ERA LEARN

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# Country Report
# Italy

Strengthening the Partnership Community

May 2025

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# Contents

# Introduction

## *ERA-LEARN Country Reports*

ERA-LEARN has been producing country reports since 2019. Ten reports have been produced until now (since May 2019), one of which is an update of an older report (Austria), and a further nine reports are planned in the current phase of ERA-LEARN. The selection of the countries is based on a combination of variables: number of network participations, network coordination, national commitments to partnerships, etc., based on the data included in the ERA-LEARN database and their combination with relevant R&I indicators from EUROSTAT and OECD.

The report draws upon available literature and data, i.e. R&I strategy/policy documents and sites, EU Semester national reports, European Innovation Scoreboard statistics, OECD and EUROSTAT statistics, country reviews and special reports by the Policy Support facility, relevant MLE (mutual learning exercise) reports, etc.

The partnership-related data comes from the ERA-LEARN database (cut-off date June 2024, the data for calls are until Nov 2024), eCORDA and the BMR 2024. The BMR 2024 data covered the European Partnerships that were launched prior to the Second Strategic Plan. The ERA-LEARN data (especially actual investment in projects and project numbers) is 75-85% complete, as not all required information has been fully updated by the H2020 partnerships. Yet, the number of calls is accurate and the committed budget figures are available for most calls. It is also important to note that the data collected in terms of pre-call budget committed or the actual investments in selected projects does not take into account the differences across countries in the eligibility of certain expenses; for example, in some countries only additional costs of a research project are eligible and not personnel costs. In addition, the in-kind contributions made by funding organisations when participating in P2Ps are not usually considered as national investments in P2Ps.

The data on Horizon Europe partnerships and their projects is still largely incomplete. The partnership-funded project-related data in the ERA-LEARN database refers to P2P networks that were launched and supported under Horizon 2020. On the other hand, the project-related data in eCORDA covers mainly projects from the co-programmed and institutionalised partnerships in Horizon Europe. Data on projects coming from co-funded partnerships and EIT-KICs are far from complete at the time of writing.

The country reports provide an analysis of a country's participation in partnerships and try to explain its 'performance' within the overall national R&I policy context and system. Comparing the specific country with a set of other countries of interest as well as the EU14, EU13 and EU27 overall averages provides additional insights. In the case of Italy, the comparator countries are Germany, France and Spain. The country reports may be useful for individual organisations in the specific country as they might only have a fragmented picture of the situation, or they might lack explanations for certain features that may be found in the wider R&I context of the country. The reports may also be useful for organisations in other countries that wish to learn the reasons behind the 'position' of a country and/or learn from other countries' exemplary performances.


## *Acknowledgements*

We owe special thanks to MUR and, in particular, Silvia Reale for her support in facilitating the preparation of the report and helping to organise interviews with key stakeholders. We are also grateful for the permission to use the data that was elaborated for the purposes of the BMR2024 expert group on support for the strategic coordinating process for partnerships.

We would also like to thank all the interviewees that shared with us valuable insights, data and information about their experience and knowledge of Italy's position in international collaboration and overall performance in research and innovation. In particular, people from the following organisations were interviewed[1]:

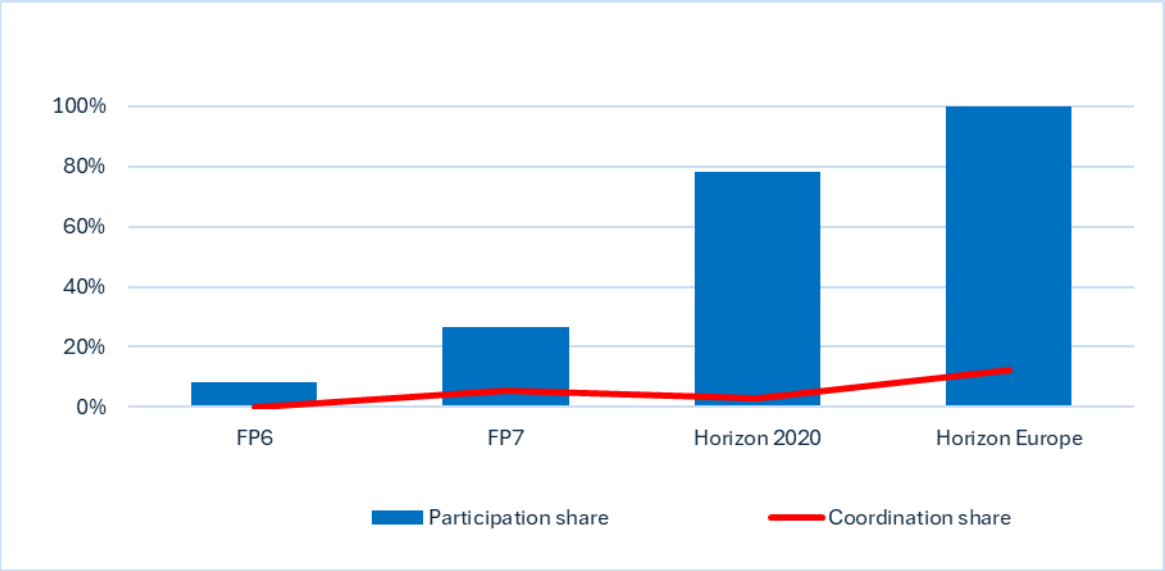
- Ministry of University and Research (MUR)
- Agency for the Promotion of European Research (APRE)
- National Institute of Health (ISS)
- Ministry of Health
- Autonomous Province of Bolzano
- Ministry of Economic Development (MISE)
- Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA)
- Ministry of Agricultural Food and Forestry Policies (MIPAAF)
- National Research Council (CNR)
- Piedmont Region
- Beneficiaries (research institutes, universities and SMEs) of the partnerships ICT AGR-FOOD, EJP RD, PRIMA, and AAL


[1] Due to GDPR rules the names of the individuals are not disclosed.

# Key Highlights

Italy shows a steady increase in the number of European Partnerships and former P2P networks that it has taken part in since FP7 (as a share of total number of partnerships in the specific framework programme – cf. Figure 1). The coordination share, however, has fluctuated but is higher among partnerships in Horizon Europe than in any other framework programme. Of the 16 partnerships that can be coordinated by countries, Italy coordinates two, i.e. (12.5%).

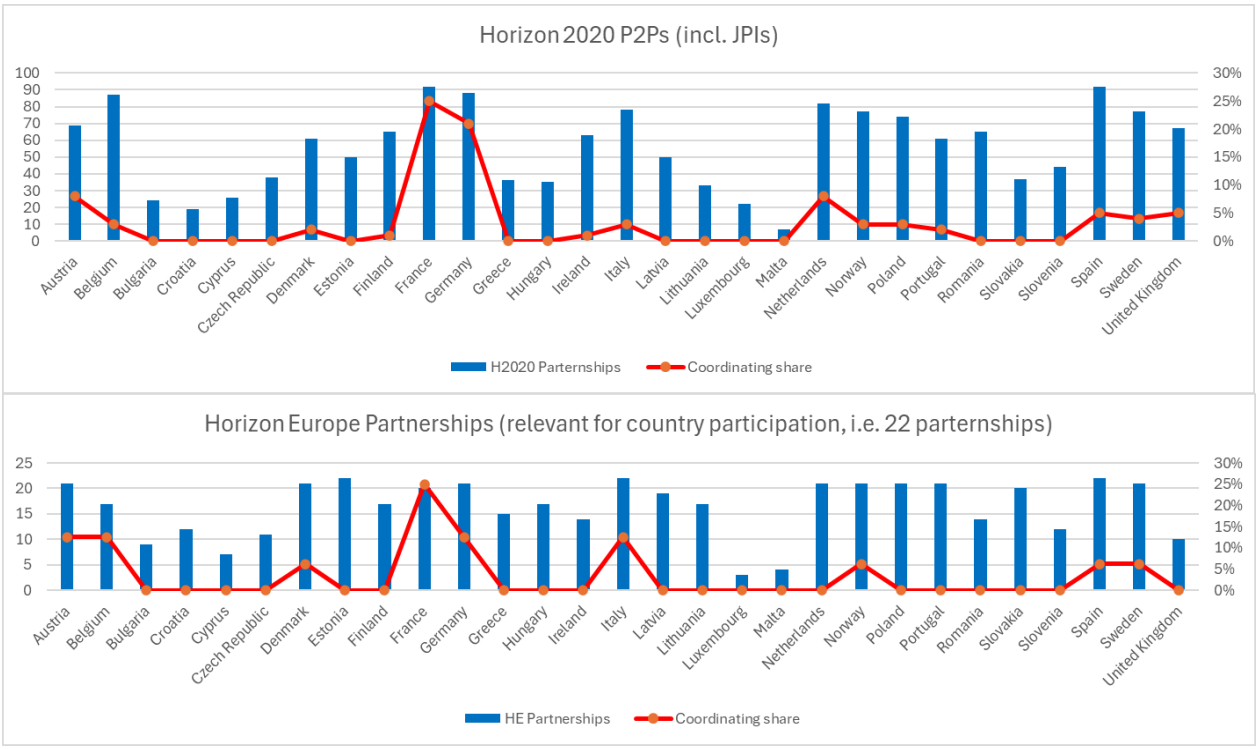
*Figure 1: Participation and coordination shares for Italy in Partnerships across the Framework Programmes*




*Source: ERA-LEARN database (cut-off date June 2024) and BMR 2024 data.*
(*) Participation share: the number of partnerships a country participates in with any role (i.e. coordinator, participant, observer, other) divided by the total number of partnerships. Coordinating shares: the number of the partnerships a country coordinates divided by the total number of partnerships.

Out of the 100 partnerships (ERA-NETs Cofunds, etc. and JPIs) in H2020, Italy participated in 78 of them, while in Horizon Europe the country is present in all 22 partnerships that are relevant for country participation, meaning 100% participation in European Partnerships. Of the comparator countries described in this report, Spain equals Italy's level of participation, while Germany and France fall slightly behind with 21 and 20 participations respectively (cf. Tables 1a and 1b).

*Figure 2: No of Partnerships and coordination shares for EU27 and selected Associated countries in H2020 and Horizon Europe*




*Source: ERA-LEARN database (cut-off date June 2024) and BMR 2024 data.*
(*) No. of partnerships: the number of partnerships a country participates in with any role (i.e. coordinator, participant, observer, other). Coordinating shares: the number of partnerships a country coordinates divided by the total number of partnerships.

Out of the 335 calls that have been launched by P2Ps in Horizon 2020, Italy has participated in 238, i.e. 60%, which is less than Spain, Germany and France, but only 9% difference compared to Spain, which has the largest number of call participations of the comparison group; all of which clearly have significant research communities. The current share in call participation in Horizon Europe Partnerships is 32% (38 out of the 117 calls), which is almost the same as France and Spain, with Germany participating in fewer calls, but only by a small percentage – any further conclusions would be premature as there is still a long way to go in Horizon Europe partnerships.

*Table 1: Participation in H2020 P2Ps (incl. JPIs)*

| | IT | ES | FR | DE | EU13 av. | EU14 av. | EU27 av. |
|---|---|---|---|---|---|---|---|
| No of H2020 partnerships | 78 | 92 | 92 | 88 | 38 | 69 | 54 |
| P2P coordinations | 3 | 5 | 25 | 21 | 3 | 6 | 6 |
| No of calls | 238 | 274 | 269 | 270 | 112 | 188 | 151 |
| No of projects | 1201 | 1471 | 1635 | 2292 | 174 | 872 | 536 |

*Source: ERA-LEARN database[2] (cut-off date June 2024)*

[2] Figures for projects will actually be higher as there are gaps in the data provided by the P2Ps

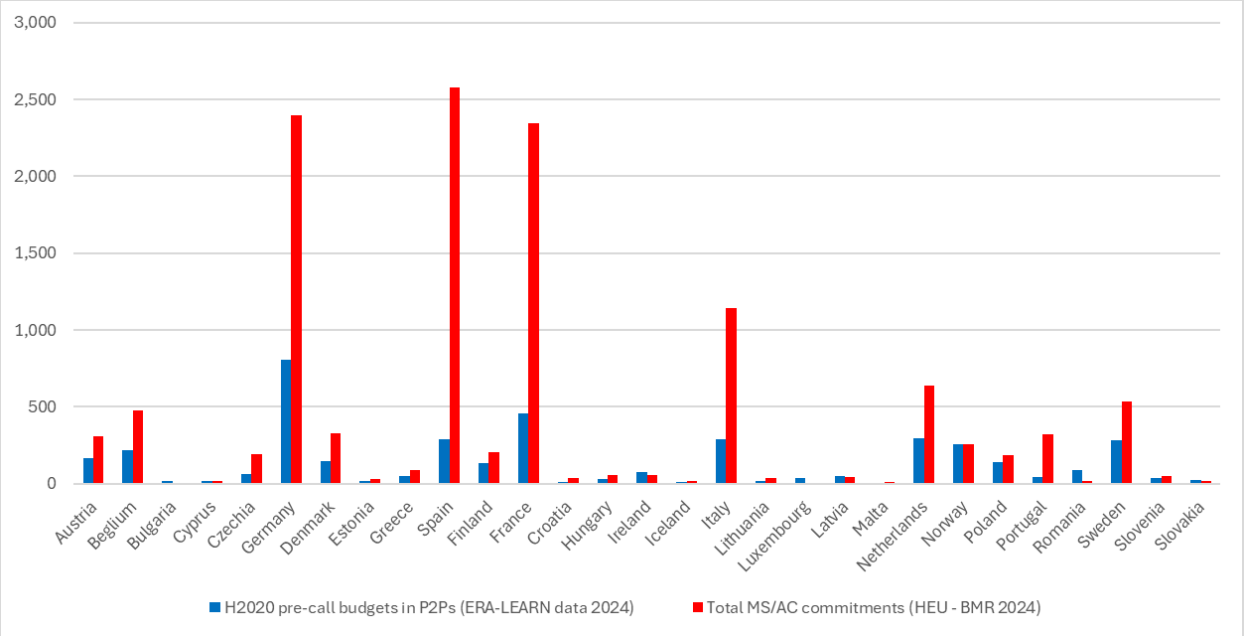
*Table 2: Participation in Horizon Europe Partnerships*

| | IT | ES | FR | DE | EU13 av. | EU14 av. | EU27 av. |
|---|---|---|---|---|---|---|---|
| No of HEU partnerships | 22 | 22 | 20 | 21 | 14 | 18 | 16 |
| Co-funded Ps coordinations | 2 | 1 | 4 | 2 | 0 | 1 | 1 |
| No of calls | 38 | 37 | 38 | 33 | 25 | 33 | 29 |
| No of projects (*) | | | | | | | |

*Source: BMR 2024 data (partnerships and coordinations); ERA-LEARN database for calls (cut-off date June 2024)*
*(*) Data on Horizon Europe projects funded by partnerships are not available yet.*

In terms of national funds made available to support partnerships, Italy made available some 287 € million in H2020 Partnerships and this was raised to 1.14 € billion in national commitments in HEU partnerships. The increase (297%) is higher than that of Germany (197%) but lower than for France (415%) and Spain (784%). Overall, it is the national commitments of these countries that stand out among Horizon Europe partnerships, as can be seen in Figure 3.

