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# Study on the R&I measures in the Recovery and Resilience Facility

Final Report

**Study on the R&I measures in the Recovery and Resilience Facility**

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## Final Report

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## List of abbreviations

| | |
|---|---|
| AI | Artificial Intelligence |
| ANCT | National Agency for Cohesion of Territories, FR |
| BRG | Better Regulation Guidelines |
| BRT | Better Regulation Toolbox |
| CCIs | Cultural and Creative Industries |
| CDTI | Centre for the Development of Industrial Technology, ES |
| CF | Cohesion Fund |
| CIDs | Council Implementing Decisions |
| CIS | Cloud Infrastructure and Services |
| CoLABs | Collaborative Laboratories |
| CORDIS | Community Research and Development Information Service |
| CPF | Cohesion Policy Funding |
| CSRs | Country Specific Recommendations |
| CTIs | Centres for Technology and Innovation |
| DG ECFIN | Directorate-General for Economic and Financial Affairs |
| DG RTD | Directorate-General for Research and Innovation |
| DNSH | Do No Significant Harm (principle) |
| ECA | European Court of Auditors |
| EC | European Commission |
| EIC | European Innovation Council |
| EIE | European Innovation Ecosystem |
| EOSC | European Open Science Cloud |
| EQ | Evaluation Question |
| ERDF | European Regional Development Fund |
| ERA | European Research Area |
| ERC | European Research Council |
| ESF+ | European Social Fund Plus |
| EU | European Union |
| FENIX | Financial and Economic NextGenerationEU Information System |
| FIDELIO | Fully Interregional Dynamic Econometric Long-term Input-Output |
| FP10 | 10th Framework Programme for Research and Innovation |
| FTE | Full-Time Equivalent |
| GBARD | Government Budget Allocations for R&D |

| | |
|---|---|
| GDP | Gross Domestic Product |
| GERD | Gross Domestic Expenditure on R&D |
| GOVERD | Government Intramural Expenditure on R&D |
| HE | Horizon Europe |
| HEI | Higher Education Institution |
| H2020 | Horizon 2020 |
| ICT | Information and Communication Technology |
| IPCEI | Important Projects of Common European Interest |
| IT | Information Technology |
| KPI | Key Performance Indicator |
| MFF | Multiannual Financial Framework |
| MS | Member State |
| MSTI | Main Science and Technology Indicators (OECD) |
| M&T | Milestones and Targets |
| NEIA | New European Innovation Agenda |
| NGO | Non-Governmental Organisation |
| OECD | Organisation for Economic Co-operation and Development |
| PIA | Investments for the Future Programme, FR |
| R&D | Research and Development |
| RDI | Research, Development and Innovation |
| R&I | Research and Innovation |
| RIS | Regional Innovation Scoreboard |
| RIS3 / S3 | Research and Innovation Strategies for Smart Specialisation |
| RRF | Recovery and Resilience Facility/Fund |
| RRP | Recovery and Resilience Plan |
| SG REFORM | Secretariat-General Structural Reform Support Service |
| SMEs | Small and Medium-sized Enterprises |
| SO | Specific Objective |
| STEP | Strategic Technologies for Europe Platform |
| STEM | Science, Technology, Engineering and Mathematics |
| TEN-T | Trans-European Transport Network |
| TRL | Technology Readiness Level |
| UEFISCDI | Executive Agency for Higher Education, Research, Development and Innovation Funding (RO) |
| VAT | Value Added Tax |

# Glossary

**Community Research and Development Information Service (CORDIS):** European Commission's primary public repository and portal for disseminating information on all EU-funded research and innovation projects and their results. It provides comprehensive access to project data, including participants, objectives, deliverables, publications, and outcomes across various thematic domains such as health, energy, food, and digital technologies

**Council Implementing Decision (CID):** Decision by the Council of the EU approving a Member State's RRP, setting the specific reforms, investments, milestones, targets, and timetable to access funding.

**Country-specific recommendation (CSR):** Individual recommendations provided to EU Member States in the context of the European Semester, identifying national challenges and priorities.

**Do No Significant Harm (DNSH) principle**: The principle of not supporting or carrying out activities that cause significant harm to environmental objectives, in line with Article 17 of Regulation (EU) 2020/852.

**Government Budget Allocations for Research and Development (GBARD):** A statistical measure used by Eurostat to quantify the financial support that governments across the European Union allocate to R&D activities.

**Investments:** Expenditure financed under the RRF to implement projects, programmes, or infrastructures in line with RRPs. Investments are financial measures and require proof of completion of agreed milestones and targets before payments are made.

**Measure:** An investment or reform included in a Member State's Recovery and Resilience Plan (RRP), financed by the Recovery and Resilience Facility. Each measure is linked to milestones and targets, which must be fulfilled before funding is disbursed.

**Milestones and Targets (M&Ts):** Measures of progress towards the achievement of a reform or an investment, with milestones being qualitative achievements and targets being quantitative achievements - Art.2 of the Recovery and Resilience Facility (RRF) Regulation.

**Payment Request:** Formal request by a Member State to the European Commission for disbursement of RRF funds, conditional on achievement of agreed milestones and targets.

**Performance-based funding:** A funding mechanism under the RRF where disbursements are made only after Member States achieve predefined M&Ts, rather than reimbursing costs.

**Recovery and Resilience Facility (RRF):** The EU's temporary financial instrument (2021–2026) providing grants and loans to support reforms and investments after the COVID-19 crisis.

**Recovery and Resilience Plan (RRP):** National plan prepared by each Member State, detailing reforms and investments to be financed under the RRF.

**Reforms:** Structural or regulatory changes included in a Member State's Recovery and Resilience Plan (RRP), designed to address country-specific recommendations, strengthen resilience, and support the green and digital transitions. They are non-financial measures but are linked to disbursements through milestones and targets.

# Abstract

This evaluation assesses how the Recovery and Resilience Facility (RRF) supported research and innovation (R&I) across the EU27 by analysing 387 R&I measures in national Recovery and Resilience Plans (cut-off date March 2025). Conducted in the period January–September 2025, the study triangulates desk research, 66 national interviews, two targeted surveys (60 Member State authority responses; 667 target-group responses), country fiches and three multi-country case studies. The evaluation findings show that the implementation progress and impact vary across Member States, with many R&I milestones and targets already met, but many measures still ongoing. Overall, the RRF proves broadly effective in the area of R&I, particularly in emerging and moderate innovator countries. Furthermore, the RRF measures are aligned and contributed to the implementation of R&I-related Country-Specific Recommendations (CSR). At the same time, in some Member States, administrative complexity and capacity constraints limit the efficiency and the full potential impact of the RRF. The Facility complemented Horizon Europe and Cohesion Policy in many cases, while the support provided continues to be relevant in light of its original objectives and the evolving strategic context. The study suggests various possible takeaways related, among others, to continued focus on CSRs, anchoring measures in existing national strategies, sustaining R&I investments post-2026, improved administrative processes and governance.

# Executive Summary

## Introduction

This evaluation examines how the Recovery and Resilience Facility (RRF) supported research & innovation (R&I) across the EU27 by assessing the R&I-related investments and reforms included in national Recovery and Resilience Plans (RRPs). It was drafted in January-September 2025 by a consortium led by Ecorys, in partnership with CSIL, Wavestone, and NIESR, under the framework contract ECFIN/048/2023 "Provision of evaluation and evaluation-related services". The study's objective is to provide an independent, evidence-based assessment of the RRF R&I measures, amounting to €55.6 billion, against the five Better-Regulation criteria (effectiveness, efficiency, relevance, coherence, and EU added value), to summarise the implementation status (cut-off March 2025), and to draw lessons that can inform future R&I funding instruments. The study covers 387 R&I measures and, among others, aims to feed into policy discussions on complementarities with other R&I instruments and initiatives such as Horizon Europe and Cohesion Policy.

## Methodology and limitations

The evaluation brings together evidence from desk research (official documents, extractions from the European Commission's internal RRF monitoring tool FENIX, Eurostat, and academic/grey literature), 66 targeted national interviews, two targeted surveys (one for Member State authorities with a total of 60 responses, and one for RRF target groups – 667 responses) resulting in an evaluation report, three multi-country case studies, covering different groups of Member States based on their European Innovation Scoreboard classification, and country fiches. R&I measures were classified into macro-areas (Scientific excellence, R&D ecosystems, Business innovation, and a Cross-cutting area for reforms) and further into investment and reform sub-areas; descriptive statistics and a Difference-in-Differences exploratory exercise were also used for an R&D indicator analysis. Key constraints were uneven survey/interview response rates among countries and the short implementation horizon for many R&I investments, which limited definitive statements about long-term impacts.

## Main conclusions

### Effectiveness

The RRF has been broadly effective in enabling R&I reforms and investments across Member States, though its effectiveness varies across countries, and many R&I measures are still ongoing. Around **70% of EU countries** have already fulfilled R&I-related milestones and targets, while **over 75% of national authorities** report that the RRF was effective to some or a large extent. At the same time, the overall implementation is partially behind the indicative schedule provided in the Council Implementing Decisions (CIDs) of the plans, raising the risk of delays in comparison with the original indicative planning. The number of R&I-related milestones/targets planned until Q4 2024 is 390, i.e. the completed (not assessed) and fulfilled targets/milestones (334), as reported by the end of April 2025, stand at 86% of this indicative planning. Nevertheless, a significant share of survey respondents reported tangible results: more than 40% of end beneficiaries and over 20% of national authorities indicated that substantial outcomes have already been observed. The RRF has already provided support to over 163,000 researchers working in research facilities across 22 countries.

