

Mid-Term Evaluation of the Asturias 2014-2020 Smart Specialisation Strategy (RIS3)



Asturias
RIS3 2014
2020

Mid-Term Evaluation



Prepared by CDI Consulting
November 2020



Citizen's Summary

1.1. Aim and scope of the evaluation

The aim of this mid-term evaluation of the Asturias 2014-2020 Smart Specialisation Strategy (RIS3) is to analyse the degree of the project's implementation and the results generated.

The evaluation also includes a series of recommendations issued by the evaluating team, intended to facilitate the development of a future Strategy to be applied in the 2021-2027 period.

This evaluation analyses the period from 2015 to 2019. As such, it should be noted that the results analysed in this mid-term evaluation are provisional, as the Asturias RIS3 is still under implementation. The final evaluation of this strategy is intended to be carried out in 2024, once the programmes have ended and their results can be fully analysed.

The main sources of information employed in the development of the evaluation are as follows.

Fig.1. Information sources.

Primary sources

Interviews

- Interviews with IDEPA staff in charge of the Strategy.
- Interviews with public bodies of the Principality of Asturias forming part of the Strategy's Executive Committee.
- Interview with bodies forming part of the Science, Technology and Innovation Advisory Council.
- Interviews with Public Research Organisations.
- Interviews with private RDI centres.
- Case studies. Interviews with the companies of projects selected as good practices.

Online surveys

- Beneficiary companies. 73 company responses (54 SMEs and 19 non-SMEs) out of 477.
- Survey of technology centres.

Secondary sources

Asturias 2014-2020 Smart Specialisation Strategy.

Beneficiary databases.

Calls and resolutions for aid.

Other IDEPA reports.

- Asturias 2014-2020 Smart Specialisation Strategy Action Plan.
- Strategy aid programme monitoring database (SPIGA).
- Calendar of Strategy activities.
- Regional agenda for sustainable materials research and innovation.
- Asturias 2018 economic report. IDEPA.
- CDTI and HORIZON aid programme monitoring report 2020.

1.2. The Asturias 2014-2020 Smart Specialisation Strategy

The Asturias 2014-2020 Smart Specialisation Strategy (RIS3) is an integrated agenda for economic transformation which identifies the priority areas of intervention, based on analysis of the region's strengths and capacities, as well as a process for the discovery of business opportunities.

This RIS3 was developed by IDEPA, applying the methodology established by the European Commission in the "Guide to Research and Innovation Strategies for Smart Specialisation", with the collaboration of the main public and private agents forming the regional science, technology and innovation system (STI). The RIS3 development process was launched in July 2012 and finalised in July 2014, with notification of the Strategy to the European Commission.

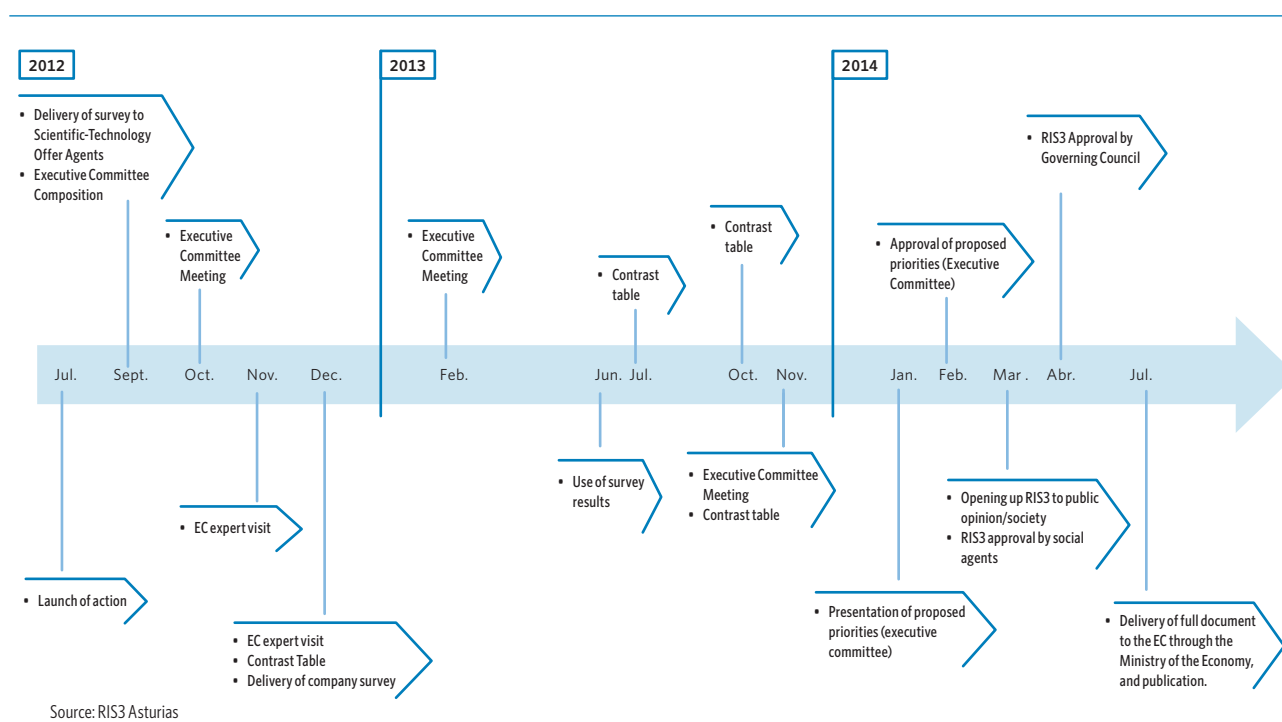
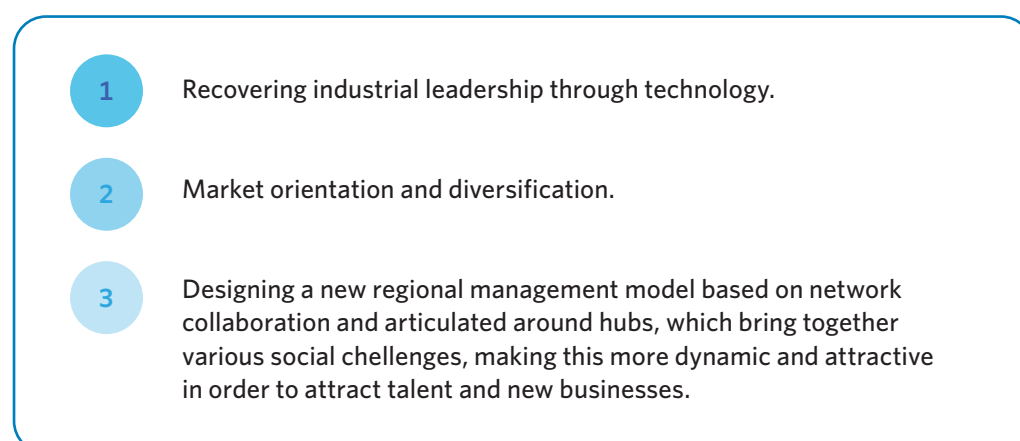


