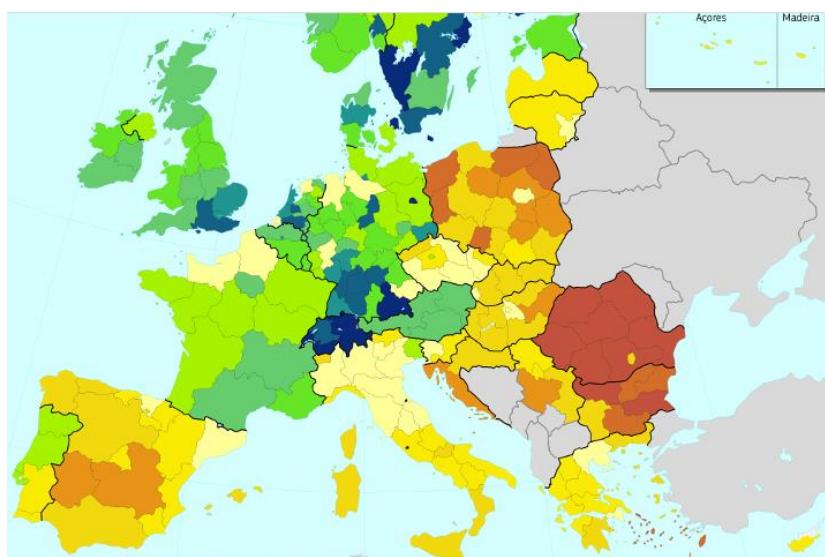
## 1.2. Induced changes in innovation ecosystems towards economic transformation

*For instance in the domains of industrial transition, environmental driven innovation, clusters, knowledge networks, breaking down silos in disciplinary and/or intersectoral work, outward-looking dimension, etc.*

Some detailed information about the regional research and innovation ecosystem can be found in the point 2.3. of the Annex to this document ("Research and Innovation System"). Therefore, in the next pages we will analyse some more concrete aspects, starting with the results of Regional Innovation Scoreboard (RIS3) of 2019.

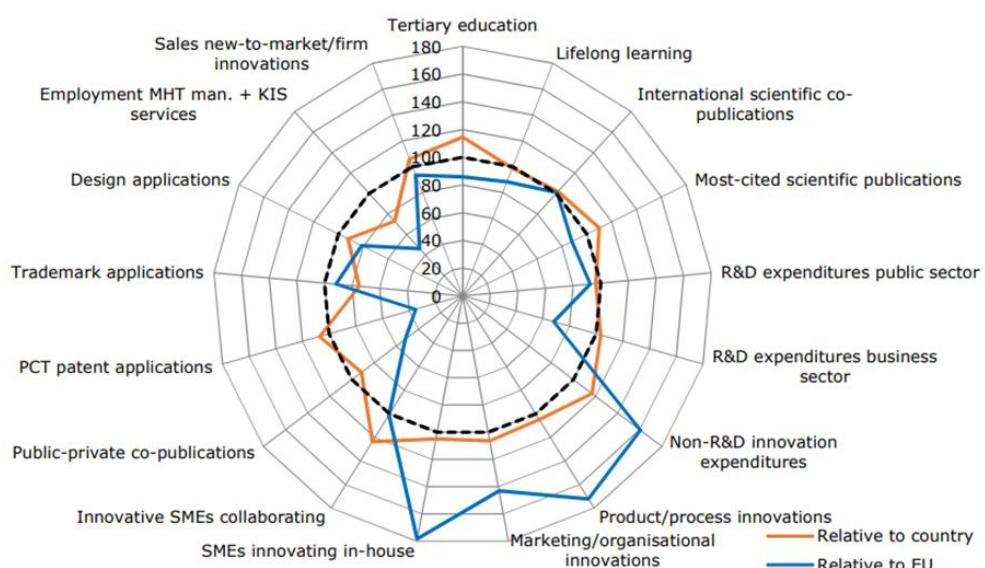
In the last RIS, Centro Region was classified, for the first time as "strong - innovator", having been a "moderate innovator" in the last edition. The regional innovation performance has increased over time (the regional innovation index increased 8,9% from 2011 to 2019 when it reached 0,445).

Additionally, comparing the indicators of 2011 with the ones of 2019 (relative to EU), it is possible to see that almost of them have improved.

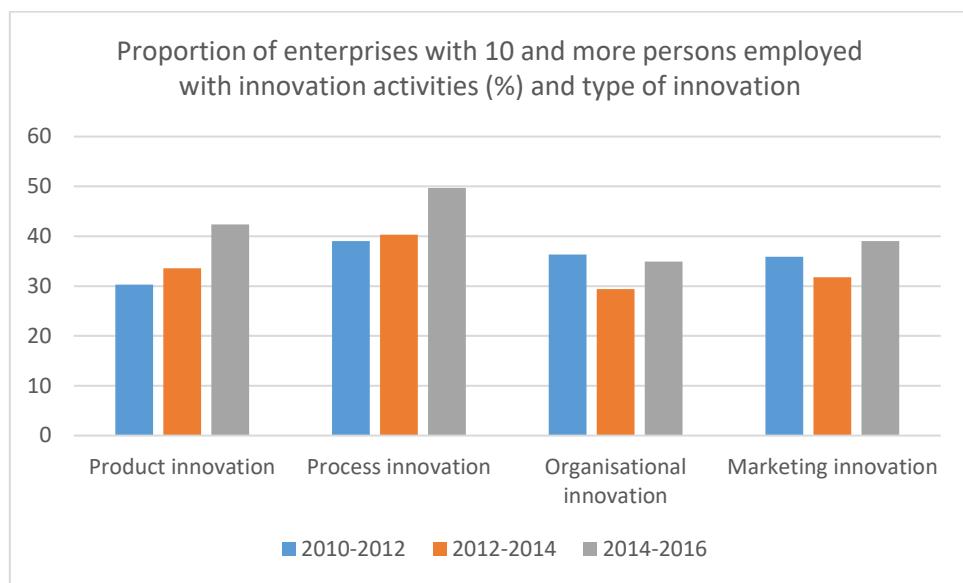


	2011 Relative to EU 2011	2019 Relative to EU 2019		2011 Relative to EU 2011	2019 Relative to EU 2019
<b>Tertiary Education</b>	60.8	85.9	<b>SMEs innovating in-house</b>	161.1	178.3
<b>Lifelong Learning</b>	111.9	88.3	<b>Innovative SMEs Collaborating</b>	151.5	101.0
<b>International Scientific Co-publications</b>	88.8	101.0	<b>Public-Private Co-Publications</b>	49.4	51.9
<b>Most Cited Publications</b>	81.1	88.1	<b>PCT Patents / EPO Patents</b>	23.5	35.2
<b>R&amp;D Expenditures Public Sector</b>	92.9	92.3	<b>Trademark Applications</b>	73.5	91.7
<b>R&amp;D Expenditures Business Sector</b>	62.8	68.1	<b>Design Applications</b>	76.9	81.4
<b>Non-R&amp;D Innovation Expenditures</b>	198.1	160.6	<b>Employment MHT manuf. + KIS</b>	23.4	46.2
<b>Product / Process Innovations</b>	155.0	172.3	<b>Sales New-to-market / Firm innovations</b>	114.2	93.5
<b>Marketing / Organisational Innovations</b>	126.2	143.1	<b>Innovation Index</b>	87.1	91.6

Coming back to the results of the 2019 Regional Innovation Scoreboard, the region performs best in terms of: non-R&D innovation expenditures; SMEs innovating in-house; SMEs introducing product/process innovations; and marketing/organisational innovations. The region's worst performances include: employment in medium-high technology manufacturing and knowledge-intensive services; PCT patent applications; and R&D expenditures in the business sector (even though the business sector is the one that most invests in R&D).



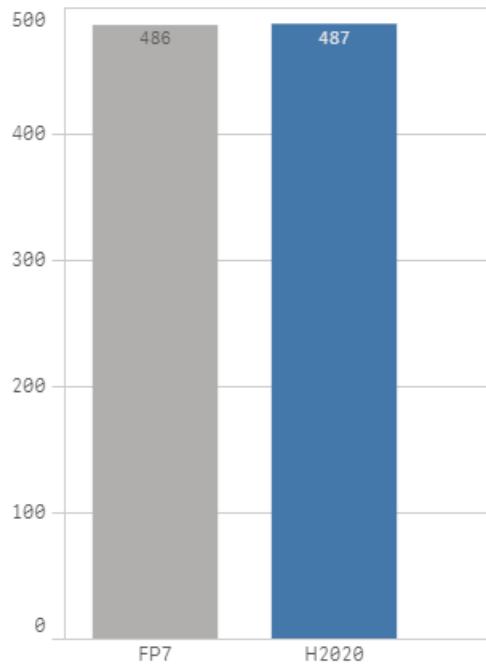
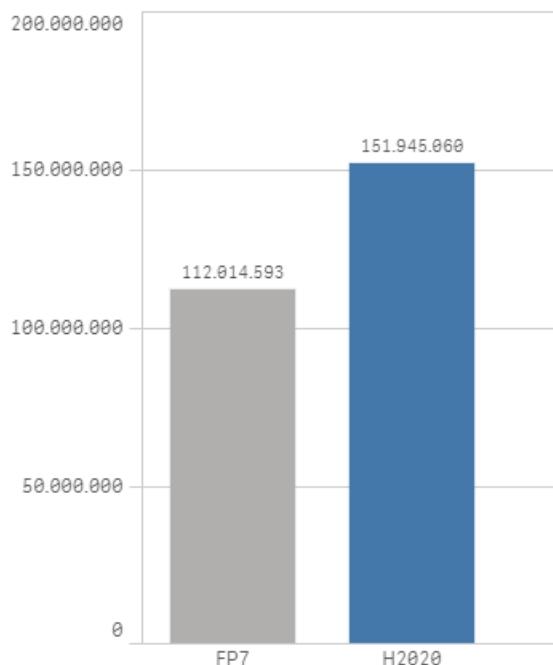
It's worth underlying the very important role played by the companies, which performed well in the indicators related to innovation, contributing significantly for Centro to be ranked as "strong - innovator". From the national statistics one can confirm that a big percentage of regional enterprises invest in innovation, having this number increased since 2010, especially in the product and process innovation (graph below). From the national statistics we also acknowledge that the business sector is the one that invests more in R&D, as it was responsible for more than 52% of all the regional Gross Expenditure on Research and Development (GERD) - closely followed by the Higher Education Institutions that accounted for more than 45% of the regional GERD – even though one of the worst performances in this RIS was exactly on the indicator "R&D expenditures in the business sector".



We should also notice that as for the percentage of GERD in GDP (at market prices), in 2018, the value for Centro was 1,31%, close to the national average (1,36%), but below the European average of 2,19% (EU27). In any case, it is worth mentioning that the two best performing NUTS III regions in Portugal, in 2018, were from Centro: Região de Coimbra (2,42%) and Região de Aveiro (2,14%).

It should also be noted that, although the Region did not perform well in terms of "employment in medium-high technology manufacturing and knowledge-intensive services", the number of regional enterprises in high and medium-high technology sectors, in 2018, was 4.308, which represents close to 18% of the total of existing companies in these sectors in Portugal.

