

UPDATE  
FOR THE PERIOD  
2018-2020

# REGIONAL RESEARCH AND INNOVATION STRATEGY FOR SMART SPECIALISATION (RIS3) OF CASTILLA Y LEÓN 2014-2020

## EXECUTIVE SUMMARY

RIS<sup>3</sup> CASTILLAYLEÓN  
2014-2020



Junta de  
Castilla y León



CASTILLA Y LEÓN



The Castilla y León RIS3  
Update for the period 2018-  
2020 was approved by  
the Regional Government  
of Castilla y León at its  
Governing Council meeting on  
26th July, 2018.

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Castilla y León





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# MAIN FACTS & FIGURES OF CASTILLA Y LEÓN

## TERRITORIAL SETTING AND DEMOGRAPHIC SITUATION

The autonomous community of Castilla y León has a land area of 94,224 km<sup>2</sup> (making it the largest region in Spain and one of the largest in the European Union). The region is divided into nine provinces and 2,248 municipalities (almost 30% of Spain's total number).

**Illustration 1:** Location of Castilla y León and territorial division



Castilla y León borders with nine other Spanish autonomous communities and with Portugal, making this region a major centre of communication in Spain and strategically located on the central axis of the European Diagonal.

From the demographic point of view, Castilla y León has a population of 2.4 million representing about 5% of the Spanish population (source: INE, Spanish Institute of Statistics). Given its considerable extension, it is a sparsely populated region, particularly in rural areas.

## EVOLUTION OF THE PRODUCTIVE STRUCTURE OF CASTILLA Y LEÓN

Over the past decades there has been a major transformation of the economic structure of Castilla y León, with a continuous modernisation, which was favoured when Spain joined the European Union and due to the success in the development of policies in the economic sphere.

The structural modernisation of the region is reflected in the loss of importance of the agricultural sector and the process of tertiary transformation of the regional economy. The table below shows the evolution of the region's economic structure in the last two decades.

**Table 1:** Evolution of the economic structure in Castilla y León

Sector	1997	2007	2017
Agriculture	9.4	5.3	4.1
Industry & Energy	21.2	19.8	20.6
Construction	6.8	9.9	5.7
Services	54.2	55.1	60.3

Source: Regional accounts (INE)



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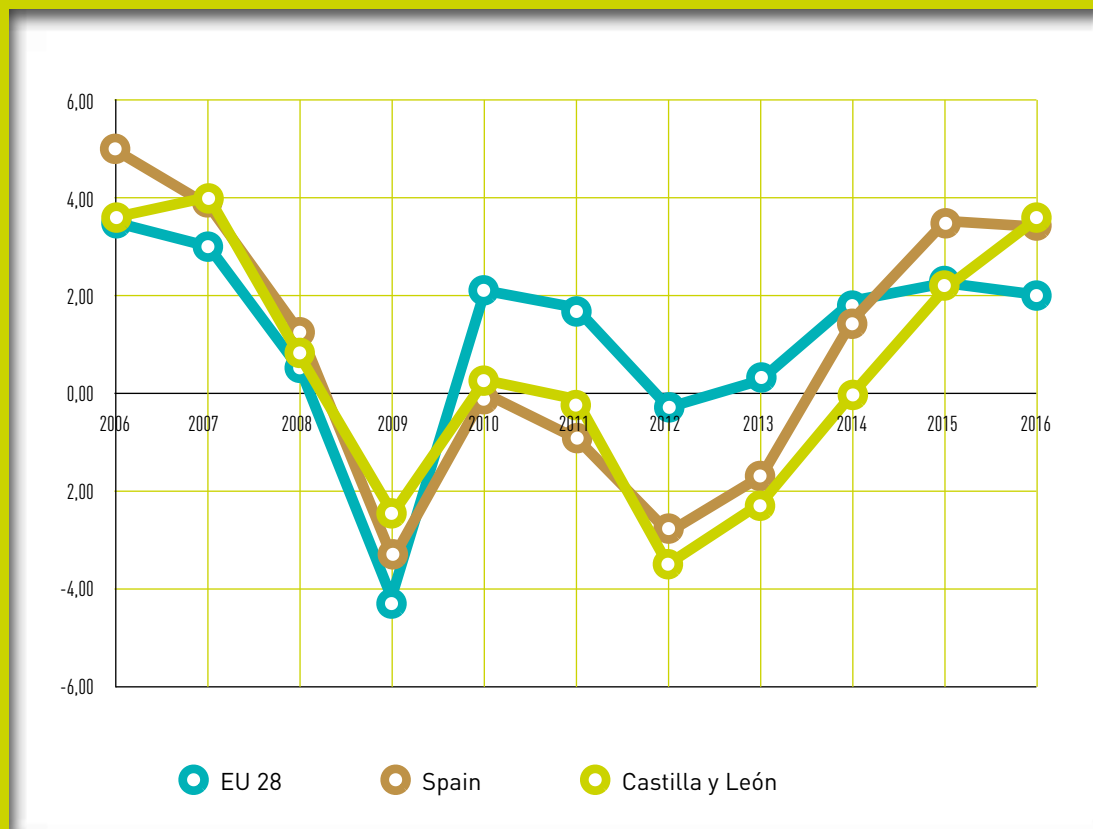
## EVOLUTION OF GROWTH AND CONVERGENCE WITH THE EUROPEAN UNION

According to data published by EUROSTAT, Castilla y León has reduced by 13 percentage points the GDP gap with the European Union since Spain joined the European Union in 1986. In 2000, the GDP per capita of Castilla y León was equivalent to 74% of the EU-27 average. In 2016, the GDP per capita of Castilla y León was equivalent to 87% of the EU-28. (Source: EUROSTAT).

This evolution upgraded Castilla y León from being an objective 1 region within the European Union as of 1 January 2007, currently being part of the group of "More developed regions".

More recently, it can be said that, in general terms, the gross domestic product (GDP) in Castilla y León in the last decade has evolved according to the average of the European economy. Specifically, our region has grown at the same rate as the Spanish average and exceeded the EU-28 and the Eurozone up to 2009 and again in 2016, while between 2010 and 2015 the growth of Castilla y León has remained below the average of the EU-28.

**Graph 1:** Rate of annual economic growth in Castilla y León, Spain and Europe



Source: EUROSTAT.

# B SCIENCE AND TECHNOLOGY: A PRIORITY FOR THE REGIONAL GOVERNMENT OF CASTILLA Y LEÓN



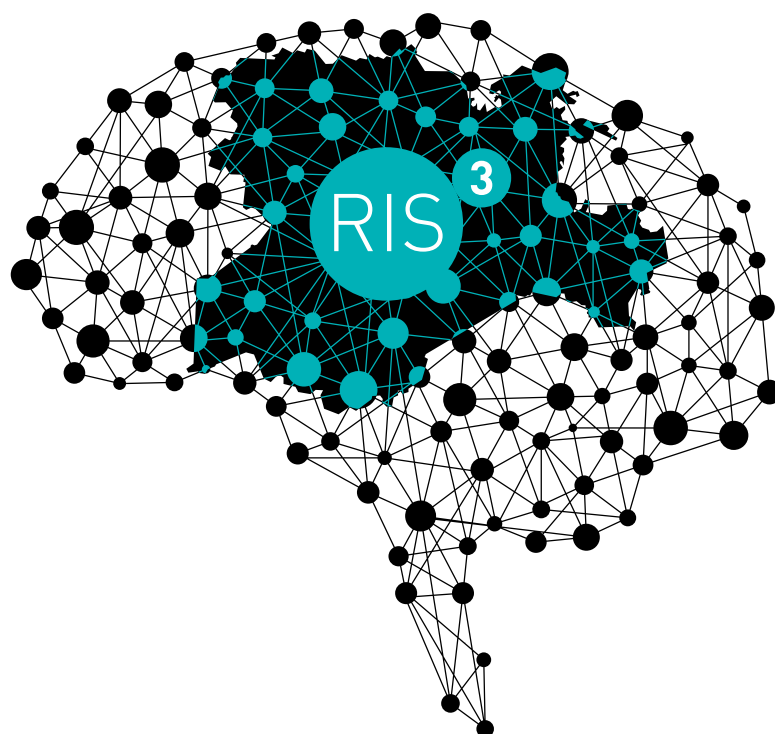
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Modernising the region's economic structure and the need for ongoing improvement of the competitiveness of the industrial tissue have made R&D, innovation and the information society one of the key issues of the region, the scientific and technological policy becoming a priority for the Regional Government of Castilla y León.