Fig. 2. Participative process milestones in the development of the Asturias RIS3.

In order to develop the RIS3, an extensive process was carried out, analysing the regional socio-economic situation, as well as the regional capacities and skills that would provide us with the proof required in order to identify the region's competitive advantages. The focus adopted emphasised the region's scientific and technological capacities.

The Asturias RIS3 establishes three strategic objectives:

Fig. 3. Asturias RIS3 Smart Specialisation Strategy Objectives.



Similarly, the RIS3 defines a limited number of fields of specialisation (6) and areas (17).

Advanced and sustainable materials	<ul style="list-style-type: none"> ▪ Industrial materials ▪ Sustainable materials ▪ Nanomaterials ▪ Graphene
New production models	<ul style="list-style-type: none"> ▪ Digital manufacturing ▪ Additive manufacturing
Supply. Network technologies	<ul style="list-style-type: none"> ▪ Energy: production and consumption ▪ Water management ▪ Logistics and security ▪ Data analysis ▪ Sensors
Agri-food markets	<ul style="list-style-type: none"> ▪ Agri-food resources ▪ Biotechnology in the dairy sector
Ageing demographic and quality of life	<ul style="list-style-type: none"> ▪ Biomedicine ▪ Health hub
Asturias steel industrial hub	<ul style="list-style-type: none"> ▪ Open innovation in the production and processing of steel ▪ Energy and transport markets

Fig. 4. Asturias RIS3 fields of specialisation and areas.

[Source: IDEPA. Priority lines for 2016]

These priorities fall into two categories: I) scientific, having their origin in strengths in the field of knowledge and II) technological, as they respond to the technological specialisation of economic activity. Furthermore, a series of challenges were defined, which refer to aspects requiring a cross-disciplinary approach, such as – for example – those related to the sustainability of business activity.

Scientific priorities	<ul style="list-style-type: none"> ▪ Nanomaterials ▪ Graphene ▪ Additive manufacturing ▪ Data analysis ▪ Sensors ▪ Biotechnology in the dairy sector ▪ Biomedicine
Technological priorities	<ul style="list-style-type: none"> ▪ Industrial materials ▪ Sustainable materials ▪ Digital manufacturing ▪ Energy: production and consumption ▪ Water management ▪ Logistics and security ▪ Agri-food resources ▪ Healthcare ▪ Open innovation in the production and processing of steel ▪ Energy and transport markets

Fig. 5. Scientific and technological priorities.

The Strategy Action Plan also establishes a framework of indicators, formed of contextual, productivity and results indicators, whose aim is to measure the results obtained in the implementation of the Strategy, as well as the extent to which the established objectives have been achieved.

1.3. Implementation of the Asturias 2014-2020 Smart Specialisation Strategy

The Strategy's implementation has largely been carried out through aid programmes, which have been complemented by Hubs and initiatives such as Open Innovation-Industry 4.0 and Proof of Concept Grants.

