



Estrategia de Innovación de  
Andalucía 2014-2020



## **Report to the citizens**

### **Final Evaluation of Results and Impacts of RIS3Andalucía**

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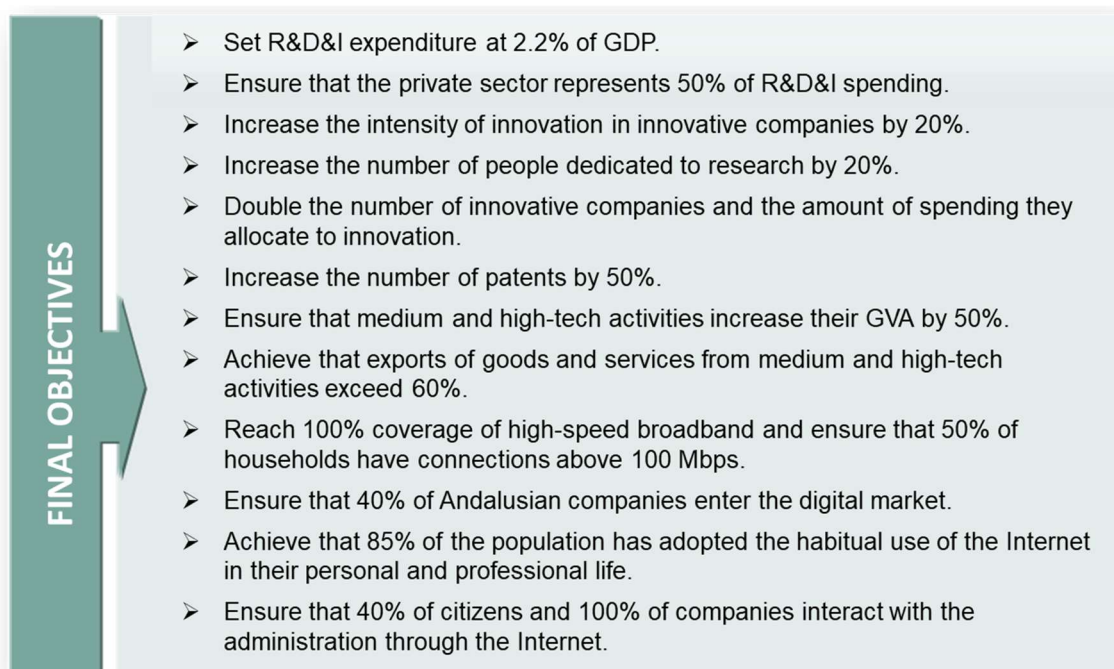
## 1. Introduction: what is RIS3Andalucía and why has it been important?

This document summarizes the **final evaluation of the Andalusia Innovation Strategy 2020 (RIS3Andalucía)**, analyzing its implementation, results between 2014 and 2023, and the impact at the end of the period. The main goal of this evaluation is to **assess whether the objectives were met, identify areas for improvement and propose recommendations** for future innovation policies in the region.

RIS3Andalucía was approved in 2015 as a strategic plan of the Andalusian Government. Its purpose was to **leverage the productive, scientific and technological capabilities of the region**, aligning them with European trends of smart specialization. This sought to increase economic competitiveness and reduce differences with other regions of the European Union (EU).

This strategy was part of the European objectives of smart, sustainable and inclusive growth established in the **Europe 2020 Strategy**. It was also coordinated with national plans such as the **Spanish Science, Technology and Innovation Strategy 2013-2020** and the **Andalusian R&D&I Plan (PAIDI)**. Its implementation was structured by European regulations on the use of Structural Funds, which ensured that investments financed through the ERDF were eligible.

The **final objectives** set by Andalusia's smart specialization strategy entailed **making substantial change in the structures and behaviour of the agents that characterize the region's production model**. These were set out in the following 12 final objectives:



During its term, **numerous measures** managed by different regional bodies were implemented, for to a **total of 198**. Initiatives promoted by national and European administrations were also considered.