In terms of the regional performance regarding Horizon 2020 funding, Centro already secured almost €152 million, representing 411 signed grants and 487 regional participations. From these 411 projects approved, 112 are led by Centro Region partners. Enterprises obtained more than €56 million (almost €15 million have gone to big companies), higher education institutions have, approximately, 60 million € approved, research centres secured more than €32 million and almost €5 million were to other types of organisation. These numbers have also increased when comparing to the results obtained with the FP7.

**Participation across Programmes**

**EU Contribution (EUR) across Programmes**


### 1.3. Potential impact of Smart Specialisation in terms of growth and jobs

*What methodology and mechanisms have been developed in your country/region to assess the impact of the Smart Specialisation approach in macro-economic terms, in terms of sectoral impact, brain drain – brain gain impact, and more generally in terms of jobs and growth.*

Until this moment, in Centro, no methodologies and mechanisms have been developed to assess the impact of S3. An evaluation of the impact of Centro RIS3 will only be made after the end of the current Programming Period, and specific indicators will be established for this purpose. In any case, Centro is aware that this will be a long-term evaluation and that the results of policies applied five years ago might only be visible in a longer period.<sup>1</sup> Taking this into account, and acknowledging that it is important to better understand and comprehend the regional dynamics of research and innovation, a monitoring system has been put in place for Centro RIS3, to allow a fine-tuning of priorities in the short-term. This monitoring system is composed by three components:

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<sup>1</sup> It is worth mentioning that Centro is a case study for the estimation of the economic impact of RIS3, using the geographic macro and regional (GMR) Europe model. The model estimates the economic impacts of policies that aim at improving the quality of entrepreneurship ecosystems ([www.tandfonline.com/doi/full/10.1080/00343404.2018.1527026#metrics-content](http://www.tandfonline.com/doi/full/10.1080/00343404.2018.1527026#metrics-content)). First results of this study will be presented and discussed in a meeting between Centro RIS3 management team and the researchers that performed the study by the end of September.

1. RIS3 development process: it is a dynamic process with constant actions happening and with important implications. Here we have three elements to monitor – the governance model; communication and capacituation system; thematic discussions (including thematic EDPs).
2. RIS3 operationalisation: a process in the scope of which we start to assess and analyse, in the short and medium term, the RIS3 influence in the Centro Region's economy. Here we have three different elements to monitor – the alignment of projects with Centro RIS3; analysis by specific objective; panel of indicators. For now, we only have information for the first element foreseen.
3. RIS3 long-term analysis: it will be presented in a report at the end of the programming period. More information about each one of the indicators of these components can be found on the monitoring tab of Centro RIS3's website: <http://ris3.ccdrc.pt/index.php/monitorizacao>.

At this point it is also important to refer that the national entity responsible for developing, implementing and operationalising the National Smart Specialisation Strategy has also prepared and published a monitoring report in 2018. The report covers three dimensions: i) operationalisation and implementation of the RIS3 (implementation of governance model and regulatory transposition); ii) demand (distribution of projects approved); iii) qualitative analysis.

Additionally, an evaluation of the implementation of the National and Regional Smart Specialisation Strategies in Portugal was also carried out within the global plan of evaluations of PT2020. From this report<sup>2</sup>, in Portugal, the operationalisation of the RIS3 approach happened in a moment where the policy of R&TD and innovation was rather mature. Therefore, the regional innovation systems were quite mature as well. However, it was remarked that the different regional innovation systems have diverse degrees of performance – the processes of institutional promotion and elaboration of Centro RIS3, Norte RIS3 and Lisbon RIS3, reflected a higher level of maturation. This higher maturation level seemed to have two effects: i) higher level of selectivity of projects (according to the RIS3 priorities established); ii) the systems more mature seemed to be the ones that took the most advantage of the potential of the RIS3 approach.

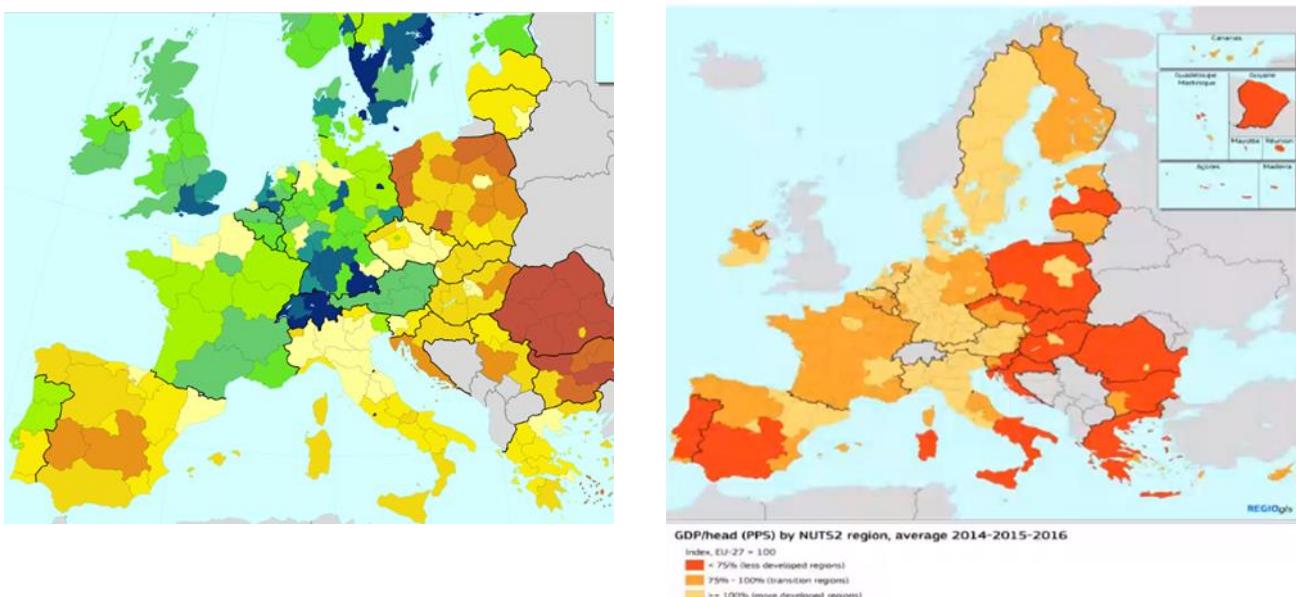
Another important conclusion of this report was that, in Portugal, the implementation of the national and the regional smart specialisation strategies is highly centred in the European Structural Funds. It goes even further affirming that without the ESIF contribution, the Portuguese smart specialisation strategies would have been policy instruments with a very small expression. Therefore, one recommendation of the evaluator was to increase the range of the policy-mix available for the implementation of the smart specialisation strategies, through a higher articulation with other national funds, programmes and

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<sup>2</sup> The report can be found in this link: [https://www.adcoesao.pt/sites/default/files/avaliacao/ava\\_ris3\\_final\\_25112019.pdf](https://www.adcoesao.pt/sites/default/files/avaliacao/ava_ris3_final_25112019.pdf); apart from the report itself there is a Policy brief ([https://www.adcoesao.pt/sites/default/files/policy\\_brief\\_ris3\\_26nov.pdf](https://www.adcoesao.pt/sites/default/files/policy_brief_ris3_26nov.pdf)) and a graphical overview ([https://www.adcoesao.pt/sites/default/files/sintesegraficaris3\\_vfolheto\\_22112019.pdf](https://www.adcoesao.pt/sites/default/files/sintesegraficaris3_vfolheto_22112019.pdf)).

policies. Two other main recommendations were the reinforcement of the monitoring process of the regional strategies and the employment and launch of RIS3 specific calls<sup>3</sup>.

Although no specific methodologies or mechanisms have been developed to assess the impact of S3 in macro-economic terms, there are some figures that we can analyse to give us a hint of the current situation. Coming back to the positive results of Centro Region in the 2019 Regional Innovation Scoreboard, we can see that the efforts made to consolidate the regional research and innovation ecosystem are paying off. And although it's difficult to establish that this result is a direct consequence of the implementation of RIS3, things seem to be connected. However, comparing the RIS map with the one of the GDP per head in PPS, Centro goes from green to red, which means that it is still a "relatively poor" region: we are still not able to translate the knowledge and innovation produced into economic value, generating growth and jobs.



In any case, in 2019, the unemployment rate in Centro Region was 4,9%, below the national average of 6,5% making it the Portuguese region with the lowest unemployment rate. Also important is the fact that this number has been decreasing since 2012, when it was 11,7%. Additionally, since 2015 Centro's unemployment rate has been consistently below the EU average (EU27 from 2020) which was, for 2019, 6,7%. However, considering the negative impact that Coronavirus will have in the economy, the unemployment rate of Centro will increase in 2020.

<sup>3</sup> Recently, a JRC technical report on the implementation of smart specialisation strategies in Portugal was released: <https://s3platform.jrc.ec.europa.eu/-/implementation-of-smart-specialisation-strategies-in-portugal-an-assessment>

About the economic structure of the Region it is worth mentioning the regional Gross Value Added (at current prices) is more than €33.000 million which represents slightly more than 18% of the national value (around €176.000 million). Companies were responsible for more than €16.000 million from the regional value, which represents almost a half of the total number. In 2018, the regional Gross Domestic Product (GDP), at current prices was more than €38.000 million, representing (again) almost 19% of the national value (which is close to €204.000 million).

Finally, services and industry play a very important role. The tertiary sector is actually the most important contributor to the regional Gross Value Added (GVA), having a weight of 66,9% (being the national average 75,5%). The secondary sector represents 29,6% of the regional GVA, which is a value only exceeded by Norte Region (31,9%) and it is well above the national average (22%). The primary sector only accounts for 3,5% of the regional GVA, but it is still above the national average (2,4%). In the last few years we have not registered any significant change in these numbers.

## Annex: Additional Information

### 1. CCDRC's presentation

Apart from the autonomous regions of Azores and Madeira, Portugal does not have political/administrative regions, only statistical. For the five mainland regions there are organisations of the central government with responsibility for regional development. These are the Regional Coordination and Development Commissions (CCDRs), which are bodies of central government in the regions.

The Regional Coordination and Development Commission of Centro implements governmental policies regarding regional development (including innovation and transnational and inter-regional cooperation), environment, city and land management, and it provides technical support to local administration in NUTSII Centro (PT16). CCDRC is also responsible for managing the Regional Operational Programme of Centro (Centro 2020).

It is also important to take into consideration that, not being Portugal a regionalised country, Centro Region does not have an independent regional budget, which can have the effect of reducing the level of flexibility and the range of initiatives that may be promoted, implemented and funded at the regional level.

### 2. Regional profile

#### 2.1. Main regional characteristics

Centro Region of Portugal is in the **geographic centre of Portugal**, having a privileged location for being in the middle of the two Portuguese metropolitan areas of Porto and Lisboa (Porto in the north – Norte Region [PT11] - and Lisbon in the south – Área Metropolitana de Lisboa [PT17]). In the south, Alentejo (another Portuguese region – PT18) is also flanking Centro. In the west the region is bordered by the Atlantic Ocean and in the east by Spain (having two cross-border regions: Castilla y Léon and Extremadura).