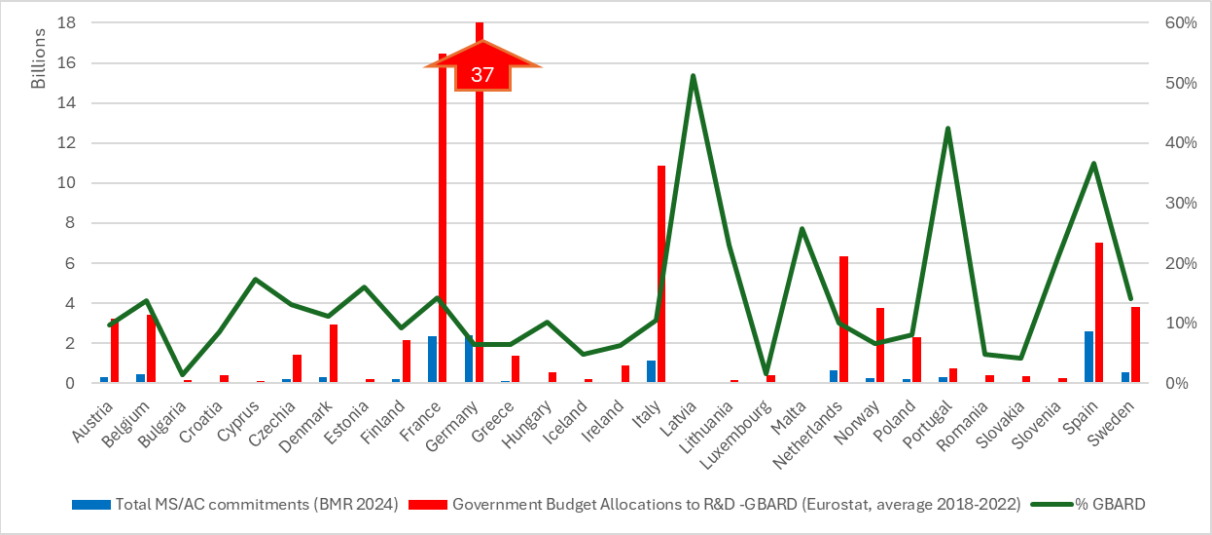
*Figure 3: Comparison of countries' pre-call budgets (H2020 Partnerships) and national commitments (HEU Partnerships) across countries (€ million)*




*Source: ERA-LEARN for H2020 Partnerships (cut-off date June 2024). BMR 2024 data for HEU Partnerships.*

When the national contributions are normalised by the government allocation in R&D, Italy's performance (10.5%) differs from the comparator countries in that its national commitment to Horizon Europe Partnerships as a percentage of its overall government spend on R&D is higher than that of Germany (at 6.4%) but lower than that of France (14.3%) and Spain (36.6%). Besides Spain, it is Portugal and Latvia's national commitments that are highest, reaching 42% and 51% of GBARD, respectively. Other small countries such as Lithuania, Malta and Slovenia also have relatively high shares, each having national commitments around 20% of GBARD.

*Figure 4: Share of MS/AC commitments to European Partnerships in HEU compared to the country GBARD*




*Source: BMR 2024 data; Eurostat.*

Italy's research and innovation (R&I) landscape demonstrates a strategic and proactive alignment with Horizon Europe's objectives, underscored by substantial national initiatives such as the National Research Programme and the National Recovery and Resilience Plan, which aim to significantly boost R&D investment to reach approximately 1.8%-2% of GDP by 2027, allocating around €12 billion toward this goal. The Italian R&I ecosystem is recognised for its robust scientific capabilities, particularly in sectors such as biomedical research, artificial intelligence, environmental sciences, and advanced manufacturing, positioning Italy effectively within European and international research collaborations.

Italian R&I funders, including the Ministry of Universities and Research (MUR), Ministry of Health, Ministry of Economic Development (MISE), and regional entities such as the Autonomous Province of Bolzano and Piedmont region, all have roles to play in shaping and participating in European Partnerships. Funders value these partnerships as efficient tools for transnational collaboration.

*"Partnerships are ultimately an efficient tool to manage transnational calls, offering solutions to co-funding challenges and management costs." (MUR official)*

*"They allow us to pool resources, expertise, and infrastructure, thereby optimising the impact and efficiency of our R&I investments." (Ministry of Health official)*

Successful partnerships, from the perspective of Italian funders, hinge upon strategic alignment of national and European priorities, effective pooling of resources and expertise, and robust international networks. The emphasis on collaborative strength and complementary skills across consortia is seen as essential, significantly enhancing Italy's capability to contribute meaningfully to Europe-wide research goals and fostering significant innovation in key thematic areas.

Participation in partnerships also presents opportunities to strengthen regional and institutional capacities. The Autonomous Province of Bolzano highlights how partnerships enable concrete

strategic alignment with regional research priorities, *offering "a new chance to have concrete direction and implementation"* of regional strategies. The Piedmont Region similarly notes partnerships' roles in aligning regional smart specialisation strategies with broader European goals, effectively bridging local and international innovation agendas.

For the Italian R&I community, partnerships present valuable opportunities for interdisciplinary collaboration, leveraging complementary expertise and infrastructure. They also contribute significantly to addressing societal and technological challenges in areas such as sustainable development, digital innovation, and healthcare. Partnerships are highly regarded for their role in strengthening Italy's research capabilities, fostering innovation, and driving forward the country's strategic objectives within the broader European and global research landscape.

Stakeholders have, however, highlighted several challenges that have impacted their participation in European Partnerships.

Administrative complexity consistently emerges as a prominent barrier, with stakeholders frequently encountering difficulties navigating complex and varying administrative procedures across national and European frameworks. This dual-layered administrative requirement creates substantial management burdens, leading to project delays, increased workload, and even withdrawals from partnerships.

Additionally, stakeholders expressed concern regarding the complexities associated with co-funding structures. Difficulties in synchronising national and European funding streams has led to uncertainties and administrative inefficiencies and has often hindered the timely initiation and management of projects. Stakeholders have suggested that the establishment of a centralised common funding pot could be a potential solution to alleviate these synchronisation issues.

Strategic alignment between regional, national, and European priorities remains a persistent challenge. Stakeholders have identified significant gaps in aligning local and regional strategic objectives with broader European agendas, primarily due to the diverse priorities and distinct funding mechanisms across ministries and regional authorities. This misalignment complicates strategic planning and coordination, limiting the effectiveness and coherence of policy implementation across different governance levels.

Further compounding these challenges are capacity constraints, especially prevalent among regional and smaller institutions. Stakeholders frequently emphasised a lack of adequate administrative resources and specialised training, which restricts effective participation and hampers the ability to manage complex partnership requirements effectively.

*"Many institutions, especially smaller ones, simply lack the necessary administrative capabilities and resources to fully engage in partnerships" (Autonomous Province of Bolzano official)*

Logistical barriers related to international collaboration also pose significant hurdles, including frequent travel demands and intensive reporting obligations. These requirements particularly impact senior researchers and those with additional commitments, limiting their availability and

willingness to engage actively in partnerships. Stakeholders have highlighted these logistical demands as *"notably burdensome, particularly for experienced researchers who have multiple responsibilities." (ENEA official)*

Despite these challenges, there is a shared optimism among stakeholders regarding the future of European Partnerships. Many view them as essential instruments for aligning national ambitions with European goals and enhancing Italy's global scientific standing. Several interviews pointed to ongoing reforms aimed at simplifying procedures and improving coordination, with one stakeholder noting that *"the new funding frameworks and strategic planning mechanisms offer a clearer and more sustainable path forward" (MUR official).* Others expressed hope that increased experience and institutional learning would lead to greater ease of participation over time. As one regional official remarked, *"we see these partnerships as a learning curve - one that will pay off in visibility, international collaboration, and scientific impact in the long term" (Autonomous Province of Bolzano official).*

Italy's participation in European Partnerships reflects a strong commitment to collaborative research, with stakeholders recognising their strategic value in aligning national priorities with Horizon Europe and fostering scientific excellence. Partnerships are widely seen as more than funding instruments; indeed, they serve as platforms for long-term collaboration, knowledge exchange, and influence over European research agendas. Italy demonstrates strength in key thematic areas and benefits from a solid policy framework and increasing engagement from national and regional institutions.

Italian stakeholders are optimistic that continued reforms and growing experience will enable the country to enhance its role within European R&I ecosystems. Partnerships are viewed as essential tools for strengthening Italy's innovation capacity, scientific visibility, and ability to respond to societal challenges at a European scale.

# 1. Italian R&I in an International Context

The Italian economy was severely hit by the Covid-19 pandemic but has proven relatively resilient in recent years, maintaining an average annual growth rate of GDP well above the EU average. Italy's R&D intensity has seen a relative decline, however, from 1.45% in 2021 to 1.31% in 2023[3], with this figure below the EU average, which stood at 2.22% in 2023.

Italy's National Research Programme (NRP) 2021–2027 is strategically aligned with the objectives of Horizon Europe, ensuring that national priorities are integrated into broader European research agendas. This alignment facilitates increased financial participation, with Italy taking the lead in two European Partnerships, and ensures that Italy's research initiatives contribute effectively to broader EU missions. Italy is also a founding member of the European Open Science Cloud (EOSC) Association, highlighting its commitment to open science and collaborative research across Europe.

The country's National Resilience and Recovery Plan (NRRP) includes specific measures to enhance the research and innovation landscape, including creating an enabling framework to stimulate deeper collaboration between universities and research centres with large companies and SMEs, strengthening research, innovation and technology transfer value chains in key technology areas. Furthermore, in line with the NRP, Italy intends to increase R&D funding to around 1.8% - 2% of GDP by 2027, with funds of around €12 billion allocated.

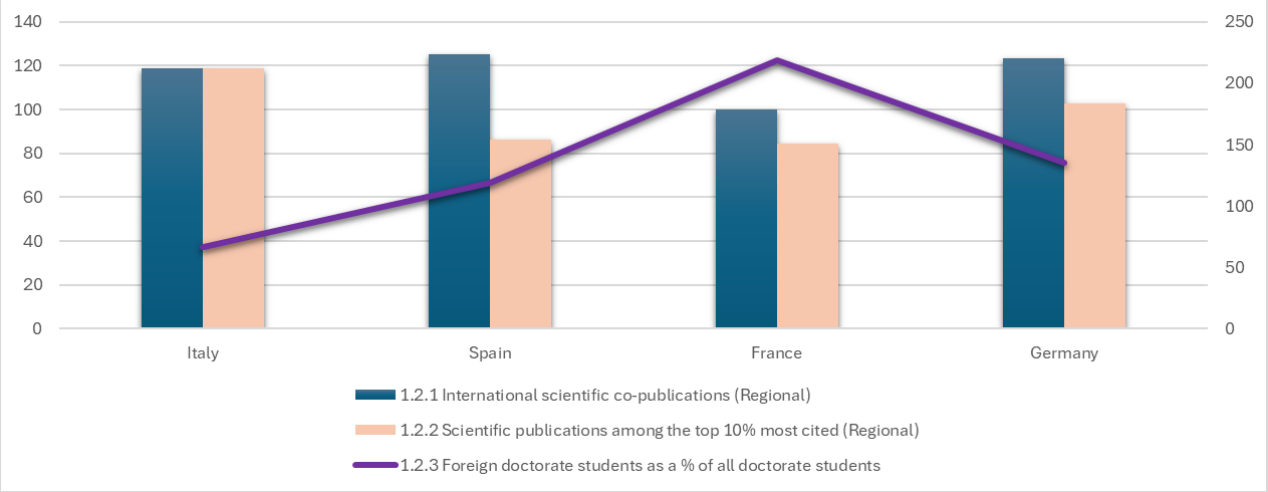
Based on the European Innovation Scoreboard 2024, Italy remains a Moderate Innovator with performance at 89.6% of the EU average, although performance is above the average of the Moderate Innovators. Of the comparator countries, Italy has the lowest ranking behind Germany (122.8%) and France (118.7%), both Strong Innovators, and Spain (89.9%), also a Moderate Innovator. Overall, Italy performs well in innovation related activities, with the strength of the SME sector standing out as Italy performed at 151% of the EU average in 2024 for the innovators dimension. The EIS survey notes Italy's weakness in terms of patent performance but highlights the high level of public-private research co-publications, confirming the openness of its public research system.