## SOME SIGNIFICANT MILESTONES

**Table 2:** Milestones in the Science and Technology policies of Castilla y León

	SIGNIFICANT MILESTONES
1983	1st call for research projects
1985	Decree supporting technological innovation
1995	Economic Development Agency
1997-2000	Regional Technology Plan 1997-2000
1999	Regional law for research and science
2002	Law for the promotion and general coordination of R&D&I
2002-2006	1st Regional R&D&I Strategy 2002-2006
2003-2006	1st Regional Strategy for Information Society 2003-2006
2003	Universities Act
2006-2009	1st Framework agreement for Industrial Competitiveness and Innovation
2007	Commissioner for Science and Technology
2008-2013	University-Business Strategy 2008-2013
2014-2020	Regional Research and Innovation Strategy for Smart Specialisation (RIS3) of Castilla y León 2014-2020
2014-2020	III Framework agreement for Industrial Competitiveness and Innovation
2018	Update for the period 2018-2020 of the Regional Research and Innovation Strategy for Smart Specialisation (RIS3) of Castilla y León

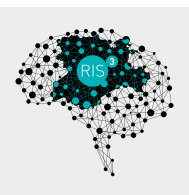


# PART 1

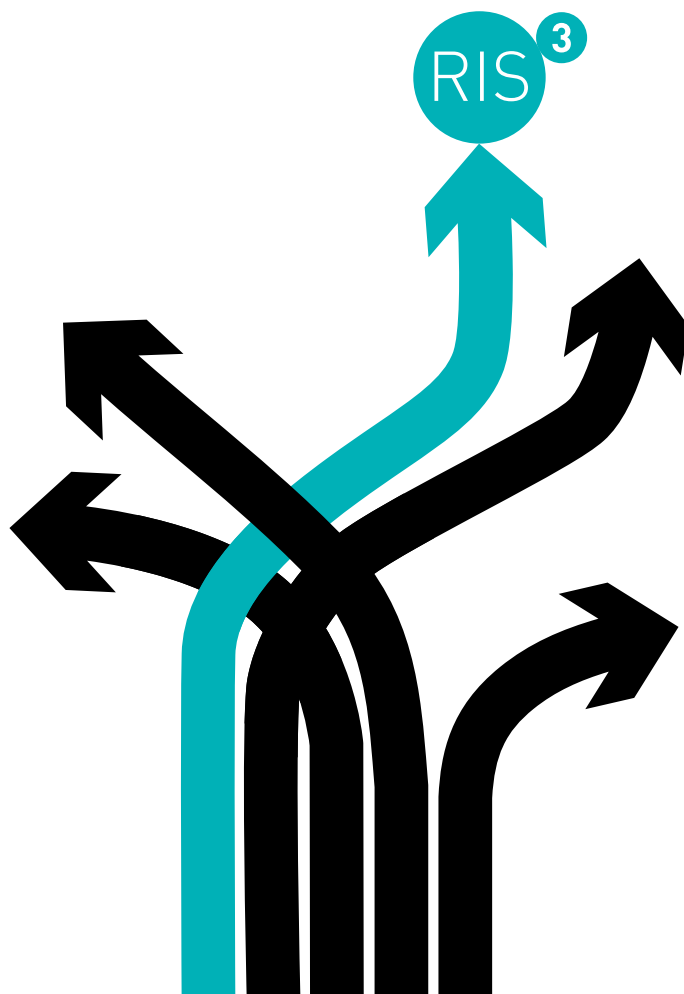
## ANALYSIS OF CONTEXT AND STARTING POINT



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# 1 INTRODUCTION



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The Regional Research and Innovation Strategy for Smart Specialisation (RIS3) of Castilla y León 2014-2020 was approved on 16 April 2014 by the Governing Council of the Regional Government of Castilla y León. As established by Act 17/2002, of 19 December, of Promotion and General Coordination of Scientific Research, Development and Technological Innovation (R&D&I) in Castilla y León, it is the element of regional planning of scientific research, development and technological innovation, and the main means of coordination of the actions carried out by the various regional ministries and by other public and private bodies related to R&D&I and the Information Society in Castilla y León.

The RIS3 provided for a mid-term assessment in 2017 based on the implementation of its various programmes during the period 2014-2016. This assessment has reviewed the degree of fulfilment of goals, the pace of implementation of the actions, their effectiveness, efficiency and sustainability, as well as the validity of thematic priorities. The conclusions and recommendations drawn from the evaluation, along with changes in the regional and global context, and the new challenges and trends, have promoted the updating of the RIS3 in Castilla y León for the period 2018-2020.

The main recommendations arising from the mid-term assessment, which have served as guidelines for the 2018-2020 update have been the following:

- To introduce visible clear commitments in key areas for Castilla y León, which concentrate resources and instruments, with the coordinated involvement of several regional ministries.
- To simplify the Strategy's structure, redesigning the programmes and specific goals.
- To review the goals for the objectives to be reached in 2020, to adapt them to the current scenario.
- To review the thematic priorities in order to better align them with the national and European challenges.



# 2 ANALYSIS OF THE CONTEXT

The most notable regulatory changes in recent years are summarised as follows:

**Table 3:** Changes in the frame of reference

LEVEL	WHAT'S NEW
European	<ul style="list-style-type: none"><li>• New set of Integrated Guidelines of the Europe 2020 Strategy.</li><li>• Publication of the Digital Single Market Strategy.</li><li>• The Horizon 2020 Framework Programme continues to feature as the main financing instrument.</li></ul>
National	<ul style="list-style-type: none"><li>• R&amp;D&amp;I support is based on the Spanish Science, Technology and Innovation Strategy 2013-2020 and the new State Plan for Scientific and Technical Research and Innovation 2017-2020.</li><li>• Publication of the digital transformation Plan of the General State Administration and its public bodies.</li><li>• Publication of the Spanish Bio-economy Strategy, Horizon 2030.</li></ul>

National and European public policies are currently in a **post-economic crisis scenario**.

The **demographic situation** of Castilla y León in recent years has been characterised by two factors: its population decline and aging.

Its gradual **economic recovery** has been evidenced by a number of macroeconomic indicators, and, predictably, it will continue in the coming years.

The **employment market** shows a positive trend with particularly good prospects in the field of tourism and ICT.

The **gross domestic product (GDP) showed a growth** of 3.4% in 2016. Despite this favourable evolution there has been a slight reduction of its relative weight in the whole of the Spanish economy, being below 5% in 2016.

The **annual growth in the number of companies** followed a positive trend in 2015, after six years of declines, and dropped slightly in 2016.

Concerning **the trade balance**, there has been a clear acceleration of exports in the last couple of years. Main exports progressively concentrate in motor vehicles.

## 2.1 R&D AND INNOVATION

The trend of **R&D expenditure** in Castilla y León, at a standstill in 2014 and 2015, has been positive in 2016, reaching 1.10% of GDP, and this being the Spanish region with the highest growth in that year.

Upon analysis of the distribution of this **R&D expenditure by sectors**, private expenditure represents the largest percentage of the total amount in 2016, namely, 59.9%. Its significance in Castilla y León had dropped since 2013, at which time it accounted for

56.2%; but in 2016 the former trend recovered. On the other hand, the higher education sector represented in 2016 31.8% of the total expenditure on R&D. Its weight has decreased in the last year, but still remains above the national average weight.

Meanwhile, **expenditure on technological innovation** has increased by 4.2% between 2013 and 2016, reaching 494.6 million euros.

**Innovative companies**<sup>1</sup> in Castilla y León represented, in 2016, 25% of total businesses with 10 or more employees in the region.

Delving deep into the Castilian and Leonese business, the number of **companies in high and medium-high technology sectors** has increased 5.3% between 2013 and 2016.

During 2016, in Castilla y León **8,874 individuals engaged in R&D activities** (full-time equivalent, FTE) which represents an increase of 0.1% compared to 2013.

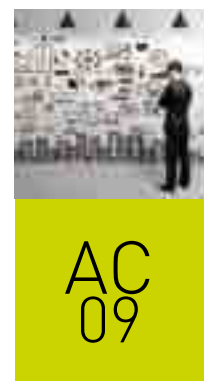
**The number of researchers** reached 5,809 individuals FTE in 2013 and 5,837 in 2016. This figure is affected by the **progressive ageing of the research staff**<sup>2</sup>, whose origin and depth is better understood by analysing a broader period: between 2007 and 2015 more than 1,000 researchers originally aged under 44 have joined the group older than 44.<sup>3</sup>

The output of researchers from Castilla y León is ongoing: in 2013 the amount of 0.7 papers per researcher were published, with similar figures for 2015. The quality of these publications, as measured by the **standardised impact**<sup>4</sup>, is however increasing (1.03 in 2009 and 1.15 in 2015).

With regard to **participation in R&D&I programmes**, the Framework Programme H2020 has returned a total of 61.8 million euros, 3.2% of the total figure for Spain in the period 2014-2016. It implies that the weight of Castilla y León against the total national amount (3.2%) is less than its relative weight in terms of national GDP (5%) or gross expenditure on R&D (4.1%). Major sectors include Energy (€12.1 million) and Health (€12.3 million).

CDTI's contribution to R&D projects for Castilla y León in 2016, compared with the year 2013 has come to a standstill.

In terms of the **patenting** activity, according to the statistics of the Spanish Patent and Trademark Office, the absolute number of PCT patent applications filed in Castilla y León in 2015 has dropped with respect to that recorded in 2013, having gone from 38 applications to 29 respectively.



## 2.2 THE INFORMATION SOCIETY IN CASTILLA Y LEÓN

Importantly, the **evolution of LTE (4G) mobile network coverage** (% of households) in Castilla y León has gone from 13.7% in 2014 to 79.9% mid-2016, and the FTTH (fibre-optic to the home) coverage, went from 2.3% in 2013 to 49.9% mid-2016.

77.5% of households in Castilla y León had **access to Internet** in 2016, an increase of 16% since 2013. In terms of the number of homes with some type of computer, these have increased by 5% between 2013 and 2016.

The number of **regular Internet users** has increased 6.9% between 2013 and 2016. Those who browse from smartphones have increased by 30.8% between 2013 and 2018.