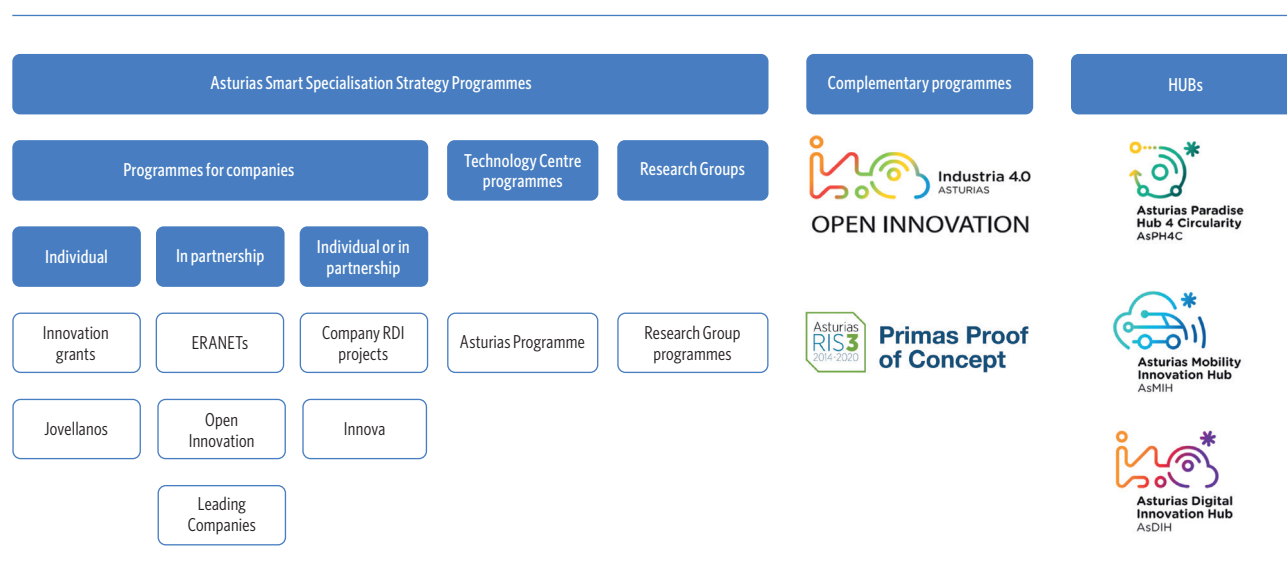


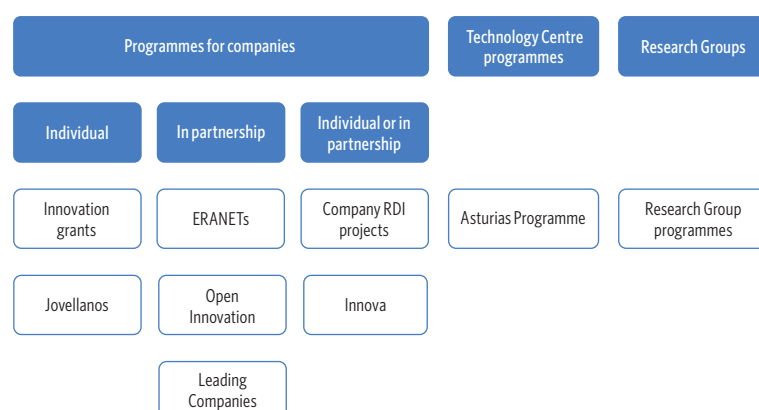
Fig. 6. Implementation of the Asturias Smart Specialisation Strategy.

1.3.1. Aid programmes

The Asturias RIS3 has been principally implemented through a series of regional aid instruments. The RIS3 Action Plan establishes these programmes, linked to all or some of the areas associated to scientific or technological priorities, according to the programme's characteristics.

These aid programmes are principally oriented towards companies. Likewise, programmes have also been developed for Technology Centres and Research Groups in the region.

Fig. 7. Asturias RIS3 aid programmes.



1.3.2. Hubs

Hubs are intended to stimulate the Strategy and encourage collaboration between regional STI system agents. They have been developed as forums of meeting and collaboration between regional science, technology and innovation system agents, related to an area or field of specialisation. Until the end of 2019, three Hubs have been promoted.

▪ **Asturias Paradise Hub 4 Circularity (Circular Economy).** This Hub is a

group of entities, infrastructures and resources focused on the circular management of waste. It brings together the specialisations of advanced and sustainable materials, and technology supplies for networks.

▪ **Asturias Mobility Innovation Hub (Sustainable Mobility).** This Hub has

been formed as a collaborative ecosystem of innovation relating to mobility, and was created to promote industrialisation, the creation of knowledge and new business activities, and the technological development of new solutions related to the development of green, connected and self-driving vehicles.

▪ **Asturias Digital Innovation Hub (Digital Manufacturing).** This Hub seeks to

coordinate and revitalise the process of industrial digitalisation in Asturias. It offers companies general services for the raising of awareness, evaluation of digital maturity, financing, marketing support, and space for the incubation of companies, as well as strengthening the development of specific hubs working towards digitalisation, such as additive manufacturing and data analysis, sensor systems, and artificial vision.

Fig. 8. Results of the Asturias Paradise Hub 4 Circularity.

Fig. 9. Results of the Asturias Mobility Innovation Hub.

Fig. 10. Results of the Asturias Digital Innovation Hub.



Results

- Asturias Sustainable Materials Roadmap (2017)
- Innovation Camp: Science for the transition towards a circular economy within the Asturian process industry (28-29 March 2019)
- EU Project: Smart Chemistry Specialisation Strategy, S3Chem (2016-2021)
- Regional agenda for Sustainable Materials research and innovation
- Integral Valorisation Circuits (network of public and private R&D pilot plants)



Results

- Inventory of scientific-technological capacities with regard to new mobility
- AsMIH Acceleration Lab: 11 projects
- MotoStudent
- FormulaStudent



Results

- Industry 4.0 Building Incubator
- As part of the Industry 4.0 Programme, the Open Innovation 4.0 programme has been developed
- Inventory of demonstration infrastructures and capacities, and technology hub pilot plants
- DIHelp EU project
- Additive manufacturing community

1.3.3. Open Innovation-Industry 4.0 programme

The Open Innovation-Industry 4.0 programme is a good practice for the promotion of innovation in specific fields of specialisation within the domain of digital manufacturing. The programme seeks to generate new models of collaborative innovation between consolidated industrial companies and new companies.

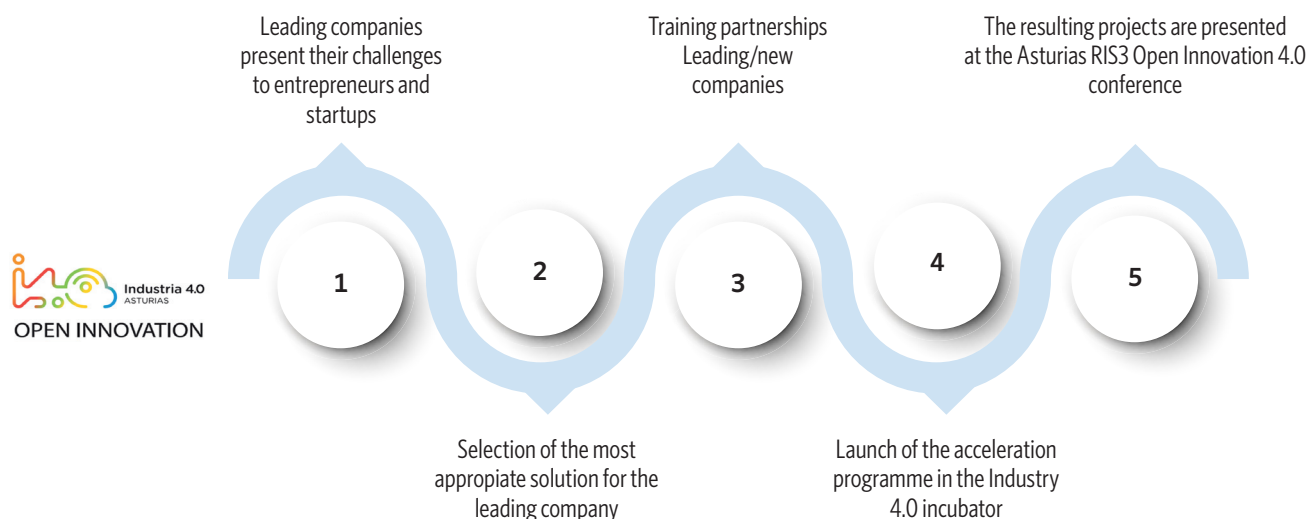


Fig. 11. Development of the Open Innovation 4.0 programme.