## 2. How has the evaluation of the Strategy been carried out?

The evaluation has relied on a mixed approach combining **qualitative and quantitative techniques**. These included **documentary and statistical review, interviews with key actors** (65 in-depth personal interviews), **questionnaires** with 678 responses collected (388 from beneficiary entities and 290 from non-beneficiaries) and **30 group workshops**. The fieldwork involved the participation of management centers,

knowledge agents, companies and economic and social agents, with an aggregate of over **750 participants**, in which a balanced presence of women and men has been taken into account.

### 3. Direct results achieved with the Strategy

#### 3.1. Main results and progress in specialization priorities

The Andalusia Innovation Strategy has made **a significant investment of almost 2,000 million euros in various programs and services** to boost innovation in the region. Of the total €1,995 million of public money invested, 83% (€1,662.7 million) went to **77 grant programs**, while €32 million were invested in **74 advanced technological services**.

The achievements of this strategy have been notable and varied: **50,000 technological consultations** were resolved and **3,786 companies used advanced technological services**. In addition, **12 Public Procurement of Innovation projects** were launched, **10,495 applications for R&D&I projects**, **4,871 applications to hire researchers** and **6,217 applications** to participate in the European program **Horizon 2020** were received.

In terms of concrete results, **3,310 R&D projects** and **2,063 innovation projects were carried out in SMEs**, generating **2,644 jobs**, 31% of which were filled by women. The strategy also promoted international participation, with **10,068 participations** of Andalusian companies in **international trade missions**, **377 international technology transfer agreements** signed, and **373 patentability reports** prepared. Moreover, **295.6 million euros of European funds (H2020)** were obtained, **218 innovation infrastructures** were created or improved, and **4,072 researchers** were hired, 52.6% of whom were women.

## RIS3ANDALUCÍA 2014-2023 STRATEGY RESULTS CHAIN

RESOURCES

PRODUCTS

RESULTS

IMPACTS

Progress was evaluated in the eight priority areas of the strategy, as well as in important issues such as digitalization and sustainability. This reflects that, although there is room for improvement, the region has made significant progress.

- **Priority 1: Mobility and Logistics:** Significant progress was made in the creation of regional logistics centers and the integration of regional economic nodes.
- **Priority 2: Advanced Industry Linked to Transportation:** A great innovative potential was identified, with a strong performance in technological development and the application of knowledge to the market.
- **Priority 3: Territorially Based Endogenous Resources:** An imbalance was detected between R&D&I activity and limited results in the generation of patents and their application to the market.
- **Priority 4: Tourism, Culture and Leisure:** Limited innovative development was detected. Digitalization was one of the most relevant achievements.



- **Priority 5: Health and Social Welfare:** There was a notable development in research. The increase in advanced therapy projects is noteworthy.
- **Priority 6: Agribusiness and Healthy Food:** A notable innovative and R&D potential was identified, with a balance between supply and demand for knowledge. Process and product innovation projects have been developed, highlighting the awareness of the importance of innovation and sustainability.
- **Priority 7: Renewable Energies, Energy Efficiency and Sustainable Construction:** A strong innovative and R&D potential was detected, with a predominance of activities developed by companies. The creation of shared energy networks and the promotion of green hydrogen stand out.
- **Priority 8: ICT and Digital Economy:** The deployment of infrastructures and the digital training of citizens are highlighted.

### 3.2. Level of achievement of initially established goals

In the final evaluation of the performance of the indicators selected to measure the achievements of the final and strategic objectives of RIS3Andalucía, **significant progress is observed** in some indicators, especially those linked to the objectives of digitization, and exports of high-tech activities (SO8), while others, those linked to business innovation, show **persistent challenges**.

#### Indicators for the final objectives 2014-2023 of the RIS3Andalucía.

RIS3Andalucía Indicator	Scope of the goal
R&D&I expenditure as a percentage of GDP (%) 2023	○
Private sector participation in R&D&I (%) 2023	⊙
Innovation intensity in innovative companies (%) 2022	⊙
Number of people dedicated to R&D 2023	⊙
Number of innovative companies 2022	⊙
Spending on innovation by head office (€ thousands) 2022	○
Number of national patents applied for 2023	⊙
GVA medium/high tech manufacturing (€ thousands) 2022	○
Exports medium and high technology activities (€ thousands) 2022	⊙
Dwellings with fast broadband connection (%) 2023	⊙
Households with connections above 100Mbps (%) 2022	⊙
Andalusian companies incorporated in the digital market (%) 2022	⊙
Population that regularly uses the Internet (%) 2023	⊙
Companies interacting with the Administration through the Internet (%) 2023	⊙
Population that interacts with the Administration through the Internet (%) 2022	⊙

Source: IECA Indicator System of the Innovation Strategy of Andalusia 2020 and INE and SPTO.