Castilla y León stands out for its growth in companies with **mobile broadband connection** going from 49.3% in 2013 to 67.4% in 2016.

<sup>1</sup> An innovative company is that which carries out technological and non-technological innovations, that is, product, process, marketing or organisational innovations.

<sup>2</sup> Personnel under the regional and local Administration, and non-profit institutions controlled and/or funded by the Administration.

<sup>3</sup> Source: Directorate General of Budget and Statistics of the Regional Government of Castilla y León, with data from INE (Spanish Statistical Office).

<sup>4</sup> This indicator compares the average number of citations of publications with the average number of citation of the world output in a single period for all the thematic areas.

The data relating to **ICT in education** have remained constant from 2012-2013 to 2014-2015: 100% of public elementary and secondary education centres of the region have access to the Internet, and the average number of students per computer for teaching and learning purposes in public schools is 3.

In the **health**<sup>5</sup> area in 2016, the implementation of electronic prescriptions in all health areas and in all pharmacies of Castilla y León has been conducted. In addition, 67 additional local clinics were connected to the health data network of Castilla y León (SACYL) to cover towns with pharmacies and towns with more than 200 health insurance cards registered.



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## 3 STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS (SWOT) ANALYSIS

SWOT analysis collects and integrates the findings of the qualitative and quantitative analysis carried out during the mid-term assessment of the Strategy. Taking the initial SWOT as starting point, the changes defined for the period 2018-2020 are highlighted with shading at the bottom of each section.

<sup>5</sup> Source: The Information Society in Spain in 2016. Fundación Telefónica.

## 3.1 SWOT R&amp;D&amp;I

Table 4: R&amp;D&amp;I SWOT analysis

STRENGTHS	OPPORTUNITIES
<ul style="list-style-type: none"> <li>• Experience in the design and implementation of regional strategies for R&amp;D&amp;I.</li> <li>• Existence of technological infrastructures: technology parks, science parks, unique scientific &amp; technological facilities, etc.</li> <li>• Awareness of the private sector on R&amp;D expenditure, with a relative weight traditionally above the national average.</li> <li>• Castilla y León is globally competitive in activities and/or traditional sectors: strategic sectors are resistant to the financial crisis due to their relationship with the productive specialisation and/or innovation drivers: agri-food, automotive, pharmacy and environment.</li> <li>• Promotion of private investment; in particular, increased investment in R&amp;D&amp;I.</li> </ul>	<ul style="list-style-type: none"> <li>• The economic specialisation and the existing capabilities of the region allow to exploit future trends related to agri-food, health and quality of life, as well as energy and environment.</li> <li>• The technological specialisation enables the development of applications in the fields of advanced materials, advanced manufacturing processes, ICT and biotechnology, and contributes to the interrelation between the economic sectors, the transversal technology applications of ICT, energy and environment, and biotechnology.</li> <li>• There is potential for the integration of value chain and economic interaction related actions: agri-food- ICT- capital goods, biotechnology- assisted healthcare, furniture-textile-stone, heritage-Spanish language, etc.</li> <li>• Being in the second half of the programming period for the Structural Funds 2014-2020, and the new Community guidelines to carry out the change in the implementation of the regional R&amp;D&amp;I policy and overcome the culture and policies of subsidy.</li> <li>• Increase of the budget for R&amp;D&amp;I, which implies an increased public capacity for the support to structures, human resources and development of initiatives.</li> <li>• Possible synergies and complementarities in the allocation of funds and strengthening the integration of policies and instruments to increase the regional leadership.</li> <li>• Revolving financial instruments and redefining the Administration's role in the provision of innovation services to companies.</li> </ul>
<ul style="list-style-type: none"> <li>• The evolution of employment data of university graduates in Castilla y León has been positive in the period analysed, but has been outpaced by the national average in 2016. Therefore, "the higher level of training of the employed population compared to that of Spain" is no longer a strength.</li> </ul>	<ul style="list-style-type: none"> <li>• In the light of the information collected from European, national and regional contexts the opportunities identified remain and could be further specified. For example, bio-economy, or industry 4.0 are core topics in European trends.</li> <li>• Regarding instruments, the promotion of scientific excellence and critical mass or public procurement of innovation have also become major issues nationally and internationally.</li> </ul>

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## WEAKNESSES

- Strong impact of the crisis: In R&D&I, the convergence process with the Spanish average of the R&D expenditure in relation to GDP re-started in 2016, although the personnel devoted to R&D and the number of innovative companies have decreased.
- Although there is, to some extent, an overall view and coordination, this could be improved and requires greater institutional leadership in R&D&I actions.
- Need for a larger budget in key areas related to the provision and/or promotion of advanced public services linked to financing, globalisation, innovation and business development (start-up, growth, cluster, etc.). Human resources generally specialised in administrative management.
- Scientific specialisation is scarcely related with the regional economic specialisation; the University-Enterprise relationship needs to be improved, and universities occupy low positions in national rankings.
- The technological level of the business fabric and the knowledge absorption capacity need to be increased. Reduced company dimension with management training needs.
- Low preparation of university graduates in the skills and competencies demanded by companies. Undercapitalisation of human resources in research institutions and loss of talent or brain drain.

## THREATS

- Prolongation of the effects of the financial and economic crisis, and difficulty of access to the financial markets.
- Limitations affecting businesses, particularly SMEs and innovative companies of new creation, in their access to funding.
- Loss of the support structure for R&D&I as a result of the crisis and the risk of the system crashing due to budgetary reasons.

- In general, an insufficient critical mass is noted in the research structures as well as capacity to attract resources.
- There is still a certain territorial distribution imbalance in terms of economic and industrial capacity between provinces.
- In the period 2014-2016 an increase in the return of Castilla y León has been noted relative to that obtained in the previous Framework Programme. Accordingly, "the reduced internationalisation of the innovation and lack of participation in international funding sources" is no longer a weakness.
- All other weaknesses remain in greater or lesser degree in the region and an improved overview and coordination between agents is desirable.

- Unappealing research structures that make it difficult to attract young researchers to reverse the ageing of this population. It coexists with the debate on the possible excess of universities and research structures, given the regional demographics.
- Difficulties for the main actors of the innovation system in the region and, particularly for the technology centres, because of the lower availability of regional budget for R&D&I.
- The analyses developed show some improvement in terms of the threats that affect the region. Recovery from the crisis is gradually reducing the intensity of the threats of the previous period (e.g. access to business financing, decline of private investment in R&D&I, or the reduction in the budget allocated to R&D&I).

## 3.2 SWOT INFORMATION SOCIETY

Table 5: Information Society SWOT analysis

STRENGTHS	OPPORTUNITIES
<p><b>Territory</b></p> <ul style="list-style-type: none"> <li>Existence in the region of ICT benchmark facilities and centres; in particular, cybersecurity.</li> </ul> <p><b>Companies</b></p> <ul style="list-style-type: none"> <li>The ICT sector of the region has capabilities of specialisation in the areas of mobility and security.</li> <li>Large offer of qualified profiles trained in ICT from the university and vocational training systems in the region.</li> <li>Widespread use of the electronic signature and on-line processing, especially in the relationship with Public Administrations. Important use of mobile broadband access.</li> </ul> <p><b>Citizens</b></p> <ul style="list-style-type: none"> <li>Positive indicators: trend in use of e-mail, high percentage of digital natives and the use of mobile devices.</li> </ul> <p><b>Public Administration</b></p> <ul style="list-style-type: none"> <li>Extensive development of the electronic Administration and availability of applications and resources that can be shared between public Administrations.</li> <li>A regional strategy for open government.</li> <li>A territorial administrative structure (e.g. provincial councils) and other consolidated initiatives to support ICT for small local entities.</li> <li>Existence of a significant number of qualified ICT professionals in public Administrations.</li> <li>High degree of development of the computerised prescription and electronic health records in the region, and health personnel accustomed to handling technology in their daily activity.</li> <li>Existence of a model of ICT implementation in the educational field.</li> </ul>	<p><b>Territory</b></p> <ul style="list-style-type: none"> <li>Importance of ICT in the objectives and priorities of the new European funding framework.</li> <li>ICTs, as transversal technologies in the Regional Specialisation Pattern.</li> <li>Nearshore: the region's ability to allow the incorporation of ICT companies in the territory.</li> <li>Satellite and mobile broadband technologies promote the extension of services.</li> </ul> <p><b>Companies</b></p> <ul style="list-style-type: none"> <li>Increase in the demand for new digital content by consumers.</li> <li>The incorporation of ICTs facilitates the internationalisation of companies.</li> <li>E-commerce and the market place as an additional sales channel.</li> <li>New funding models for innovative enterprises and to support entrepreneurs.</li> <li>New technologies and trends: digital marketing techniques, tools and cyber security, fintech, IoT, cloud platforms.</li> </ul> <p><b>Citizens</b></p> <ul style="list-style-type: none"> <li>Existence of ever more usable technologies and closer to the citizens and opening of new channels of access to information and training.</li> </ul> <p><b>Public Administration</b></p> <ul style="list-style-type: none"> <li>The use of ICT in the public sector and new models of public and public-private partnerships that allow saving costs and exploiting synergies.</li> <li>Use of ICT to favour energy saving and the development of smart cities.</li> <li>New educational models through ICT, and ICT as a tool for the efficient provision of social and healthcare services remotely through telemedicine and telecare.</li> </ul>
<p>Many of the strengths that were identified at the time must be assessed with respect to the rest of the national territory. In this regard, many of them disappear or at least are questioned:</p> <ul style="list-style-type: none"> <li>In terms of the availability of broadband (4G and Fibre Optic), Castilla y León, despite its positive evolution, is below the national average. Therefore, the "availability of broadband coverage throughout the territory (universal service)" cannot be considered a strength.</li> <li>According to the use of the Internet, Castilla y León is below the national indicators, both in relation to households as well as companies or educational institutions. Therefore the following is removed from the list of strengths: <ul style="list-style-type: none"> <li>Widespread use of electronic banking, electronic signature and on-line processing, especially in the relationship with Public Administrations.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Act 39/2015, on Common Administrative Procedure of the Public Administrations and Act 40/2015, on Legal Regime of the Public Sector, make up a scenario in which electronic processing must be usual form used by the Administrations in their multiple types of internal management, in the relationship with the citizens and their relationship among each other.</li> </ul> <p>There are opportunities identified that, in view of the speed of development of ICTs and changes in the environment, it seems at least questionable to currently consider them opportunities as they are technological "commodities":</p> <ul style="list-style-type: none"> <li>The e-ID has been established in Spain since 2006 and no foreseeable change in the environment makes it likely to be established as opportunity in the next few years. Accordingly, the opportunity "Great potential of the e-ID in the provision of public and private digital services" is deleted.</li> </ul>