The region is composed by **100 municipalities**, which are organised into **eight Intermunicipal Communities** (CIM) and are spread over an area of close to **28.000 km** which accounts for more than 31% of Portugal's land area. Around 39% of the territory is covered by forest area. Although the region does not have a formal capital the main city is Coimbra.

Centro has more than **2,2 million of inhabitants**<sup>4</sup>, accounting for around 22% of the population in Portugal. With 10 municipalities having more than 50.000 inhabitants<sup>5</sup>, the region has a **balanced network of medium-sized urban centres** covered by a good network of infrastructures. The **population's density is 78,6**<sup>6</sup> (number of inhabitants per km<sup>2</sup>) which makes Centro a region with a rather low population density (especially if compared with population's density of Área Metropolitana de Lisboa that is 944). Nevertheless, it is important to note that the desertification the interior of the region is suffering contrasts with more populated and urbanized areas located along the coast.

In 2019, in Centro, the **unemployment rate was 4,9%**, below the national average of 6,5% making it the Portuguese region with the lowest unemployment rate<sup>7</sup>. Although this number has been decreasing since 2012, when it was 11,7%, it is possible that this number will increase in 2020 considering the negative impact that Coronavirus will have in the national economy. Since 2015 Centro's unemployment rate has been consistently below the EU average (EU27 from 2020) which was, for 2019, 6,7%<sup>8</sup>.

In 2019 the **higher education rate** (of resident population aged between 25 and 64 years) in the region **was 25,2%** which is lower than the national rate (26,3%)<sup>9</sup>. However, in 2018/2019 the enrollment rate in tertiary education<sup>10</sup> was 40,2%, above the national average (36,4%)<sup>11</sup>.

To finalise, a striking characteristic of the region is its **demographic decline**. In Centro, in 2018, the crude rate of natural growth (of population) was -0,56%<sup>12</sup>. In the period 2011-2018, only one<sup>13</sup>, of the 100 municipalities of the region, did not see its natural growth decrease, having a minor positive percentage variation (+0,28%). For that same period 18 municipalities presented a percentual drop higher than 10%.

Additionally, and because of the demographic decline, the region has an **ageing population**, which is the result of, on the one hand, the increase of elderly population, and on the other hand, the decreasing of the young population. In 2018, for each 199 elderly people (65 or more years-old) there was only 100 young persons (less than 15 years-old)<sup>14</sup>. This number is even more significant compared with the

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<sup>4</sup> INE, 2020. Data updated on June 2019.

<sup>5</sup> The most populated municipality is Coimbra (with 133.724 inhabitants), followed by Leiria, Viseu, Torres Vedras, Aveiro, Figueira da Foz, Ovar, Castelo Branco, Pombal, Caldas da Rainha. .

<sup>6</sup> INE, 2020. Data updated on June 2019.

<sup>7</sup> INE, 2020. Data updated on February 2020.

<sup>8</sup> Eurostat, 2020.

<sup>9</sup> INE, 2020. Data updated on February 2020.

<sup>10</sup> Percentage relation between the number of students aged between 18 and 22 years old, enrolled in initial training courses, and the resident population aged at the same age groups.

<sup>11</sup> INE, 2020. Data updated on October 2019.

<sup>12</sup> INE, 2020. Data updated on May 2019.

<sup>13</sup> It was Entroncamento.

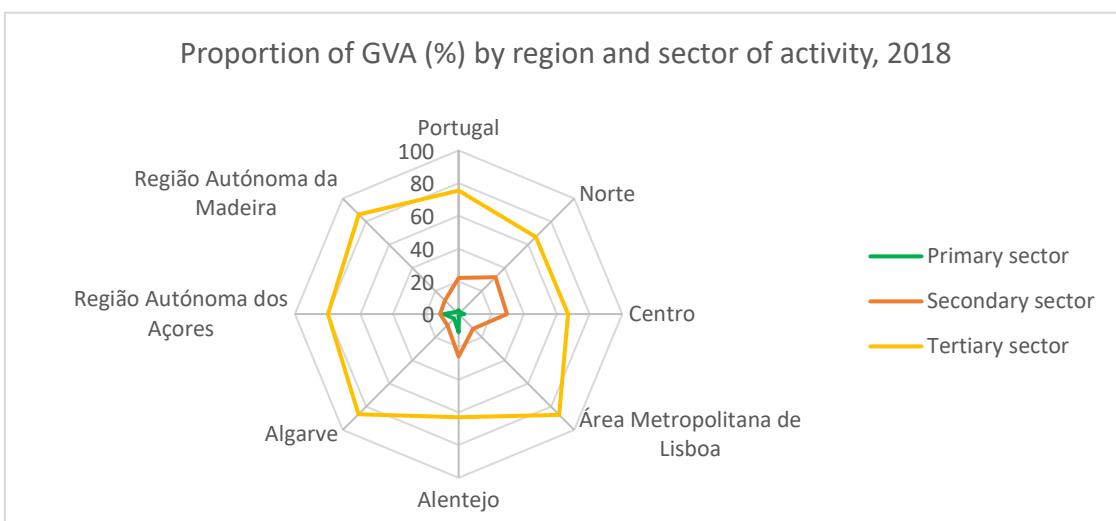
<sup>14</sup> INE, 2020. Data updated on June 2019.

national average (159 elderly people for each 100 young persons) and it is the second highest of Portugal (after Alentejo Region).

## 2.2. Regional economic structure

The regional economy is rather diversified encompassing both low technology level industrial sectors (such as most companies in ceramics, glass, cement, forest industries), and some medium and high-tech sectors (such as health services, biotechnology, space technologies, new materials and ICT).

It is worth mentioning that services and industry play a very important role in the region. The tertiary sector is actually the most important contributor to the regional **Gross Value Added (GVA)**, having a weight of 66,9% (being the national average 75,5%). The secondary sector represents 29,6% of the regional GVA, which is a value only exceeded by Norte Region (31,9%) and it is well above the national average (22%). The primary sector only accounts for 3,5%<sup>15</sup> of the regional GVA, but it is still above the national average (2,4%).



The regional Gross Value Added (at current prices) is more than **€33.000 million** which represents slightly more than 18% of the national value (around €176.000 million)<sup>16</sup>. Companies were responsible for more than €16.000 million from the regional value, which represents almost a half of the total number<sup>17</sup>.

<sup>15</sup> INE, 2020. Data updated on January 2020.

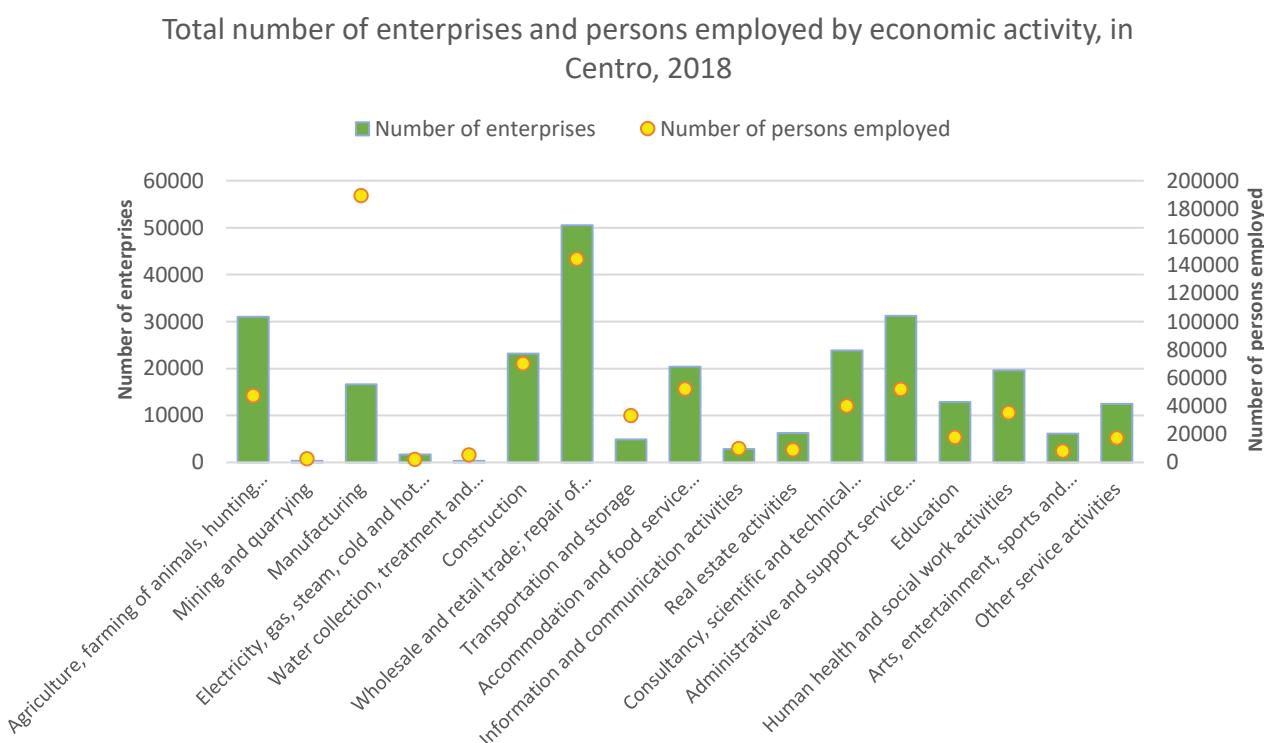
<sup>16</sup> INE, 2020. Data updated on January 2020.

<sup>17</sup> INE, 2020. Data updated on February 2020.

In 2018, the regional **Gross Domestic Product (GDP)**, at current prices was more than **€38.000 million**, representing (again) almost 19% of the national value (which is close to €204.000 million)<sup>18</sup>. Nevertheless, for the same year, the **GDP per capita** (at current prices) **was around €17. 196**, which is lower than the national average (close to €19.800)<sup>19</sup> and well below the EU average (EU 27 from 2020) that was €30.160. In 2017, the regional **GDP per capita in PPS** (Purchasing Power Standards) **was close to €20.000**, below the national average (almost €23.000) and representing 66,6% of the EU value (EU28 = 100)<sup>20</sup>.

### 2.2.1. Regional business fabric

Centro's business fabric is quite important for its regional dynamism. Having **264.492 companies**, Centro accommodates almost 21% of the total number of companies existing in Portugal<sup>21</sup>. These enterprises employ **738.063 persons** (which is more than 18% of the number of persons employed in enterprises in Portugal)<sup>22</sup>. The distribution of these numbers (enterprises and persons employed) by economic activity can be found in the graph below.



<sup>18</sup> INE, 2020. Data updated on January 2020.

<sup>19</sup> INE, 2020. Data updated on January 2020.

<sup>20</sup> INE, 2020. Data updated on January 2019.

<sup>21</sup> INE, 2020. Data updated on February 2020.

<sup>22</sup> INE, 2020. Data updated on February 2020.

According to the number of employees, in 2018, **more than 99% of Centro's companies were SME's** employing more than 89% of the persons working in regional enterprises<sup>23</sup>, thus, playing a very important role in the economic structure of the region. The distribution of companies by size and number of employees can be found in the table below.