1.3.4. Proof of Concept Grants

Proof of Concept Grants allow basic research projects to be applied within the industry, as a public-private financing instrument to support models of open innovation in leading companies within the region. These grants offer 30,000 euros, with IDEPA contributing 50% and the leading company providing the remaining 50%.

As part of this initiative, the leading companies selected were ArcelorMittal in 2015, with 5 POCs, Reny Picot in 2016, with 3 POCs, and Thyssenskrupp in 2017, with 4 POCs.

These grants have sought to encourage collaboration between leading companies in the region and research groups, so that scientific knowledge can be translated into solutions applied on the market.

1.4. Implementation and results

Budgetary implementation refers to the consideration of expenses made, while achievements refer to the main advances achieved, and results refer to the effects observed during the Strategy's implementation.

1.4.1. Financial implementation

The level of budgetary implementation reached 187 million euros.

Of the total 187 million euros, 112.2 million euros correspond to regional public investment, while private investment reached 74.8 million euros.

Investment	2015	2016	2017	2018	2019	2020*	Total
Public	€15.9M	€21.0M	€22.6M	€21.7M	€24.9M	€6.0M	€112.2M
Regional ERDF	€7.8M	€12.9M	€13.5M	€12.8M	€15.9M	€6.0M	€68.9M
Other regional financing	€8.1M	€8.1M	€9.1M	€8.9M	€9.0M	-	€43.1M
Private	€13.6M	€17.5M	€14.9M	€14.7M	€14.1M	-	€74.8M
Total	€29.5M	€38.5M	€37.5M	€36.4M	€39.0M	€6.0M	€187M

* Only aid from Asturias and Research Groups have been taken into account in 2020, as these are multiannual programmes established in 2018, having been awarded in that year and paid in annual instalments. Performance in 2020 has not been analysed for other programmes as the mid-term evaluation only considers the period up to 2019.

The 2014-2020 Asturias ERDF Operational Programme constitutes the main source of public financing for the budget implemented as part of the Strategy, with resources intended to be cofinanced by this instrument reaching 68.9 million euros up to the year 2019. This budget has been materialised through the implementation of a series of programmes directed to companies, technology centres and research groups.

Table 1. 2015-2019 budgetary implementation.

[Source: In-house creation based on data provided by IDEPA and the General Directorate for Innovation]

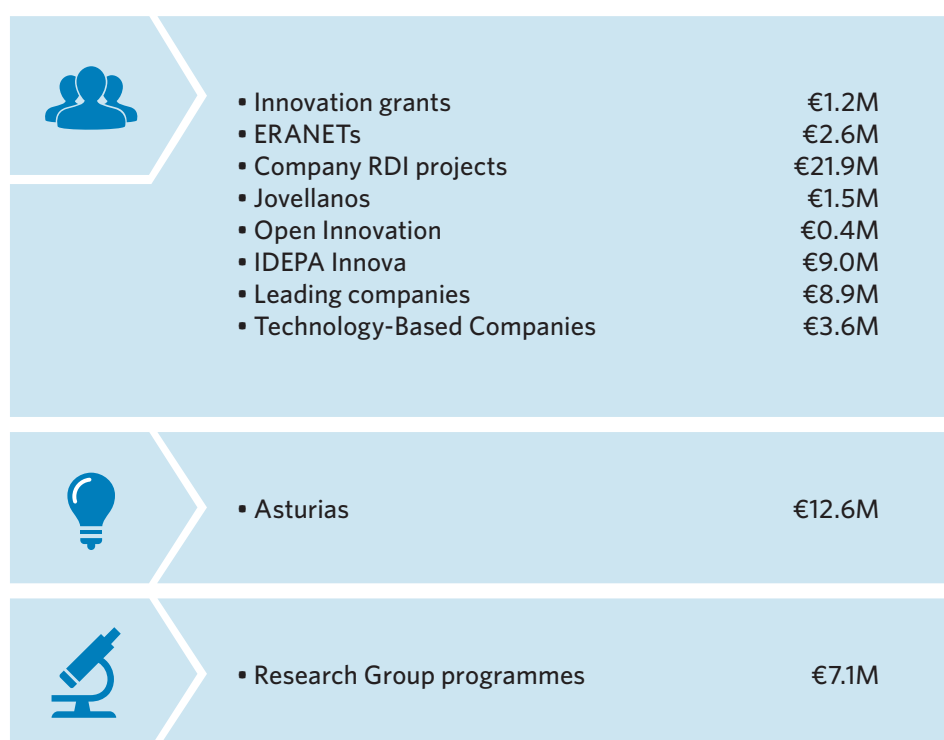
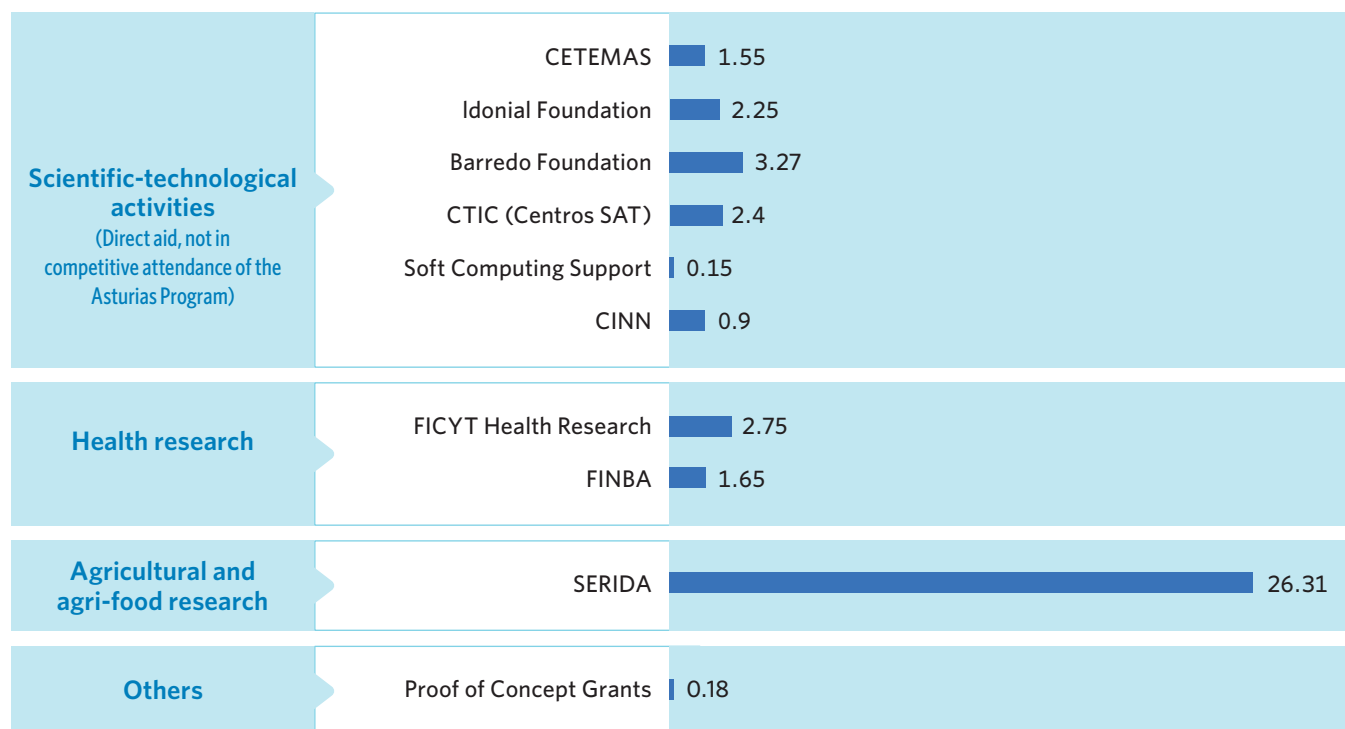