### 3.3. Assessment of direct results according to evaluation criteria

The evaluation of the **direct results** of the RIS3Andalucía was carried out based on different criteria, the main conclusions of which are shown below:

- In terms of **efficiency**, progress has been made in the development of the specialization structure, in the achievement of objectives linked to digitalization and high-tech exports, and in university-industry collaboration, although limited by bureaucracy.
- In terms of **efficiency**, although monitoring and control has improved, administrative complexity continues to reduce its impact.
- The **satisfaction of the beneficiary entities** with respect to the aid instruments, from institutions from both academia and the business world, reaches a medium-high average, both in the questionnaires and in the personal interviews, and the importance of the RIS3Andalucía is recognized, but there is still a need to reduce response times in the processing and collection of aid, the timing of the calls and/or guarantee that the channel is always open.
- In terms of **complementarity**, positive connections with national and European programs were identified, although there were also some substitution effects, and there were difficulties in assessing the contribution of R&D resources managed by the State and the EU to developing the selected specialization structure in the region.
- In terms of **territorial impact**, there was an unequal impact, benefiting to a greater extent the more dynamic areas such as Malaga and Seville, although it is worth mentioning the territorial focus of some actions, as was the case of Cadiz within the framework of Integrated Territorial Investment (ITI).
- In terms of **effectiveness**, R&D&I has been consolidated as a central axis at the political level, but it is still limited by the dispersion of resources, the turnover of key people and administrative complexity.
- In terms of **relevance**, progress has been made in raising awareness of the importance of innovation and in the development of the specialization structure, but it has not been possible to make society as a whole aware of RIS3, so it is important to intensify efforts to promote and disseminate the Strategy itself and its actions.
- Finally, in terms of **participation**, progress has been made in the involvement of key stakeholders, although it is necessary to intensify efforts to improve communication in order to strengthen its impact.

## 4. Impacts attributable to the Strategy

### 4.1. The most significant change perceived in the Regional Innovation System is the following

The **most significant changes** identified have been a greater awareness of innovation:

- The configuration of the **RIS3Andalucía as a strategy cross-cutting** made it possible to promote innovation throughout the regional Administration, since 75% of the structure of the Regional Ministries have participated in it, and up to 11 regional economic development strategies have contributed to the fulfillment of its objectives.
- The system for the selection of operations and their monitoring, focused on specialization priorities allowed the EC to classify Andalusia as a **STRONG S3 region** in 2021.
- The **participatory governance** of RIS3Andalucía has been extended to other strategies, such as aerospace and the Crece Industria plans.
- **Interregional cooperation has also been favored in the areas of prioritization**, identifying common realities in the Mediterranean and with neighboring regions.



- The importance of innovation at regional level, in the national and European context has been highlighted, and **initiatives for cooperation and territorial dynamization** have been consolidated.

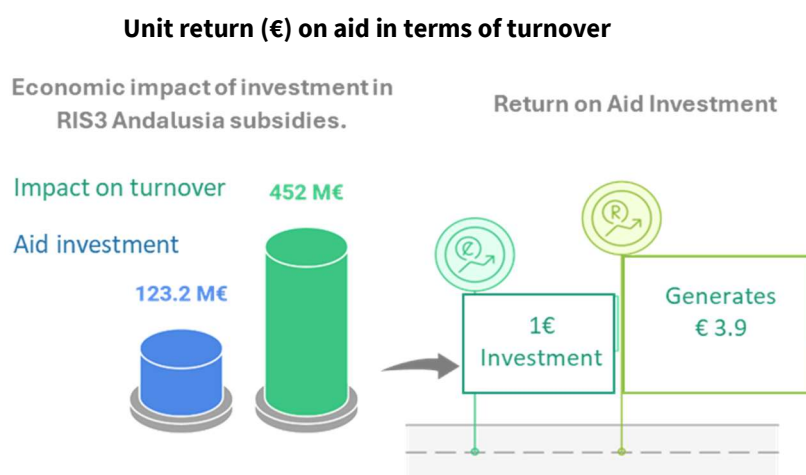
#### 4.2. Impacts on beneficiary entities

As for the **impact on the beneficiary entities**, the counterfactual analysis shows a **positive effect** on both the knowledge-generating agents and the companies that received support.