	<b>Micro enterprises (less than 10 persons)</b>	<b>Small enterprises (10 - 49 persons)</b>	<b>Medium enterprises (50 - 249 persons)</b>	<b>Big enterprises (250 and more persons)</b>	<b>Total</b>
<b>Number of enterprises</b>	254.874	8.245	1.217	1.56	<b>264.492</b>
	96.36%	3.12%	0.46%	0.06%	
<b>Number of persons employed</b>	382.311	157.984	119.788	77.980	<b>738.063</b>
	51.80%	21.41%	16.23%	10.57%	

The number of regional **enterprises in high and medium-high technology sectors**, in 2018, was 4.308, which represents close to 18% of the total of existing companies in these sectors in Portugal and **1.63%** of all the regional enterprises<sup>24</sup>. The percentage of persons employed by enterprises in high and medium-high technology sectors represents around 5% of the total of persons employed by regional companies.

The number of **enterprises born** in Centro, in 2018 was 34.561, which represents close to 18% of the total number of companies created in Portugal in the same year and 13% of the total number of existing companies in the region<sup>25</sup>. The number of **births of enterprises in high and medium-high technology sectors** in the region was 648, representing close to 1,9% of the companies born in the region.

About the **gazelle companies**<sup>26</sup>, in 2019, the number was 112<sup>27</sup>, which represents a very small percentage of the universe of enterprises in Portugal. Nevertheless, the growth in this number, since 2011 (the first year with a complete study), was of 111% (from 53 to 112). Just from 2018 to 2019, the grow rate was of 18% (from 95 to 112).

<sup>23</sup> INE, 2020. Data updated on February 2020.

<sup>24</sup> INE, 2020. Data updated on February 2020.

<sup>25</sup> INE, 2020. Data updated on February 2020.

<sup>26</sup> The criteria used by CCDRC is that the company must cumulatively: i) have headquarters in the region; ii) present a growth in the business volume above the 20% in the last three years; iii) have less than 10 years; iv) have at least 10 employees in the last year; v) have at least 500.000€ in sales in the year before.

The last study available online is the one from 2018:

[http://www.ccdrc.pt/index.php?option=com\\_docman&view=download&alias=4633-empresas-gazela-2018&category\\_slug=2019-1&Itemid=739](http://www.ccdrc.pt/index.php?option=com_docman&view=download&alias=4633-empresas-gazela-2018&category_slug=2019-1&Itemid=739)

<sup>27</sup> Number calculated by CCDRC.

The position of the **Foreign Direct Investment (FDI)** in Centro Region has increased since 2012 having reached, in 2019, the €4.054 million<sup>28</sup>, which corresponds to 2,9% of the FDI received by the national economy. Even though this number is rather low, we know that there is FDI in facilities of companies with headquarters outside Centro. Therefore, this FDI is not reflected in the regional figures. Nevertheless, since 2010, the value of FDI transactions in Centro has always been positive. Moreover, since 2014, the net inflow of FDI in the region has been above €100 million, having reached its peak in 2016, with €383 million<sup>29</sup>. Regarding the **exports of goods**, in 2019, the regional number was more than €11.300 million, which represents almost 19% of the national amount (approximately €59.900 million)<sup>30</sup>. From all the exports more than 43% were industrial supplies.

### 2.3. Research and Innovation (R&I) System

With three public universities, six polytechnic institutes, around 70 Research and Development (R&D) units, nine interface centres, four collaborative labs, 12 research infrastructures, 48 technological infrastructures, 4 clusters, and 39 business incubators, it is safe to say that Centro has a strong and quite balanced scientific and technological system. More specific information on each one of these types of organisations can be found in the table below.

Type of organisation	Description
<b>Public universities</b>	They are University of Aveiro, University of Beira Interior and University of Coimbra.
<b>Polytechnic institutes</b>	They are Polytechnic institute of Castelo Branco, Polytechnic institute of Coimbra, Polytechnic institute of Guarda, Polytechnic institute of Leiria, Polytechnic institute of Tomar and Polytechnic institute of Viseu.
<b>R&amp;D units</b>	<p>They are public and private research institutions, non-profit, having as main activity the scientific research and the technological development. These entities receive a pluriannual funding, according to its evaluation (carried out by the Portuguese Foundation for Science and Technology - FCT). For the 2020-2023 period, 348 R&amp;D units have presented themselves to the evaluation process in Portugal. From these, 68 were from Centro Region (close to 20%) and only 7 of the regional R&amp;D units did not obtain the classification required to obtain the funding<sup>31</sup>.</p> <p>It is worth to note that Centro's R&amp;D units will receive more than 58% of the total funding for the area of Science and Engineering of Materials and Nanotechnology (going only for one R&amp;D Unit). In the Sciences of Earth, Atmosphere and Climate Changes area, Centro will receive around 49% of the funding. Last but not least: in the Digital Services – social, cultural, economic or of public administration; Electronic and computer engineering; and in the Sciences and Technologies of the Sea; Centro's</p>

<sup>28</sup> Data sent by Bank of Portugal

<sup>29</sup> Data from "Barómetro do Centro de Portugal"

<sup>30</sup> INE, 2020. Data updated on April 2020.

<sup>31</sup> Values calculated by CCDRC, accordingly to the data published to FCT

	R&D Units will receive 37%; 36% and 32% (respectively) of the total funding available for the areas <sup>32</sup> .
<b>Interface centres</b>	<p>They are institutions that promote technological transfer and innovation in enterprises, namely through certification processes, improvement of quality, production efficiency, support to innovation activities, access to technologies in development and human resources capacitation<sup>33</sup>. In Portugal there are 28 recognised interface centres<sup>34</sup> and nine of them are from Centro Region.</p> <ul style="list-style-type: none"> <li>• AEMITEQ – Association for the Technological Innovation and Quality</li> <li>• AIBILI – Association for the Biomedical Research and Light and Imaging Innovation</li> <li>• CENTIMFE – Technological Centre of the Moulds Industry, Special Tools and Plastics</li> <li>• COTHN – National Operating and Technological Horticultural Centre</li> <li>• CTCV – Technological Centre of Ceramics and Glass</li> <li>• CTIC – Technological Centre of Leather Industries</li> <li>• IPN - Instituto Pedro Nunes – Association for the Innovation and Development in Science and Technology</li> <li>• ITeCons – Technological Research and Development Institute in Sciences for Construction, Energy, Environment and Sustainability</li> <li>• RAIZ – Forest and Paper Research Institute</li> </ul>
<b>Collaborative labs</b>	<p>Also called CoLaB, they can be non-profit private associations or companies and have as main goal to create, direct and indirectly, qualified and scientific jobs in Portugal, through the implementation of research and innovation agendas focused on the economic and social value creation<sup>35</sup>. A CoLaB must be composed by, at least, a company and a R&amp;D unit of a higher education institution funded by FCT in order to promote collaborative activities between these entities.</p> <p>Until this moment, 26 Collaborative Labs have been recognised, being four of them based in Centro Region:</p> <ul style="list-style-type: none"> <li>• CoLAB Atlântico – Collaborative Lab for the Atlantic</li> <li>• eCOLab- Collaborative Lab for Circular Economy</li> <li>• FOODLAB - IDANHA FOODLAB</li> <li>• SFCoLAB - Smart Farm CoLAB</li> </ul> <p>Even though the other 22 Collaborative Labs are not based in Centro, some of them are participated by Centro Region agents (as there are partners from outside the region in the four based in Centro).</p>
<b>Research Infrastructures</b>	<p>The Portuguese Roadmap of Research Infrastructures (RI) recognised 56 RI. From these, <b>12 are based in Centro</b> (either single sited, distributed or digital)..</p> <ul style="list-style-type: none"> <li>• BIN - National Brain Imaging Network</li> <li>• C4G -Collaboratory for Geosciences (distributed infrastructure)</li> <li>• ENGAGE SKA - Enable Green E-Sciences for the Square Kilometre Array (distributed infrastructure)</li> <li>• GenomePortugal – National Facility for Genome Sequencing and Analysis (distributed infrastructure)</li> </ul>

<sup>32</sup> Values calculated by CCDRC, accordingly to the data published to FCT

<sup>33</sup> <http://www.programainterface.pt/pt/cit>

<sup>34</sup> The recognition was made by the National Innovation Agency (ANI)

<sup>35</sup> <https://www.fct.pt/apoios/CoLAB/>

	<ul style="list-style-type: none"> <li>• MIA-Portugal - Multidisciplinary Intutute of Ageing</li> <li>• ORCIP - Optical Radio Convergence Infrastructure for Communications and Power Delivering (distributed infrastructure)</li> <li>• PAMI - Portuguese Additive Manufacturing Initiative (distributed infrastructure)</li> <li>• Portuguese Network of Infrastructures for the Circular Economy</li> <li>• RNME – Portuguese Network of Electronic Microscopy (distributed infrastructure)</li> <li>• TEMA - Centre for Mechanical Technology and Automation</li> <li>• UC-LCA - Laboratory Coordinator for Advanced Computing</li> <li>• VIRAVECTOR - Viral Vectors for Gene Transfer Core Facility</li> </ul> <p>Moreover, Centro Region has also <b>nodes from 15 Portuguese Research Infrastructures based outside the region.</b></p> <ul style="list-style-type: none"> <li>• BIOBANCO – Portuguese Network of Biobanks</li> <li>• EMBRC.PT – European Marine Biological Resource Centre Portugal</li> <li>• EMSO-PT - European Multidisciplinary Seafloor Observatory Portugal</li> <li>• INCD - Portuguese National Distributed Computing Infrastructure</li> <li>• Laserlab-Portugal</li> <li>• PASSDA - Production and Archive of Social Science Data</li> <li>• PORBIOTA - Portuguese e-infrastructure for Information and Research on Biodiversity</li> <li>• PPBI - Portuguese Platform of Bioimage</li> <li>• PRISC - Portuguese Research Infrastructure of Scientific Collections</li> <li>• PtCAC – Portuguese Academic Clinic Centres Network</li> <li>• PtCRIN – Portuguese Clinical Research Infrastructure Network</li> <li>• PTNMR - Portuguese Nuclear Magnetic Resonance Network</li> <li>• RNCA –Advanced Computing Portugal</li> <li>• RNEM - Portuguese Mass Spectrometry Network</li> <li>• TRIS-HCP - Translational and Clinical Research Infrastructures Specialisation Platform - Health Cluster Portugal</li> </ul>
<b>Technological Infrastructures<sup>36</sup></b>	<p>In Portugal the roadmap of Technological Infrastructures<sup>37</sup> recognises four types of entities: Technological Centres; Technological Valorisation and Transfer Centres, Science and Innovation Parks; Incubation Centres of Technological Basis. In total, Centro has 48 Technological Infrastructures, but only 37 have legal personality. These are the ones presented below.</p> <p><b>Technological Centres from Centro:</b></p> <ul style="list-style-type: none"> <li>• CENTIMFE – Technological Centre of the Moulds Industry, Special Tools and Plastics</li> <li>• CTCV – Technological Centre of Ceramics and Glass</li> <li>• CTIC – Technological Centre of Leather Industries</li> </ul> <p><b>Scientific and Technological Parks in Centro:</b></p> <ul style="list-style-type: none"> <li>• Biocant Park (the only park of biotechnology in Portugal)</li> <li>• BLC3 (only national entity created for the development and industrialisation of biorefineries)</li> </ul>

<sup>36</sup> The recognition of these entities was made by the National Innovation Agency, who established a set of criteria that each entity should comply with to be considered a Technological Infrastructure (and of which type).It is important to clarify that some of the Technological Infrastructures recognised were also recognised as Interface Centres, as they are complying with the criteria established to be part of each one the different typologies of entity.