Fig. 12. Financial implementation by the Asturias RIS3 programme. Period: 2015-2019. 2014-2020 Asturias ERDF Operational Programme Cofinancing.

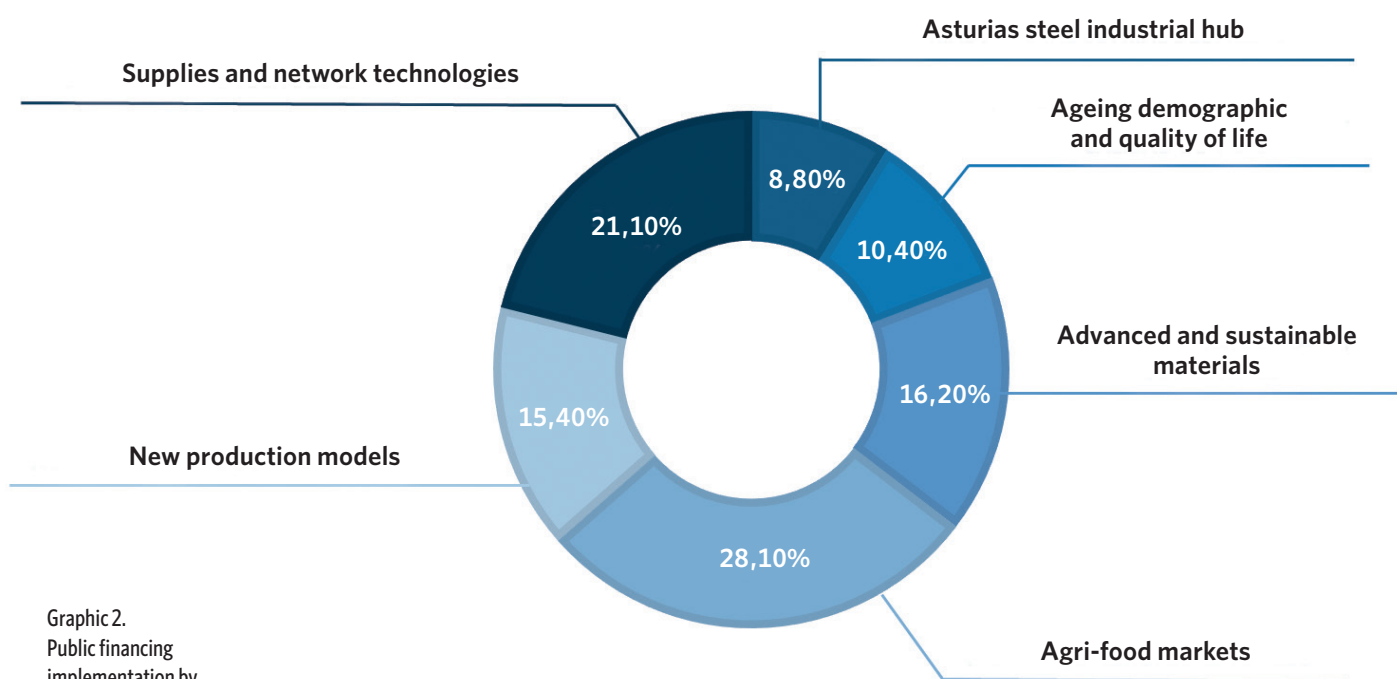
On the other hand, 43.12 million euros have been implemented which correspond to actions developed by various bodies of the Principality of Asturias, which do not make use of Regional ERDF cofinancing.



Graphic 1. Implemented in the Principality of Asturias and not cofinanced by ERDF. Period: 2015-2019. Unit: millions of euros.

With regard to implementation by field of specialisation, it can be noted that this does not significantly vary in relation to that established in the Smart Specialisation Strategy Action Plan.