Specifically, the estimates reflect a **better performance in terms of turnover and job creation** in companies that have benefited from aid compared to those that have not (**almost 20% more on average**).

Invoicing of companies:

**Regarding the impact in terms of turnover**, an **estimated total impact of 452 million euros** has been achieved, having invested a **total amount of 123.2 million euros** in aid.



Source: Prepared by the authors based on the estimated contribution of the supported projects to turnover and employment in the beneficiary companies (data extrapolated from the responses of 388 beneficiaries to all business support).

Publications of excellence of the Knowledge Agents:

In the case of knowledge-generating agents, **similar effects** can be seen in terms of publications of excellence.

Grants have played a fundamental role in **strengthening quality scientific production in universities**. This increase consolidates their capacity to generate knowledge

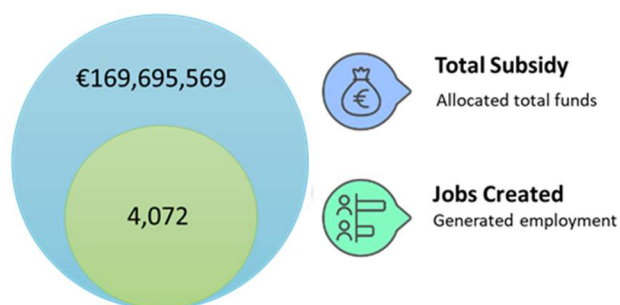
Employment in companies and knowledge agents:

On the side of **business**, a total of **179.4 million euros** have been deployed (public expenditure paid) to finance business investments that have generated a total of **2,644 direct permanent jobs**, of which 30.9% have been jobs occupied by women.

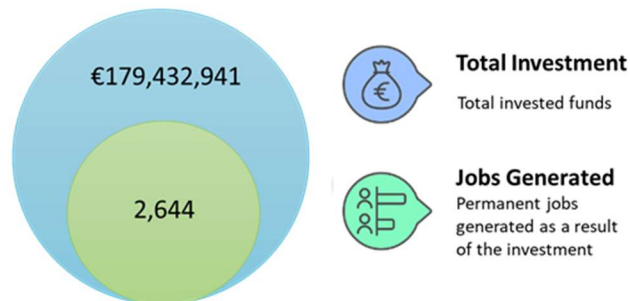
**169.7 million euros** (public expenditure paid) have been deployed to encourage the hiring of people by Andalusian knowledge-generating agents, which have generated **4,072 direct jobs**, 52.5% of which have been occupied by women.

## Employment generated by knowledge agents and companies due to selected support programs

### Actions aimed at the recruitment of research personnel by knowledge agents



### Actions aimed at promoting investment and business development



Source: Prepared by the authors based on the registry data of the aid operations considered

## 4.3. Progress in the level of convergence with Spain and Europe

An important element to observe the real impact of the policy is through the comparison of the indicators considered in the Strategy with reference environments, in this case with the average values of Spain and the European Union. Based on the values of the *Regional Innovation Scoreboard* in its 2023 edition for Spain and the EU, it is possible to appreciate the progress in convergence that has taken place.

### Evolution of convergence at state and European level 2016-2026.

Indicator	ESP valuation 2016-2023	EU Valuation 2016-2023
Regional Innovation Index (RIS)	⊙	⊙
<b>International scientific co-publications</b>	⊙	⊙
<b>Scientific publications among the 10 most cited</b>	⊙	⊙
<b>People with more than basic general digital skills</b>	⊙	⊙
Public sector R&D expenditure	⊙	⊙
Private sector R&D expenditure	⊙	⊙
Spending on innovation not related to R&D	⊙	⊙
Expenditures on innovation per person employed	⊙	⊙
<b>ICT specialists employed</b>	⊙	⊙
SMEs introducing product innovations	⊙	⊙
SMEs introducing innovations in business processes	⊙	⊙
Innovative SMEs cooperating with others	⊙	⊙
<b>Public-private co-publications</b>	⊙	⊙
PCT patent applications	⊙	⊙
<b>Trademark applications</b>	⊙	⊙
Design applications	⊙	⊙