<sup>37</sup> [https://www.ani.pt/media/4382/caracteriza%C3%A7%C3%A3o-infraestruturas-tecnol%C3%B3gicas\\_v4\\_2018.pdf](https://www.ani.pt/media/4382/caracteriza%C3%A7%C3%A3o-infraestruturas-tecnol%C3%B3gicas_v4_2018.pdf)

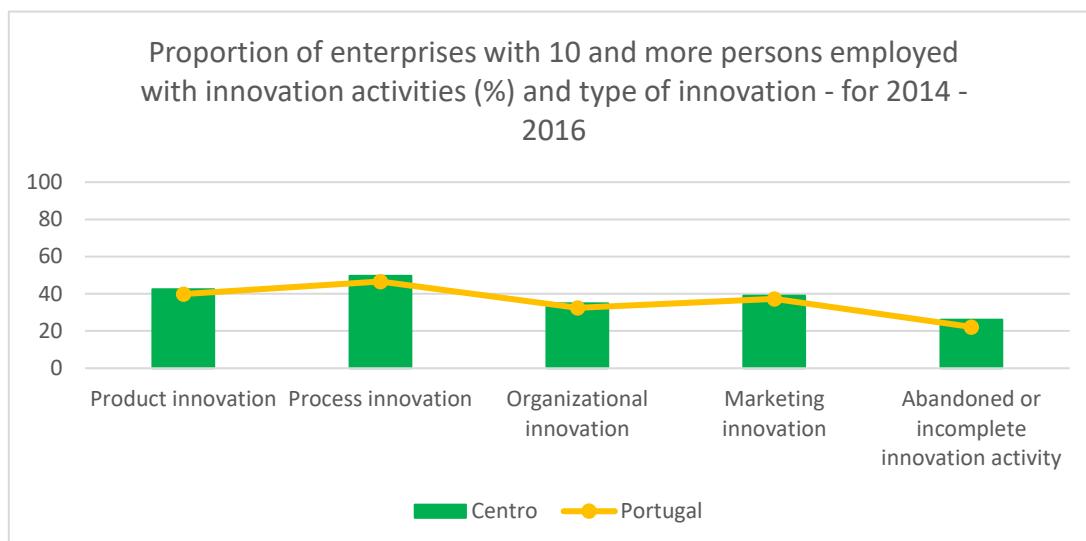
	<ul style="list-style-type: none"> <li>• Parkurbis</li> <li>• iParque</li> <li>• TAGUSVALLEY</li> <li>• Creative Science Park</li> </ul> <p><b>Incubation Centres of Technological Basis in Centro<sup>38</sup></b></p> <ul style="list-style-type: none"> <li>• CEI – Innovative Enterprises Centre</li> <li>• CETEC – Technological Enterprises Centre</li> <li>• CIEBI/BIC – Entrepreneurial Innovation Centre of Beira Interior</li> <li>• GreenValley FoodLab</li> <li>• IDDNET - D. Dinis Incubator</li> <li>• IEFF – Enterprises Incubator of Figueira da Foz</li> <li>• IEUA - Enterprises Incubator of University of Aveiro</li> <li>• Enterprises Incubator of Curia Tecnoparque</li> <li>• IPN Incubator</li> <li>• IUPEN – Urban Poli-nucleated Incubator of Enterprises and Businesses</li> <li>• OPEN – Association for Specific Business Opportunities</li> <li>• Parkurbis Incubation</li> <li>• Start-up Santarém</li> </ul> <p>In Centro we also have 18 <b>Technological Valorisation and Transfer Centres</b>:</p> <ul style="list-style-type: none"> <li>• ADAI – Association for the Industrial Aerodynamics Development</li> <li>• AEMITEQ – Association for the Technological Development and Quality</li> <li>• AIBILI – Association for Innovation and Biomedical Research on Light and Image</li> <li>• CBPBI Association – Centre of Biotechnology of Plants of Beira Interior</li> <li>• UC Tecnimede Association – Research, Technological Development and Internationalisation</li> <li>• CATAA – Technological Support Centre for Agri-industry</li> <li>• CBE – Centre of Biomass for Energy</li> <li>• Centre of Innovation and Technology N. Mahalingam</li> <li>• Operative and Technological National Horticultural Centre</li> <li>• INOVLINEA – Centre of Food Technology Transfer</li> <li>• IPN - Pedro Nunes Institute</li> <li>• ISR – Systems and Robotics Institute</li> <li>• IT – Telecommunications Institute</li> <li>• ITeCons – Institute for Research and Technological Development for Construction, Energy, Environment and Sustainability</li> <li>• LINE – Industrial and Entrepreneurial Innovation Lab – TAGUSVALLEY</li> <li>• RAIZ – Forest and Paper Research Institute</li> <li>• SerQ – Forest Innovation and Competences Centre - Association</li> <li>• UC BIOTECH</li> </ul>
<b>Clusters</b>	Three National clusters are based in Centro: Cluster Habitat; ICT Cluster; and Cluster from Engineering and Tooling. We also have Inovcluster (as regional arm of the National Agri-food Cluster). These clusters have a strong regional implementation as they are strongly connected to some main activities developed in the region.
<b>Incubators</b>	The Region has 39 business incubators. From those, 20 belong to the National Incubators Network, 13 have a technological basis and five are predominantly industrial. One of these incubators (Instituto Pedro Nunes), recently, received an

<sup>38</sup> Including three without legal personality.

	award in the World Incubation Summit 2019, for being in the Top 10 of the Best Incubators of the World, in the <i>University Business Incubators</i> category.
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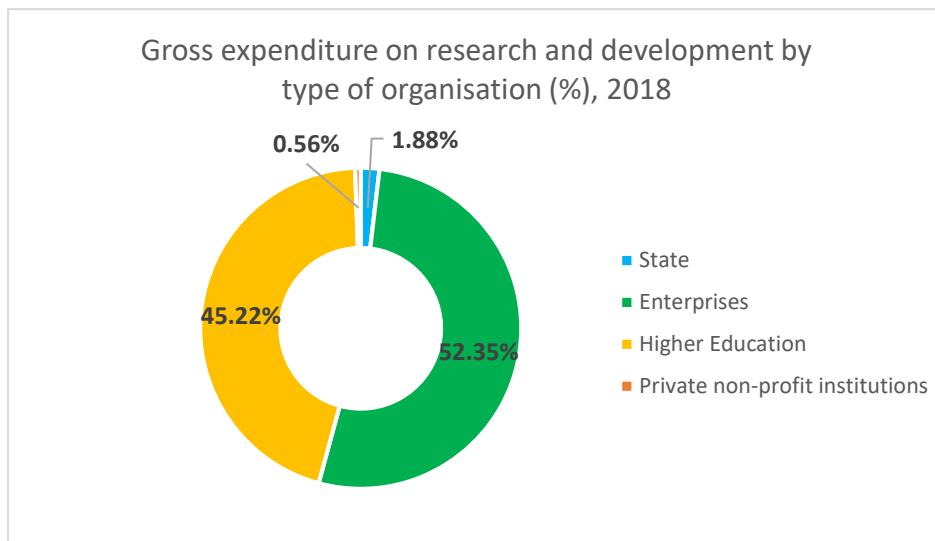
We should note **that all these organisations are well spread over the territory** contributing to the consolidation and strengthening of the regional R&I Ecosystem.

Although all these organisations are fundamental for the success of the regional R&I System, we must not forget the very important role played by the companies, which performance indicators contributed significantly for Centro to be ranked as “strong - innovator” in the last Regional Innovation Scoreboard (see end of this chapter for more information on this). As it is possible to see in the graphic below, in the period 2014-2016, 42,4% of the regional enterprises (with 10 and more persons employed) had product innovation activities, 49,7% had process innovation activities, 34,9% had organisational innovation activities and 39% had marketing innovation activities. It is also important to note that each one of these values was above the national average.



Furthermore, in Centro, in 2018, companies were responsible for more than 52% of all the regional **Gross Expenditure on Research and Development (GERD)**. They were closely followed by the Higher Education Institutions that accounted for more than 45% of the regional GERD<sup>39</sup>.

<sup>39</sup> INE, 2020. Updated on May 2020.



It is important to notice that, for the same year, the regional Gross Expenditure on R&D was more than €499 million which represented around 18% of the national amount. The amount invested by Centro's companies was approximately €261 million (accounting for more than 18% of the total value invested by enterprises in R&D in Portugal). About the amount invested by companies in R&D, it is interesting to see that, in 2016, almost 74% of these expenditures were made by SMEs and only 26% of the GERD came from big enterprises<sup>40</sup>.

	Total GERD of enterprises in 2016	Micro enterprises (less than 10 persons)	Small enterprises (10 - 49 persons)	Medium enterprises (50 - 249 persons)	Big enterprises (250 and more persons)
Amount (€)	€ 232,593.60	€ 21,635.30	€ 71,722.10	€ 77,722.20	€ 61,513.90
Amount (%)	100%	9.30%	30.84%	33.42%	26.45%

As for the percentage of **gross expenditure on research and development in GDP** (at market prices), in 2018, the value for Centro was **1,31%**<sup>41</sup>. This number matched the national average (1,36%) below the national and European targets for 2020 (2,7% and 3%, respectively). For the same year, the regional GERD in GDP was also well below the European average of 2,19%<sup>42</sup> (EU27). In any case, it is worth mentioning that the two best performing NUTS III regions in Portugal, in 2017, were from Centro: Região de Aveiro (2,24%) and Região de Coimbra (2,20%)<sup>43</sup>.

<sup>40</sup> INE, 2020. Updated on September 2018.

<sup>41</sup> INE, 2020. Updated on May 2020.

<sup>42</sup> Eurostat, 2020.

<sup>43</sup> INE, 2020. Updated on December 2019.

In terms of R&D and innovation resources, in 2016, Centro ranked second among Portuguese NUTS II regions regarding the number of **PhDs in S&T areas** per 1,000 inhabitants (1,06 against the national average of 0,84)<sup>44</sup> and third concerning **R&D researchers** (full time equivalent) in the active population (0,78% in 2017, against the national average of 0,86%)<sup>45</sup>.

In total, in 2018, the region made 81 **innovation patents applications per million inhabitants**, the highest value for the country. The national average was 71 innovation patents requests per million inhabitants<sup>46</sup>.

In terms of the regional performance regarding **Horizon 2020 funding**, Centro secured €151,9 million<sup>47</sup>, representing 411 signed grants and 487 regional participations. From these 411 projects approved, 112 are led by Centro Region partners. Enterprises obtained more than €56 million (almost €15 million have gone to big companies), higher education institutions have, approximately, 60 million € approved, research centres secured more than €32 million and more than €5 million were to other types of organisation.