In relation to the attractiveness of the research system, which reflects the international profile of the country, it presents a moderate to strong performance (93.2% of the EU average). In terms of international scientific co-publications, it holds 19th position, superseded marginally by the comparator countries of Germany (18th) and Spain (16th), but ranked 2 positions ahead of

[3] Eurostat: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R%26D_expenditure

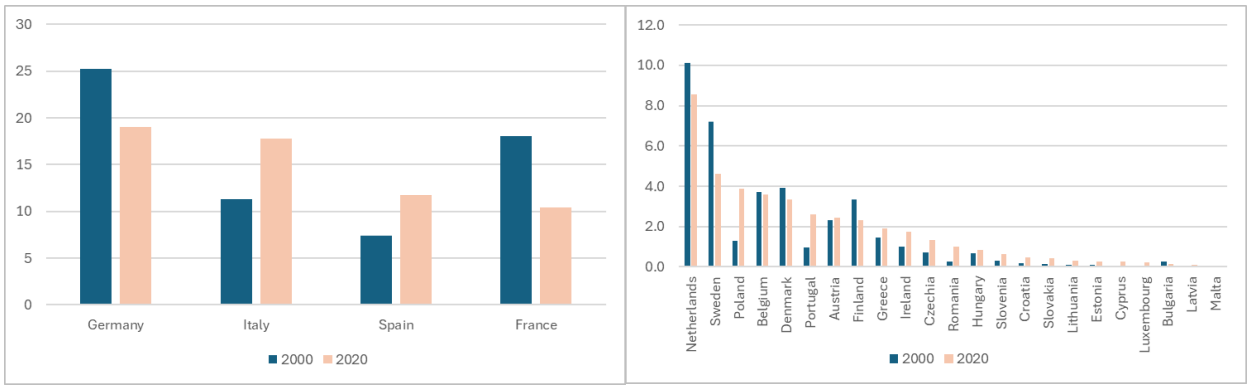
France. It should be noted that Italy's performance in this respect represents a strong increase since 2017 levels. When considering, however, the top 10% of the most cited publications, Italy increases its ranking significantly to 5th place at 124% of the EU average, superseding all comparator countries. The country's share of foreign doctoral students is ranked poorly at only 49% of the EU average, almost 9% lower than in 2017, due in part to the pandemic, but it has started to grow again. As expected, this is lower than comparator countries. Public-private co-publications are considered a relative strength for Italy, alongside resource productivity and SME innovation performance. The relative weaknesses are noted as being the percentage share of foreign doctoral students, the level of the population with tertiary education and job-job mobility of HRST (EIS 2024 Country Profile Italy).

*Figure 5: EIS 2022 indicators for 'Attractive research systems' for Italy and the comparator countries*




The Science, Research and Innovation Performance of the EU, 2024 report looks at EU member state contributions to scientific publications (not co-publications) and, within the EU, this remains concentrated, with four countries (Germany, Italy, Spain and France) producing 56% of all EU scientific publications in 2020. It is noted that this is partly due to the size of these countries. Italy is ranked second, after Germany, for share of EU scientific publications, and increase from the 2000 data point. It also ranks second in the EU for the share of the top 10% of the most cited EU scientific publications, again increasing from the year 2000 reference point. Notably, Italy and Spain have increased their share over this period, while Germany and France's shares have reduced.

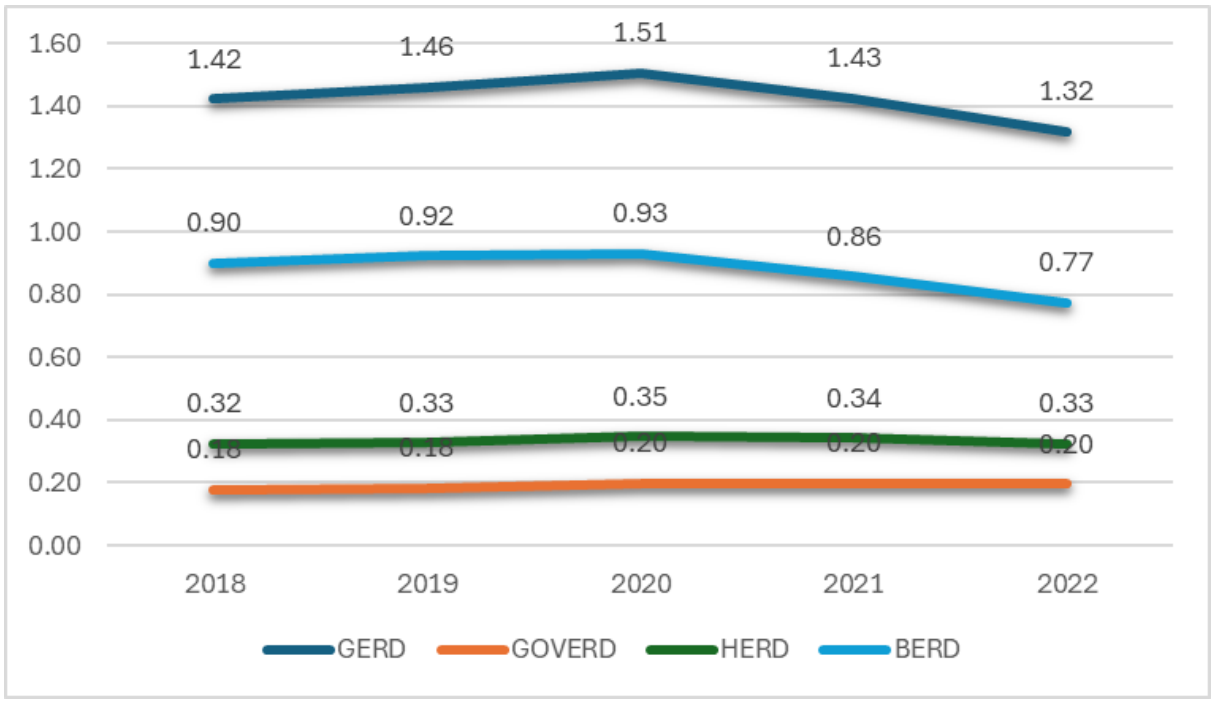
*Figure 6: Share of each EU-27 Member State of the top 10% most cited EU-27 scientific publications, 2000 and 2020*




*Source: Science, Research and Innovation Performance of the EU 2024*

Italy has a relatively low level of gross domestic expenditure on R&D (GERD), at 1.31% of GDP in 2022. This is the lowest it has been in around 10 years, following a gradual increase in the years to 2020 (peaking at around 1.51%), which has reduced each year since that level.

*Figure 7: R&D expenditure in Italy (% of GDP) (2022 values)*

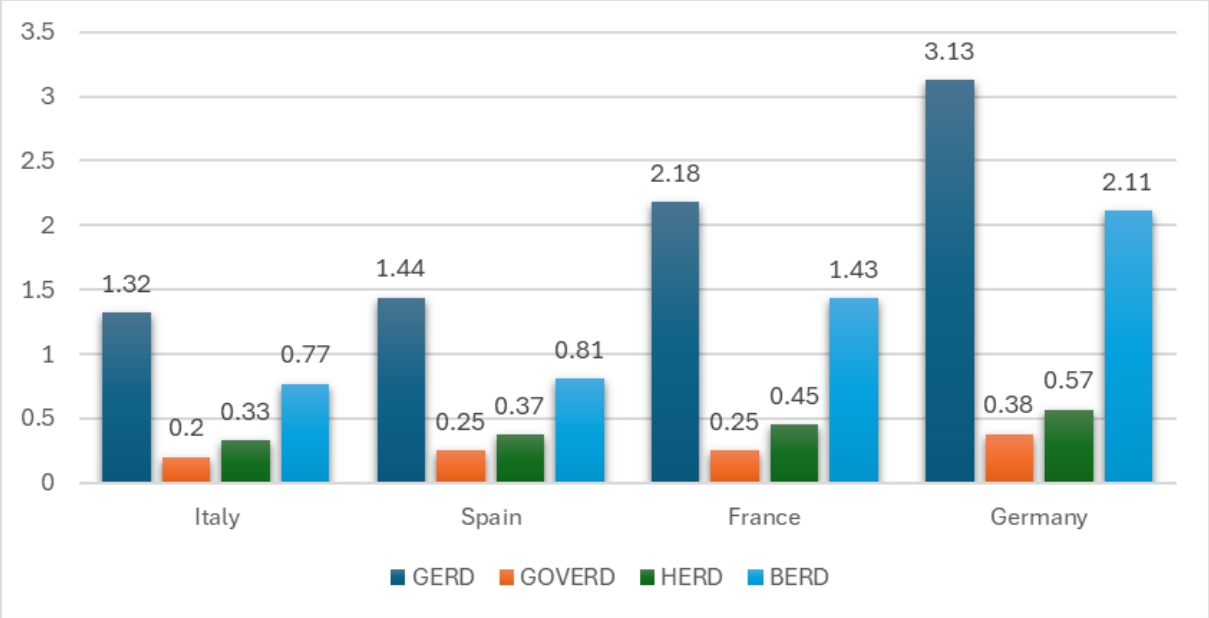



*Source: OECD STI Indicators (2024)*

Based on 2022 values for the OECD STI indicators, Italy is placed lowest among its comparator countries across all R&D indicators, with Germany placed 4th highest among the EU27 countries. In terms of GERD, the majority of expenditure in Italy is spent by businesses, with a significant portion also coming from government and higher education institutions

Italy and Spain have very similar profiles across all indicators, both lagging behind France and Germany in relation to GERD and BERD, although indicators in relation to HERD and GOVERD are relatively similar across the board.

*Figure 8: Basic R&D indicators for Italy and the comparator countries (2022 values)*




Italy's research and innovation environment, despite recent economic disruptions, remains strategically positioned within the broader European context. The alignment of Italy's National Research Programme and the National Recovery and Resilience Plan with Horizon Europe reflects a clear national commitment to significantly enhance R&D investment and address existing shortfalls in funding relative to other EU countries. While Italy currently holds the status of a Moderate Innovator, its notable strengths, particularly in SME innovation and high-impact scientific publications, underline its potential for substantial growth and influence within the European R&I landscape.

Challenges persist, notably Italy's comparatively low R&D expenditure and limitations in patent outputs and international talent attraction. However, the country's proactive engagement in European Partnerships and its strategic initiatives targeting increased R&D funding position it well for overcoming these challenges.

# 2. Who are the Key R&I Funders in Italy?

Italian Ministries and the regions of Italy are central to the country's participation in European and international partnerships for research and innovation. The ministries most involved in partnerships are the Ministry of Universities and Research, Ministry of Health, Ministry of Economic Development, and the Ministry of Agriculture, Food and Forestry Policies. The National Institute of Health is also a key sectoral funder of research. Key regional funders include the Autonomous Province of Bolzano and Piedmont region. Other sectoral ministries, regions, and institutions contribute to Italy's European partnerships participation, notably, the Ministry of Cultural Heritage and Activities, Ministry of Environment, Land and Sea, the Institute for Industrial Promotion, the Regional Foundation for Biomedical Research, the Telethon Foundation, and regions such as Tuscany, Puglia, and Friuli Venezia Giulia.

A summary of the feedback and insights from interviews with key stakeholders is included below.

## *2.1. Ministry of University and Research (MUR)*

MUR sets out Italy's political priorities on research and oversees the country's universities. It manages the National Research Program (NRP) 2021-2027 which focuses on the development of open science and innovation of the research market, whereas the National Recovery and Resilience Plan (NRRP) taps into the need to enshrine the innovation of the research system with other challenges faced by the country (e.g., green transition, healthcare modernisation, and efficiency of public administration). Moreover, within the NRRP, an investment of EUR 1.8 billion is allocated to support and finance the realisation of the NRP[4].

The Ministry entrusts an important set of competencies to the National Research Council (CNR), a public research institution supervised and financed by the MUR, which is described further below.