The field of specialisation presenting the greatest budgetary implementation corresponds to agri-food markets: mainly due to the significance of agricultural and agri-food research carried out by SERIDA within said budgetary implementation.



Graphic 2. Public financing implementation by field of specialisation. Period: 2015-2019.

1.4.2. Principal Strategy achievements

Regional public implementation via the European Regional Development Fund has been allocated to aid programs through which grants amounting to 68.9 million euros have been awarded, allowing for the achievement of 1,352 projects, with the participation of 489 bodies.

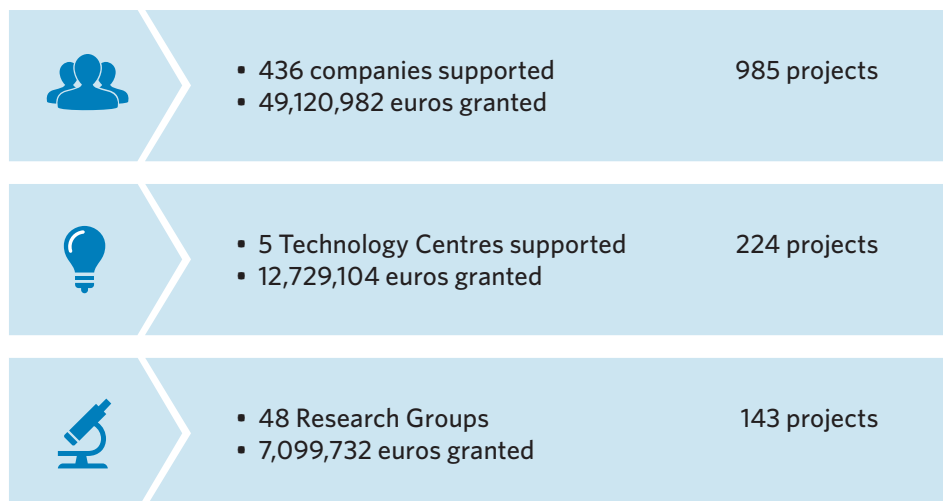


Fig. 13. Principal RIS3 achievements by STI system agent.

The main areas in which the three categories of agents have developed most projects are: data analysis, digital manufacturing, and open innovation in the production and processing of steel.

On the other hand, the areas in which fewest projects have been developed are: logistics, security, and water management.

Fig. 14. Main areas by category of beneficiary agent.

Companies	Technology Centres	Research Groups
More developed telematics		
<ul style="list-style-type: none"> Data analysis Digital manufacturing Agri-food resources Additive manufacturing Sustainable materials Sensors Open innovation in the production and processing of steel 	<ul style="list-style-type: none"> Additive manufacturing Industrial materials Agri-food resources Data analysis Open innovation in the production and processing of steel Digital manufacturing 	<ul style="list-style-type: none"> Biomedicine Data analysis Sustainable materials Nanomaterials Industrial materials Biotechnology in the dairy sector Healthcare
Less developed telematics		
<ul style="list-style-type: none"> Biotechnology in the dairy sector Graphene Nanomaterials Water management Logistics and security Biomedicine 	<ul style="list-style-type: none"> Graphene Biotechnology in the dairy sector Water management Logistics and security Energy and transport markets 	<ul style="list-style-type: none"> Digital manufacturing Additive manufacturing Energy and transport markets Logistics and security Water management Sensors

In the case of companies, 436 companies received public aid amounting to 49.1 million euros, for the development of 985 RDI projects. The categories of companies having received the most grants are SMEs, and more specifically, small businesses. This category of company has received 43.6% of the total grants awarded to companies.

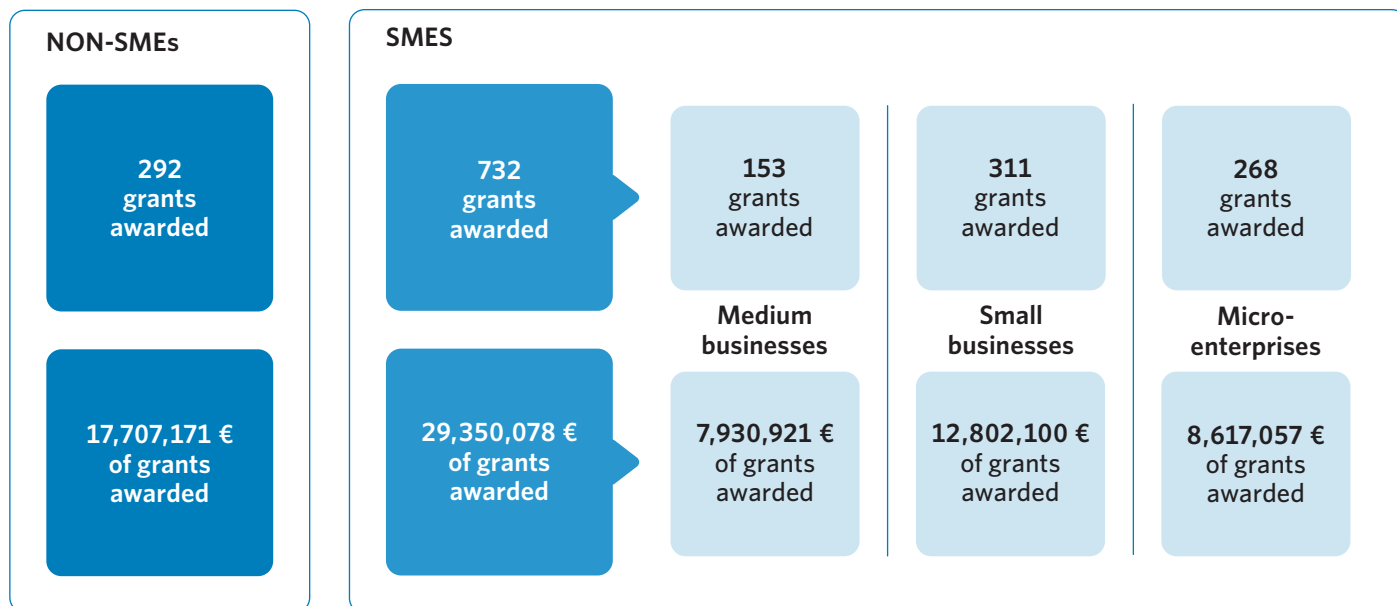


Fig. 15. Principal RIS3 achievements by company category.