Taking this into account, and accordingly to the JRC technical report “Mobilising European Structural and Investment Funds and Horizon 2020 in support of innovation in less developed regions”, Centro region belongs to the group of “**intermediary R&I regions**”, defined by a higher R&I intensity (GERD/GDP) combined with a higher ESIF dependence and lower capacities to capture Horizon 2020 funding (H2020/ESIF)<sup>48</sup>.

To conclude, in the **Regional Innovation Scoreboard** (RIS) of 2019, Centro Region was classified has “**strong - innovator-**”<sup>49</sup>. The regional innovation performance has increased over time (the regional innovation index increased 8,9% from 2011 to 2019 when it reached 0,445). The region performs best in terms of: non-R&D innovation expenditures; SMEs innovating in-house; SMEs introducing product/process innovations; and marketing/organisational innovations. The region’s worst performances include: employment in medium-high technology manufacturing and knowledge-intensive services; PCT patent applications; and R&D expenditures in the business sector (even though the business sector is the one that most invests in R&D).

<sup>44</sup> INE, 2020. Data updated on November 2017.

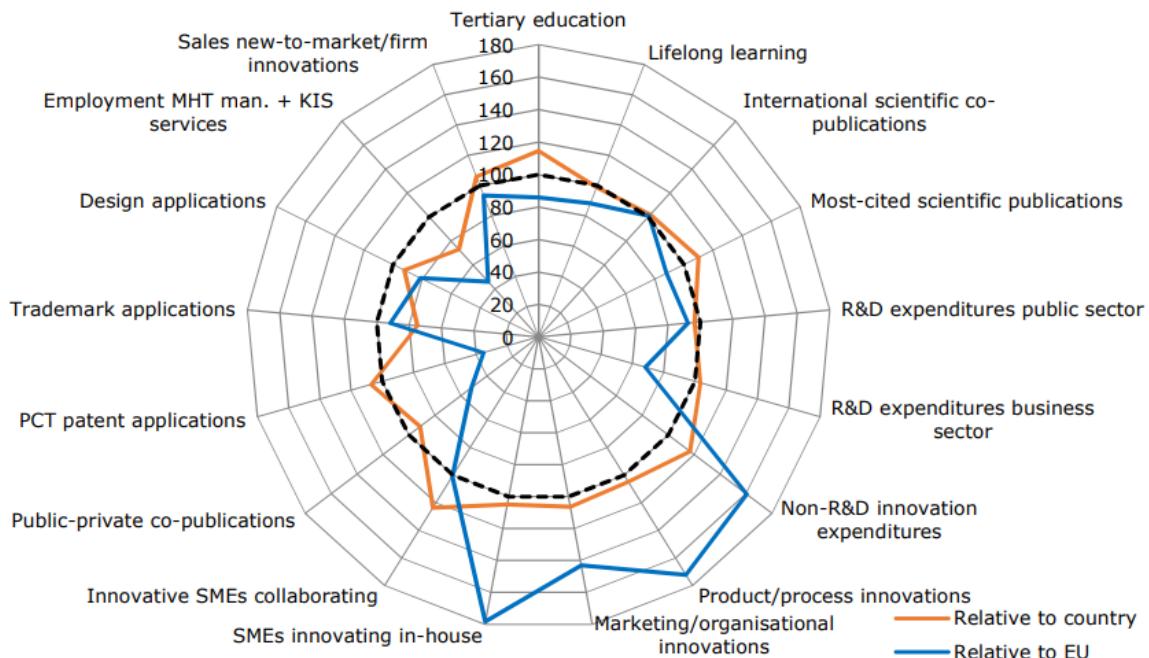
<sup>45</sup> INE, 2020. Data updated on June 2019.

<sup>46</sup> INPI, 2020.

<sup>47</sup> Information shared by the National Innovation Agency, reporting to March 2020. Note: the data available to the National Innovation Agency is more updated than the one in the H2020 Dashboard.

<sup>48</sup>[https://publications.jrc.ec.europa.eu/repository/bitstream/JRC112442/jrc112442\\_mobilising\\_european\\_structural\\_and\\_investment\\_funds\\_and\\_horizon\\_2020.pdf](https://publications.jrc.ec.europa.eu/repository/bitstream/JRC112442/jrc112442_mobilising_european_structural_and_investment_funds_and_horizon_2020.pdf)

<sup>49</sup> Portugal is a moderate innovator.



### 3. Research and Innovation Smart Specialisation Strategy of Centro – Centro RIS3

It is important to be aware that, to meet the *ex-ante* conditionality, Portugal decided to have **a multilevel strategy: a National Smart Specialisation Strategy and seven Regional Smart Specialisation Strategies** – one by each of the Portuguese regions. Thus, Centro RIS3 was defined and all its development, implementation, operationalisation and monitoring were (and still are) conducted by CCDRC.

About Centro RIS3, its process of reflexion was, since the beginning, open to everyone. From the discussion with the regional stakeholders **eight differentiating thematic domains were established: Forest, Sea, Tourism, Agroindustry, Materials, Health, ICT and Biotechnology**. These domains are areas in which there is productive capacity and/or capability to produce scientific and technological knowledge, whether in already consolidated ways or as an emerging activity.

The process then led to the identification of **four cross-cutting priorities**, to be taken into account when allocating resources: **Resources sustainability, Qualification of human resources, Territorial cohesion and Internationalisation**.

From the thematic domains and the cross-cutting priorities, **four specific objectives** were defined:

- 1) Adoption of sustainable industrial solutions;
- 2) Valorisation of natural endogenous resources;
- 3) Mobilisation of technologies for quality of life;
- 4) Promotion of territorial Innovation.

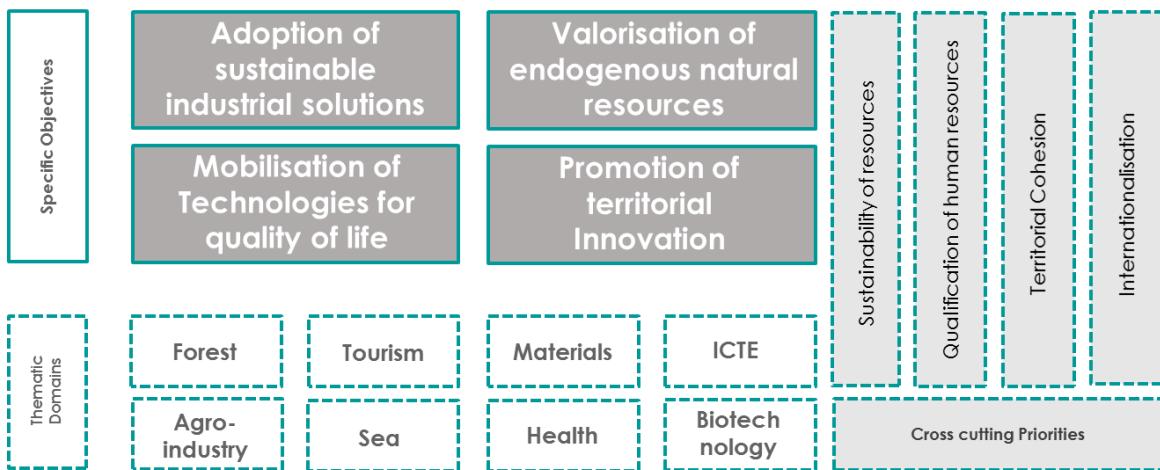
Within each one of these objectives, stakeholders collectively defined some specific lines of action, establishing the path to achieve the proposed objectives.

Specific Objectives	Lines of Action
<b>1) Adoption of sustainable industrial solutions</b>	<b>1.a)</b> Development of processes, materials and sustainable systems with greater added value for the Centro Region <b>1.b)</b> Efficient use of resources and reduction of productive processes' impact on the environment <b>1.c)</b> Industrial modernisation through circular economy <b>1.d)</b> Industrial modernisation through "Production centred on the human being" <b>1.e)</b> Valorisation of advanced and/or emerging technologies in higher added-value eco-innovation processes, products and systems
<b>2) Valorisation of endogenous natural resources</b>	<b>2.a)</b> Conservation and sustainability of natural endogenous resources <b>2.b)</b> Monitoring and integrated management of natural endogenous resources <b>2.c)</b> Development of products, processes and services with a view to boosting value chains associated with natural endogenous resources.
<b>3) Mobilisation of technologies for quality life</b>	<b>3.a)</b> Development of innovative preventive health actions and systems <b>3.b)</b> Development of innovative actions and systems that facilitate early diagnosis in health <b>3.c)</b> Development of new treatments and therapies (e.g. cellular, genetic, biological, pharmacological, regenerative) <b>3.d)</b> Development of innovative actions and systems that promote active and healthy ageing, conducive to independent living, that run through the different care networks (health care and social support) <b>3.e)</b> The adoption of platforms to cultivate interoperability between systems, enhancers of citizen-centred solutions <b>3.f)</b> Promotion of actions to reinforce the commitment to Health and Wellness Tourism
<b>4) Promotion of territorial Innovation</b>	<b>4.a)</b> Promotion and streamlining of innovation projects anchored in the territory <b>4.b)</b> Promotion of social innovation initiatives <b>4.c)</b> Development of innovative proposals for the qualification of tourism in the Centro Region

It is important to underline that the lines of action established were not the result of a top-down process. On the contrary, the lines of action were defined within four working groups (one working group for each specific objective) that were open to everyone and coordinated by external experts. These experts translated the different suggestions into a coherent proposal and worked together with CCDRC team in a strategic level.

Another important note is that these working groups were not active just in the beginning of the process. They met and engaged throughout the years, to allow some adjustments in Centro RIS3, taking into account the changes and developments of the regional innovation system over the years.

In the image below we can have an overview of Centro RIS3' design and all its components.



Although there are several components, it is quite simple to operationalise. For instance, when evaluating the alignment of a project with Centro RIS3 **the first thing that is done (and the most important one) is to analyse if a project is contributing to at least one of the lines of action established** within the specific objectives. If it is, then the project is considered aligned with Centro RIS3.

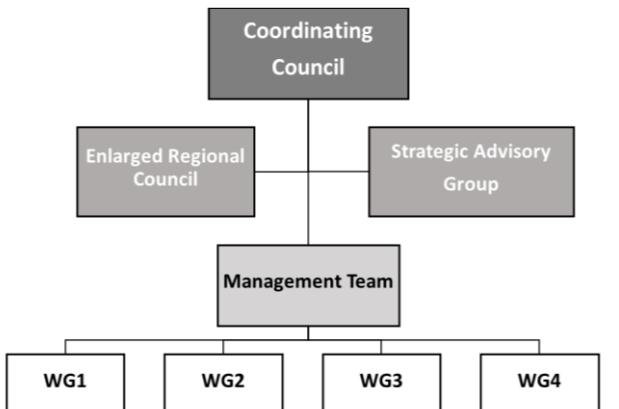
Additionally, **a second analysis is carried out to assess the degree of alignment with Centro RIS3**.