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## WEAKNESSES

### Territory

- Extensive region with a complex terrain which hinders the extension of ICT infrastructure.
- Economic sustainability of ICT infrastructure, both public and private.

### Companies

- Lack of capillarity in the region of businesses and economic activities related to ICT, and excessive atomisation of projects.
- Productive tissue mostly consisting of micro-enterprises and freelancers in traditional sectors, with a low degree of ICT implementation, especially in retail trade.
- The scarce use of ICT in work organisation and large imbalances in the use of ICT based on the size of the company.
- Lack of adaptation of the official training schemes (University, vocational training) to the ICT market.
- Difficulty in the internationalisation of the regional ICT sector.

### Citizens

- Ageing population with less training and knowledge of the use of ICT tools, particularly in cybersecurity issues.
- High percentage of the population not interested in ICT among those without access to the Internet.

### Public Administration

- In some cases, it would be necessary to enhance leadership and overcome the resistance to change and intensify the coordination within and among public institutions for the use of ICT.
- Poor rationalisation/simplification of the administrative procedures for electronic implementation, especially in the local Administrations.
- Inadequate preliminary analysis in Public Administrations of social and economic return of investments in ICT.
- Reluctance to the use of ICT in the classroom by a percentage of the teaching staff and difficulty in the extension of digital public services in the field of health due to the territorial dispersion.

## THREATS

### Territory

- Low profitability for operators of the extension of telecommunications infrastructures in the rural setting.
- Difficulty in expanding the telecommunications infrastructure due to the differentiated and particular application of certain environment and urban planning standards.

### Companies

- Loss of competitiveness in view of the enterprises' failure to adapt to ICT in a globalised environment.
- Costs associated with product distribution in e-commerce platforms.
- Complexity of the regulatory framework in ICT

### Citizens

- Low level of confidence in the digital area in certain age ranges.

### Public Administration

- Scarce ease of use of electronic administration services and complexity in the use of digital certification systems.
- Rapid technology changes that hinder the adaptation of public Administrations.
- Lack of interoperability and standardisation of digital contents and services.
- Legislative amendments in ICT that may imply significant changes, with difficulties in their implementation due to economic factors and deadlines.

- As previously indicated, the marketing of products via the Internet is already a commodity and all the associated costs are well defined (set-up, marketing, product distribution, etc.) and may not be considered a "threat". In case the companies of Castilla y León are not competitive in this channel, it should be considered as a "weakness".



# PART 2

## UPDATE OF THE REGIONAL RESEARCH AND INNOVATION STRATEGY FOR SMART SPECIALISATION OF CASTILLA Y LEÓN (RIS3) FOR THE PERIOD 2018-2020



P2  
15

The Update of the Regional Research and Innovation Strategy for Smart Specialisation (RIS3) of Castilla y León, introduces the following major changes and innovations for the period 2018-2020:

- **Flagship initiatives:** These initiatives are conceived as a series of commitments capable of impacting on a number of thematic priorities and strategic objectives. They will be the framework in which the different parts of the regional Administration can work together and reinforce each other in areas related to the Europe 2020 priorities.
- **Attraction, retention and return of talent programme:** one of the most important aspects to strengthen in the next period is the attraction and retention of talent. One of the Strategy programmes has therefore been redefined to encompass all those specific instruments that focus on promoting and developing human talent.
- **Adjustment of targets set for 2020:** although no significant changes are expected in the design of targets and indicators, the need to adapt and adjust objectives to the new challenges and the demands of the period 2018-2020 has been identified.

# REGIONAL SPECIALISATION PATTERN

RS  
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The regional specialisation pattern identifies those economic activities, scientific areas and technologies that represent the competitive and comparative advantages of the territory. In the definition of the RIS3 it was conceived as the basis for the determination of the thematic priorities, and with a view to the period 2018-2020, its evaluation has allowed for its redesign in the scientific field, while large macro activities of the economic pattern are still valid.

## MACROACTIVITIES OF THE REGIONAL SPECIALISATION PATTERN FOR THE PERIOD 2018-2020

Agri-food

Automotive industry, Components and Equipment

Health and Quality of Life

Tourism, Heritage and Spanish Language

Energy and Industrial Environment

Habitat

# 5 STRATEGIC OBJECTIVES



SO  
17

The strategic objectives that are aimed at for the RIS3 in Castilla y León are maintained for the period 2018-2020. Only strategic objective V is amended, linked to the new programme 5 related to the attraction and retention of talent.

**Table 6:** Strategic objectives for the period 2018-2020

STRATEGIC OBJECTIVES
<b>Strategic objective I / Reinforce a more competitive and sustainable economic model</b> through business innovation and the efficient use of resources.
<b>Strategic objective II / Move towards scientific and technological leadership in certain fields</b> of potential for regional specialisation, setting up a more attractive science and technology system.
<b>Strategic objective III / Improve the internationalisation and the outward looking</b> of the regional innovation system.
<b>Strategic objective IV / Promote multidisciplinary collaboration between</b> generators of knowledge and knowledge transfer.
<b>Strategic objective V/ Promote talent and creativity</b> in all social and economic areas.
<b>Strategic objective VI / Turn ICT into tools enabling change</b> and innovation, social and territorial cohesion, economic growth, rural development and job creation.



# 6 THEMATIC PRIORITIES

TP  
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Taking as its starting point the regional specialisation pattern, the thematic priorities for the RIS3 for the period 2018-2020 have been sharpened in certain aspects, given that their definition for a period of three years instead of seven allows to address them in more detail.

At the same time, thematic priorities TP1 and TP2 are reformulated to better align with the challenges defined nationally and in Europe, and so is TP4, to collect all the fields related to the endogenous resources of the region.

## TP1. Agri-food as a catalyst for the extension of the innovation on the territory.

**Table 7:** Areas of action for TP1

AREAS OF ACTION	
Agriculture and animal production	Production systems, sustainability and profitability of agricultural production
	Biodiversity and its productive and quality adaptation to the agro-systems
	Precision agriculture: geolocation, sensing of crops, etc.
	Sustainable development of livestock
	Animal feeding, well-being and health
	Genetic improvement and animal reproduction advance
	Use of residual organic matter: nutrients, proteins, fertilisers, energy, etc.
Feeding	Improvement of pasture management systems
	Safety, quality and traceability of food
	Immunonutrients
	Innovation in processes, products and services of the integrated supply chain
Bioenergy and bio-products	Technologies for packaging and conservation of food (smart, functional bio-based and biodegradable materials)
	Integrated bio-refinery
	Industrial processes of production of bioenergy and bio-products, including biodegradable materials
	Development of base products for the chemical or pharmaceutical industry



**TP2. Manufacturing and processing technologies, especially in transport sectors, such as the automotive and aeronautics, making materials and components the key to leadership and sustainability.**

**Table 8:** Areas of action for TP2

AREAS OF ACTION	
Transport	Development of new energy sources and more efficient and less polluting alternative propulsion systems
	Improvement of the safety of vehicles
	Efficient management of the road network
	Efficient and smart transportation systems
	Improvement of the mobility of people and goods (logistics)
	Electronic systems of the vehicle
	Vehicles reconfigurable by trends or features
	Autonomous vehicles and remotely controlled systems
Design and advanced manufacturing	Adaptation of manufacturing to a greater variety of models and features of equipment
	Improvement in production efficiency and reduction of response time to market demands
	Modelling and connectivity of processes
	Collaborative robotics and flexible manufacturing systems
	Circular economy applied to manufacturing processes: eco-innovation, eco-design, etc.
Advanced materials	Development of composite materials and new alloys. Nanotechnology
	Material characterisation and computational modelling
	New functional materials, smart materials and their potential industrial applications



TP  
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**TP3. Application of knowledge and technology to Health and Social Care, Demographic Change and Well-being, for the improvement of the quality of life of citizens.**

**Table 9:** Areas of action for TP3

AREAS OF ACTION	
Biomedical research	Epidemiological research: Sentinel Health Network, surveillance of influenza, risk factors and evaluation of preventive and health-care programmes, antimicrobial resistance.
	Basic research: genomics, proteomics, molecular and immune response diagnosis, advanced markers diagnosis and prognosis.
	New pharmaceutical processes and/or products
	Research into new diagnostic and therapeutic solutions: personalised medicine, clinical trials, cell therapy and regenerative medicine (advanced biomedical devices, development and application of tissue engineering, development of predictive models in critical cases).
Advanced materials	Biocompatible materials
	Nanomaterials and nanopreparations
Improving chronic and/or dependent patient care	Evaluation of care models: reorganisation of processes
	Design and validation of smart systems and robotics intended for people in situation of dependency or disability
	Design and validation of monitoring systems and development of telemedicine and telecare.
Technologies for social inclusion	Research in new technologies which facilitate the independent living of persons in their home, with special attention to rural areas
	Research of innovative solutions for social inclusion, based on organisation, processes and ICT



## TP4. Natural Heritage, Cultural Heritage and the Spanish Language, and endogenous resources as basis of the sustainability of the territory.