For some countries, the share of RRF R&I allocation over government budget allocations on research and development (GBARD) between 2021 and 2023 has been more than 50%, which shows the prominence of the RRF in supporting national R&I systems. The RRF has been an effective tool in directing R&I towards accelerating the **green transition** as well as **digitalisation** objectives. Around 35% of the total R&I expenditure of the plans was allocated to green R&I. Digital R&I was allocated a lower, but still significant proportion of the total budget for R&I than green R&I (9.3% of the total R&I budget).

The RRF has functioned as **a strategic lever for the European Semester**. Notably, the R&I-related CSRs have been integrated into RRPs, fostering enhanced ownership. The measures have facilitated progress in addressing the structural and long-standing challenges of R&I systems in the different Member States - out of 50 CSRs relating to R&I from the relevant years, 19 CSRs achieved some progress, 11 achieved substantial progress, and 5 were considered fully addressed. The RRF has successfully acted as **a catalyst for strengthening the R&I capacities of EU Member States**. In particular, RRF funding allocated to R&I measures has been primarily used to increase the innovation performance levels of firms, especially in moderate, leading and strong innovator countries, where this area has absorbed the largest share of allocations. The RRF has also been instrumental in improving science-business collaboration, particularly in emerging innovator countries. Scientific excellence was also enhanced in many Member States, primarily through infrastructure development, grants for research and talent acquisition and retention. The RRF functioned as **a catalyst for policy development, particularly in emerging and moderate innovator** countries, where the RRF facilitated the implementation of reforms and the enhancement of capacities that had previously been stalled.

To ensure the **sustainability** of the RRF measures, **several Member States have taken concrete steps to sustain R&I funding beyond 2026**, combining national budget allocations, structural reforms, and alignment with EU funding instruments (e.g. ERDF, Horizon Europe). At the same time, countries vary significantly in their readiness and commitment. **While some have formalised legislative frameworks and multi-annual plans, others** are **still exploring options or** remain **reliant on future EU funding cycles and political decisions.** There is generally a proactive attitude among beneficiaries in seeking further funding, particularly from public sources. However, the target group representatives are primarily looking for leveraging national and Horizon Europe financing, while other sources, such as the Cohesion Policy Funds, are less sought after. In only a few cases, the RRF projects represent a continuation of projects financed by private funds or have already applied for support under private banks/instruments.

### Efficiency

A majority of Member State authorities perceived the integration of R&I reforms and investments under the RRF as **generating efficiency gains**. Most survey respondents believed that combining reforms and investments under one instrument (RRF) improved implementation effectiveness, especially by aligning structural R&I reforms with targeted funding. Several Member States demonstrated how reforms (ranging from legal frameworks to governance structures) created enabling conditions for investment measures to proceed more smoothly, particularly in streamlining procedures, improving institutional coordination, and strengthening performance-based funding systems.

However, a factor limiting further efficiency gains was **administrative burden**, especially in countries with fragmented governance or limited capacity. Stakeholders consistently reported that the administrative burden, rigid procedures, and complex reporting requirements slowed down implementation. In several Member States, fragmented governance structures and the limited experience of national administrations in managing performance-based instruments further compounded these challenges, often leading to delays in procurement, weak coordination, and uneven capacity across ministries and agencies. The absence of sufficiently flexible mechanisms on allocations and spending, in comparison to other EU funding instruments such as the Cohesion Policy's rules, reduced Member States' ability to adapt to unforeseen circumstances. Collectively, these factors constrained the timely delivery of some R&I reforms and investments.

### Coherence

Overall, the RRF has **complemented other EU instruments for R&I**, **particularly Horizon Europe and Cohesion Policy**, by supporting systemic reforms and mobilising a significant amount of funds to address national-level priorities. RRF support to R&I stands out, compared to other funding instruments, for its support to national reforms, and while—like Horizon

Europe—it covers the whole innovation cycle, the RRF shows a relatively higher focus on downstream investments. The relationship between the RRF and Cohesion Policy has been marked by both complementarity and some overlap. In several countries, complementarities were ensured through thematic or temporal demarcation. Some Member States developed formal coordination mechanisms to prevent overlap and plan alignment, e.g. through Smart Specialisation Strategies, but with varying success. In some cases, the RRF helped fill territorial gaps in funding—supporting more developed regions or centralised institutions that received less support from ERDF. However, in some instances, both instruments supported similar types of R&I investments (especially grants to enterprises), leading to some competition for beneficiaries and crowding-out effects—especially in countries where RRF procedures were simpler and faster than those of Cohesion Policy. Complementarity between the RRF and InvestEU has remained modest, as few Member States activated the InvestEU MS compartment using RRF funds. Overall, **the RRF did not systematically displace other EU funding sources**.

The RRF has played a **complementary and, in many cases, significant role in reinforcing national R&I systems** across the EU, substantially depending on the existing capacity and innovation maturity of each Member State. In most Member States, **the RRF complemented rather than replaced national R&I funding**, providing an additional layer of support to advance strategic priorities. Although the R&I-related measures under the RRF were not specifically designed to align with the objectives of the **European Research Area (ERA) Policy Agenda or the New European Innovation Agenda (NEIA)**, they nonetheless show significant contributions to both.

### EU added value

The **RRF played a significant role in enabling, accelerating, and shaping R&I reforms and investments**, particularly in **emerging and moderate innovator countries**. Most Member State authorities reported that while many reforms and some investments were already foreseen, the RRF contributed to accelerating their implementation and enhancing their strategic focus and design. Survey responses and interviews show that the RRF was especially **critical for investments**. The added value of the RRF-supported measures in initiating/implementing R&I reforms and investments was particularly high among emerging innovators rather than in Member States with higher innovation classifications. **Leading innovator countries** often viewed the RRF as a financial accelerator of already established priorities, rather than a source of new strategic direction. Nevertheless, even in those contexts, the RRF helped to scale or fast-track existing initiatives.

While the **inclusion of R&I multi-country projects in national RRPs has been uneven**, there is significant potential to generate EU added value, particularly in strategic areas such as hydrogen, microelectronics, cloud infrastructure, and quantum technologies. However, the actual implementation of these projects remains at an early stage. The RRF's contribution has been stimulating in several cases, especially where projects were already in the pipelines and participation would have otherwise been financially or administratively out of reach by scaling up national ambitions and accelerating involvement in Important Projects of Common European Interest (IPCEIs). Yet, the Facility's **rigid timelines, administrative complexity, and performance-based structure have posed challenges for cross-border coordination**, especially in sectors where outcomes require long-term investment horizons.

### Relevance

The **R&I support provided through the RRF continues to be highly relevant in light of its original objectives and the evolving strategic context** at both EU and national levels. Evidence from the Recovery and Resilience Scoreboard, national implementation reports, and stakeholder interviews confirms that the RRF remains aligned with its initial goals and has also adapted to emerging priorities. 91% of the surveyed national authorities affirm the continued alignment of R&I measures with strategic priorities. This dynamic relevance is evident in the

alignment of RRF-funded initiatives with the EU's evolving policy frameworks, such as the European Green Deal, the Digital Strategy, and the Competitiveness Compass.

While most Member States consider the implementation of R&I measures under the RRF to be **feasible within the 2026 timeframe**, concerns remain regarding delays and structural bottlenecks. These challenges create a risk that governments may increasingly **prioritise measures that are faster or easier to implement**, thereby securing disbursements, but at the expense of more **ambitious and structurally impactful initiatives**.

### Lessons learned

Building on the main conclusions and the overall findings of the study, the paragraphs below provide takeaways for future policy-making that present either strategic or operational implications, as explained by the lessons learned listed below.

### Strategic lessons learned

#### Future instruments should maintain a strong focus on R&I-related Country-Specific Recommendations (CSRs)

The evaluation reveals that the RRF served as a strategic instrument of the European Semester, with R&I-related CSRs explicitly incorporated into the design of national Recovery and Resilience Plans. This ensured that reforms and investments contributed to addressing **structural bottlenecks** such as low R&D intensity, weak science–business collaboration, and limited institutional capacity, particularly in emerging and moderate innovator countries.

#### Future EU instruments should provide equally strong incentives for deeper R&I reforms in better-performing Member States

**In some strong/lead innovator countries, R&I reforms were limited or absent**, with RRF support focused on targeted investments. The R&I systems in these countries are well-established, but the RRF has not been used extensively to drive structural changes, such as enhancing R&I governance, making research careers more attractive, and creating a supportive environment for startups and scaleups. Yet, R&I systems in strong/leading innovators also continue to face important challenges, as confirmed by the 2025 Semester analysis and CSRs.