In practice, this will determine if the project will be scored with 3,50 or 5,00 in this evaluation criterion<sup>50</sup>. Therefore, for a project to be considered strongly aligned with Centro RIS3, besides contributing to at least one of the lines of action, it will also have to comply with at least two of the following three requirements:

- 1- To be aligned with, at least, one thematic domain or cross-cutting priority.
- 2- To contribute in a very clear and differentiating way to the regional economy and/or to the regional innovation ecosystem.
- 3- To produce a spill-over effect into the value chains or a dissemination effect in the region.

<sup>50</sup> The evaluation criteria are: A – quality of the project; B – impact of the project in the competitiveness of the company; C – contribute of the project for the economy; D – contribute of the project for the regional convergence (alignment with RIS3).

About the **governance model** of Centro RIS3 it was thought to ensure the involvement and participation in different ways of the regional stakeholders, being composed by eight governance bodies.



**Enlarged Regional Council:** acts as a Forum for the Regional Research and Innovation System and is responsible for validating the entire process, providing inputs, keeping track of the documents that are produced and making key strategic decisions throughout the exercise.

**Coordinating Council:** led by the CCDRC and comprising a group of national and regional relevant bodies that assume the management of the development and monitoring works of Centro RIS3.

**Strategic Advisory Group:** composed by persons of recognised merit who are involved in strategic thinking about the region and/or smart specialisation and who can make a valuable contribution to the process.

**Management Team:** made up of members of the CCDRC (with executive functions) and of the external coordinators of the thematic working groups. This team is responsible for streamlining the work, organising meetings, producing documents and mobilising the necessary resources for all this to happen.

**Thematic working groups:** they are thematic and "spaces of entrepreneurial discovery" *per excellence*. Within these groups, the relevant actors in each area work together, seeking to stimulate innovation and internationalisation, cooperation and networking. There are four working groups, one by each specific objectives established in Centro RIS3.

Finally, we should add that **the revision process of Centro RIS3 is ongoing** and for that effect, in October of 2019 an online survey was launched to regional stakeholders to assess the adequacy of the current Centro RIS3' design. The results of this survey were presented in a meeting that occurred on the 31<sup>st</sup> of that month. This was a completely open meeting that counted with the participation of 132 regional and national stakeholders. This meeting was followed by four other meetings, this time organised by working group, aiming at discussing the present and future lines of action of Centro RIS3. These meetings occurred between January and February of 2020 and registered overall 354 participations. The contributions received in these meetings are now being taken into consideration. Moreover, it should be taken into consideration that this revision process will have to recognise the fact

that COVID-19 will impact the regional reality (economically and socially). Thus, the future regional Smart Specialisation Strategy will have to meet the new challenges in order to tackle them in an efficient way.

### 3.1. The Entrepreneurial Discovery Processes in Centro RIS3

As explained previously, the thematic working groups established for each one of the specific objectives of Centro RIS3 are seen as spaces of EDP *per excellence* as within these groups all the relevant actors in each area, and coming from different typologies of entities, come together and discuss common problems and challenges. Moreover, these working groups, even that more active in the beginning of the process, have never stop working, being guaranteed a continuous process that has allowed to choose investment priorities, to refine priorities (lines of action) and the creation of conditions for the emergence of new partnerships. Also, throughout the years CCDRC kept working with the coordinators of each one of these working groups.

Until this moment, 25 meetings were already organised, counting with more than 1300 participations and more than 100 entities were represented.

	<b>WG1</b>	<b>WG2</b>	<b>WG3</b>	<b>WG4</b>	<b>Other meetings</b>
<b>2015</b>	19/01 48 participants  26/02 34 participants	13/01 52 participants  26/02 46 participants  16/04 31 participants	16/01 33 participants  27/02 35 participants	16/01 44 participants  27/02 81 participants (3 subgroups)	Kick-off meeting 07/01 77 participants  Joint meeting 30/04 85 participants
<b>2017</b>	25/01/2017 41 participants	26/01/2017 38 participants	25/01/2017 25 participants	25/01/2017 35 participants	
<b>2018</b>	+WG3 (CE) 19/09/2018 21 participants	+WG4 (CE) 24/09/2018 30 participants	+WG1 (CE) 19/09/2018 21 participants	+WG2 (CE) 24/09/2018 30 participants	Joint meeting (CE) 10/12/2018 78 participants
<b>2019</b>					Kick-off meeting of the revision process 31/10 130 participants
<b>2020</b>	30/01 67 participants	03/02 108 participants	30/01 66 participants	03/02 113 participants	

Even though recognising the importance of these working groups to define priorities and specific lines of action to achieve the objectives proposed, over the years, CCDRC also understood that to really be able to create new and differentiating projects, then alongside these EDPs *per excellence*, some other EDPs would have to be organised.

This second type of EDPs were thought and planned to allow the conversion of each thematic domain into more concrete transformative actions (always taking into consideration the specific objectives established for Centro RIS3). Focusing into very narrowed areas or resources, CCDRC also discovered that this is the only way to really attract entrepreneurs and to have them participating in a committed manner.

Thus, on May 2017, CCDRC organised the first thematic EDP in the region. This EDP was organised with the JRC and focused on the Vineyard and Wine value chain. It counted with more than 100 participants, being almost 40% from the private sector. 13 project ideas arise and 6 of them moved to the Project Development Lab (PDL). The PDL, also organised by CCDRC and the JRC, aimed at further developing business ideas initiated in the EDP, in terms of fundability, partnerships (regional, national and international) and linkages with international value chains. It had around 70 participants, divided into 5 working groups.

Later on, on September 2017, together with Alentejo (PT) and Extremadura (ES), Centro organised another EDP but this time on the Medicinal and Aromatic Plants sector. The event counted with more than 70 participants and close to 55% were representatives of private companies. One project idea coming from this EDP applied to POCTEC (the Operational Programme of Cross-Border Cooperation Spain-Portugal) and was approved.

After the first thematic session, some regional and local stakeholders acknowledged the benefits of this type of event and have interiorised the concept and methodology. Consequently, they have even organised, by themselves, other EDPs focusing on regional natural resources that have a high expression in some specific territories within the region. One EDP was on the pinecone and pine nuts value chain and it was organised by an association of municipalities. Another event was aiming the blueberry sector and was organised by one university and one municipality. The objectives were to discuss challenges related to these resources, to find new ways to exploit them and to create new partnerships.

Another type of initiative that was carried out in Centro Region and that can also be seen as a type of Entrepreneurial Discovery Process, was the opening of thematic calls for important regional value chains, which aimed at promoting research, innovation, qualification and internationalisation of the sector identified, gathering all the relevant regional stakeholders under the same projects. In practice, this meant that for each one of the calls launched, only one project was approved, corresponding to the

one with the more comprehensive and coherent list of activities foreseen and with the more representative and complete partnership. Thus, three different ERDF calls were opened: one for the wine, another one for the cheese value chain and, finally, the third one on the agroindustry sector.

The wine project had €2,9 million of funding approved and it gathered the five wine associations of the region, the National Institute of Agricultural and Veterinarian Investigation and two regional Polytechnic Institutes. Together, the project partners contributed to the economic valorisation of an important regional natural resource – the wine (and vineyard). For this, the partnership developed a structural and complementary set of actions in the following domains of intervention: i) viticulture and winemaking; ii) certification and quality; iii) promotion and valorisation of the wine and vineyards territories. A second call to further develop this project was launched recently.

The cheese project has €1,9 million of funding approved and it gathers relevant regional and national associations and clusters, regional public entities (as municipalities), two Polytechnic Institutes and two technological centres. The main objective of the partnership is to support the regional actors of this value chain in the challenges faced (from the producer of milk to the cheese consumer) to strengthen this sector. For this to be possible, the project will promote some actions related to innovation, knowledge, quality and food security within the cheese value-chain.

For the agroindustry sector the application approved is an €1,9 million ERDF project, and it gathers one university, one polytechnic institute, one technological centre and one interface centre. The partnership will try to meet the challenges that the agri-food sector of the region faces, by characterising, conserving and valuing the natural endogenous resources of low-density territories, through a territorial development strategy, promoting and consolidating the collaboration between science and technology institutions, higher education and the Agri-food cluster.

These calls were launched to answer specific needs felt within differentiating domains identified in Centro RIS3. Therefore, the promotion of these calls, as well as the approval and implementation of the projects described above, were a way of operationalising Centro RIS3, by promoting research, innovation and qualification in critical regional value chains, in which these needs were clearly and collectively identified.

### 3.2. The alignment of projects with Centro RIS3

One important remark to be made is the fact that RIS3 is used in different ways to assess projects, depending on the Thematic Objective. **For TO1 calls, RIS3 is used as an admissibility criterion.** This means that if a project of a TO1 call is not aligned with RIS3 it will not go through the other criteria and it will not even be evaluated. If the project is aligned with RIS3 it will be assessed and the alignment with RIS3 will be one of the evaluation criteria (it is the regional merit of the project). **For TO3 calls, usually,**

**RIS3 is only used as an assessment criterion** and even if the project is not aligned with RIS3 it can still be approved. However, there was already one TO3 call where RIS3 was used as an admissibility criterion<sup>51</sup>. **For the TO8 calls**, launched at regional level, **RIS3 was only used as assessment criteria**. **For TO10 calls**, launched at regional level, **RIS3 was always used as an admissibility and assessment criteria**.

Depending on the instrument that we are talking about, RIS3 will also have a different relative weight in the evaluation of the project. In the table below, we can see in which instruments and typologies of investments the RIS3 is, or not, used as an admissibility criterion and its relative weight in the final evaluation of a project.

Instruments and Typologies of investment		Centro RIS3	
		Admissibility criterion	Assessment criterion (% of the project evaluation)
<b>Incentives System for Enterprises</b>	Research and Technological Development - TO1	✓	30% (it can be 20% for R&D projects at the European scale)
	Entrepreneurial Innovation and Entrepreneurship	✗	15% (10% in 3 calls)
	SMEs - TO3	✓	
	Non-SMEs - TO1	✓	
<b>Support System for Collective Actions</b>	SMEs' qualification and internationalisation	✗	21%
	Individual projects - TO3	✗	30%
<b>Support System for Scientific and Technological Research</b>	Joint projects - TO3	✗	10.8%
	Internationalisation - TO3	✗	10.8%
	Promotion of the entrepreneurial spirit - TO3	✗	10.8%
<b>Support to Technological Infrastructures</b>	Scientific and Technological Knowledge Transfer - TO1	✓	10.8%
	Integrated programmes of SR&TD - TO1	✓	6.75%
	SR&TD - individual projects - TO1	✓	3%
	SR&TD – co-promotion projects - TO1	✓	9%
	Research Infrastructures projects - TO1	✓	10%
	Incubation Centres of Technological Basis - TO3	✓	15%
	Technological Centres, Technological Valorisation and Transfer Centres, Science and Innovation Parks - TO1	✓	15%
	Creative Science Park - TO1	✓	30%

<sup>51</sup> The call was "Support to Technological Infrastructures - Incubation Centres of Technological Basis"

<b>Employment of highly qualified human resources – TO8</b>	×	24% or 30% (depending on the call)
<b>Doctoral and Post-doctoral Programmes – TO10</b>	✓	40%
<b>Technological Specialisation Courses (CET) – TO10</b>	✓	20%
<b>Higher Technical Professional Courses– TO10</b>	✓	15%
<b>Higher Technical Professional Courses – Acquisition of equipment – TO10</b>	✓	25%

It is also worth mentioning that until the 31<sup>st</sup> of December 2019, Centro RIS3 technical body had evaluated the alignment with Centro RIS3 of more than **7.700 applications**. From those, 3.777 applications were already approved.