Table 10: Areas of action for TP4

AREAS OF ACTION	
Cultural heritage	Understanding the historical evolution of the territory and of the expressions of the intangible cultural heritage
	Diagnostic technologies and preventive conservation
	New advanced materials for the conservation of cultural heritage
	Techniques of restoration or replication of stone, wood and other materials
	Identification of bio-deterioration agents that may affect the conservation of the cultural heritage
	Bio-cleaning and bio-consolidation technologies
	Technologies for the promotion of the documentary funds
	Comprehensive management as a public service of cultural heritage
Culture and Spanish language	Analysis, recognition, prevention, and dissemination of the economic value of cultural heritage
	Research and new technologies applied to the teaching of Spanish as a foreign language
	Enhance the transversal nature of production processes, products, languages, markets and brands
Natural heritage	Advanced technologies for natural language processing
	Planning and management of the natural heritage
	Exploiting the value of natural heritage
	Protection of natural heritage
Forest management	Research and monitoring of regional biodiversity and prevention of the regression of fauna and flora populations and their habitat
	Development of bio-products of forestry origin
Mineral raw materials	Traceability of forest products
	Development of mining and metallurgical techniques to increase the efficiency of processes
	Use and promotion of waste
	Development of competitive products from indigenous mineral raw materials (natural stone and others)



TP  
20



**TP5. R&D in Information and Communication Technologies, Energy and Sustainability, for the regional global competitiveness on the basis of the transversal nature of technologies and knowledge.**

**Table 11:** Areas of action for TP5

AREAS OF ACTION	
ICT	Security and confidence in digital services: cybersecurity
	The Internet of the future. Improvement of infrastructures
	Mobility
	Technologies for contents
	Cognitive systems and robotics
	Technologies for the Industry 4.0
	Big Data
	Green ICT in all sectors
Energy	Intelligent energy management
	Energy storage: fuel cells, hydrogen storage, natural gas storage, storage of electrical energy, storage and management of thermal power, etc.
	Technologies involved in the generation, transmission and distribution of energy: materials, advanced processes, etc.
	Energy efficiency
	Digitisation and integration of buildings into energy networks
	Renewable energy
	Energy rehabilitation of industrial processes
	Advanced materials and nanotechnology for energy applications
Technologies for sustainability	Utilisation of organic waste for energy purposes
	Industrial environment (eco-design, eco-toxicity, efficiency in raw materials, recycling, etc.)
	Smart territories
	Recycling and recovery industry
	Reduction, capture, transformation and storage of carbon
	Climate change
	Water

TP  
21



# PROGRAMMES AND SPECIFIC OBJECTIVES

PS  
22

The update of the Regional Research and Innovation Strategy for Smart Specialisation of Castilla y León maintains its original structure of 6 programmes, which outline in detail the initiatives and actions that will be developed to achieve the objectives of the Strategy. The main novelty introduced is programme 5 Attraction, retention and return of talent that replaces the former programme 5 Innovative Society, as it integrates the specific objectives relating to tackling the brain drain and to retain population in the region.

- Programme 1. Business innovation and more competitive economy.
- Programme 2. Excellent science and technological leadership.
- Programme 3. Internationalisation.
- Programme 4. Collaboration.
- Programme 5. Attraction, retention and return of talent.
- Programme 6. Digital agenda for Castilla y León.

These programmes display, for each strategic objective, the actions that are developed in the thematic priorities.

The updated programmes have the following specific objectives for the period 2018-2020:

**Table 12:** Programmes and specific objectives of the RIS3 for the period 2018-2020

## P1. BUSINESS INNOVATION AND MORE COMPETITIVE ECONOMY.

The challenge of this programme remains to develop proactive policies to structure and support the business needs in innovation which, in the mid-term, will mean a greater private investment in R&D&I resulting in the improvement of business competitiveness.

- 1.1 Support the innovative effort of companies
- 1.2 Encourage the creation of innovative companies

## P2. EXCELLENT SCIENCE AND TECHNOLOGICAL LEADERSHIP

The purpose of this programme, which is the core of the science policy in the region, is to move towards scientific and technological leadership in those fields with potential for regional specialisation, marked in the thematic priorities of the RIS3.

- 2.1 Promote niches of excellence and international leadership in technologies and scientific areas in which there is competitive advantage and potential
- 2.2 Increase the scientific quality and the socio-economic impact of the research activity



### P3. INTERNATIONALISATION

The commitment of this programme is interrelated with other programmes, and consists in enhancing the international perspective and scale of the science and technology system as the only way to take advantage of the opportunities offered by globalisation.

- 3.1** Support the research and innovative activity with international projection
- 3.2** Increase the participation of entities from Castilla y León in international R&D&I programmes

### P4. COLLABORATION

Aims to achieve greater collaboration between system stakeholders to cover some of the deficits currently suffered, as is the lack of critical mass, but especially the fragmentation of the value chain of the R&D&I (science - business connection).

- 4.1** Organise and enhance the knowledge transfer structures
- 4.2** Protection and exploitation of research results
- 4.3** Joint R&D&I projects and open innovation
- 4.4** Creation and consolidation of research and innovation networks and platforms.

### P5. ATTRACTION, RETENTION AND RETURN OF TALENT

The purpose of this new programme, redesigned for the period 2018-2020, is making our science and technology system attractive in order to retain and attract the talent and human capital in Castilla y León.

- 5.1** Educating in attitudes and values linked to innovation and entrepreneurship
- 5.2** Increasing the convergence of higher education and innovation
- 5.3** Bringing society closer to the achievements of science and technology
- 5.4** Training of Human Resources
- 5.5** Attracting and retaining talent

### P6. DIGITAL AGENDA FOR CASTILLA Y LEÓN

The challenge of the Digital Agenda for Castilla y León is to achieve the digital transformation of the region's society, mainly focusing on Information and Communication Technologies (ICT) to become tools enabling innovation and competitiveness, and greater social and territorial cohesion, achieving economic growth of Castilla y León, a greater development of the rural environment and job creation.

- 6.1** Deployment of telecommunication networks and services to ensure digital connectivity
- 6.2** Developing digital economy for companies' growth and competitiveness
- 6.3** Boosting e-Government and improving the effectiveness, efficiency and quality of public services through an intensive use of ICT
- 6.4** Promoting the digital adaptation of the citizenship and social innovation



PS  
23

Based on the recommendations from the mid-term evaluation of the RIS3, the update introduces seven flagship initiatives for the period 2018-2020. These initiatives are conceived as a series of commitments capable of impacting on a number of thematic priorities and strategic objectives.

## 8.1 FLAGSHIP INITIATIVE: CIRCULAR BIO-ECONOMY

### CONTEXT AND BACKGROUND:

Bioeconomy encompasses the production of renewable biological resources and their conversion into food, feed, bioenergy and biological products for different value chains.

On the other hand, due to the growing scarcity, the high cost and volatility of raw materials, circular economy is acquiring great importance, as a model that aims to improve the efficiency in the use of resources through the reduction of both the input of materials, and the production of virgin waste, closing ecological and economic loops or flows of the resources.

The EU developed the strategy *Innovating for sustainable growth: a Bioeconomy for Europe (2012)*, also considering bio-economy as one of four items on which to concentrate the remaining resources of the Horizon 2020 programme.

At the national level, there exists its own policy: the Spanish Bioeconomy Strategy Horizon 2030, coordinated by the National Institute of Research and Agricultural and Food Technology (INIA).

At the regional level, both the Agrarian Technological Institute of Castilla y León (ITACYL) and the Institute for Business Competitiveness of Castilla y León (ICE), continue to be committed to bioeconomy as an area of interest in their respective strategic plans.

### SPECIFIC ACTIONS:

- Pilot project for the identification and promotion of by-products of the agri-food production.
- Revitalisation of the Bioincubator of Boecillo Technology Park.
- Identification of new activities linked to the production, transformation and marketing of new resources and products.

### THEMATIC PRIORITIES:

The initiative is mainly related to thematic priorities 1: Agri-food, and 4: Natural Heritage, Cultural Heritage and the Spanish Language, and endogenous resources; and indirectly affects thematic priority 5: R&D in Information and Communication Technologies, Energy and Sustainability.