MUR is co-ordinating the Sustainable Blue Economy Partnership (SBEP). The objective of SBEP is to enforce synergies with other European Partnerships and restore our oceans and waters (the 'Mission' of the Partnership). A specific objective at the national level is to valorise and bring as an added value to the partnership some relevant national assets, and namely unique research

[4] European Commission (2023) ERA Country Report – Italy

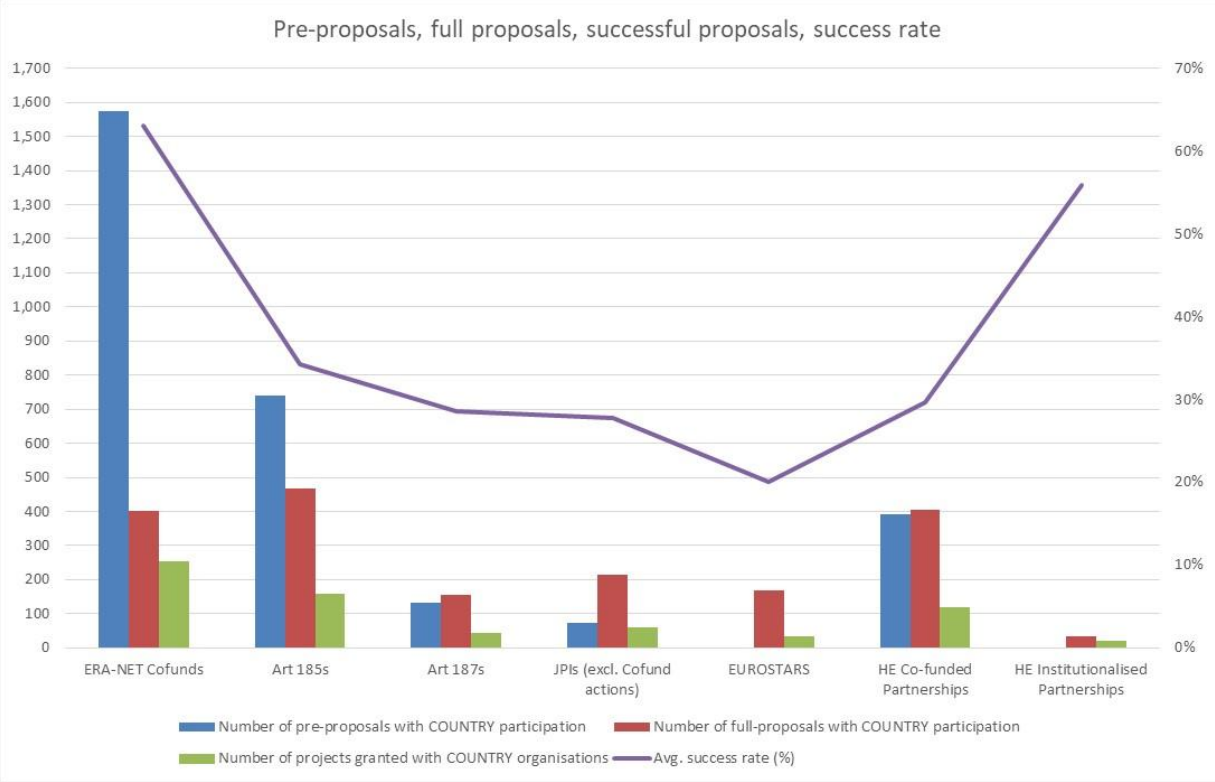
infrastructures, such as the Leonardo high performance computer and the Laura Bassi vessel for marine, ocean and polar research[5].

An MUR official proposes key advantages of European Partnerships:

> *"Partnerships are, ultimately, an efficient tool to manage transnational calls. They offer two key advantages: 1) co-funding, offers a solution to those countries reluctant to use national funds for transnational research activities; 2) co-funding for management, where management of transnational calls is normally quite expensive, but partnerships support the management of costs. Our policy over the 10 years has therefore been largely harmonised with European policy." (MUR official)*

## Analysis of MUR Participation in Calls Under H2020 and Horizon Europe

*Figure 9: MUR Participation in H2020 and Horizon Europe*




***NB:*** *There are gaps in the data made available which may impact the analysis undertaken.*

*Source: MUR, 2025*

As shown in Figure 9 above, ERA-NET Cofunds calls with Italian participation received significantly more pre-proposals compared to other types of partnership calls. While the proportion of pre-proposals progressing to full proposal, appears to be much lower, it should be

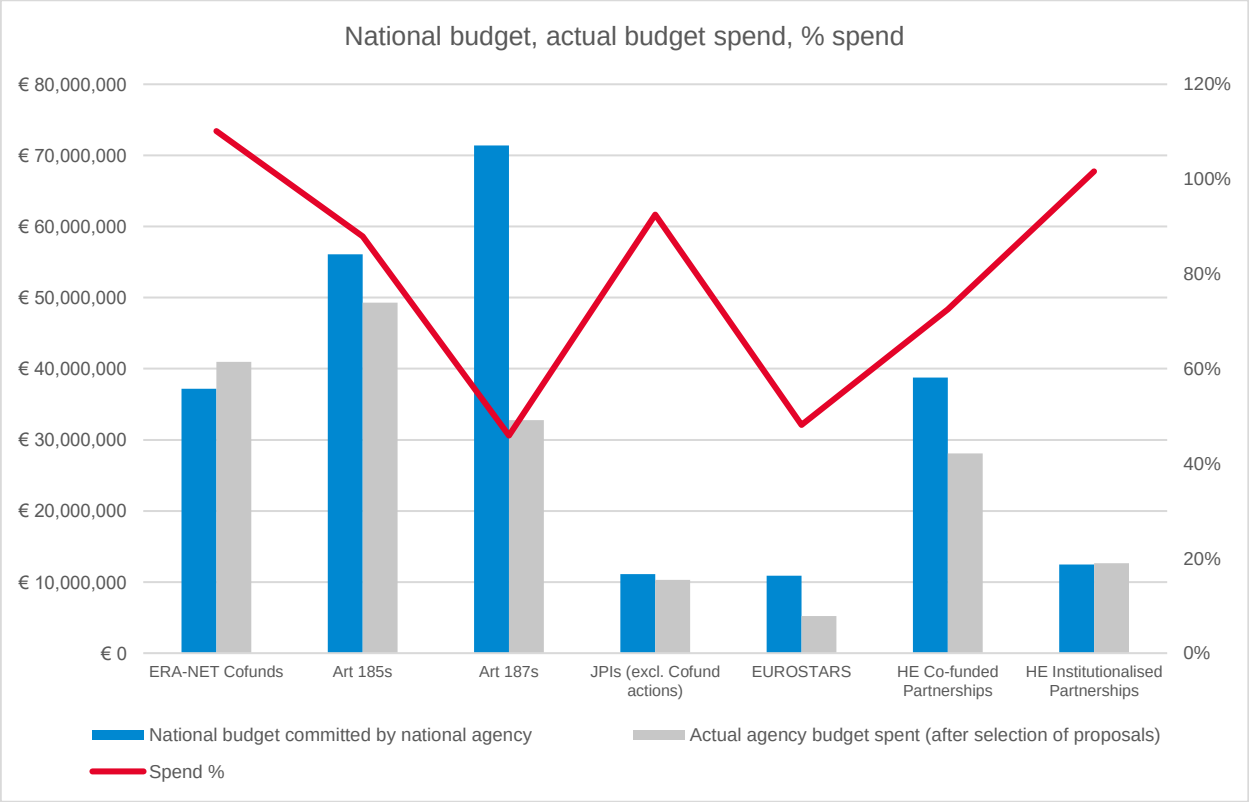
[5] Italy BMR 2024

noted that not all calls have two stages and so the data should be regarded with this caveat in mind. Regarding success rates (number of full proposals that received national funding), and based on the data available, ERA-NET Cofunds achieved the highest success rate among Italian participants at 63% (spending more than 100% of the funding committed to these calls). The overspend in ERA-NET Cofunds resulted from several ERA-NET Cofund networks surpassing their national budgets, including 31 exceeding 100%, one surpassing 200%, and several receiving more than 150% of their original budgets.

In relation to the apparent low success rate (around 30%) for Horizon Europe Co-funded partnerships, the reason for this is unclear but there remains a lack of data, more generally, for the Horizon Europe partnerships and so further analysis is not yet possible. It is, however, noted that despite a low success rate for the Co-funded partnerships, MUR has invested more than 70% of the budget that was committed to these calls.

The relative number of projects funded by the Institutionalised partnerships is clearly significantly lower than for other funding instruments, but MUR has invested more than 100% of the budgets that were committed to these calls.

*Figure 10: Italy's MUR Budget Committed and Actual Spend*




*Source: MUR, 2025*

## 2.2. Ministry of Health

The Ministry of Health is a key sectoral funder in Italy's R&I landscape, particularly through its coordination of the Transforming Health and Care Systems Partnership (THCS). The Ministry primarily funds researchers from the Scientific Institute for Research, Hospitalisation and Care (IRCCS), these are autonomous hospitals focused on clinical and translational research in the biomedical field. These institutes align their thematic research areas with national strategies to drive healthcare innovation.

The Ministry has historically participated in European initiatives like ERA-NETs (e.g., infectious diseases, neurology, personalised medicine) and new Partnerships such as Personalised Medicine, Antimicrobial Resistance (AMR), and Pandemic Preparedness. Success has been moderate, with about 80 eligible projects per year, though recent calls have seen less success due to the complexities of new Partnerships. Typical call budgets for Italy range between €1.5 million and €2 million.

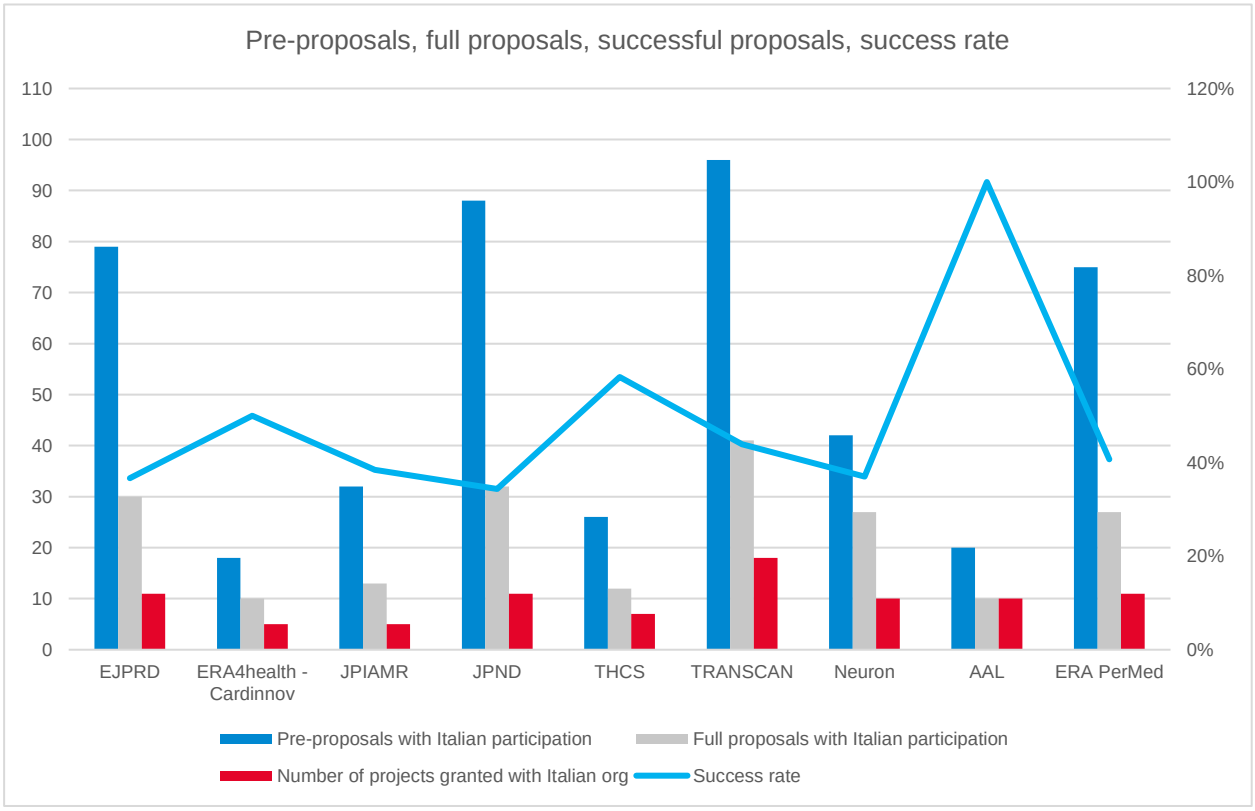
A Ministry official recognised the key role European Partnerships play in Italy's R&I landscape:

> *"Partnerships are a central instrument in Italy's national research and innovation (R&I) strategy, playing a vital role in both our European and national portfolios. These partnerships allow us to pool resources, expertise, and infrastructure, thereby optimizing the impact and efficiency of our R&I investments. They not only enhance the mobility of scientists but also facilitate the exchange of knowledge and best practices, elevating the overall quality and competitiveness of Italian research on the global stage." (Ministry of Health official)*

Analysis of Ministry of Health's Participation in Calls Under H2020 and Horizon Europe