	Instruments and Typologies of investment	Applications		Approved Projects		
		N.º	Average investment by project	N.º	Average investment by project	Average support by project
<b>Incentives System for Enterprises</b>	Research and Technological Development	1 413	869 191 €	591	792 871 €	466 324 €
	Entrepreneurial Innovation and Entrepreneurship	2 246	2 927 562 €	1,027	3 123 872 €	1 371 856 €
	SMEs' qualification and internationalisation	2 881	420 862 €	1 642	452 459 €	154 781 €
	Subtotal	6 540	1 378 589 €	3 260	1 355 749 €	594 676 €
<b>Support System for Collective Actions)</b>	Internationalisation	31	406 154 €	15	367 084 €	304 037 €
	Promotion of the entrepreneurial spirit	44	441 309 €	27	397 702 €	289 320 €
	Scientific and Technological Knowledge Transfer	21	565 704 €	14	586 264 €	427 492 €
	Subtotal	96	457 168 €	56	436 641 €	327 805 €
<b>Support System for Scientific and Technological Research</b>	Integrated programmes of SR&TD	22	1 318 356 €	16	1 628 838 €	1 377 693 €
	SR&TD Projects - Individual	827	222 243 €	260	217 843 €	183 990 €
	SR&TD Projects - Copromotion	75	95 947 €	65	97 389 €	78 825 €
	Research Infrastructures projects	20	1 319 590 €	20	1 700 583 €	1 304 092 €
	Subtotal	944	261 003 €	361	340 838 €	280 017 €
<b>Support to Technological Infrastructures</b>		23	2 727 613 €	9	3 154 257 €	2 478 818 €
<b>Employment of highly qualified human resources</b>		56	337 038 €	49	317 000 €	218 427 €
<b>Technological Specialisation Courses</b>		13	713 651 €	13	670 601 €	556 525 €
<b>Higher Technical Professional Courses (including acquisition of equipment)</b>		31	1 084 374 €	29	853 994 €	638 194 €
<b>Total</b>		<b>7 703</b>	<b>1 224 296 €</b>	<b>3 777</b>	<b>1 229 717 €</b>	<b>560 456 €</b>

Acknowledging that this is primordial to better understand and comprehend the regional dynamics of research and innovation, CCDRC took the initiative of developing a regional monitoring system that includes the analysis of the alignment of projects (applicants and approved) with Centro RIS3.

Nevertheless, this system should not be confused with Centro RIS3 monitoring system, which incorporates this analysis, but it is not limited to it, being much broader.

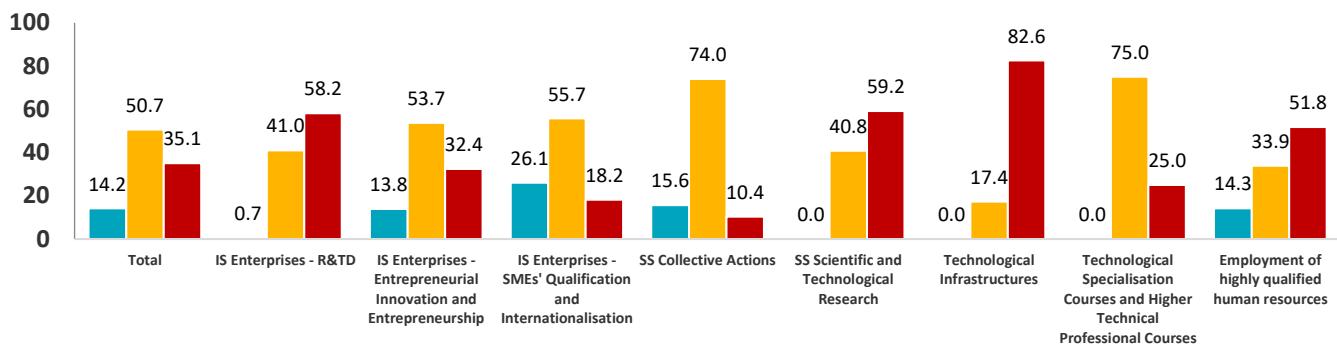
It is also important to underline that, the information that composes this regular analysis is not automatically taken from any existing platform. To be able to make this analysis, CCDRC' team has feed a list of projects evaluated with all the relevant information needed to carry out the monitoring foreseen. With all data available properly processed, twice a year, CCDRC publishes a monitoring document in its RIS3' website. The latest version of his document was made public in April 2020, with information reporting to December 2019.

Some pertinent figures that can be found in this document are:

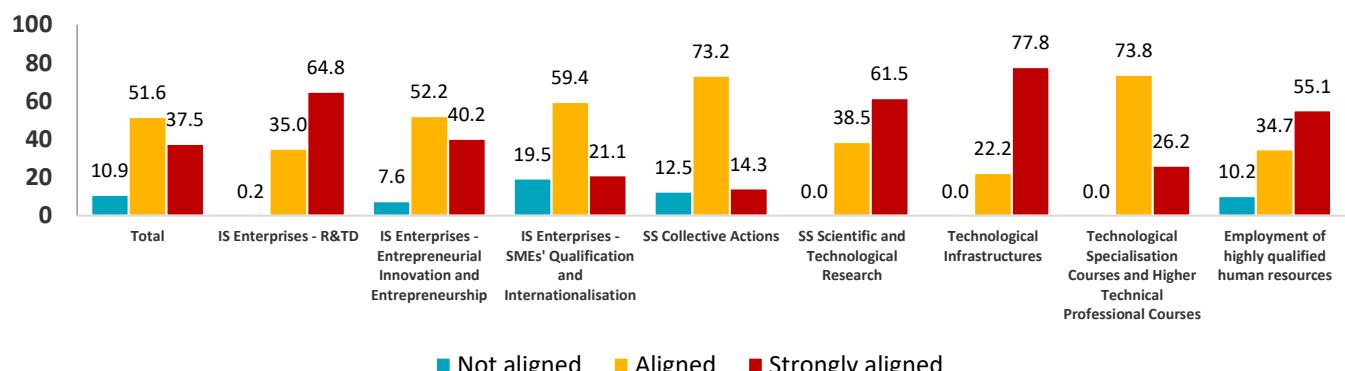
- The number and percentage of projects evaluated by Centro RIS3' team (by policy instrument);
- The geographical location of applicant and approved projects in Centro;
- The distribution of applicant and approved projects by sector of activity;
- The average value of investment by project (applicant and approved) and by policy instrument;
- The average value of investment by project (applicant and approved) and by geographical location;
- The average score of projects (regarding its alignment with Centro RIS3) by policy instrument;
- The distribution of projects (applicant and approved) by policy instrument and degree of alignment with Centro RIS3 (not aligned, aligned, strongly aligned);
- The alignment of applicant and approved projects with the differentiating domains and the cross-cutting priorities of Centro RIS3;
- The alignment of applicant and approved projects with the specific objectives of Centro RIS3;
- The alignment of projects with each line of action established within the specific objectives.

In the charts presented in the next page some more information about the alignment of projects with Centro RIS3 can be found.

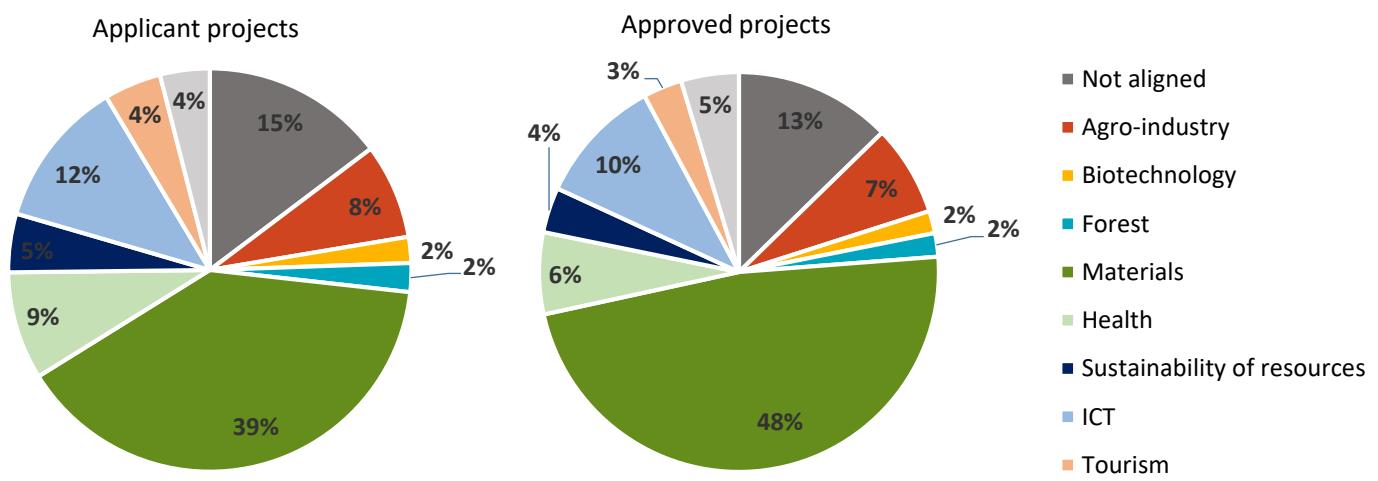
### Alignment of applications with Centro RIS3 (%)



### Alignemnt of projects approved with Centro RIS3 (%)

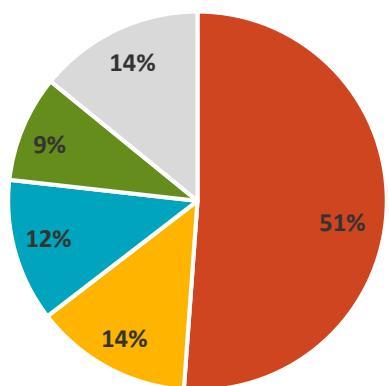


### Alignment of projects with Centro RIS3' differentiating domains and cross-cutting priorities

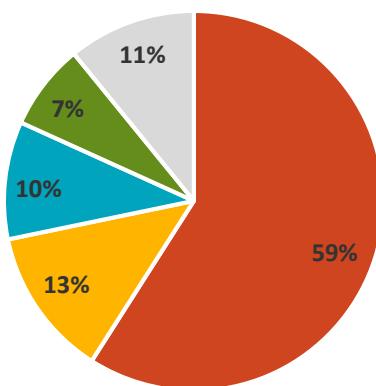


### Alignment of projects with Centro RIS3' specific objectives

Applicant projects



Approved projects



- 1- Sustainable industrial solutions
- 2- Valorisation of natural endogenous resources
- 3- Technologies for quality of life
- 4- Territorial Innovation
- Not aligned