#### Future RRF-like interventions should be systematically anchored in relevant R&I strategies such as Smart Specialisation Strategies (S3) and other existing national frameworks

The evaluation shows that RRF-supported **reforms and investments embedded in existing national or regional strategies**, such as **S3,** ensured a more strategic and impactful use of funds, building upon existing regional strengths and avoiding the selection of ad-hoc projects. Integrating RRF funding into pre-existing, evidence-based strategic priorities enabled some Member States to reinforce their innovation ecosystems and achieve greater coherence in their R&I spending.

#### Embed policy evaluation systematically in the R&I policy cycle

The study found that in some Member States, ex-post assessments of initiatives established prior to the RRP, public consultations, needs assessments, and other ex-ante assessments helped identify R&I measures to put in place. Relevant EU instruments can be used to support these assessments, e.g. Horizon Europe Policy Support Facility and the Technical Support Instrument. Furthermore, determining whether interventions generate the intended policy effects requires structured, ongoing evaluation efforts, which are currently not explicitly mandated at national level within the RRF framework.

### A balance is needed between quick results and long-term impact, so the focus does not fall mostly on higher TRL technologies

The RRF's accelerated timeline sometimes prompted **a selective focus on projects with higher Technology Readiness Levels** (TRL), particularly in emerging innovators, where applied research with quicker commercialisation potential was prioritised. This urgency-driven structure aligned with the Facility's design but sidelined to some extent longer-term or foundational research. In some countries, the pressure to meet the 2026 deadline often redirected more complex or time-intensive projects toward Cohesion Policy instruments, revealing a strategic narrowing toward fast-tracked, near-market initiatives.

### More government efforts are needed to sustain R&I investments after 2026

Concerning the **financial sustainability of the measures post-RRF**, significant variation persists across the EU, with many countries still lacking clear, binding commitments on how the higher levels of R&D funding can be maintained. In these cases, long-term sustainability will depend on future political decisions, evolving fiscal conditions, and the successful integration of RRF-driven reforms into national innovation ecosystems and EU budgetary frameworks.

### Future EU instruments should consider more dedicated support for gender equality in R&I

**Dedication to gender equality in R&I varied widely** across Member States. Only some countries include R&I measures explicitly integrating gender perspectives. The absence of consistent gender provisions meant that the RRF did not fully seize the opportunity to tackle **persistent gender gaps in R&I systems**, such as women's underrepresentation in STEM fields, limited access to leadership roles, and barriers to participation in innovation ecosystems.

### The design of future EU instruments needs to combine national flexibility with stronger incentives for transnational cooperation

While the RRF succeeded in strengthening domestic R&I systems, **it fell short of realising its full potential to foster EU-wide collaboration**. With few cross-border initiatives and limited emphasis on shared European priorities in R&I, the opportunity to build a more integrated and resilient European innovation ecosystem was only partially seized. Despite R&I being central to shared EU priorities, the RRF was mainly implemented through national channels. While several Member States engaged in IPCEIs, the RRF's contribution to initiating new multi-country R&I projects appears limited.

**Procedural/operational lessons learned**

### Future EU instruments should reduce administrative complexity and increase procedural flexibility in the implementation of R&I measures

The RRF experience shows that **administrative complexity and rigid procedures** can hinder the efficient implementation of R&I measures. Excessive documentation and time-consuming approval processes for changes created additional administrative burden for both authorities and target groups. Ideally, **future instruments should further aim to simplify reporting requirements and allow for more agile budget modifications**, enabling projects to adapt to evolving needs without compromising accountability.

### Amending future national plans should follow a simple procedure

The process of amending RRPs has been identified as a **key aspect** in the context of R&I measures in several countries. This is particularly relevant in the context of evolving economic priorities and changing circumstances, such as inflationary pressures, procurement delays, and the uncertainty surrounding the achievement of desired outcomes in R&I projects. The process is often criticised for its lack of flexibility and the significant time investment it demands, even though **flexibility has improved**.

### More attention is needed to the governance models

A key lesson from the implementation of R&I measures under the RRF is the critical importance of a **well-structured governance system** that ensures precise coordination and sufficient administrative capacity. Countries with streamlined governance models, where roles were clearly defined and coordination between ministries, implementing agencies, and research stakeholders was institutionalised, were able to deliver reforms and investments more efficiently.

### Complementarity must be deliberately planned, and early coordination is key

**Complementary** use of the RRF, Horizon Europe, and Cohesion Policy **does not occur automatically**. It necessitates a clear, overarching strategic vision at the national level. Member States that engaged in early coordination and demarcation (whether thematically, temporally, or territorially) were more successful in creating synergies.

### Better data sharing, interoperable systems, and common tracking tools are needed to support coordinated planning and monitoring

**Data access and transparency** are essential for identifying and avoiding duplication. Some Member States indicated that better access to detailed information on EU-funded projects across different funding mechanisms could help in reducing overlap and boosting coherence. Furthermore, there is an absence of a centralised database tracking co-financing for R&I projects under the RRF.

# Résumé exécutif


### Introduction

Cette évaluation examine comment la facilité pour la reprise et la résilience (FRR) a soutenu la recherche et l'innovation (R&I) dans l'UE27 en évaluant les réformes et investissements en matière de R&I dans les plans nationaux de reprise et de résilience (PNRR). Elle a été rédigée entre janvier et septembre 2025 par un consortium dirigé par Ecorys, en partenariat avec CSIL, Wavestone et NIESR, dans le cadre du contrat-cadre ECFIN/048/2023 « Prestation de services d'évaluation et services liés à l'évaluation ». L'objectif de l'étude est de fournir une évaluation indépendante et fondée sur des preuves des mesures R&I de la FRR, représentant 55,6 milliards d'euros, selon les cinq critères « Mieux Légiférer » (efficacité, efficience, pertinence, cohérence et valeur ajoutée européenne), de résumer l'état d'avancement de la mise en œuvre (date limite mars 2025) et de tirer des enseignements pour les futurs instruments de financement de la R&I. L'étude couvre 387 mesures R&I et vise, entre autres, à alimenter les discussions politiques sur les complémentarités avec d'autres instruments et initiatives R&I tels qu'Horizon Europe et la politique de cohésion.

### Méthodologie et limites

L'évaluation rassemble des preuves issues de la recherche documentaire (documents officiels, extractions de l'outil interne de suivi FRR de la Commission européenne FENIX, Eurostat et littérature académique/grise), 66 entretiens nationaux ciblés, deux enquêtes ciblées (une pour les autorités des États membres avec un total de 60 réponses, et une pour les groupes cibles de la FRR avec 667 réponses) aboutissant à un rapport d'évaluation, trois études de cas multi-pays couvrant différents groupes d'États membres selon leur classement au tableau de bord européen de l'innovation, et des fiches-pays. Les mesures R&I ont été classées en macro-domaines (excellence scientifique, écosystèmes de R&D, innovation des entreprises et un domaine transversal pour les réformes) et en sous-domaines d'investissement et de réforme ; des statistiques descriptives et un exercice exploratoire de différence des différences ont également été utilisés pour l'analyse des indicateurs R&D. Les obstacles principaux dans le cadre de l'analyse ont pris la forme de taux de réponse inégaux aux enquêtes/entretiens selon les pays, ainsi qu'un horizon de mise en œuvre court pour de nombreux investissements en matière de R&I, limitant l'élaboration d'affirmations définitives sur les impacts à long terme.

### Principales conclusions

#### Efficacité

La FRR a été globalement efficace pour permettre des réformes et investissements en matière de R&I dans les États membres, bien que son efficacité varie selon les pays et que de nombreuses mesures soient encore en cours. **Environ 70 % des pays de l'UE** ont déjà rempli les jalons et objectifs liés à la R&I, tandis que **plus de 75 % des autorités nationales** estiment que la FRR a été efficace dans une certaine mesure. Cependant, la mise en œuvre globale est partiellement en retard par rapport au calendrier indicatif des décisions d'exécution du Conseil, ce qui augmente le risque de retards. Le nombre de jalons/objectifs R&I prévus jusqu'au T4 2024 est de 390, dont 334 (86 %) ont été atteints ou remplis fin avril 2025. Néanmoins, une part significative des répondants a signalé des résultats tangibles : plus de 40 % des bénéficiaires finaux et plus de 20 % des autorités nationales ont indiqué que des résultats substantiels ont déjà été observés. La FRR a déjà soutenu plus de 163 000 chercheurs dans des infrastructures de recherche dans 22 pays.

Dans certains pays, la part de l'allocation FRR R&I par rapport aux budgets gouvernementaux pour la recherche et le développement (GBARD) entre 2021 et 2023 a dépassé 50 %, ce qui montre l'importance de la Facilité pour le soutien des systèmes nationaux de R&I. La FRR a été un outil efficace pour orienter la R&I vers **l'accélération de la transition verte** et des **objectifs de numérisation**. Environ 35 % des dépenses totales R&I des plans ont été allouées à la R&I verte. La R&I numérique a reçu une part moindre, mais significative, du budget total R&I (9,3 %).