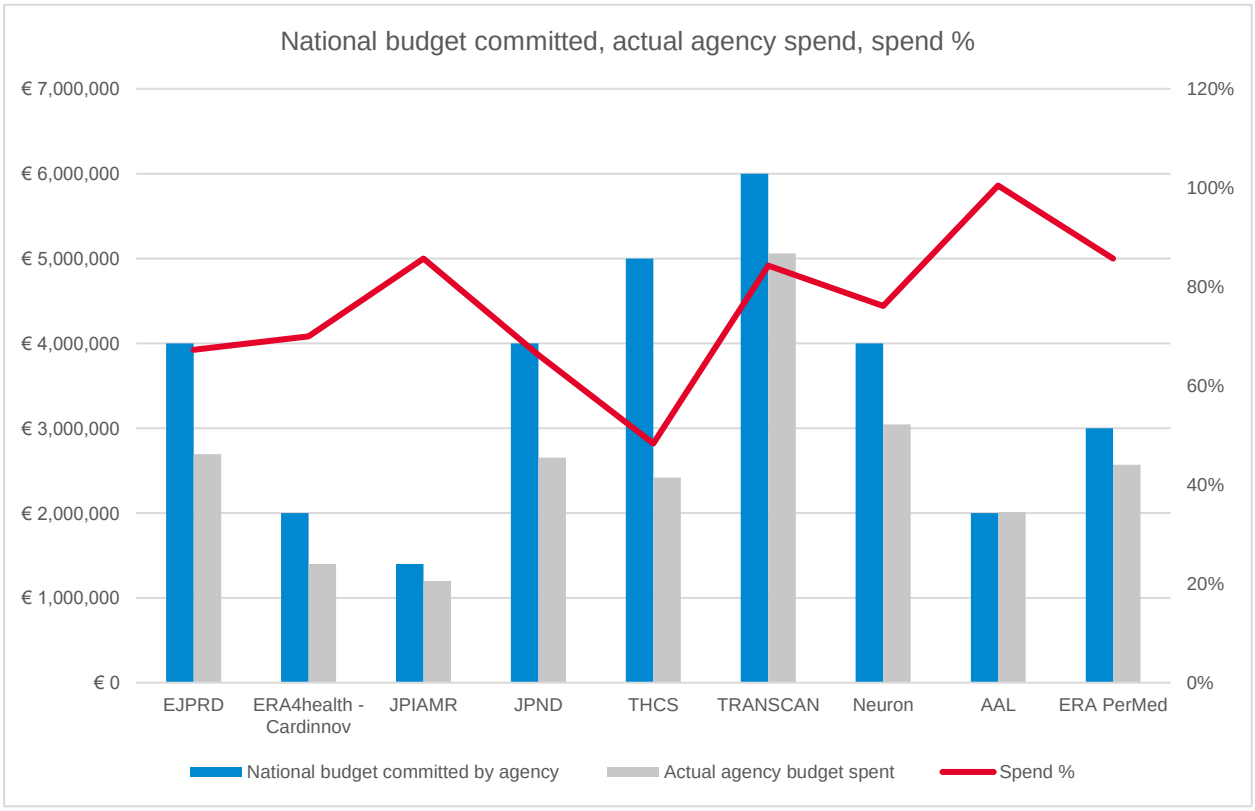
Figure 11 illustrates a consistent trend in proposal success rates, with eight out of nine types of funding instruments achieving success rates between 35% and 60%, reflecting uniformity in the evaluation process across most programmes. The exception is AAL, which achieved a 100% success rate. Additionally, there is a notable divide in pre-proposal submissions from Italian researchers with around half of the instruments receiving over 75 pre-proposals, while the remaining programmes received 42 or fewer. This may suggest a concentration of interest and activity within a few key research domains, while others are less represented.

*Figure 11: Ministry of Health Participation in H2020 and Horizon Europe*




*Source: Ministry of Health, 2025*

*Figure 12: Italy's MoH Budget Committed and Actual Spend*




*Source: Ministry of Health, 2025*

Figure 12 illustrates the Ministry of Health's spending profile across the different instruments. Consistent with the analysis of project proposals above, there is a general alignment in the percentage of actual spend relative to the committed budget. All programmes utilised between 66% and 100% of their allocated budgets, except for THCS, which utilised only 48%. Notably, no programmes exceeded their committed budgets, with AAL being the only programme to fully utilise 100% of its committed funding.

## 2.3. Ministry of Economic Development (MISE)

MISE is a central government body responsible for promoting economic growth, industrial development, and innovation. Its key focus areas include digital transformation, fostering innovation in SMEs, and driving the country's transition to Industry 4.0. MISE also plays a pivotal role in energy policy, supporting the Green New Deal and advancing renewable energy projects to align with Italy's sustainability goals. Additionally, the Ministry provides significant support for public-private partnerships, stimulating innovation and competitiveness across strategic sectors of the economy. [6]

MISE is involved in seven Partnerships, including two Institutionalised Partnerships (Chips JU and EuroHPC) and five Co-funded Partnerships (Water4All, DUT, CETP, SBEP, and INNOVATIVE SMEs). The experience has been mixed across both sets of Partnerships with some low successes in Co-funded Partnerships due to the orientation towards research opposed to innovation (i.e., lower TRLs) which resulted in *"limited interest from Italian enterprises to participate"* according to a Ministry official. Additionally, negative aspects have contributed to occasionally poor experiences, such as *"lack of administrative capacity, lack of expertise, and difficult and unclear rules".*

A Ministry official provides some suggestions for improvement of Partnerships:

> *"Try to clearly divide the topics between Horizon Europe, Partnerships, and other European programmes like the Digital Europe Programme. This should also help with the establishment of better synergies. Synergy might be OK through the mixed use of funds while not when it comes to fusion of similar topics, so it would be useful to fuse similar Partnerships and terminate the empty ones." (MISE official)*

[6] https://www.mef.gov.it/en/index.html

## 2.4. Ministry of Agriculture, Food and Forestry Policies (MIPAAF)

MIPAAF is the central government body responsible for overseeing and promoting policies related to agriculture, food security, forestry, and fisheries. MIPAAF plays a crucial role in supporting research and innovation in agriculture, focusing on areas such as sustainable farming practices, food quality and safety, biodiversity conservation, and climate adaptation in agriculture. The ministry actively funds initiatives that enhance productivity while minimising environmental impact, aligning with Italy's commitments to sustainable development and the European Green Deal.

MIPAAF is engaged in both national and European R&I programmes, particularly those that support climate-resilient agriculture, food innovation, and sustainable forestry management. The Ministry has supported more than 25 European Partnerships contributing around €14 million to joint calls. The Ministry is exclusively involved in co-funded Partnerships.

> According to Ministry officials, initiatives such as European Partnerships *are "valuable for providing alignment across countries and for international collaboration".* However, the complexities of Partnerships create barriers due to the *"unclear and difficult administrative duties"* required *which "discourages decision-makers at the Ministry from supporting such activities".* Overall, European Partnerships have *"improved the visibility of the country's research strengths and increased awareness amongst researchers of the needs of the sector while strengthening research networks across Europe".* Negative feedback relates to the complex system of budget allocation, different spending capacities of funders, and the administrative resource burden.

## 2.5. National Institute of Health (ISS)

ISS is both a funder and performer of research within the European Partnerships initiative, with autonomy to decide which partnerships to take part in, closely collaborating with the Ministry of Health and MUR. ISS serves as Italy's foremost public health institution, operating under the Ministry of Health and its primary mission is to safeguard public health through comprehensive research, surveillance, policy guidance, and technical and scientific support. The ISS conducts extensive studies across a variety of themes within the health domain, including in areas such as infections diseases, chronic illnesses, environmental health, and biomedical science. This broad focus contributes significantly to advancements in medical knowledge and public health practices.

Regarding participation in European Partnerships, ISS is involved in PARC, THCS, ERA4Health under cluster 1 (Health) and EUPAHW under cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment). In the case of THCS, the Institute participates as a research performing organisation, allowing researchers to *"strengthen relations with the research community directly involved in the consortium",* according to ISS officials, while also able to

participate in the external joint transnational calls launched by THCS, presenting researchers with *"several opportunities to strengthen synergies with other organisations."*

> Regarding the often-mentioned issues around administrative burdens, ISS officials do recognise that it can present a barrier for newer partners or those with insufficient resource and/or knowledge, but the Institute itself is *"in a good position since we have a long-standing administrative knowledge and have invested increasing resource over the past 10 years; at present, we have about 30 people in a single unit that covers research strategy and coordination activities, including a grant office."* However, despite this, the internal financial reporting requested by partnership coordinators is an additional burden which creates issues for an institution like ISS that has to calculate costs for (min.) 30 people every six months.

## 2.6. Autonomous Province of Bolzano/Bozen – South Tyrol

Bolzano Province – South Tyrol has developed a Smart Specialisation Strategy 2030[7], with the aim of directing support policy towards areas with a high development potential. The strategy has four areas of specialisation: Automation and Digital, Food and Life Science, Green Technologies, Alpine Technologies. It also prioritises four cross-cutting fields: Sustainability, Digitalisation, Creative Industries, and Training and Continuing Education.

Bolzano actively participates in European research initiatives, particularly within Horizon Europe, to further its expertise in green innovation and sustainable technologies, helping drive its transformation into a green and digital economy. European Partnerships have been a key feature in this shift, with the region taking part in three Partnerships, Biodiversa+, Agroecology, and FutureFoods. In this framework, close cooperation with local research institutions, such as Eurac Research and the Free University of Bolzano, has proven to be effective in implementing the province's innovation objectives based on solid scientific expertise in biodiversity, climate adaptation, sustainable agriculture, forestry and food technology.

This is the region's first experience of European Partnerships despite having experience in international collaborations through bilateral cooperation with neighbouring countries, such as Germany, Switzerland, and Austria.

A representative of the region described the positive and negative impacts of Partnerships:

> *"Partnerships are an important additional funding instrument for our research community. They provide opportunities to meet other partners and increase our visibility in terms of R&I. They also support greater exchange with Italian ministries. Negatively, there is still a*

[7] https://innovazione-ricerca.provincia.bz.it/it/smart-specialisation-strategy

*lack of capacity in our research community and the community requires time to get acquainted with the instrument." (Official of Autonomous Province of Bolzano)*

## 2.7. Piedmont Region

Piedmont's regional innovation policy aims to strengthen its innovation capacities, boost regional competitiveness, and foster dynamic enterprises. This policy has supported collaborative R&D through innovation clusters, focusing on strategic areas like the smart factory, Industry 4.0, life sciences, and the bioeconomy. Despite these efforts, the region's heavy reliance on manufacturing and the limited innovation activity among small and medium-sized enterprises (SMEs) present challenges[8]. Innovation in the region tends to be driven by larger firms, leaving many SMEs behind. In response, the Piedmont Smart Specialisation Strategy 2021-2027 was developed simultaneous to the OECD's 2021 review of the region's innovation ecosystem. The review highlighted several actions to enhance Piedmont's innovation landscape, such as attracting new investment partners, boosting innovation in micro and small firms, improving coordination among innovation actors, and better integrating regional strategies with national, EU, and global policies. It also identified six key areas of specialisation, including semiconductors, clean mobility, aerospace, food, health and green technologies. These recommendations align closely with the objectives of European partnerships.

Additionally, a significant portion of regional innovation activity is supported by the PNRR and RRF funding facility, spanning seven key missions, including digital, green, health, and other sectors. This initiative encompasses over 1,000 interventions across more than 1,300 projects, with a total investment of €1.6 billion[9].

In European Partnerships, the region has limited experience only having launched calls earlier in 2024. The region is currently involved in the Clean Aviation JU and a co-programmed partnership. These are typically linked to the region's Smart Specialisation Strategy, although the region does not issue dedicated, thematic calls for specific areas, but rather an open call for tenders that covers all areas of specialisation. Official representatives from the region explained that the decision to start the process of joining Partnerships *was "driven by specific needs, particularly the imperative to strengthen synergies between funds and programmes with the new round of structural funding, aligning with the recommendations of the European Commission".* The initial experience is understood to have been *"instrumental in achieving three key objectives"*: (1) aligning the region's intervention themes within support programmes, guided by the regional smart specialisation strategies; (2) establish a second level of synergy among funding instruments, creating a comprehensive support system for various phases of research and

[8] OECD (2021), Regional Innovation in Piedmont, Italy: From Innovation Environment to Innovation Ecosystem

[9] https://pnrr.regione.piemonte.it/

development across the entire Technology Readiness Level (TRL) spectrum, utilising both the region's tools and those from other programmes; (3) empower SMEs in the region to expand internationally by participating in projects that align with European programmes.

Italy's diverse array of research and innovation funders, ranging from major ministries such as the Ministry of Universities and Research, Ministry of Health, and Ministry of Economic Development to specialised regional and sectoral bodies, collectively underscores the country's strategic commitment to fostering R&I. While the national and regional entities play essential roles in shaping Italy's engagement in European Partnerships, administrative complexities and financial management issues remain persistent challenges. Addressing these challenges through streamlined processes and improved coordination among funders will be critical for maximising the effectiveness and impact of Italy's participation in European R&I initiatives.