### EXPECTED IMPACT:

- Boosting of the sector, and generation of new knowledge.
- Increasing the productivity of enterprises in the rural environment.

FI  
25

#### Instruments:



R&D&I  
funding



Specialised  
services



Outreach

#### Organisational structure:

Department of  
Agriculture and  
Livestock

Department of  
Economy and Finance

Institute for Business  
Competitiveness (ICE)



Agrarian Technological  
Institute of Castilla y León  
(ITACYL)



#### Programmes for implementation:

P.1. Business  
innovation and more  
competitive economy

P.2. Excellent science  
and technological  
leadership

P.3.  
Internationalisation

P.4. Collaboration

P.5. Attraction,  
retention and return of  
talent

P.6. Digital Agenda for  
Castilla y León

#### Beneficiaries:

Bioeconomy  
companies

Technology  
Centres

Start-ups

University  
Research Groups

€ 24,534,000



F.E.D.E.R.

Other  
competitive  
sources



FEADER



## 8.2 FLAGSHIP INITIATIVE: KNOWLEDGE AND COMPETITIVENESS

### CONTEXT AND BACKGROUND:

Progress has been made both in the scientific production of R&D institutions and the innovation carried out by businesses, but it is necessary to deepen in the transfer between these two poles, to enhance and multiply the impact of the results of each one.

Enhancing knowledge transfer from R&D entities to the market will allow Castilla y León to continue the progress initially started by the *University-Business Strategy of Castilla y León 2008-2013*, with the *University-Business knowledge transfer programme (TCUE)*, and the *Entrepreneurship, Innovation, and Self-employment Strategy of Castilla y León, 2016-2020*.

### SPECIFIC ACTIONS:

- New model of technology centres.
- Financial instrument (seed capital) for new innovative companies.
- “Lean New Entrepreneurs” workshops at the universities. Special focus on Humanities.
- Knowledge transfer voucher.

### THEMATIC PRIORITIES:

The initiative has a strong transversal nature as there are opportunities for improvement in relation to knowledge transfer in the 5 thematic priorities.

### EXPECTED IMPACT:

- Increase of collaborative projects: local, national and international.
- Acceleration of innovative entrepreneurship processes.
- Increase of exploited patents.

## Instruments:

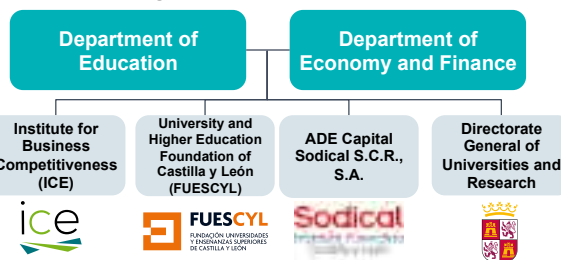


R&D&I  
funding



Specialised  
services

## Organisational structure:



## Programmes for implementation:

P.1. Business  
innovation and more  
competitive economy

P.2. Excellent science  
and technological  
leadership

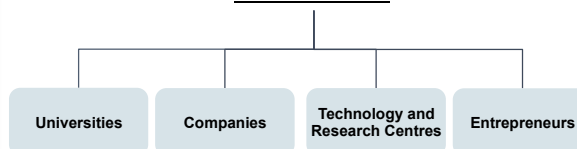
P.3.  
Internationalisation

P.4. Collaboration

P.5. Attraction,  
retention and return of  
talent

P.6. Digital Agenda for  
Castilla y León

## Beneficiaries:



€ 25,527,000



F.E.D.E.R.



FI  
27

## 8.3 FLAGSHIP INITIATIVE: SOCIAL AND HEALTHCARE INNOVATION

### CONTEXT AND BACKGROUND:

Castilla y León must face an ageing population that is associated with an increase in dependency, chronic conditions and social-healthcare demands. This situation must be addressed by applying knowledge to the development of products or services to meet these needs.

This is a challenge common to many regions of Europe and therefore the European Commission is promoting programmes such as *Active and Assisted Ageing Programme* or *European Partnership of Innovation for Active and Healthy Ageing*.

At the national level, Spain contemplates the *Strategic Action for Health of the State Plan of Scientific and Technical Research and Innovation*, under the leadership of the ISCIII.

### SPECIFIC ACTIONS:

- SACYLINNOVA Programme to promote innovation in hospitals and health centres, through advice to health professionals and seeking funding, increasing the culture of innovation and entrepreneurship in SACYL, and promoting the protection and exploitation of knowledge.
- ARGOS Project for the development of a social and health care platform to integrate health and social systems to manage in an efficient way the care of those chronically ill and people in situation of dependency.

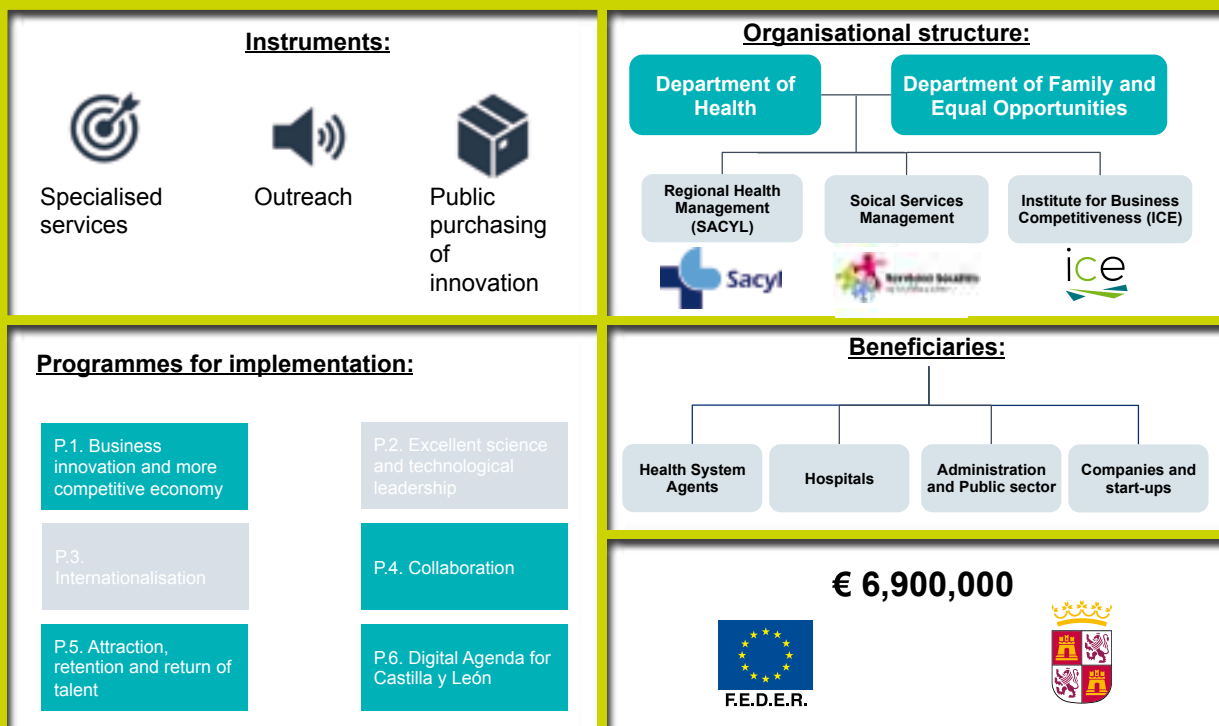
## THEMATIC PRIORITIES:

The initiative has a strong healthcare characteristic, being included in the thematic priority 3.

## EXPECTED IMPACT:

- Implementation of innovation projects, with market applications.
- Improvement of social and health care.

FI  
28



## 8.4 FLAGSHIP INITIATIVE: CYBERSECURITY

### CONTEXT AND BACKGROUND:

Globalisation and the increasingly deep-rooted use of ICT mean that cybersecurity policies gain ever more importance, a subject that represents a clear opportunity for specialisation for Castilla y León, since it allows exploiting two unique features: the existence of the National Institute for Cybersecurity (INCIBE), and the Cybersecurity and Advanced Technologies Cluster.

At the European level, the EU has developed the *Cybersecurity Strategy*, the Networks and information security directive (NIS) and, more recently the European Cyber Security Organisation (ECSO).

At the national level, Spain has the *National Cybersecurity Strategy*.

### SPECIFIC ACTIONS:

- Accelerator of entrepreneurial projects in collaboration with INCIBE.
- Participation in ECSO: positioning in Europe.
- Promotion of the Digital Innovation Hub in collaboration with the Cybersecurity and Advanced Technologies Cluster.

### THEMATIC PRIORITIES:

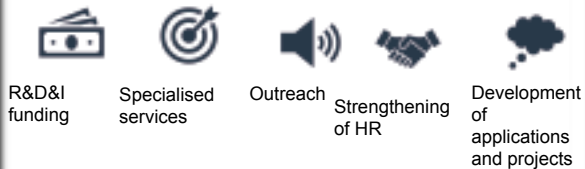
By its nature, the initiative is framed within the thematic priority 5.