La FRR a servi de **levier stratégique pour le Semestre européen**. Les recommandations par pays liées à la R&I ont été intégrées dans les PNRR, favorisant une appropriation accrue. Les mesures ont permis de progresser dans la résolution des défis structurels et persistants des systèmes de R&I des États membres : sur 50 recommandations par pays liées à la R&I, 19 ont progressé, 11 ont progressé de manière substantielle et 5 ont été pleinement atteintes. La FRR a agi comme **catalyseur pour renforcer les capacités R&I des États membres de l'UE**, notamment en augmentant la performance d'innovation des entreprises, en particulier dans les pays innovateurs modérés, leaders et forts, où ce domaine a absorbé la plus grande part des allocations. La FRR a également été déterminante pour améliorer la collaboration science-entreprise, surtout dans les pays innovateurs émergents. L'excellence scientifique a été renforcée dans de nombreux États membres, principalement grâce au développement des infrastructures, aux subventions pour la recherche et à l'acquisition et la rétention de talents. La FRR a servi de **catalyseur pour le développement des politiques, notamment dans les pays innovateurs émergents et modérés**, où elle a facilité la mise en œuvre de réformes et le renforcement de capacités auparavant à l'arrêt.

Pour assurer la **durabilité** des mesures FRR, **plusieurs États membres ont pris des mesures concrètes pour pérenniser le financement R&I après 2026**, en combinant allocations budgétaires nationales, réformes structurelles et alignement avec les instruments de financement de l'UE (ex. FEDER, Horizon Europe). **Cependant, les pays varient considérablement dans leur préparation et leur engagement. Certains ont formalisé des cadres législatifs et des plans pluriannuels**, d'autres **explorent encore des options** ou restent dépendants des **futurs cycles de financement de l'UE et des décisions politiques**. Les bénéficiaires sont généralement proactifs dans la recherche de financements supplémentaires, principalement publics, notamment via Horizon Europe, tandis que les fonds de la politique de cohésion sont moins recherchés. Dans quelques cas, les projets FRR représentent la continuation de projets financés par des fonds privés ou ont déjà sollicité un soutien auprès de banques/instruments privés.

### Efficience

La majorité des autorités nationales ont perçu l'intégration des réformes et investissements en matière de R&I dans la FRR comme **générant des gains d'efficience**. La plupart des répondants estiment que la combinaison des réformes et investissements sous un même instrument (FRR) a amélioré l'efficacité de la mise en œuvre, notamment en alignant les réformes structurelles en matière de R&I avec des financements ciblés. Plusieurs États membres ont montré comment les réformes (cadres juridiques, structures de gouvernance) ont créé des conditions favorables pour que les mesures d'investissement se déroulent plus facilement, en particulier en simplifiant les procédures, en améliorant la coordination institutionnelle et en renforçant les systèmes de financement axés sur la performance.

Toutefois, un facteur limitant les gains d'efficience supplémentaires a été la **charge administrative**, surtout dans les pays à gouvernance fragmentée ou à capacité limitée. Les parties prenantes ont signalé que la charge administrative, les procédures rigides et les exigences complexes en matière de rapports ralentissaient la mise en œuvre. Dans plusieurs

États membres, la fragmentation des structures de gouvernance et le manque d'expérience des administrations nationales dans la gestion d'instruments axés sur la performance ont aggravé ces défis, entraînant souvent des retards dans les marchés publics, une coordination faible et une capacité inégale entre ministères et agences. L'absence de mécanismes suffisamment flexibles pour les allocations et les dépenses, par rapport à d'autres instruments de financement de l'UE tels que les règles de la politique de cohésion, a réduit la capacité des États membres à s'adapter aux circonstances imprévues. Collectivement, ces facteurs ont limité la livraison en temps voulu de certaines réformes et investissements en matière de R&I.

### Cohérence

Globalement, la FRR **a complété d'autres instruments de l'UE pour la R&I, notamment Horizon Europe et la politique de cohésion**, en soutenant des réformes systémiques et en mobilisant des fonds importants pour répondre aux priorités nationales. Le soutien FRR à la R&I se distingue par son appui aux réformes nationales et, bien qu'il couvre tout le cycle d'innovation comme Horizon Europe, il met davantage l'accent sur les investissements en aval. La relation entre la FRR et la politique de cohésion a été marquée à la fois par la complémentarité et par certains chevauchements. Dans plusieurs pays, la complémentarité a été assurée par une démarcation thématique ou temporelle. Certains États membres ont mis en place des mécanismes de coordination formels pour éviter les chevauchements et planifier l'alignement, par exemple via les stratégies de spécialisation intelligente, avec des succès variables. Dans certains cas, la FRR a permis de combler des lacunes territoriales de financement, soutenant des régions plus développées ou des institutions centralisées moins soutenues par le FEDER. Cependant, les deux instruments ont parfois soutenu des types similaires d'investissements en matière de R&I (notamment des subventions aux entreprises), entraînant une concurrence pour les bénéficiaires et des effets d'éviction, surtout dans les pays où les procédures FRR étaient plus simples et rapides que celles de la politique de cohésion. La complémentarité entre la FRR et InvestEU est restée modeste, peu d'États membres ayant activé le compartiment InvestEU avec des fonds FRR. Globalement, **la FRR n'a pas systématiquement remplacé d'autres sources de financement de l'UE.**

La FRR a joué un rôle **complémentaire et, dans de nombreux cas, significatif pour renforcer les systèmes nationaux de R&I** dans l'UE, dépendant fortement de la capacité existante et de la maturité de l'innovation de chaque État membre. Dans la plupart des États membres, **la FRR a complété plutôt que remplacé le financement national de la R&I**, apportant un soutien supplémentaire pour faire avancer les priorités stratégiques. Bien que les mesures R&I de la FRR n'aient pas été spécifiquement conçues pour s'aligner sur les objectifs de **l'agenda politique de l'Espace européen de la recherche (ERA) ou du Nouvel agenda européen de l'innovation (NEIA**), elles montrent néanmoins des contributions significatives aux deux.

### Valeur ajoutée européenne

La **FRR a joué un rôle important pour permettre, accélérer et façonner les réformes et investissements en matière de R&I**, en particulier dans les **pays innovateurs émergents et modérés**. La plupart des autorités nationales ont indiqué que, si de nombreuses réformes et certains investissements étaient déjà prévus, la FRR a contribué à accélérer leur mise en œuvre et à renforcer leur orientation stratégique. Les réponses aux enquêtes et les entretiens montrent que la FRR a été **particulièrement déterminante pour les investissements**. La valeur ajoutée des mesures soutenues par la FRR pour initier/mettre en œuvre des réformes et investissements en matière de R&I a été particulièrement élevée chez les innovateurs émergents, moins dans les États membres à forte classification d'innovation. **Les pays innovateurs leaders** considèrent souvent la FRR comme un accélérateur financier de priorités

déjà établies, plutôt que comme une source de nouvelle orientation stratégique. Néanmoins, même dans ces contextes, la FRR a permis de développer ou d'accélérer des initiatives existantes.

Bien que l'inclusion de **projets R&I multi-pays dans les PNRR nationaux ait été inégale**, il existe un potentiel important pour générer une valeur ajoutée européenne, notamment dans des domaines stratégiques tels que l'hydrogène, la microélectronique, l'infrastructure cloud et les technologies quantiques. Cependant, la mise en œuvre réelle de ces projets en est encore à ses débuts. La contribution de la FRR a été stimulante dans plusieurs cas, surtout lorsque les projets étaient déjà en préparation et que la participation aurait été financièrement ou administrativement hors de portée, en augmentant les ambitions nationales et en accélérant l'implication dans les projets importants d'intérêt européen commun (IPCEI). Pourtant, les **délais rigides, la complexité administrative et la structure axée sur la performance de la Facilité ont posé des défis pour la coordination transfrontalière**, notamment dans les secteurs nécessitant des investissements à long terme.

### Pertinence

Le **soutien R&I apporté par la FRR reste très pertinent au regard de ses objectifs initiaux et du contexte stratégique évolutif** aux niveaux européen et national. Les données du tableau de bord de la reprise et de la résilience, des rapports nationaux de mise en œuvre et des entretiens avec les parties prenantes confirment que la FRR reste alignée sur ses objectifs initiaux et s'est également adaptée aux priorités émergentes. 91 % des autorités nationales interrogées confirment l'alignement continu des mesures R&I avec les priorités stratégiques. Cette pertinence dynamique se manifeste dans l'alignement des initiatives financées par la FRR avec les cadres politiques évolutifs de l'UE, tels que le Pacte vert européen, la stratégie numérique et la boussole de compétitivité.

Bien que la plupart des États membres considèrent la mise en œuvre des mesures R&I dans le cadre de la FRR comme **réalisable d'ici 2026**, des inquiétudes subsistent concernant les retards et les blocages structurels. Ces défis créent un risque que les gouvernements **privilégient de plus en plus les mesures plus rapides ou plus faciles à mettre en œuvre**, garantissant ainsi les décaissements, mais au détriment d'initiatives **plus ambitieuses et à fort impact structurel**.

## Enseignements tirés

En s'appuyant sur les principales conclusions et les résultats globaux de l'étude, les paragraphes ci-dessous présentent des enseignements pour l'élaboration des politiques futures, qui comportent des implications stratégiques ou opérationnelles, comme expliqué dans la liste des enseignements tirés.