Source: Prepared by the authors based on the European Regional Innovation Scoreboard (RIS2023)

Regarding the **convergence** of Andalusian indicators in the period **2016-2023 with Spain and the EU**, it is concluded that there have been **significant advances** in convergence in indicators such as *people with above basic digital skills, international scientific, scientific publications among the top 10 most cited, co-publications, ICT specialists employed, public-private co-publications and trademark applications*.



#### 4.4. Impact assessment according to evaluation criteria

The following is a list of the main conclusions obtained in the analysis of the Strategy's impact for the period as a whole:

- With respect to **sustainability**, the impacts are considered to be lasting over time.
- As **collateral effects**, the discourse in favor of **R&D&I** was strengthened.
- **Gender gaps** in the regional innovation system showed signs of increasing awareness of their importance.
- Regarding the **impact on employment**, an increase in the **hiring of R&D and research personnel in the knowledge generation subsystem** was observed (4,072 direct jobs as a result of the programs and a positive evolution of growth, as well as **positive effects on companies** (2,644 direct permanent jobs as a result of the programs).
- Finally, the **sectoral impact** showed progress in **strategic sectors such as agribusiness/healthy food, health, renewable energies and ICTs**, and lesser progress in **other sectors such as tourism and territorially based endogenous resources**.
- Finally, linked to the progress in terms of the **context as a whole**, Andalusia has evolved positively during this period.

### 5. Conclusions of the evaluation

#### 5.1. Summary of achievements and challenges

The evaluation of the RIS3Andalucía **reveals a positive impact at the macro and micro level on the development of regional innovation**. Significant progress has been made in **convergence with Spain and the EU** in terms of the quality of scientific production and training personnel.

An outstanding achievement has been the **increased awareness of the importance of R&D&I in the regional ecosystem, establishing for the first time a comprehensive strategic framework**. This has fostered collaboration in the ecosystem and a focus on strategic sectors, which **has led Andalusia to be rated as a "region STRONG S3" by the European Commission**.

The strategy has improved Andalusia's competitive position.

At the micro level, **the beneficiary companies have shown a positive return**, generating an additional 3.9 euros of turnover for each euro of aid received. This has been reflected in the creation of more than 2,600 permanent jobs. **Knowledge-generating entities have also experienced positive effects**, with an increase in research excellence and the incorporation of R&D personnel, generating more than 4,000 research jobs. However, areas for improvement in efficiency and sustainability have been identified that require attention for future strategies.