### EXPECTED IMPACT:

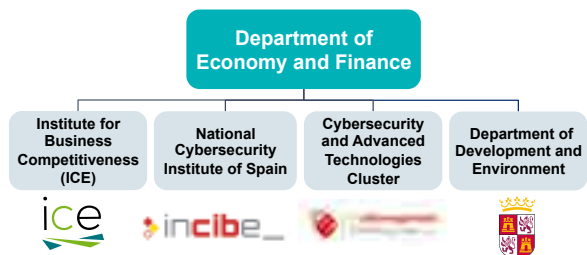
- Leadership of Castilla y León in this field: creation of an innovation pole.
- Attracting talent and investment, developing a competitive sector.
- Increase in the digital confidence in all sectors, and therefore of digitisation.

FI  
29

#### Instruments:



#### Organisational structure:



#### Programmes for implementation:

P.1. Business innovation and more competitive economy

P.2. Excellent science and technological leadership

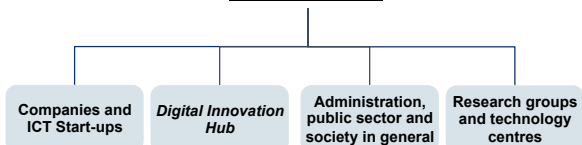
P.3. Internationalisation

P.4. Collaboration

P.5. Attraction, retention and return of talent

P.6. Digital Agenda for Castilla y León

#### Beneficiaries:



€ 24,980,000



Other competitive sources





## 8.5 FLAGSHIP INITIATIVE: INDUSTRY 4.0

### CONTEXT AND BACKGROUND:

The term Industry 4.0 is becoming increasingly widespread and means the generalisation of the use of ICT in industry, providing corporate access to the fourth industrial revolution and the integration of services related to the Information Society.

The member states with the industrial sectors of highest added value in the EU, such as Germany, France, the United Kingdom or Italy, boost initiatives related to industry 4.0

The digital transformation of Spanish industry has been conducted through the *Connected Industry 4.0 Initiative*

At the regional level the *Master Plan of Industrial Enhancement* and the *Entrepreneurship, Innovation and Self-employment Strategy of Castilla y León 2016-2020* have been launched. Both instruments consider Industry 4.0 as one of the pillars of industrial specialisation.

### SPECIFIC ACTIONS:

- Sectoral plans of action, to support the implementation of the technological solutions required.
- Support to the regional ICT sector to develop new competitive solutions.
- Funding of strategic disruptive technological projects.

### THEMATIC PRIORITIES:

By its nature, the initiative is framed within the thematic priority 5.

### EXPECTED IMPACT:

- Incorporation of innovative technological solutions to the productive processes.
- Generation of new economic activities, changing the regional industrial model.



FI  
30





## Instruments:



R&D&I  
funding



Specialised  
services



Strengthening  
of HR

## Organisational structure:



## Programmes for implementation:

P.1. Business  
innovation and more  
competitive economy

P.2. Excellent science  
and technological  
leadership

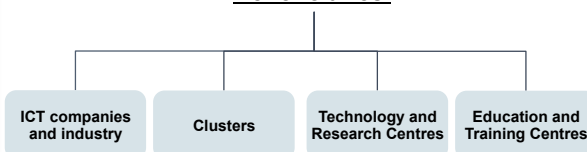
P.3.  
Internationalisation

P.4. Collaboration

P.5. Attraction,  
retention and return of  
talent

P.6. Digital Agenda for  
Castilla y León

## Beneficiaries:



€ 53,000,000



Other  
competitive  
sources



FI  
31

## 8.6 FLAGSHIP INITIATIVE: STAIRWAY TO EXCELLENCE

### CONTEXT AND BACKGROUND:

Research systems are faced with an environment of increasing competition for ideas, talent and funding. The diagnosis of the R&D system of Castilla y León has shown that there are a number of challenges to be taken into account in the next years for R&D institutions to be competitive at the international level.

In this context, the European Commission itself is aware of the need to establish a “stairway to excellence” that would allow regions and countries to develop and exploit synergies between the Horizon 2020 R&D Framework Programme and regional and state investments. In this regard, it is working to strengthen regional research structures with larger capacities in the international R&D scenario.

At the national level, these works are carried out via the Subprogramme for Institutional Strengthening, by the accreditation of *Severo Ochoa* research centres of excellence and *María de Maeztu* research units of excellence.

### SPECIFIC ACTIONS:

- Funding of strategic research plans at R&D centres or units.
- Recruitment or stabilisation of researchers with a high international projection.
- Recruitment or stabilisation of R&D and transfer.

## THEMATIC PRIORITIES:

The initiative has a strong transversal nature as it acts on the science system as a whole, affecting the 5 thematic priorities.

## EXPECTED IMPACT:

- Achieving the accreditation of regional centres of excellence in national programmes.
- Increasing the participation in European programmes of excellence, such as the ERC.
- Improvement of the research excellence indicators (impact, Q1, etc.).
- Making our science system more attractive.

### Instruments:



R&D&I  
funding



Attracting  
and  
retaining  
HR

### Organisational structure:

Department of  
Education

Directorate  
General of  
Universities and  
Research



### Programmes for implementation:

P.1. Business  
innovation and more  
competitive economy

P.2. Excellent science  
and technological  
leadership

P.3.  
Internationalisation

P.4. Collaboration

P.5. Attraction,  
retention and return of  
talent

P.6. Digital Agenda for  
Castilla y León

### Beneficiaries:

Universities

Public Research  
Centres

Centres with own legal status and non-  
profit foundations conducting R&D with  
own resources

€ 23,400,000

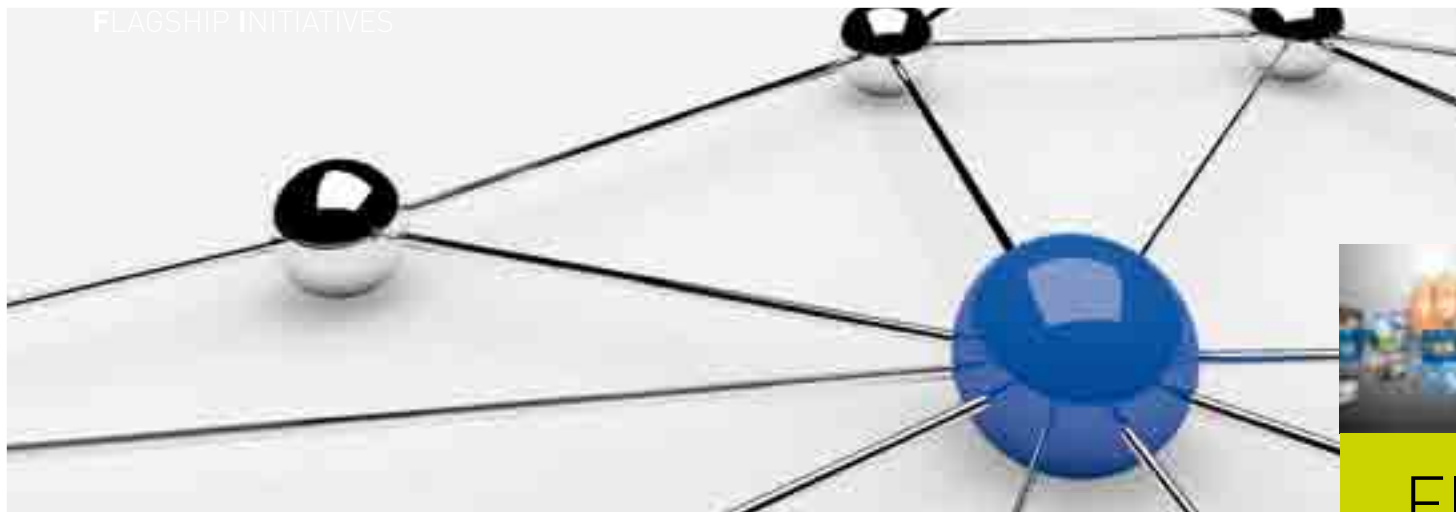


Other  
competitive  
sources



EXCELLENCE





## 8.7 FLAGSHIP INITIATIVE: CONNECTED SCHOOLS

### CONTEXT AND BACKGROUND:

The digitisation process of the last decades has had a transversal impact on many economic and social areas, including education. Therefore, the emerging policy initiatives are based on ensuring the use of new technologies, digital content and innovative teaching methods in school education.

At the European level, the concept of digital competence, proposed by the Directorate-General for Education and Culture of the European Commission, has emerged as one of the 8 skills required within the paradigm of life-long learning in a society, like ours, in which ICT is ubiquitous.

At the national level, the *Schools connected* programme is noted, which aims to extend and consolidate the use of technology in the Spanish educational system, in accordance with the objectives of the Digital Culture in School Plan (2013), the Digital Agenda for Spain and the CORA Report (Commission for the Reform of Public Administrations).

Castilla y León has been working on this line for years through the *School 2.0 Plan* (2009) in collaboration with the Ministry of Education or the more recent development of the *Master Plan of ICT in Schools of Castilla y León*.