## Leçons stratégiques

### Les futurs instruments devraient maintenir un fort accent sur les recommandations spécifiques par pays liées à la R&I

L'évaluation montre que la FRR a servi d'instrument stratégique du Semestre européen, avec des recommandations par pays liées à la R&I explicitement intégrées dans la conception des PNRR. Cela a permis que les réformes et les investissements contribuent à résoudre des **goulets d'étranglement structurels** tels qu'une faible intensité de R&D, une collaboration

science-entreprise insuffisante et une capacité institutionnelle limitée, en particulier dans les pays innovateurs émergents et modérés.

### Les futurs instruments de l'UE devraient offrir des incitations tout aussi fortes pour des réformes en matière de R&I plus profondes dans les États membres les mieux classés

**Dans certains pays innovateurs forts ou leaders, les réformes en matière de R&I étaient limitées ou absentes,** le soutien de la FRR étant concentré sur des investissements ciblés. Les systèmes de R&I de ces pays sont bien établis, mais la FRR n'a pas été largement utilisée pour induire des changements structurels, tels que l'amélioration de la gouvernance R&I, l'attractivité des carrières de recherche et la création d'un environnement favorable aux start-ups et scale-ups. Pourtant, ces systèmes continuent de faire face à des défis importants, comme le confirment l'analyse du Semestre 2025 et les recommandations par pays.

### Les interventions de type FRR devraient être systématiquement ancrées dans des stratégies R&I pertinentes telles que les stratégies de spécialisation intelligente (S3) et autres cadres nationaux existants

L'évaluation montre que les **réformes et investissements soutenus par la FRR, intégrés dans des stratégies nationales ou régionales existantes telles que S3**, ont permis une utilisation plus stratégique et efficace des fonds, en s'appuyant sur les forces régionales existantes et en évitant la sélection de projets ad hoc. L'intégration du financement FRR dans des priorités stratégiques préexistantes et fondées sur des preuves a permis à certains États membres de renforcer leurs écosystèmes d'innovation et d'atteindre une plus grande cohérence dans leurs dépenses R&I.

### Intégrer systématiquement l'évaluation des politiques dans le cycle de la politique R&I

L'étude a constaté que, dans certains États membres, des évaluations ex post d'initiatives antérieures à la FRR, des consultations publiques, des analyses des besoins et d'autres évaluations ex ante ont aidé à identifier les mesures R&I à mettre en place. Des instruments de l'UE pertinents peuvent soutenir ces évaluations, par exemple la facilité de soutien aux politiques d'Horizon Europe et l'Instrument d'appui technique. De plus, déterminer si les interventions produisent les effets politiques escomptés nécessite des efforts d'évaluation structurés et continus, qui ne sont actuellement pas explicitement exigés au niveau national dans le cadre de la FRR.

### Un équilibre est nécessaire entre résultats rapides et impact à long terme, afin que l'accent ne soit pas mis principalement sur les technologies à TRL élevé

Le calendrier accéléré de la FRR a parfois favorisé **une sélection de projets à niveau de maturité technologique (TRL)** élevé, en particulier dans les pays innovateurs émergents, où la recherche appliquée à potentiel de commercialisation rapide était privilégiée. Cette structure, dictée par l'urgence, était conforme à la conception de la Facilité mais a quelque peu mis de côté la recherche fondamentale ou à plus long terme. Dans certains pays, la pression pour respecter l'échéance de 2026 a souvent réorienté les projets plus complexes ou longs vers les instruments de la politique de cohésion, révélant un recentrage stratégique sur des initiatives accélérées et proches du marché.

### Davantage d'efforts gouvernementaux sont nécessaires pour pérenniser les investissements en matière de R&I après 2026

Concernant la **durabilité financière des mesures après la FRR**, des différences importantes subsistent dans l'UE, de nombreux pays n'ayant pas encore pris d'engagements clairs et

contraignants sur la manière de maintenir des niveaux élevés de financement R&D. Dans ces cas, la pérennité à long terme dépendra des décisions politiques futures, de l'évolution des conditions budgétaires et de l'intégration réussie des réformes induites par la FRR dans les écosystèmes nationaux d'innovation et les cadres budgétaires de l'UE.

### Les futurs instruments de l'UE devraient prévoir un soutien plus dédié à l'égalité de genre dans la R&I

**L'engagement en faveur de l'égalité de genre dans la R&I varie fortement selon les États membres**. Seuls certains pays incluent des mesures R&I intégrant explicitement la dimension de genre. L'absence de dispositions cohérentes en matière de genre a empêché la FRR de saisir pleinement l'opportunité de s'attaquer aux **écarts persistants**, tels que la sous-représentation des femmes dans les STIM, l'accès limité aux postes de direction et les obstacles à la participation dans les écosystèmes d'innovation.

### La conception des futurs instruments de l'UE doit combiner flexibilité nationale et incitations plus fortes à la coopération transnationale

Si la FRR a permis de renforcer les systèmes R&I nationaux, **elle n'a pas pleinement réalisé son potentiel pour encourager la collaboration à l'échelle européenne**. Avec peu d'initiatives transfrontalières et une attention limitée aux priorités européennes partagées en R&I, l'opportunité de construire un écosystème d'innovation européen plus intégré et résilient n'a été que partiellement saisie. Malgré le rôle central de la R&I dans les priorités européennes, la FRR a été principalement mise en œuvre via des canaux nationaux. Bien que plusieurs États membres aient participé à des IPCEI, la contribution de la FRR au lancement de nouveaux projets R&I multi-pays semble limitée.

**Leçons procédurales/opérationnelles**

### Les futurs instruments de l'UE devraient réduire la complexité administrative et accroître la flexibilité procédurale dans la mise en œuvre des mesures R&I

L'expérience de la FRR montre que la **complexité administrative et des procédures rigides** peuvent entraver la mise en œuvre efficiente des mesures R&I. Une documentation excessive et des processus d'approbation chrono pour les modifications ont créé une charge administrative supplémentaire pour les autorités et les groupes cibles. Idéalement, **les futurs instruments devraient viser à simplifier les exigences de reporting et permettre des modifications budgétaires plus agiles**, afin que les projets puissent s'adapter aux besoins évolutifs sans compromettre la responsabilité.

### La modification des plans nationaux futurs devrait suivre une procédure simple

Le processus de modification des PNRR a été identifié comme un **aspect clé** dans le contexte des mesures R&I dans plusieurs pays. Cela est particulièrement pertinent dans le contexte de priorités économiques évolutives et de circonstances changeantes, telles que les pressions inflationnistes, les retards de passation de marchés et l'incertitude quant à l'atteinte des résultats souhaités dans les projets R&I. Ce processus est souvent critiqué pour son manque de flexibilité et le temps important qu'il exige, même si la **flexibilité s'est améliorée**.

### Une attention accrue doit être portée aux modèles de gouvernance

Une leçon clé de la mise en œuvre des mesures R&I sous la FRR est l'importance critique d'un **système de gouvernance bien structuré**, assurant une coordination précise et une capacité administrative suffisante. Les pays dotés de modèles de gouvernance rationalisés, où les rôles étaient clairement définis et la coordination entre ministères, agences de mise en œuvre et

acteurs de la recherche était institutionnalisée, ont pu réaliser les réformes et investissements plus efficacement.

### La complémentarité doit être planifiée délibérément et la coordination précoce est essentielle

L'utilisation **complémentaire** de la FRR, d'Horizon Europe et de la politique de cohésion ne se fait pas **automatiquement**. Elle nécessite une vision stratégique claire et globale au niveau national. Les États membres ayant engagé une coordination et une démarcation précoces (thématiques, temporelles ou territoriales) ont eu plus de succès dans la création de synergies.

### Un meilleur partage des données, des systèmes interopérables et des outils de suivi communs sont nécessaires pour soutenir la planification et le suivi coordonnés

L'accès aux données et la transparence sont essentiels pour identifier et éviter les doublons. Certains États membres ont indiqué qu'un meilleur accès à des informations détaillées sur les projets financés par l'UE via différents mécanismes pourrait aider à réduire les chevauchements et à renforcer la cohérence. De plus, il manque une base de données centralisée pour le suivi du cofinancement des projets R&I dans le cadre de la FRR.

# Zusammenfassung


## Einleitung

Diese Studie untersucht, wie die *Recovery and Resilience Facility* (RRF, Aufbau- und Resilienzfazilität) Forschung und Innovation (F&I) in der EU-27 unterstützt hat, indem die F&I-bezogenen Investitionen und Reformen in den nationalen *Recovery and Resilience Plans* (RRPs) bewertet wurden. Sie wurde im Zeitraum Januar bis September 2025 von einem Konsortium unter der Leitung von Ecorys in Partnerschaft mit CSIL, Wavestone und NIESR im Umfang des Rahmenvertrags ECFIN/048/2023 „Provision of evaluation and evaluation-related services“ erstellt. Ziel der Studie ist es, eine unabhängige, evidenzbasierte Bewertung der F&I-Maßnahmen der RRF im Umfang von €55,6 Mrd. anhand der fünf Kriterien der Leitlinie für eine bessere Rechtsetzung (Wirksamkeit, Effizienz, Relevanz, Kohärenz und EU-Mehrwert) vorzulegen, den Stand der Umsetzung zusammenzufassen (Stichtag März 2025) und Lehren abzuleiten, die künftige F&I-Finanzierungsinstrumente informieren können. Die Studie deckt 387 F&I-Maßnahmen ab und soll u. a. in politische Diskussionen zu Komplementaritäten mit anderen F&I-Instrumenten und -Initiativen wie *Horizon Europe* und der Kohäsionspolitik einfließen.