# 3. Who are the Key R&I Performers in Italy?

## *Key Research Performing Institutions*

Italy's research and innovation landscape consists of several key institutions and organisations across academia, national research bodies, technology transfer centres, and public-private partnerships. These include the following:

Major Public Research Organisations:

- National Research Council (CNR - Consiglio Nazionale delle Ricerche)
- Italian National Agency for New Technologies, Energy, and Sustainable Economic Development (ENEA)
- Italian Institute of Technology (IIT - Istituto Italiano di Tecnologia)
- National Institute for Nuclear Physics (INFN - Istituto Nazionale di Fisica Nucleare)
- National Institute for Astrophysics (INAF - Istituto Nazionale di Astrofisica)
- National Institute of Geophysics and Volcanology (INGV - Istituto Nazionale di Geofisica e Vulcanologia)
- Italian Space Agency (ASI - Agenzia Spaziale Italiana)
- Council for Agricultural Research and Agricultural Economics Analysis (CREA - Consiglio per la Ricerca in Agricoltura e l'Analisi dell'Economia Agraria)

Universities and Higher Education Institutions (research-intensive):

- Politecnico di Milano - engineering, architecture, industrial design, ICT, energy, and management
- Politecnico di Torino - engineering, aerospace, automotive, ICT, energy systems, and applied sciences
- University of Bologna - comprehensive research across sciences, engineering, medicine, humanities, economics, and social sciences
- Sapienza University of Rome - extensive fundamental and applied research in science, technology, medicine, and humanities
- University of Milan - strong research performance in biomedical sciences, life sciences, chemistry, physics, and social sciences

- University of Padua - advanced research across physics, astronomy, biology, engineering, psychology, and medicine
- University of Pisa - notable research in physics, computer science, engineering, mathematics, life sciences, and humanities
- University of Naples Federico II - extensive multidisciplinary research, particularly strong in engineering, materials science, biomedical sciences, and ICT
- Scuola Normale Superiore (Pisa) and Scuola Superiore Sant'Anna (Pisa) - elite institutions known for high-level fundamental research in humanities, natural sciences, social sciences, engineering, robotics, economics, and law

Private and Non-Profit Research Organisations:

- Fondazione Bruno Kessler (FBK) - independent research foundation performing advanced studies in AI, ICT, quantum technologies, digital humanities, and innovation processes
- Fondazione Edmund Mach (FEM) - conducts applied research on agriculture, environmental management, biodiversity, food safety, and biotechnology
- Human Technopole (Milan) - prominent new research institute specialising in genomics, precision medicine, biotechnology, and life sciences research

Italy also hosts a number of technology transfer and innovation clusters that are involved in the performance of research, and these include the AREA Science Park (Trieste), which is a major national technology park actively conducting applied research, technology transfer, and innovation in ICT, biotech, renewable energy, and advanced materials. Furthermore, there are eight nationally recognised 'Competence Centres' focused on Industry 4.0, which are specialised research and innovation hubs collaboratively operated by universities, research institutions, and industry, focusing on advanced manufacturing, automation, AI, robotics, digitalisation, and sustainability.

Collectively, these research-performing institutions form the backbone of Italy's research and innovation landscape, engaging in high-level scientific discovery, technological innovation, and multidisciplinary collaboration, both nationally and internationally.

## *How are they doing in Horizon participation?*

Based on the data available in the Horizon Dashboard, Italy's performance in Horizon 2020 and Horizon Europe (until July 2024) sits in fourth place among the comparator countries in almost all indicators, except participation rank, where it is slightly above France in both framework programmes. Of the comparator countries, Germany is consistency highest among the group, with France ahead of Spain in almost all metrics, as shown in Table 3.

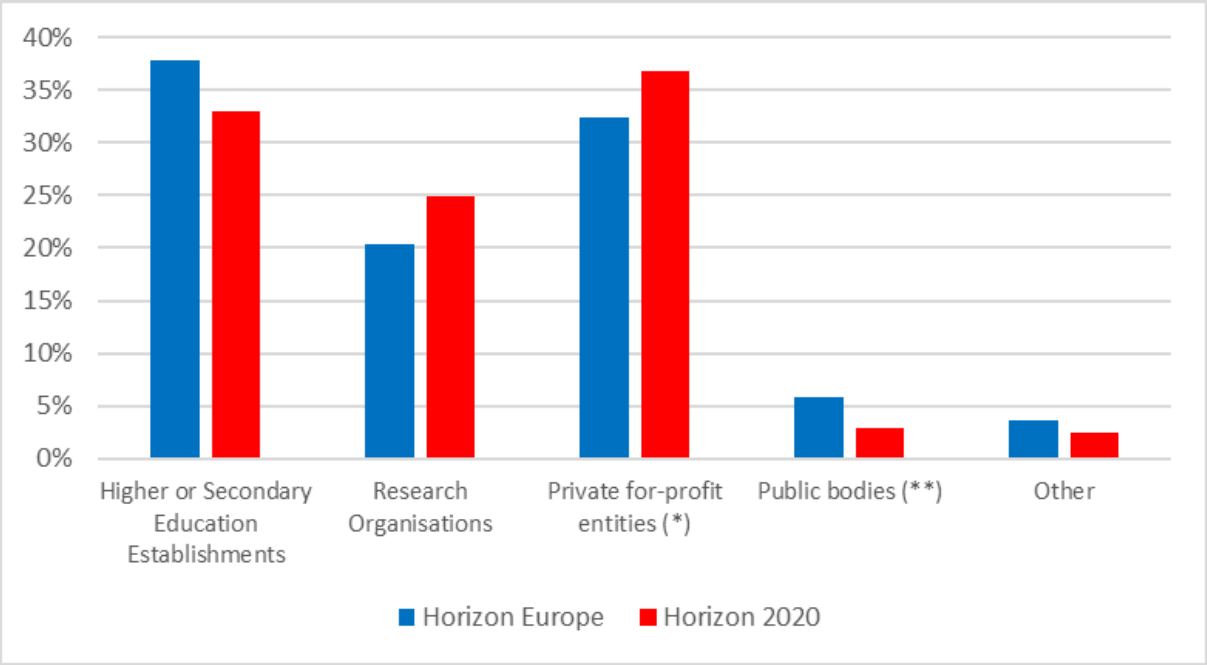
*Table 3: Selected indicators of countries' performance in H2020 and Horizon Europe*

| ***Horizon 2020*** | **Italy** | **Spain** | **France** | **Germany** |
|---|---|---|---|---|
| *Net EU contibution (billion)* | 5.71 (8.36%) | 6.39 (9.35%) | 7.44 (10.89%) | 10.13 (14.82%) |
| *Unique participations (no.)* | 4,003 (9.55%) | 4,261 (10.17%) | 3,538 (8.44%) | 4,551 (10.86%) |
| *Succes rate (%) H2020 success rate 15.32%* | 12.96% | 14.27% | 17.44% | 16.80% |
| *Budget share rank out of 28* | 5 | 4 | 3 | 1 |
| *Participation rank out of 28* | 4 | 2 | 5 | 1 |
| *ERC principal investigators (no.)* | 463 (5.93%) | 495 (6.34%) | 834 (10.68%) | 1,287 (16.48%) |
| *ERC net EU contribution (million)* | 597.1 (4.96%) | 665.4 (5.53%) | 1,310 (10.91%) | 2,060 (17.13%) |
| ***Horizon Europe*** | **Italy** | **Spain** | **France** | **Germany** |
| *Net EU contibution (billion)* | 3.2 (8.82%) | 3.93 (10.85%) | 4.11 (11.34%) | 5.86 (16.17%) |
| *Unique participations (no.)* | 2,106 (8.38%) | 2,509 (9.98%) | 2,206 (8.78%) | 2,663 (10.59%) |
| *Succes rate (%) - HEU success rate 20.31%* | 18.39% | 20.05% | 23.20% | 22.13% |
| *Budget share rank out of 27* | 5 | 3 | 2 | 1 |
| *Participation rank out of 27* | 3 | 2 | 4 | 1 |
| *ERC principal investigators (no.)* | 296 (8.27%) | 301 (8.41%) | 462 (12.91%) | 758 (21.18%) |
| *ERC net EU contribution (million)* | 398 (6.99%) | 421.1 (7.40%) | 737.5 (12.96%) | 1,290 (22.59%) |

*Source: Horizon dashboard – 24/7/2024, R&I Country Profile – Key Figures*

With regards to the types of beneficiaries, there appear to be some changes in the proportion of involvement across the different types. The proportion of both higher or secondary education establishments and public bodies has increased between Horizon 2020 and Horizon Europe, by around 5% for the former. Conversely, there has been a relative 5% drop in participation from research organisations and private-for-profit entities between Horizon 2020 and Horizon Europe. However, given that the percentages changes are small, the figures are based on the EC contributions received by the project beneficiaries and that Horizon Europe is still running, any conclusions would be premature at this stage.

*Figure 13: Type of Italian beneficiaries in projects across Horizon 2020 and Horizon Europe based on the EC contributions*




*Source FFG based on eCORDA data (cut-off date July 2023)*
*(*) Excluding Higher or Secondary Education Establishments*
*(**) Excluding Research Organisations and Secondary or Higher Education Establishments*

Table 4 provides an overview of the top 20 Italian participants in Horizon Europe projects, based on EU net contribution, with the top three being a mix of public research organisations and universities.

*Table 4: Top 20 Italian participants in Horizon Europe projects based on the EU net contribution (€)*

| Nr. | Organisation | Net EU Contribution (€) |
|---|---|---|
| 1 | CONSIGLIO NAZIONALE DELLE RICERCHE | 145,889,674 |
| 2 | POLITECNICO DI MILANO | 129,976,000 |
| 3 | ALMA MATER STUDIORUM - UNIVERSITA DI BOLOGNA | 110,549,335 |
| 4 | UNIVERSITA DEGLI STUDI DI PADOVA | 94,883,259 |
| 5 | POLITECNICO DI TORINO | 61,451,108 |
| 6 | UNIVERSITA DEGLI STUDI DI MILANO | 49,596,753 |
| 7 | FONDAZIONE ISTITUTO ITALIANO DI TECNOLOGIA | 47,291,289 |
| 8 | UNIVERSITA DEGLI STUDI DI ROMA LA SAPIENZA | 46,714,681 |
| 9 | UNIVERSITA DEGLI STUDI DI TORINO | 45,608,465 |
| 10 | UNIVERSITA DEGLI STUDI DI TRENTO | 41,838,242 |
| 11 | UNIVERSITA COMMERCIALE LUIGI BOCCONI | 41,801,008 |
| 12 | MINISTERO DELL'UNIVERSITA E DELLA RICERCA | 41,060,372 |
| 13 | FONDAZIONE CENTRO EURO-MEDITERRANEOSUI CAMBIAMENTI CLIMATICI | 40,180,032 |
| 14 | UNIVERSITA CA' FOSCARI VENEZIA | 37,661,788 |
| 15 | GE AVIO SRL | 36,097,302 |
| 16 | UNIVERSITA DEGLI STUDI DI FIRENZE | 35,255,189 |
| 17 | MINISTERO DELLE IMPRESE E DEL MADE IN ITALY | 34,874,767 |
| 18 | LEONARDO - SOCIETA PER AZIONI | 34,730,382 |
| 19 | RINA CONSULTING SPA | 32,597,381 |
| 20 | UNIVERSITA DEGLI STUDI DI NAPOLI FEDERICO II | 32,428,701 |

## *How are they doing in partnership project participation?*

Based on data from the ERA-LEARN database, Italian research organisations took part in around 1200 partnership projects during H2020. This is fewer than project participation from each of the other comparator countries, with Germany superseding Italian figures by more than 1000 participations. Furthermore, the Italian contribution accounts for around 6.16% of the total actual investments made by all countries involved in P2Ps in H2020[10]. This is lower than the share of EU contributions absorbed by Italian organisations in H2020 (8.36% of total net EU contributions). In relation to Italian participations, this currently accounts for 7.61% of total P2P project participations in comparison to 9.74% for H2020 projects. The figures are also lower than for Horizon Europe projects (9.59% of total participations and 8.48% of the total net EU contribution

[10] Overall figures are likely to be higher for all countries due to missing data from partnerships and new contributions to calls and projects in current and future calls

in Horizon Europe). It can be argued that, overall, Italy has benefitted less from P2P partnerships than from EU framework programmes.

The interviews with the project beneficiaries provided useful insights regarding their overall experience of participating in partnership-funded projects. Overall, the researchers reported predominantly positive experiences of participating in P2P funded projects. The collaborative nature of the partnerships was frequently praised for enabling multidisciplinary consortia, bringing together diverse expertise, resources, and enhancing scientific and practical outcomes.

The nature and opportunity for development of the consortia among transnational funded projects was noted as being of particular benefit, such that one researcher highlighted that *“we weren’t rushed through strategic checkpoints. We had sufficient time for development” (AAL beneficiary 2).*

Beneficiaries across all projects highlighted international collaboration as a primary strength.

> *"The collaborative nature of the EJP RD partnership was a standout feature, fostering meaningful exchanges within a diverse and multidisciplinary consortium" (EJP RD beneficiary 1)*
>
> *"It allowed us to connect with international experts, significantly impacting project outcomes and dissemination" (EJP RD beneficiary 2)*
>
> *"The complementarity of skills and mutual exchange of learning between consortium partners has been extremely valuable" (ICT AGRI-FOOD beneficiary 1)*

These comments from researchers underline the significance of collaboration in achieving project objectives.

The thematic alignment of partnerships was noted as enabling research in key areas that might otherwise not be covered:

> *“We're very happy about the scope and the type of topics. Very often, Mediterranean issues are not specifically addressed by many calls” (PRIMA beneficiary)*

In terms of the administrative processes, researchers found that, in general, these were manageable, with clear guidance and support provided by the Italian Ministry. The beneficiaries valued the opportunity to communicate directly with the Ministry and appreciated the timely and helpful responses. A commonly cited frustration, however, was the requirement to translate project proposals into Italian, which was described as significantly burdensome.