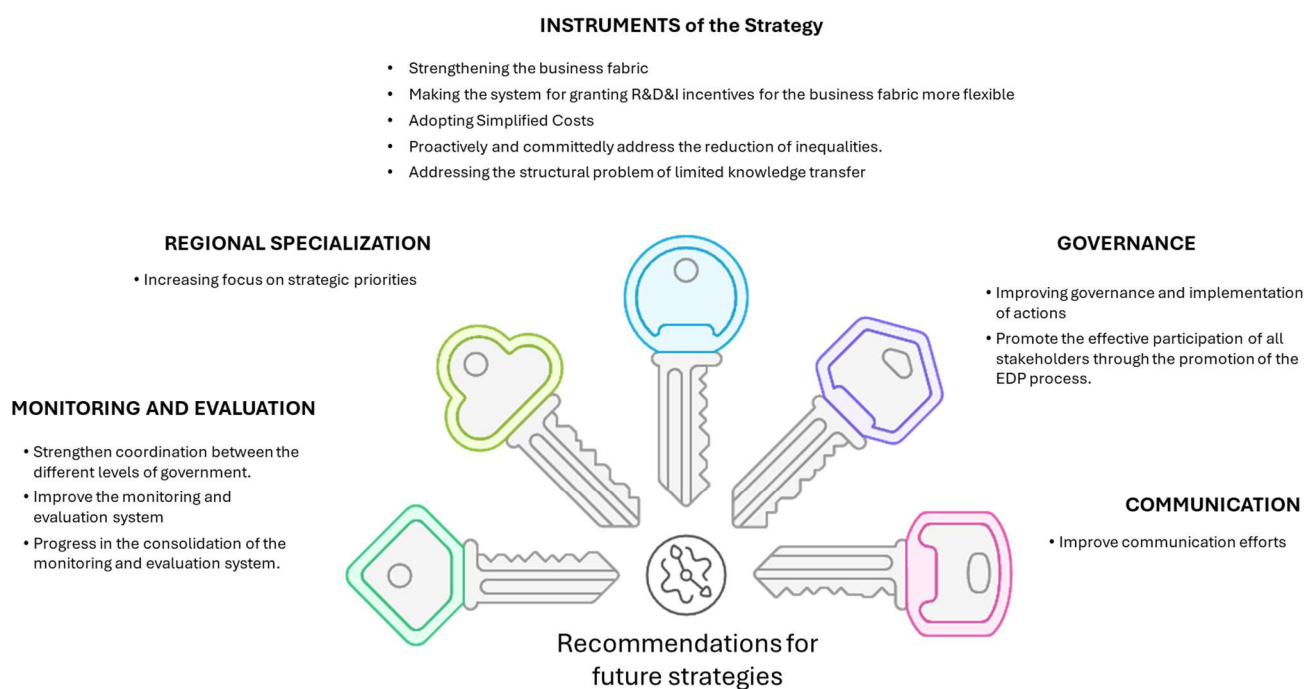
The evaluation carried out for RIS3AAndalucía concludes in a series of challenges that should be addressed as a learning experience for future strategies, specifically:

- **Reduce bureaucratic and administrative complexity.**
- **Increase agility in the granting of aid.**

- **Increase the results orientation of support instruments.**
- **Improve university-industry knowledge transfer processes.**
- **Reducing gender gaps** in innovation.
- **Improve territorial balance in the distribution of resources.**
- **Increase the focus of actions in priority sectors.**
- **Improve cooperation and coordination between state and EU administrations.**
- **Improve communication and dissemination** of the Strategy and its relevant actions.

## 5.2. Recommendations for future strategies

To maximize the impact of innovation policies and improve efficiency in the management of resources, it is necessary to **implement a series of strategic measures** to overcome the barriers identified. These recommendations seek to **optimize governance, strengthen the business fabric, reduce inequalities and improve monitoring and evaluation mechanisms**. The key actions proposed to improve the Andalusian regional specialization strategy in the future are:



### Regarding the INSTRUMENTS of the Strategy:

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- **Strengthen the business fabric**, facilitating access SME to R&D&I financing and markets.
- **To make the system for granting R&D&I incentives for the business fabric more flexible**, allowing for other more flexible systems, other than competitive bidding.
- **Adopt Simplified Costs**, streamlining justification procedures.
- **Proactively and committedly address the reduction of inequalities** territorial and gender, with positive discrimination measures such as: higher aid intensity, budgetary reserves, bonuses, etc.
- **Address the structural problem of limited knowledge transfer** between universities and companies by strengthening institutions interface.

### Regarding REGIONAL SPECIALIZATION:

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- **Focusing strategic priorities to a greater extent**, defining clearer and more specialized areas.

### Regarding the GOVERNANCE model:

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- **Improve governance and implementation of actions**, simplifying procedures and strengthening coordination. It is recommended that grants be scheduled and that a single window for their management be created to facilitate the planning of R&D&I in companies and academia.
- **Promote the effective participation of all stakeholders through the promotion of the EDP process.**

### Regarding the mechanisms of:

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- **Strengthen coordination between the different levels of the Administration** (local, regional, state and European) as well as between the Regional Ministries and the Technical Secretariat, providing the necessary human and financial resources.
- **Improve the monitoring and evaluation system**, implementing a computerized system with clear indicators. Raise monitoring and evaluation to the rank of law.
- **Advance in the consolidation of the monitoring and evaluation system**, defining clear and relevant indicators.

### Regarding COMMUNICATION:

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**Improve communication efforts**, providing the necessary means, using accessible language.