## Methodik und Grenzen

Die Bewertung bündelt Beweise aus Schreibtischrecherche (amtliche Dokumente, Auszüge aus dem internen RRF-Monitoring-Tool FENIX der Europäischen Kommission, Eurostat sowie wissenschaftliche/graue Literatur), 66 zielgerichteten nationalen Interviews, zwei gezielten Umfragen (eine mit Behörden der Mitgliedstaaten mit insgesamt 60 Antworten und eine mit Zielgruppen der RRF – 667 Antworten), die in einem Evaluationsbericht und drei länderübergreifenden Fallstudien resultierten, sowie die unterschiedliche Gruppen von Mitgliedstaaten anhand ihrer Einstufung im European Innovation Scoreboard abdecken und in Ländersteckbriefe einflossen. F&I-Maßnahmen wurden in Makrobereiche (wissenschaftliche Exzellenz, F&E-Ökosysteme, Unternehmensinnovation und ein querschneidender Bereich für Reformen) und weiter in Investitions- und Reformunterbereiche klassifiziert; desweiteren wurden deskriptive Statistiken und ein explorativ Difference-in-Differences-Verfahren für eine F&E-Indikatoranalyse eingesetzt. Zentrale Einschränkungen waren ungleichmäßige Antwortquoten in Umfragen/Interviews zwischen den Ländern sowie der kurze Umsetzungszeitraum vieler F&I-Investitionen, welcher eindeutige Aussagen zu Langfristwirkungen begrenzte.

## Wichtigste Erkenntnisse

### Wirksamkeit

Die RRF war insgesamt wirksam bei der Ermöglichung von F&I-Reformen und -Investitionen in den Mitgliedstaaten, wenngleich ihre Wirksamkeit je nach Land variiert und viele F&I-Maßnahmen noch laufen. **Rund 70 % der EU-Länder** haben bereits F&I-bezogene Meilensteine und Ziele erfüllt, während **über 75 % der nationalen Behörden** berichten, die RRF sei in gewissem oder hohem Maße wirksam gewesen. Zugleich liegt die Gesamtumsetzung teilweise hinter dem in den Durchführungsbeschlüssen des Rates (CIDs) der Pläne angegebenen indikativem Zeitplan zurück, was das Risiko von Verzögerungen gegenüber der ursprünglichen Planung erhöht. Bis Q4 2024 waren 390 F&I-bezogene Meilensteine/Ziele vorgesehen; die bis Ende April 2025 abgeschlossenen (nicht bewerteten) und erfüllten Ziele/Meilensteine (334) entsprechen 86 % dieser indikativen Planung. Gleichwohl meldete ein erheblicher Anteil der Befragten sichtbare Ergebnisse: Mehr als 40 % der Endbegünstigten und über 20 % der nationalen Behörden gaben an, dass bereits substanzielle

Resultate beobachtet wurden. Die RRF hat bereits über 163 000 Forschende in Forschungseinrichtungen in 22 Ländern unterstützt.

In einigen Ländern lag der Anteil der RRF F&I-Zuweisungen an den staatlichen Haushaltsausgaben für Forschung und Entwicklung (GBARD) zwischen 2021 und 2023 bei über 50 %, was die Bedeutung der Fazilität für die Stützung nationaler F&I-Systeme unterstreicht. Die RRF war ein wirksames Instrument, um F&I in Richtung der Beschleunigung der **grünen Transformation** sowie der **Digitalisierung** zu orientieren. Rund 35 % der gesamten F&I-Ausgaben der Pläne entfielen auf grüne F&I. Digitale F&I erhielt einen geringeren, aber weiterhin signifikanten Anteil am gesamten F&I-Budget als grüne F&I (9,3 % des F&I-Gesamtbudgets).

Die RRF fungierte als **strategischer Hebel für das Europäische Semester**. Die F&I-bezogenen länderspezifischen Empfehlungen (CSR) wurden in die RRPs integriert und förderten eine stärkere Eigenverantwortung. Die Maßnahmen trugen dazu bei, strukturelle und langjährige Herausforderungen der F&I-Systeme in den Mitgliedstaaten anzugehen – von 50 einschlägigen CSRs erzielten 19 einige Fortschritte, 11 erhebliche Fortschritte und 5 werden als vollständig umgesetzt angesehen. Die RRF hat erfolgreich als **Katalysator** für die **Stärkung der F&I-Kapazitäten der EU-Mitgliedstaaten gewirkt**. Insbesondere wurden die RRF-Mittel für F&I-Maßnahmen in erster Linie dazu genutzt, das Innovationsniveau von Unternehmen zu steigern – insbesondere in Ländern mit moderater, führender und starker Innovationskraft, wo dieser Bereich den größten Anteil der Zuweisungen absorbierte. Die RRF war zudem maßgeblich and der Verbesserung der Zusammenarbeit zwischen Wissenschaft und Wirtschaft beteiligt, insbesondere bei aufstrebenden Innovatoren. Die wissenschaftliche Exzellenz wurde in vielen Mitgliedstaaten vor allem durch Infrastrukturaufbau, Forschungsförderungen sowie Talentgewinnung und -bindung gestärkt. Die RRF wirkte als **Katalysator der Entwicklung von Richtlinien**, insbesondere in **Ländern mit aufstrebender und moderater Innovationskraft**, wo sie die Umsetzung zuvor stockender Reformen und den Kapazitätsaufbau erleichterte.

Um die **Nachhaltigkeit** der RRF-Maßnahmen zu sichern, haben **mehrere Mitgliedstaaten konkrete Schritte unternommen, um F&I-Finanzierung über 2026 hinauszustabilisieren** – durch eine Kombination aus **nationalen Haushaltszuweisungen**, **Strukturreformen** und der **Ausrichtung auf EU-Finanzierungsinstrumente** (z. B. **EFRE**, *Horizon Europe*). Gleichzeitig unterscheiden sich die Länder deutlich in Bereitschaft und Verpflichtung. **Während einige gesetzliche Rahmen und mehrjährige Pläne formalisiert** haben, **prüfen andere noch Optionen oder stützen sich weiterhin auf künftige EU-Finanzierungszyklen** und **politische Entscheidungen**. Unter den Begünstigten herrscht generell eine proaktive Haltung bei der Suche weiterer Finanzierung, insbesondere aus öffentlichen Quellen. Vertreter der Zielgruppen setzen dabei vor allem auf nationale Mittel und Horizon Europe; andere Quellen wie Kohäsionsfonds werden seltener nachgefragt. Nur in wenigen Fällen stellen RRF-Projekte eine Fortsetzung privat finanzierter Vorhaben dar oder haben bereits Unterstützung über private Banken/Instrumente beantragt.

### Effizienz

Die Mehrheit der Behörden der Mitgliedstaaten nahm die Integration von F&I-Reformen und Investitionen im Rahmen der RRF als **effizienzsteigernd** wahr. Die meisten Befragten waren der Auffassung, dass die Bündelung von Reformen und Investitionen in einem Instrument (RRF) die Umsetzungswirksamkeit erhöhte, insbesondere durch die Ausrichtung struktureller F&I-Reformen auf zielgerichtete Finanzierung. Mehrere Mitgliedstaaten zeigten, wie Reformen (von Rechtsrahmen bis zu Governance-Strukturen) förderliche Bedingungen schufen, damit Investitionsmaßnahmen reibungsloser vorankommen – insbesondere durch

Verfahrensverschlankung, bessere institutionelle Koordination und Stärkung leistungsorientierter Finanzierungssysteme.

Ein Faktor, der die Effizienzgewinne begrenzte, war die **administrative Belastung**, insbesondere in Ländern mit fragmentierter Governance oder begrenzten Kapazitäten. Die befragten Interessengruppen berichteten durchweg, dass bürokratische Lasten, starre Verfahren und komplexe Berichtspflichten die Umsetzung verlangsamten. In mehreren Mitgliedstaaten verstärkten zergliederte Governance-Strukturen und die begrenzte Erfahrung der nationalen Verwaltungen mit leistungsbasierten Instrumenten diese Herausforderungen zusätzlich, was häufig zu Vergabeverzögerungen, schwacher Koordination und ungleichen Kapazitäten zwischen Ministerien und Agenturen führte. Das Fehlen ausreichend flexibler Mechanismen für die Zuweisung und Verwendung von Mitteln im Vergleich zu anderen EU-Finanzierungsinstrumenten wie den Vorschriften der Kohäsionspolitik schränkte die Fähigkeit der Mitgliedstaaten ein, sich an unvorhergesehene Umstände anzupassen. Insgesamt behinderten diese Faktoren die fristgerechte Umsetzung mancher F&I-Reformen und -Investitionen.