> *"We had to produce a very long document in Italian re-proposing the whole project, just for the Italian part...it was actually much more complicated than the international proposal in English" (ICT AGRI-FOOD beneficiary 2)*
>
> *"I don't see why they wanted it in Italian; it shouldn't be complicated, but actually, it was a very complex process" (EJP RD beneficiary 3)*

In the interview programme, most beneficiaries noted challenges relating to funding, particularly delayed financial distributions. These delays were described as financially strenuous, as

institutions often had to front expenses until reimbursement was received, creating financial risks and stress within the research teams.

> *“We received the funds several months after signing the grant agreement, creating initial delays” (EJP RD beneficiary 3)*
>
> *"We had to anticipate a lot of money...there was significant financial exposure and risks due to delayed funding" (PRIMA beneficiary)*
>
> *"In Italy, we have difficulties managing funds received because it arrives very late, sometimes after one year from project completion" (AAL beneficiary 1)*
>
> *"The length of waiting time for receiving the funds could be improved in these kinds of projects" (AAL beneficiary 2)*

Additional constraints noted by researchers stemmed from rigid national funding regulations. Beneficiaries reported limited flexibility regarding budget adjustments and cumbersome national reporting requirements.

> *"Rules set by the funding agency have been quite rigid and unhelpful...the lack of budget flexibility has been frustrating" (ICT AGRI-FOOD beneficiary 1)*
>
> *"National reporting was continuous and very complicated, with different requirements and extensive documentation……our ministry required continuous detailed reporting every four to six months, separate from international reports, adding significant complexity and administrative burden” (PRIMA beneficiary)*

Beneficiaries were also asked about their experience in other funding mechanisms and often found transnational programmes, despite their administrative complexities, more rewarding due to their broader scope and enhanced collaborative opportunities.

> *"Compared to Horizon Europe, the EJP RD framework felt more targeted and specialised - advantageous for addressing unique challenges of rare diseases. National programmes often lack this international dimension" (EJP RD beneficiary 1)*
>
> *“For the first time, we had clinicians, researchers, and patient organisations working closely. We could directly address patient needs, something not possible at the same scale nationally” (EJP RD beneficiary 2)*

Even those that observed no major differences pointed to the significance of operational flexibility within transnational programmes, explaining:

> *"What can make the difference is having more or less flexibility in what you can do within a project" (ICT AGRI-FOOD beneficiary 2)*

Beneficiaries identified several key factors essential for the success of transnational projects. A strong, balanced consortium with complementary expertise was universally seen as critical.

> *“The collaborative nature and complementarity of skills among partners were essential. We brought algorithmic skills but lacked engineering expertise, which other partners provided effectively” (ICT AGRI-FOOD beneficiary 1)*

Researchers also emphasised the importance of effective communication strategies, clearly defined and realistic objectives, and strong dissemination practices. Indeed, *"Strong and collaborative consortia with complementary skills and effective communication" (EJP RD beneficiary 1)* were deemed to be key, and collaboration was stressed as being instrumental in addressing project challenges comprehensively.

The benefits of extended project timeframes were also recognised as being a key to project success, with *"sufficient time to develop strategically important technologies, due to the longer timeframe provided by transnational projects" (EJP RD beneficiary 2) being described as* essential for achieving significant results.

Beneficiaries generally reported positive experiences within their transnational projects, praising effective collaboration and significant scientific impacts. Nevertheless, administrative complexities and funding challenges specific to Italy were identified as critical areas that need attention. Addressing these issues through streamlined administrative procedures and timely financial allocations would significantly enhance beneficiaries' experiences, ultimately improving the effectiveness and impact of future transnational projects.

Italy's research and innovation landscape is strengthened by an extensive network of public research institutions, universities, and private research entities that excel across diverse scientific and technological domains. Key institutions such as the National Research Council (CNR), ENEA, and leading universities provide a robust foundation for impactful research participation in European initiatives. Despite Italy's significant contribution to Horizon Europe and Horizon 2020 projects, there remains scope to increase participation levels and the alignment of R&I activities with European Partnership objectives. Enhancing collaboration, reducing administrative hurdles, and improving financial efficiency will further amplify the capacity and competitiveness of Italy's research performers within Europe’s R&I ecosystem.

# 4. In Which R&I Areas is Italy Strong?

Italy's national research priorities and budget allocations, as outlined in its National Recovery and Resilience Plan (PNRR), emphasise key missions, including:

- "Digitalisation, Innovation, Competitiveness, Culture" to which more than €50 billion was allocated to enhance public administration digitalisation, promote innovation in production sectors and support the tourism and culture industries through technological advancements
- "Green Revolution and Ecological Transition", reflecting Italy's commitment to environmental sustainability with a budget of almost €70 billion
- "Education and Research," with an allocation of almost €34 billion to improve educational infrastructure and bolster research initiatives, underscoring Italy's dedication to fostering a knowledge-based economy
- "Infrastructure for Sustainable Mobility," focusing on modernising transportation networks with a budget allocation of more than €31 billion
- "Health", with a budget of more than €20 billion to strengthen healthcare services, enhance pandemic preparedness, and promote research in medical sciences

This strategic focus aligns with Italy's scientific strengths. Italy has, for example, emerged as a strong player in artificial intelligence (AI) research, particularly in machine learning, natural language processing, and computational intelligence, which spans multiple domains such as healthcare and industrial automation. Furthermore, Italy has a strong tradition in biomedical research and life sciences with significant contributions in molecular biology, genetics and neuroscience. Likewise, its researchers have contributed extensively to both fundamental and applied research in physics, material science and engineering and have contributed to the field of environmental and climate sciences focussing on mitigating the effects of climate change, improving water resource management and advancing renewable energy technologies. Its scientific excellence is rooted in a multidisciplinary approach to address complex societal and technological challenges.

Indeed, a recent study[11] analysing the field and discipline of Italy's Highly Ranked Scholars (for the period 2018-2022) highlights that the current key research areas in which Italy's research excels are medicine, engineering and computer science, and physical sciences and mathematics.

[11] Italy's excellence in research, 2025 (Science Direct)

Life sciences is also an important field in which Italian researchers perform well, especially when the outcome is combined with highly ranked scholars in pharmacy and pharmaceutical sciences and in public health.

Regarding the areas addressed by Italian researchers in Horizon 2020 and Horizon Europe based on the total EC contributions, we see a clear focus in the area of digital and enabling technology as well as in climate, energy and mobility areas in both framework programmes, aligning with the country's scientific strengths. The value of the ERC and MSCA schemes is also notable.

*Figure 14: Performance of Italian actors in Horizon 2020 and Horizon Europe - thematic areas based on the total EC contributions*


*Source: FFG, based on eCORDA data (cut-off date Dec 2024)*

Italy demonstrates substantial strengths in strategically significant research and innovation areas, notably artificial intelligence, biomedical sciences, engineering, environmental and climate sciences, and advanced manufacturing. These strengths align closely with both national strategic priorities and broader European research objectives, particularly those outlined in Italy's National Recovery and Resilience Plan. Italy has significant potential to strengthen its leadership and influence within European R&I Partnerships by further leveraging these core competencies and enhancing sector-specific investments.

# 5. With Whom Does Italy Collaborate in R&I and Why?

Historical and geographical ties, particularly with countries in the southern Mediterranean region, are seen as key drivers of Italy's collaborations in Horizon 2020 and Horizon Europe partnership projects. This perspective was widely supported by the official representatives consulted during this study.

An official representative of MUR noted that there is also a political motivation to support international communities, for example, in sectors such as agriculture and water.

Other key collaboration drivers include complementarities and synergies. An official from the Ministry of Health stated that *"researchers actively seek partners with complementary skills or infrastructure to enhance their capabilities and achieve more impactful outcomes".* The Bolzano Province region seeks synergies in research areas by focusing on *"neighbouring countries dealing with similar topics and challenges".* Language, geographical and historical considerations play a role in this respect, but regional participation in EU partnerships is, more generally, expanding local research communities' networks beyond neighbouring territories.

Based on partnership data from Horizon 2020 and Horizon Europe projects, Italian organisations collaborate most frequently with a consistent set of countries. The top four – Spain, Germany, France, and the Netherlands – remain unchanged in order of 'Number of links'. While the rankings shift slightly as the number of links decreases, the same countries generally appear in both datasets. For instance, Belgium and Greece swap positions, Austria ranks one place lower in Horizon Europe, while Portugal and Denmark move up. Notably, Ireland and the Czech Republic drop out in Horizon Europe, replaced by Slovenia and the United States, which did not feature as collaborators under Horizon 2020.

*Table 5: Top collaborations of Italian organisations in H2020 partnership projects and Horizon Europe projects*

| H2020 Partnership Projects | | Horizon Europe projects | |
|---|---|---|---|
| *Countries* | *Number of links* | *Countries* | *Number of links* |
| Spain | 934 | Spain | 17,471 |
| Germany | 874 | Germany | 14,841 |
| France | 702 | France | 13,083 |
| Netherlands | 392 | Netherlands | 8,293 |
| Greece | 346 | Belgium | 7,922 |
| Belgium | 342 | Greece | 7,502 |
| Austria | 278 | United Kingdom | 5,456 |
| Sweden | 206 | Austria | 4,545 |
| United Kingdom | 205 | Portugal | 4,305 |
| Switzerland | 164 | Sweden | 3,842 |
| Finland | 148 | Switzerland | 3,598 |
| Norway | 147 | Finland | 3,241 |
| Portugal | 129 | Denmark | 2,902 |
| Poland | 118 | Norway | 2,725 |
| Türkiye | 105 | Poland | 2,618 |
| Denmark | 84 | Slovenia | 2,225 |
| Ireland | 81 | Türkiye | 1,497 |
| Czech Republic | 75 | United States | 973 |

In terms of international networks, one official from the National Institute of Health stated:

> *"There is a well-established network of collaborators that is stable and maintained through different activities – occasionally, newcomers will join the network. Some countries, such as Greece and Slovakia, are more actively participating compared to H2020 programmes."*

As mentioned above, there is a general recognition that Italian organisations will collaborate with the same countries in Horizon Europe as they did in Horizon 2020, albeit with some instances where specific regional or historical collaboration factors play a motivating role or complementarity of capabilities is a key driver. An official from the Agency for the Promotion of European Research (APRE) summarises this quite well:

> *"Overall, Italian researchers are generally going to collaborate with the same countries that Italy is collaborating with in Horizon Europe. There is, also, an effort to collaborate with widening countries, too."*

European Partnerships have been instrumental in establishing strategic collaborations with Southern Mediterranean countries, such as through PRIMA. At the EU level, these partnerships reinforce the integration of Italy's R&I system, particularly with Germany, France, the Netherlands, and Belgium, reflecting the alignment of national value and innovation chains in this region. While

partnerships aim to broaden the spectrum of collaborations, the resulting networks largely emphasise existing relationships over the formation of new ones.[12]

Italy's research and innovation collaborations are deeply rooted in historical, geographical, and strategic considerations, emphasising partnerships with key European counterparts such as Spain, Germany, France, and the Netherlands. The consistent focus on Mediterranean collaboration through platforms like PRIMA underscores Italy's commitment to addressing regional and transboundary challenges. While existing partnerships remain strong and productive, there is ongoing potential for Italy to expand and diversify its international research networks.

[12] Italy BMR 2024

# 6. What are Italy's Strengths & Weaknesses in Relation to Participation in European R&I Partnerships?

*Strengths*

- High strategic alignment with EU priorities - Italy has embedded the goals of Horizon Europe into its national research strategy, particularly through the National Research Programme (PNR) and the National Recovery and Resilience Plan (NRRP). This ensures alignment of national investments with EU missions, reinforcing Italy's role in addressing key societal and technological challenges at the European level.
- Alignment of regional Smart Specialisation Strategies with EU and partnership agendas - Several Italian regions have effectively aligned their Smart Specialisation Strategies with the thematic areas addressed in European Partnerships. This has enhanced the regional relevance of transnational R&I cooperation and created synergies between regional development goals and broader European missions, particularly in areas such as sustainable agriculture, green technologies, and food innovation.
- Comprehensive participation across partnerships - Italy exhibits a strong commitment to European collaboration, with full participation in all eligible Horizon Europe Partnerships and consistent engagement across most H2020 initiatives. This reflects a clear national intention to remain integrated in the European R&I ecosystem.
- Active fostering of regional participation in European Partnerships - Italy is one of the few Member States that systematically promotes the participation of regional authorities and stakeholders in European R&I Partnerships. This inclusive approach strengthens the territorial relevance of partnerships and enhances the integration of regional innovation ecosystems into European R&I frameworks.
- Scientific and institutional excellence - Italy maintains a high level of scientific output, including a leading share of highly cited publications. Its network of public research bodies, world-class universities, and specialised institutes (e.g. CNR, ENEA, IIT) provides a strong platform for participating in transnational initiatives.
- Strong innovation potential in key sectors - Italy shows competitive advantages in areas such as life sciences, biomedical research, digital technologies, AI, climate and environmental science, and advanced manufacturing. This positions Italy well to contribute to thematic partnerships aligned with green and digital transitions.
- Effective international collaboration networks - Longstanding and well-established collaboration with leading EU partners facilitates stable and impactful engagement in joint R&I efforts, especially in Mediterranean-focused programmes like PRIMA.

- Leadership roles in select partnerships - Italy has demonstrated the capacity to lead strategically significant partnerships (e.g. Sustainable Blue Economy), leveraging national assets and expertise to shape the European research agenda in targeted areas.