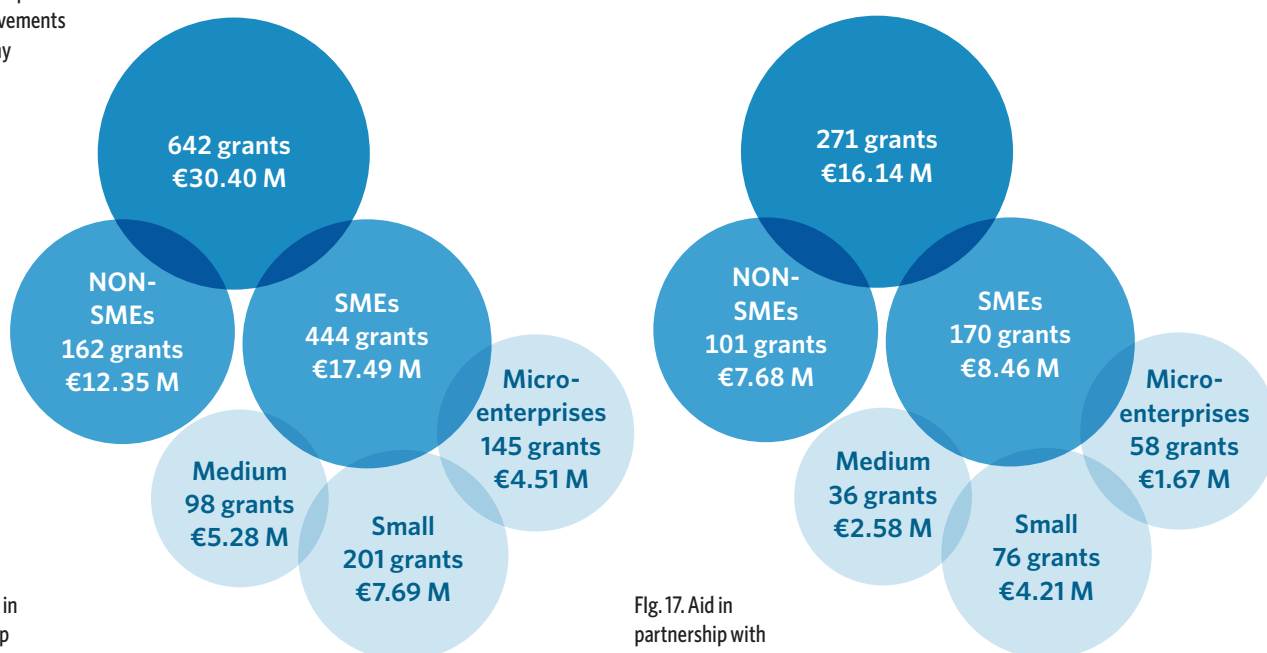


Fig. 16. Aid in partnership with TCs/RGs.

Fig. 17. Aid in partnership with businesses.

1.4.3. Analysis of results indicators

The Strategy has also defined a series of results indicators whose aim is to determine the effect that the Strategy's implementation is having in a socio-economic context. Currently, as the Strategy is still under implementation, these results are provisional. As such, the results will be analysed in the final evaluation of 2024. The results indicators are defined by objectives, by scientific and technological priorities, and by challenges.

Objective 1. Recovering industrial leadership through technology					
Results indicator	Source	Start value	2020 objective	Last year available	Value reached
Increase of % in private R&D expenditure	INE- Statistics on R&D activities	€98.377K (2011) 45% of total R&D expenditure	55% of total R&D expenditure	2018	60.16%
Increase in % of number of researchers within companies	INE- Statistics on R&D activities	806 (2012)	10 %	2018	0.521%
European returns achieved by companies and by the scientific-technological offer	CDTI/ EC In-house creation	FP7 data total participation 1.14% of Spanish total (2007-2013)	1.5% of Spanish total (Horizon 2020)	2014-2019	1.36%
Objective 2. Market orientation					
Results indicator	Source	Start value	2020 objective	Last year available	Value reached
Increase in the number of innovative companies with technological innovations (in %)	INE- Encuesta sobre innovación en las empresas	344 (2011-2013)	25% increase (2018-2020)	2016-2018	31.40%

The results obtained are generally positive, although these cannot yet be analysed as the Strategy is still under implementation.

With regard to results indicators defined by area, these are classified according to scientific priorities, technological priorities, and challenges.

At this time, there are two scientific priority indicators that may be analysed in greater detail: European projects piloted and the creation of technology-based companies (TBCs).

Tabla 2. Analysis of results indicators by objectives.

[Source: In-house creation based on data provided by IDEPA and the General Directorate for Innovation. Action plan. RIS3 Asturias]