### Kohaerenz

Insgesamt **ergänzte die RRF andere EU-Instrumente für F&I – insbesondere Horizon Europe und die Kohäsionspolitik**, indem sie systemische Reformen unterstützte und erhebliche Mittel zur Bearbeitung nationaler Prioritäten mobilisierte. Der RRF-Beitrag zu F&I hebt sich – im Vergleich zu anderen Finanzierungsinstrumenten – durch seine Unterstützung nationaler Reformen hervor, und während die RRF – wie Horizont Europa – den gesamten Innovationszyklus abdeckt, legt sie einen relativ stärkeren Fokus auf nachgelagerte Investitionen. Die Beziehung zwischen der RRF und der Kohäsionspolitik ist sowohl durch Komplementarität als auch durch gewisse Überschneidungen gekennzeichnet. In mehreren Ländern wurde Komplementarität durch thematische oder zeitliche Abgrenzung sichergestellt. Einige Mitgliedstaaten etablierten formale Koordinierungsmechanismen, um Überschneidungen zu vermeiden und Ausrichtung zu planen (z. B. über Strategien für intelligente Spezialisierung), mit unterschiedlichem Erfolg. In manchen Fällen half die RRF, territoriale Finanzierungslücken zu schließen – etwa durch Förderung stärker entwickelter Regionen oder zentraler Einrichtungen, die vom Europäischen Fonds für Regionale Entwicklung (EFRE) weniger unterstützt wurden. Mitunter förderten jedoch beide Instrumente ähnliche F&I-Investitionen (insbesondere Unternehmenszuschüsse), was zu Konkurrenz um Begünstigte und Verdrängungseffekten führte – vor allem in Ländern, in denen RRF-Verfahren einfacher und schneller waren als die der Kohäsionspolitik. Die Komplementarität zwischen RRF und InvestEU blieb gering, da nur wenige Mitgliedstaaten das InvestEU-MS-Kompartment mit RRF-Mitteln aktivierten. Insgesamt **verdrängte die RRF andere EU-Finanzierungsquellen nicht systematisch**.

Die RRF spielte eine **ergänzende und in vielen Fällen bedeutende Rolle bei der Stärkung nationaler F&I-Systeme** in der EU – in hohem Maße abhängig von bestehender Kapazität und Innovationsreife jedes Mitgliedstaats. In den meisten Mitgliedstaaten **ergänzte die RRF eher die nationale F&I-Finanzierung**, statt sie zu ersetzen, und stellte eine zusätzliche Unterstützungsschicht zur Weiterentwicklung strategischer Prioritäten dar. Obwohl die F&I-Maßnahmen der RRF nicht ausdrücklich auf die Ziele des **Europäischen Forschungsraums (EFR/ERA)** oder der **Neuen Europäischen Innovationsagenda (NEIA)** zugeschnitten waren, leisten sie dennoch signifikante Beiträge zu beiden.

### EU-Mehrwert

Die RRF spielte eine **bedeutsame Rolle** bei der **Ermöglichung, Beschleunigung und Ausgestaltung** von F&I-Reformen und -Investitionen, insbesondere in **aufstrebenden** und

**moderaten Innovationsländern**. Die meisten Behörden berichteten, dass zwar viele Reformen und einige Investitionen bereits vorgesehen waren, die RRF jedoch deren Umsetzung beschleunigte und strategische Ausrichtung und Konzeption schärfte. Umfrageantworten und Interviews zeigen, dass die RRF **insbesondere für Investitionen kritisch** war. Der Mehrwert der von der RRF unterstützten Maßnahmen bei der Einleitung/Umsetzung von F&I-Reformen und -Investitionen war besonders hoch bei aufstrebenden Innovationsländern, weniger in Mitgliedstaaten mit höheren Innovationskräften. **Führende Innovationsländer** sahen die RRF oft als finanziellen Beschleuniger bereits etablierter Prioritäten und weniger als Quelle neuer strategischer Ausrichtung. Dennoch half die RRF auch dort, bestehende Initiativen zu skalieren oder zu beschleunigen.

Obwohl die **Einbindung länderübergreifender F&I-Projekte** in nationale RRPs **ungleichmäßig** war, besteht erhebliches Potenzial für die Generierung von EU-Mehrwert, insbesondere in strategischen Bereichen wie Wasserstoff, Mikroelektronik, Cloud-Infrastruktur und Quantentechnologien. Die tatsächliche Umsetzung dieser Projekte befindet sich jedoch noch in einem frühen Stadium. Der Beitrag der RRF war in mehreren Fällen stimulierend, insbesondere dort, wo Projekte bereits in der Pipeline waren und eine Beteiligung ohne die RRF finanziell oder administrativ kaum möglich gewesen wäre – durch die Steigerung nationaler Ambitionen und die Beschleunigung der Beteiligung an wichtigen Vorhaben von gemeinsamem europäischem Interesse (IPCEI). Dennoch erschwerten **starre Zeitvorgaben**, **administrative Komplexität** und die **leistungsorientierte Architektur** der Fazilität die **grenzüberschreitende Koordination**, besonders in Sektoren mit **langfristigen Investitionshorizonten**.

### Relevanz

**Die im Rahmen der RRF bereitgestellte F&I-Unterstützung ist angesichts der ursprünglichen Ziele und des sich entwickelnden strategischen Kontexts auf EU- und nationaler Ebene weiterhin hoch relevant**. Beweise aus dem Recovery and Resilience Scoreboard, nationalen Umsetzungsberichten und Stakeholder-Interviews bestätigt, dass die RRF im Einklang mit ihren Anfangszielen bleibt und sich zugleich an neue Prioritäten angepasst hat. 91 % der befragten nationalen Behörden bestätigen die fortgesetzte Ausrichtung der F&I-Maßnahmen an strategischen Prioritäten. Diese dynamische Relevanz zeigt sich in der Ausrichtung der RRF-finanzierten Initiativen auf die sich entwickelnden EU-Politikrahmen, wie den Europäischen Grünen Deal, die Digitale Strategie und den Wettbewerbsfähigkeitskompass.

Obwohl die meisten Mitgliedstaaten die Umsetzung der F&I-Maßnahmen **im Rahmen der RRF bis 2026 für machbar halten**, bestehen Bedenken hinsichtlich Verzögerungen und struktureller Engpässe. Diese Herausforderungen bergen das Risiko, dass Regierungen **zunehmend Maßnahmen mit schnellerer oder leichterer Umsetzung priorisieren**, um **Auszahlungen zu sichern**, jedoch geschehe dies **zulasten ehrgeizigerer, strukturell wirkungsvollerer Vorhaben**.

## Lehren aus der Studie

Aufbauend auf den wichtigsten Schlussfolgerungen und den Gesamtergebnissen der Studie liefern die folgenden Absätze Erkenntnisse für die zukünftige Politikgestaltung, die entweder strategische oder operative Implikationen haben, wie in den nachstehenden Lehren erläutert.

**Strategische Erkenntnisse**

Künftige Instrumente sollten einen starken Fokus auf F&I-bezogene länderspezifische Empfehlungen (CSRs) beibehalten

Die Bewertung zeigt, dass die RRF als strategisches Instrument des Europäischen Semesters diente, wobei F&I-bezogene CSRs ausdrücklich in die Gestaltung der nationalen Aufbau- und Resilienzpläne integriert wurden. Dies stellte sicher, dass Reformen und Investitionen dazu beitrugen, **strukturelle Engpässe** wie geringe F&E-Intensität, schwache Wissenschaft-Wirtschaft-Kooperation und begrenzte institutionelle Kapazitäten zu überwinden, insbesondere in Ländern mit aufstrebender und moderater Innovationskraft.

Künftige EU-Instrumente sollten ebenso starke Anreize für tiefere F&I-Reformen in leistungsstärkeren Mitgliedstaaten bieten

**In einigen führenden Innovationsländern waren F&I-Reformen begrenzt oder fehlten**, wobei die RRF-Unterstützung auf gezielte Investitionen konzentriert war. Die F&I-Systeme dieser Länder sind gut etabliert, aber die RRF wurde nicht umfassend genutzt, um strukturelle Veränderungen herbeizuführen, wie z. B. die Verbesserung der F&I-Governance, die Attraktivität von Forschungskarrieren und die Schaffung eines unterstützenden Umfelds für Start-ups und Scale-ups. Dennoch stehen auch diese Systeme weiterhin vor wichtigen Herausforderungen, wie die Analyse des Europäischen Semesters 2025 und der CSRs bestätigen.

Künftige RRF-ähnliche Interventionen sollten systematisch in relevante F&I-Strategien wie Strategien für intelligente Spezialisierung (S3) und andere bestehende nationale Rahmenwerke eingebettet werden

Die Bewertung zeigt, dass durch die **Einbettung von RRF-unterstützten Reformen und Investitionen in bestehende nationale oder regionale Strategien** wie **S3** eine strategischere und wirkungsvollere Mittelverwendung sichergestellt wurde, indem auf bestehenden regionalen Stärken aufgebaut und die Auswahl von Ad-hoc-Projekten vermieden wurde. Die Integration der RRF-Finanzierung in bereits bestehende, evidenzbasierte strategische Prioritäten ermöglichte es einigen Mitgliedstaaten, ihre Innovationsökosysteme zu stärken und eine größere Kohärenz bei den F&I-Ausgaben zu erreichen.