## *Weaknesses*

- Structural and systemic administrative bottlenecks - Italy's research administration suffers from fragmented and overly complex bureaucratic procedures. Overlapping national and EU reporting, inconsistent rules, and language requirements (e.g. proposal translations into Italian) create friction that reduces efficiency and competitiveness.
- Delayed and rigid national funding mechanisms - Persistent delays in funding disbursement and inflexible budgetary frameworks weaken Italy's attractiveness as a partner in time-sensitive, competitive projects. Institutions frequently need to pre-finance project activities.
- Insufficient public investment in R&D - Despite recent strategic commitments, Italy's gross R&D expenditure remains below EU averages and comparator countries. Limited national investment constrains the ability to scale research ambitions and match the resources mobilised by peers like France and Germany.
- Under-leveraged potential of SMEs and innovation actors - Although SMEs perform strongly in innovation indicators, barriers such as low TRL focus in partnerships and administrative complexity can limit their active involvement in EU-funded collaborative research.
- Challenges in internationalisation and talent attraction - Italy faces persistent difficulties in attracting foreign researchers and doctoral students, suggesting broader limitations in the openness and international competitiveness of the research system.

# 7. Country specific topic of interest for Italy: Collaboration within the Mediterranean Area

## *Strategic importance of Mediterranean collaboration for Italy*

Italy has long regarded the Mediterranean as a strategic priority, geographically, historically, culturally, and politically. Positioned at the heart of the Mediterranean Basin, Italy sees the region not only as a neighbouring area of shared challenges but also as a space of opportunity for mutual development, stability, and innovation. In this context, collaboration in research and innovation (R&I) with countries across the Southern Mediterranean is not a peripheral concern but a core component of Italy's external science policy and regional engagement strategy.

This strategic orientation is rooted in Italy's recognition that many of the most pressing societal and environmental challenges, climate change, food insecurity, water scarcity, and migration, are inherently transboundary in nature, requiring coordinated scientific responses. These challenges are particularly acute in the Mediterranean, where shared climatic vulnerabilities and ecological pressures are matched by growing socio-economic disparities. As such, Italy views research and innovation as a pragmatic and forward-looking instrument for building cooperation, fostering stability, and generating sustainable solutions.

At the European level, this collaboration strengthens Italy's position within the EU research and innovation landscape. By actively participating in Mediterranean-focused initiatives, Italy contributes to EU goals around global cooperation and supports the development of a more integrated European Research Area.

The European Union's Partnership for Research and Innovation in the Mediterranean Area (PRIMA) represents an important vehicle for this form of cooperation. It brings together EU Member States and Southern Mediterranean countries in a joint framework designed to address shared regional challenges through science and innovation. Italy has played a leading role in this initiative, both in terms of financial commitment and scientific engagement.

## *Why the Mediterranean is relevant for a Partnership*

Given the complexity and cross-border nature of the challenges facing the Mediterranean region, a structured and long-term partnership model is particularly well suited to support research and

innovation cooperation. Issues such as climate change, water management, food security, and sustainable agriculture cannot be effectively addressed by individual countries acting alone. A partnership approach ensures that efforts are aligned, resources are pooled, and solutions are developed collaboratively and with regional relevance.

For Italy, participating in a formal partnership, such as PRIMA, offers a number of strategic advantages. It provides a clear and stable framework for collaboration with both EU and non-EU countries in the Mediterranean, ensuring that joint priorities are identified and addressed through coordinated funding and shared governance. This structure enables the development of integrated research agendas, avoids duplication of effort, and creates space for deeper scientific cooperation.

The partnership model also supports Italy's goal of building equal and inclusive relationships with countries in the Southern Mediterranean. Rather than relying solely on bilateral agreements, which can be fragmented, multilateral partnerships ensure that all participating countries have a seat at the table and contribute to shaping the research agenda. This reinforces principles of co-ownership, mutual benefit, and joint responsibility.

Moreover, partnerships like PRIMA help to embed Mediterranean cooperation into broader European strategies. PRIMA directly contributes to EU priorities such as the Green Deal, the Farm to Fork Strategy, and the Sustainable Development Goals. Through its involvement, Italy not only strengthens its own research capacity but also ensures that Mediterranean perspectives are embedded in EU-level science and innovation policy. In this way, the partnership model is not only relevant - it is essential. It provides the structure, legitimacy, and scale needed to tackle regional challenges effectively.

## *Italy's experience with PRIMA*

Italy's experience with PRIMA has been consistently positive, both in terms of participation and outcomes. Since the launch of the partnership in 2018, Italy has played a leading role in shaping its direction, contributing both strategically and financially. Italy is the single largest national funder of PRIMA, committing €7 million per year, more than any other participating country. This financial leadership reflects the country's strong political and institutional support for Mediterranean-focused cooperation.

Over the first six years of the programme, Italian beneficiaries participated in 182 funded projects, representing a commitment to research of approximately €43 million. These projects span key themes covered by PRIMA, including sustainable water management, resilient agricultural systems, and food value chains adapted to Mediterranean conditions. Italian research institutions, universities, and SMEs have been central actors in these projects, often coordinating or co-leading consortia with Southern Mediterranean partners. Participation in PRIMA has enabled Italian researchers to build strong and lasting scientific relationships with counterparts across the

Mediterranean. These collaborations have contributed to significant knowledge transfer, the development of pilot projects and field demonstrations, and the creation of innovative solutions tailored to regional needs. The structured framework of PRIMA has allowed Italy to focus its R&I investments more strategically, targeting areas of national and regional importance that may otherwise have received less attention in broader programmes.

From an administrative perspective, PRIMA is widely regarded within Italy as a well-functioning and efficient partnership. Italian stakeholders have highlighted the partnership's flexibility and relatively low administrative burden compared to other EU co-funded instruments. This is largely attributed to PRIMA's Article 185 governance model, which has provided a clear management structure while allowing national agencies to engage effectively.

Beyond direct project outcomes, Italy's involvement in PRIMA has also delivered strategic value. It has enhanced Italy's visibility and leadership within the Mediterranean research community, reinforced its science diplomacy objectives, and supported the integration of its own national priorities with broader European and regional agendas. The thematic focus of PRIMA also aligns closely with Italy's domestic R&I challenges, especially in the country's southern regions.

Italy is now playing a central role in shaping the next phase of the partnership. As part of the development of PRIMA 2, Italy is co-leading, alongside Spain, the design of the new Strategic Research and Innovation Agenda (SRIA). This work includes exploring the expansion of PRIMA's thematic scope to include new areas such as renewable energy and health, as well as extending the geographical reach of the partnership to other adjacent regions, including the Black Sea.

Italy's commitment to PRIMA is not only financial and institutional - it is strategic. The country views PRIMA as a key tool to deliver practical, science-based solutions to shared Mediterranean challenges while reinforcing regional partnerships and European cohesion.

## *Future outlook*

Looking ahead, Italy remains firmly committed to deepening and expanding its research and innovation collaboration within the Mediterranean region. PRIMA has proven to be a valuable and effective framework for addressing shared regional challenges, and Italy is actively working to ensure the partnership continues to evolve in line with future needs and priorities.

The recent decision to extend PRIMA beyond its original timeframe reflects strong political and institutional support at both national and European levels. Italy has already confirmed its continued financial commitment for the additional three-year extension period and has taken on a leadership role in co-designing the future direction of the partnership. PRIMA 2 is expected to build on the successes of the current programme while addressing identified gaps and opportunities. This includes potential expansion of thematic areas to cover new but related domains such as renewable energy, public health, and resource circularity, which are increasingly

important in the context of climate adaptation and sustainable development. Italy strongly supports this evolution, recognising the interconnected nature of Mediterranean challenges and the need for integrated, cross-sectoral approaches.

Italy is also aware of the importance of improving inclusiveness and strengthening the role of Southern Mediterranean countries within PRIMA. Future efforts will likely place greater emphasis on building capacity, encouraging leadership roles for Southern partners, and promoting stronger South-South collaboration. This is seen as essential to ensuring the long-term sustainability and balance of the partnership.

Going forward, Italy aims to build on the momentum and progress that has been made by continuing to invest in Mediterranean collaboration, leveraging PRIMA as a platform for innovation, diplomacy, and regional integration. Through its leadership, Italy will help ensure that the next phase of PRIMA is not only responsive to emerging challenges but also fit for purpose in a changing geopolitical and environmental landscape.

# Annex

| Main indicators for Partnerships in H2020+ Horizon Europe based on available data | Italy | France | Germany | Spain | EU14 average | EU13 average | EU27 AVERAGE |
|---|---|---|---|---|---|---|---|
| Total actual investments in partnership calls (€ m) (H2020+ HEU) | 521 | 745 | 1515 | 497 | 325 | 89 | 232 |
| Number of participating member organisations to partnerships | 75 | 108 | 87 | 87 | 46 | 16 | 31 |
| Number of parnership calls with specific country participation | 396 | 544 | 603 | 520 | 369 | 187 | 281 |
| Number of full-proposals submitted to partnership calls (*) | | | | | | | |
| Number of eligible proposals submitted to partnership calls (*) | | | | | | | |
| Success rate (funded/full-proposals) (*) | | | | | | | |
| Number of partnership projects with specific country participation (**) | 1158 | 1571 | 2201 | 1410 | 847 | 166 | 519 |
| Number of total project participations from country (**) | 1902 | 2475 | 3848 | 2039 | 1325 | 221 | 794 |
| Total costs of project participation (€ m) (**) | 353 | 770 | 1290 | 509 | 391 | 37 | 220 |

Sources: ERA-LEARN database (cut-off date June/November 2024)
(*) Data not available yet

(**) Only H2020 Partnership data available

| Main R&I indicators | Italy | | | | Germany | France | Spain | EU 27 average |
|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2022 | 2022 | 2022 | 2022 | 2022 |
| GERD (as % of GDP) | 1.46 | 1.51 | 1.43 | 1.32 | 3.13 | 2.18 | 1.44 | 2.11 |
| Percentage of GERD funded by the business sector | 55.90 | 52.80 | 53.90 | - | 62,8 (2021) | 55,4 (2021) | 50,2 (2021 ) | 57 (2021) |
| Percentage of GERD funded by government | 32.30 | 33.70 | 35.10 | - | 30 (2021) | 32,5 (2021) | 37,5 (2021) | 30,8 (2021) |
| Percentage of GERD funded by rest of the world | 9.60 | 11.30 | 8.80 | - | 6,9 (2021) | 7,7 (2021) | 7,5 (2021) | 9,9 (2021) |
| Percentage of GERD performed by the business sector | 63.20 | 61.80 | 60.20 | 58.60 | 67.40 | 65.80 | 56.40 | 65.80 |
| Percentage of GERD performed by higher education | 22.50 | 23.10 | 24.00 | 24.60 | 18.10 | 20.60 | 26.00 | 21.90 |
| Percentage of GERD performed by government | 12.60 | 13.20 | 14.00 | 14.80 | 12.10 | 11.60 | 17.20 | 10.80 |
| GOVERD (% of GDP) | 0.18 | 0.20 | 0.20 | 0.20 | 0.38 | 0.25 | 0.25 | 0.23 |
| percentage of GOVERD financed by the business sector | 3.90 | 3.80 | 3.20 | - | 7,9 (2021) | 6,9 (2021) | 8,3 (2021) | 6,9 (2021) |
| HERD (as % of GDP) | 0.33 | 0.35 | 0.34 | 0.33 | 0.57 | 0.45 | 0.37 | 0.46 |
| percentage of HERD financed by the business sector | 6.00 | 6.00 | 6.80 | - | 13,1 (2021) | 3,1 (2021) | 5,3 (2021) | 7 (2021) |
| BERD (% of GDP) | 0.92 | 0.93 | 0.86 | 0.77 | 2.11 | 1.43 | 0.81 | 1.39 |
| percentage of BERD fudned by the business sector | 85.50 | 82.30 | 85.80 | - | 88,5 (2021) | 81,8 (2021) | 84 (2021) | 83,2 (2021) |
| percentage of BERD fudned by government | 4.20 | 4.70 | 4.40 | - | 3,5 (2021) | 9,4 (2021) | 8,7 (2021) | 5,7 (2021) |
| percentage of BERD funded by rest of the world | 10.20 | 12.90 | 9.50 | - | 7,9 (2021) | 8,6 (2021) | 7 (2021) | 10,8 (2021) |
| Total national public funding to transnationally coordinated R&D (€ million) (EUROSTAT) | 779.88 | 878.91 | 827.18 | 928.30 | 1359.92 | - | 615.06 | 4571.48 |
| Total researchers (full-time equivalent) | 160,824 | 156,989 | 158,960 | 160,741 | 484,823 | 345,617 | 161,751 | 2,072,456 |
| International scientific co-publications per million pop | | | | 119 (2024) | 123,2 (2024) | 99,9 (2024) | 125,1 (2024) | |
| Share of country's publications in top 10% most-cited worldwide | | | | 118,9 (2024) | 102,9 (2024) | 84,5 (2024) | 86,3 (2024) | |
| PCT patent applications EIS 2024 | | | | 76,8 (2024) | 121,3 (2024) | 91,7 (2024) | 64 (2024) | |
| ERC projects | | | | 58 | 137 | 82 | 59 | |

OECD STI Indicators, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB&_ga=2.10058678.2035126309.1548251117-1585184866.1542984834

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