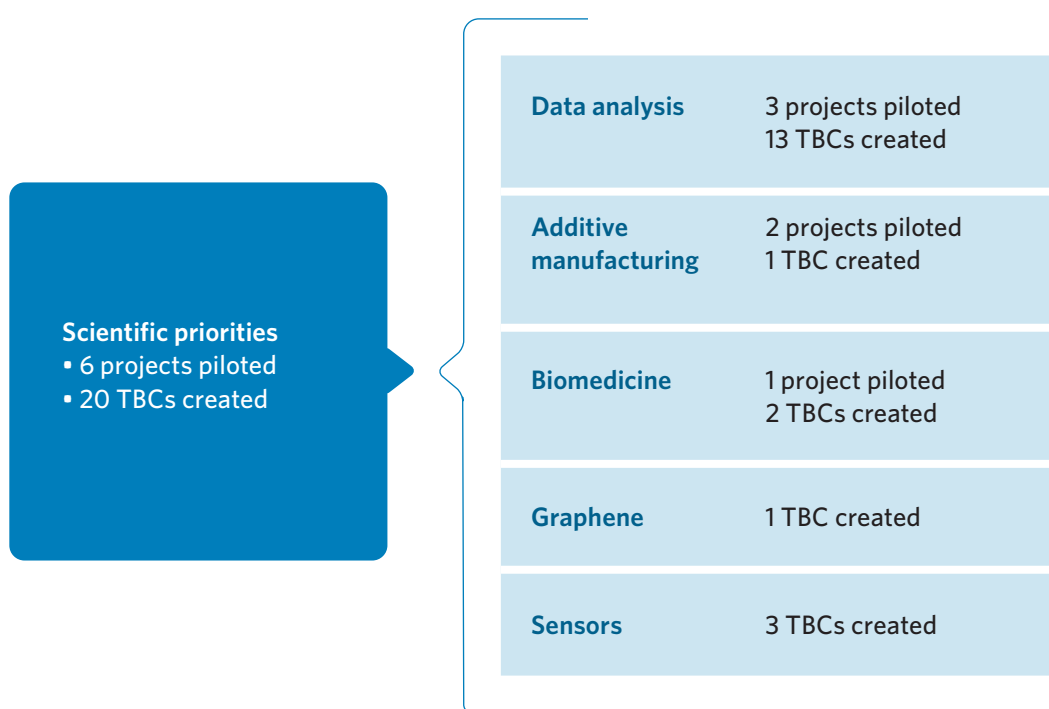


Fig.18. Results regarding scientific priorities.

On the one hand, the “European projects piloted” indicator presents 10 projects.

The agents of the STI regional system have participated in 120 European projects (HORIZON2020), with returns of 1.36% of the national total obtained. Of these 120 European projects, there are 10 European consortium projects piloted by Asturian bodies.

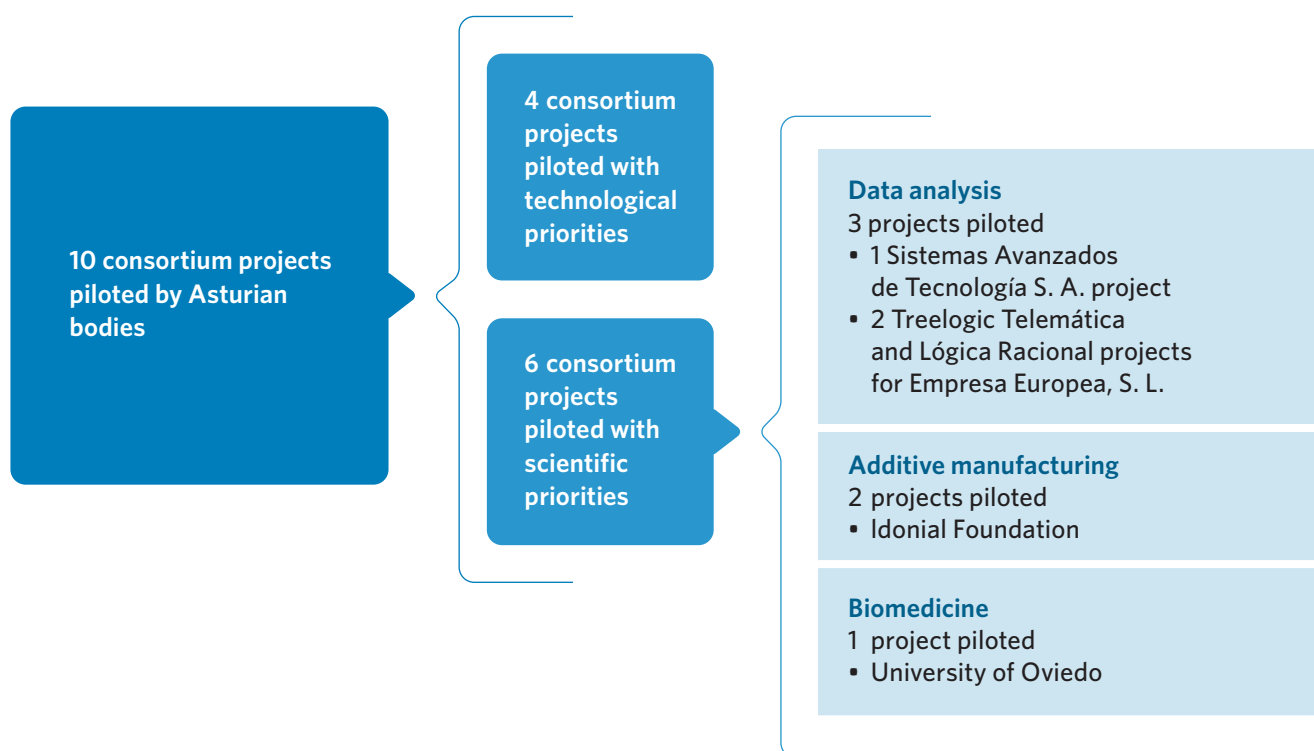


Fig. 19.
HORIZON2020
consortium projects
piloted by Asturian
bodies.

In addition, there are two Horizon2020 projects supported by the European Research Council of the University of Oviedo, corresponding to the scientific priorities of nanomaterials and biomedicine.

On the other hand, during the 2015-2019 period, 40 Technology-Based Companies (TBCs) were created, while the development and growth of a further 20 already-established TBCs was supported. This information indicates that as a result of the Asturias RIS3 Smart Specialisation Strategy’s development, the fabric of Asturian business has been enriched and consolidated with cutting-edge technological companies working in fields related to both the scientific priorities and the technological priorities.

	Priority	Number
Scientific priorities	Graphene	1
	Data analysis	13
	Sensors	3
	Biomedicine	2
	Additive Manufacturing	1
Technological priorities	Energy: Production, supply and consumption	4
	Digital Manufacturing	5
	Water management	1
	Logistics and Security	1
	Industrial materials	1
	Healthcare	5
	Agri-food resources	3

Table 3. Number of TBCs created by priorities.
[Source: IDEPA]

The Principality of Asturias has made a significant effort to encourage the creation of TBCs, which has been manifested through the existence of various aid instruments for their creation and development, as well as the advice and information developed by the European Business Centre.

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