### SPECIFIC ACTIONS:

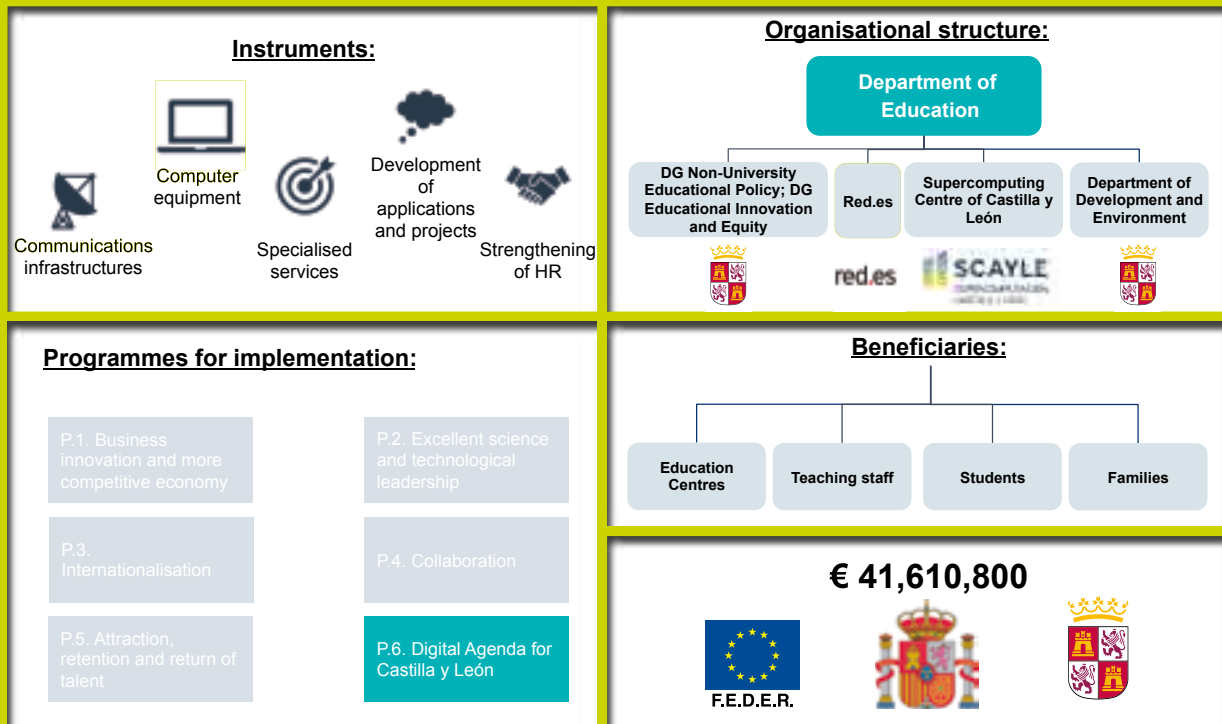
- Ultra-fast broadband connection in all public schools
- Allocation of internal infrastructures of communications and computer equipment.
- Development of the support-service providing structure.
- Preparation of the Plan of use of ICT in Education.

### EXPECTED IMPACT:

- Connection of about 1,600 educational centres' sites.
- Use by 350,000 students of new technologies and methodologies in education.
- Consolidation of the digital skills in students: education for the future.



FI  
34



# 9 GOVERNANCE



The coordination at the different Strategy levels will be carried out during the period 2018-2020 by the same bodies that participated in the previous period:

**Table 13:** Governance of the RIS3 for the period 2018-2020

BODY	FUNCTIONS
Regional Government of Castilla y León	<ul style="list-style-type: none"> <li>Approval of the Strategy and possible changes or updates.</li> </ul>
Commission of General Secretaries	<ul style="list-style-type: none"> <li>Coordinate the activities of the various ministries.</li> </ul>
Commissioner for Science and Technology	<ul style="list-style-type: none"> <li>Ensure the coordination and coherence of RIS3 actions.</li> <li>Coordinate the preparation of the annual reports of the RIS3.</li> </ul>
Technical Management Group	<ul style="list-style-type: none"> <li>Follow-up of actions and promotion of their complementarity with those of the State and the H2020 Programme.</li> </ul>
Working groups	<ul style="list-style-type: none"> <li>Analyse and make recommendations for improvement on the instruments and actions raised for proper implementation of the RIS3.</li> </ul>

The Update of the RIS3 of Castilla y León for the period 2018-2020 raises some strategic and specific objectives to be achieved by 2020, through measures proposed in the various programmes.

As a novelty for the period 2018-2020, the indicators of the specific objectives are presented in this document.

A final evaluation in 2021 is foreseen, following the completion of the Strategy, with the aim of analysing the impact achieved by the actions carried out.

## 10.1 STRATEGIC OBJECTIVES INDICATORS

**Table 14:** Result indicators of the strategic objectives for the period 2018-2020

Indicator of results	Strategic Objective RIS3	Units	Source	Reference value		Goal 2020
				Year	Data	
R&D expenditure on GDP	OE1	%	INE	2016	1.10%	1.50%
Percentage of R&D expenditure executed by businesses	OE1	%	INE	2016	59.9%	66.0%
Standardised impact of the scientific output of Castilla y León	OE 2	Ratio	ICONO	2015	1.15	1.20
% of exports of products with higher technological content on total exports	OE3	%	INE	2016	68,89%	72.00%
% of researchers in the private sector	OE4	%	INE	2016	28.23%	36.00%
Human resources in science and technology (% of active population)	OE5	%	EUROSTAT	2016	40.4%	43.0%
% of population with broadband coverage at speeds of 30Mbps or higher	OE6	%	SETSI	2016	63.5%	100%
% of companies with less than 10 workers having Internet connection		%	INE	2017	66.8%	75.0%
% of people who use the Internet regularly		%	INE	2017	76.9%	83.0%
% of people who have made purchases through the Internet in the last 3 months		%	INE	2017	35.4%	46.0%
% of people over 65 years old who use the Internet regularly		%	INE	2017	36.6%	42.0%

## 10.2 SPECIFIC OBJECTIVES INDICATORS

Table 15: Result indicators of the specific objectives for the period 2018-2020

Indicator of results	Specific Objective RIS3	Units	Source	Reference value		Goal 2020
				Year	Data	
Expenditure on technological innovation	OE1.1	Thousands of euros	INE	2016	494.508	750.000
% of innovative companies <sup>6</sup>	OE1.1	%	INE	2016	25.5%	30.0%
% of companies in high and medium-high technology sectors	OE1.2	%	INE	2016	1.48%	1.55%
% of publications of excellence	OE2.1	%	ICONO	2015	10.8	11.5
% of publications in high impact journals (Q1)	OE2.1	%	ICONO	2015	40.1	45.0
% return of the participation of Castilla y León in the R&D&I State programmes	OE2.2	%	FECYT	2015	3.7	4.5
Applications for European patents filed in Spain	OE3.1	Patents/ million inhab.	OEPM	2015	2.86	9.00
% of cumulative return of the EU R&D Framework Programme (H2020) over the total in Spain	OE3.2	%	CDTI	2016	3.34%	3.40%
Number of technology-based companies created in the university environment (cumulative) <sup>7</sup>	OE 4.1	No.	FUESCYL	2016	87	133
Patent applications filed by universities	OE4.2	No.	OEPM	2016	35	55
% of innovative companies that have cooperated in innovation of total innovative companies.	OE4.3	No.	DGBS <sup>8</sup>	2015	29.50%	35.00%
% of scientific publications with international collaboration	OE4.4	%	ICONO	2015	39.09%	42.00%
Increase of the number of companies in Castilla y León	OE5.1	%	INE	2016	0.16%	2.00%
% of employed population in Castilla y León with higher education and/or PhD	OE5.2	%	EPA	2016	39.3	43.0
Patent applications	OE5.3	Patents/ million inhab.	OEPM	2015	46.6	55.0
% R&D personnel in the private sector	OE5.4	%	INE	2016	38.50%	45.00%
Number of researchers per thousand of the employed population	OE5.5	‰	INE	2016	6.05	6.50
Electronic registration entries over total number of entries	OE6.3	%	JCYL <sup>9</sup>	2016	35.0	51.0

<sup>6</sup> Modified indicator now covers both technological and non-technological innovations.<sup>7</sup> New indicator defined by the reorganisation of the objectives of the Programme 4.<sup>8</sup> Directorate General of Budget and Statistics, Regional Government of Castilla y León.<sup>9</sup> Regional Government of Castilla y León.ME  
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During the mid-term evaluation, the actual resources mobilised in the period 2014 to 2016 were found to have been higher than initially expected. Accordingly, the forecast of the resources to be mobilised by the RIS3 up to 2020 has been revised:

**Table 16:** RIS3 Resources 2014-2020

	RESOURCES MOBILISED			FORECAST OF RESOURCES TO MOBILISE				TOTAL
(MILLION EURO)	2014	2015	2016[*]	2017	2018	2019	2020	2014-2020
Public resources	452.6	456.8	411.0	573	601	637	670	3,802
Regional Government of Castilla y León	294.6	285.5	231.3	386	407	435	461	2,500
Other public resources	158.0	171.3	179.7	187	195	202	209	1,302
Private resources	775.0	755.6	803.3	838	871	901	935	5,878
<b>TOTAL</b>	<b>1,227.6</b>	<b>1,212.4</b>	<b>1,214.3</b>	<b>1,411</b>	<b>1,472</b>	<b>1,538</b>	<b>1,605</b>	<b>9,681</b>

[\*] Final data, except for "Other public resources", which are an estimate.



UPDATE  
FOR THE PERIOD  
2018-2020

REGIONAL RESEARCH  
AND INNOVATION  
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SPECIALISATION (RIS3)  
OF CASTILLA Y LEÓN  
2014-2020

RIS<sup>3</sup> CASTILLA Y LEÓN  
2014-2020



CASTILLA Y LEÓN