Politikevaluierung systematisch in den F&I-Politikzyklus einbetten

Die Studie ergab, dass in einigen Mitgliedstaaten Ex-post-Bewertungen früherer Initiativen, öffentliche Konsultationen, Bedarfsanalysen und andere Ex-ante-Bewertungen dazu beitrugen, die zu implementierenden F&I-Maßnahmen zu identifizieren. Relevante EU-Instrumente wie die Horizont Europa – Fazilität zur Unterstützung der Politikgestaltung (Policy Support Facility) und das Instrument für technische Unterstützung können diese Bewertungen unterstützen. Darüber hinaus erfordert die Feststellung, ob Interventionen die beabsichtigten politischen Wirkungen erzielen, strukturierte, kontinuierliche Evaluierungsbemühungen, die derzeit auf nationaler Ebene im Rahmen der RRF nicht ausdrücklich vorgeschrieben sind.

Es ist ein Gleichgewicht zwischen schnellen Ergebnissen und langfristiger Wirkung erforderlich, damit der Fokus nicht überwiegend auf Technologien mit hohem TRL liegt

Der beschleunigte Zeitplan der RRF führte manchmal zu einer **selektiven Fokussierung auf Projekte mit höherem Technologie-Reifegrad (TRL),** insbesondere in aufstrebenden Innovatoren, wo angewandte Forschung mit schnellerer Kommerzialisierung priorisiert wurde. Diese durch Dringlichkeit getriebene Struktur entsprach dem Design der Fazilität, verdrängte

jedoch teilweise längerfristige oder grundlegende Forschung. In einigen Ländern führte der Druck, die Frist 2026 einzuhalten, häufig dazu, dass komplexere oder zeitintensivere Projekte auf Instrumente der Kohäsionspolitik umgeleitet wurden, was eine strategische Fokussierung auf schnell umsetzbare, marktorientierte Initiativen offenbart.

### Mehr staatliche Anstrengungen sind erforderlich, um F&I-Investitionen nach 2026 aufrechtzuerhalten

Hinsichtlich der **finanziellen Nachhaltigkeit der Maßnahmen nach der RRF** bestehen in der EU erhebliche Unterschiede, da viele Ländern noch keine bindenden Aussagen getätigt haben, wie die höheren F&E-Finanzierungsniveaus beibehalten werden können. In diesen Fällen hängt die langfristige Nachhaltigkeit von künftigen politischen Entscheidungen, sich entwickelnden Haushaltsbedingungen und der erfolgreichen Integration der durch die RRF angestoßenen Reformen in nationale Innovationsökosysteme und EU-Haushaltsrahmen ab.

### Künftige EU-Instrumente sollten eine stärkere Unterstützung für die Gleichstellung der Geschlechter in F&I vorsehen

Das **Engagement für die Gleichstellung der Geschlechter in F&I variierte stark** zwischen den Mitgliedstaaten. Nur einige Länder enthalten F&I-Maßnahmen, die ausdrücklich Geschlechterperspektiven integrieren. Das Fehlen konsistenter Geschlechterbestimmungen bedeutete, dass die RRF die Gelegenheit nicht vollständig nutzte, um **anhaltende geschlechterspezifische Unterschiede in F&I-Systemen anzugehen**, wie die Unterrepräsentation von Frauen in MINT-Fächern, eingeschränkter Zugang zu Führungspositionen und Barrieren für die Teilnahme an Innovationsökosystemen.

### Das Design künftiger EU-Instrumente muss nationale Flexibilität mit stärkeren Anreizen für die transnationale Zusammenarbeit kombinieren

Während die RRF die nationalen F&I-Systeme stärkte, **konnte sie ihr volles Potenzial zur Förderung der EU-weiten Zusammenarbeit nicht ausschöpfen**. Mit wenigen grenzüberschreitenden Initiativen und begrenztem Fokus auf gemeinsame europäische Prioritäten in F&I wurde die Chance, ein stärker integriertes und widerstandsfähiges europäisches Innovationsökosystem aufzubauen, nur teilweise genutzt. Trotz der zentralen Rolle von F&I für gemeinsame EU-Prioritäten wurde die RRF hauptsächlich über nationale Kanäle umgesetzt. Während mehrere Mitgliedstaaten an IPCEIs teilnahmen, scheint der Beitrag der RRF zur Initiierung neuer länderübergreifender F&I-Projekte begrenzt.

**Prozedurale/operative Erkenntnisse**

### Künftige EU-Instrumente sollten die administrative Komplexität verringern und die prozedurale Flexibilität bei der Umsetzung von F&I-Maßnahmen erhöhen

Die Erfahrungen mit der RRF zeigen, dass **administrative Komplexität und starre Verfahren** die effiziente Umsetzung von F&I-Maßnahmen behindern können. Übermäßige Dokumentation und zeitaufwändige Genehmigungsprozesse für Änderungen führten zu zusätzlicher administrativer Belastung für Behörden und Zielgruppen. Idealerweise sollten **künftige Instrumente darauf abzielen, die Berichtspflichten weiter zu vereinfachen und agilere Budgetanpassungen zu ermöglichen**, damit Projekte sich an veränderte Bedürfnisse anpassen können, ohne die Rechenschaftspflicht zu gefährden.

### Die Änderung künftiger nationaler Pläne sollte einem einfachen Verfahren folgen

Der Prozess zur Änderung der RRPs wurde in mehreren Ländern als **Schlüsselaspekt** im Zusammenhang mit F&I-Maßnahmen identifiziert. Dies ist besonders relevant im Kontext sich

entwickelnder wirtschaftlicher Prioritäten und veränderter Umstände wie Inflationsdruck, Verzögerungen bei der Beschaffung und Unsicherheit hinsichtlich der Erreichung der gewünschten Ergebnisse in F&I-Projekten. Der Prozess wird oft wegen mangelnder Flexibilität und des erheblichen notwendigen Zeitaufwands kritisiert, auch wenn sich die **Flexibilität verbessert hat**.

### Mehr Aufmerksamkeit für Governance-Modelle

Eine zentrale Lektion aus der Umsetzung von F&I-Maßnahmen im Rahmen der RRF ist die entscheidende Bedeutung eines gut strukturierten Governance-Systems, das eine präzise Koordination und ausreichende Verwaltungskapazität gewährleistet. Länder mit gestrafften Governance-Modellen, in denen Rollen klar definiert waren und die Koordination zwischen Ministerien, Durchführungsagenturen und Forschungsakteuren institutionalisiert war, konnten Reformen und Investitionen effizienter umsetzen.

### Komplementarität muss bewusst geplant werden, und frühe Koordination ist entscheidend

Die komplementäre Nutzung der RRF, von Horizon Europe und der Kohäsionspolitik erfolgt nicht automatisch. Sie erfordert eine klare, übergreifende strategische Vision auf nationaler Ebene. Mitgliedstaaten, die frühzeitig Koordination und Abgrenzung (thematisch, zeitlich oder territorial) betrieben, waren erfolgreicher bei der Schaffung von Synergien.

### Besserer Datenaustausch, interoperable Systeme und gemeinsame Tracking-Tools sind erforderlich, um koordinierte Planung und Überwachung zu unterstützen

Datenzugang und Transparenz sind entscheidend, um Doppelarbeit zu erkennen und zu vermeiden. Einige Mitgliedstaaten gaben an, dass ein besserer Zugang zu detaillierten Informationen über EU-finanzierte Projekte in verschiedenen Finanzierungsmechanismen dazu beitragen könnte, Überschneidungen zu verringern und die Kohärenz zu stärken. Darüber hinaus fehlt eine zentrale Datenbank zur Nachverfolgung der Kofinanzierung von F&I-Projekten im Rahmen der RRF.

# 1. Introduction

## 1.1. Introduction to the study and the report

This report presents the final report of the study on the research and innovation (R&I) ([1]) measures in the Recovery and Resilience Facility (RRF). It was drafted in January-September 2025 by a consortium led by Ecorys, in partnership with CSIL, Wavestone, and NIESR, under the framework contract ECFIN/048/2023 "Provision of evaluation and evaluation-related services".

The report is organised into several core chapters and annexes, each serving a distinct purpose in presenting the evaluation findings and supporting evidence. Chapter 1 (Introduction) provides the background and context of the study, outlining its objectives and scope. It explains the rationale for evaluating the R&I measures under the RRF and sets the stage for the subsequent analysis. Furthermore, it summarises the implementation status of R&I-related measures across Member States. Chapter 2 (Methodology, Data Collection and Limitations) describes the methodological framework used for the evaluation, including the categorisation of R&I measures, the data collection methods (desk research, interviews, targeted survey), the analytical approaches (e.g. counterfactual analysis) and the limitations encountered during the study, such as data gaps and uneven stakeholder responses. Chapter 3 (Evaluation findings) provides the findings per evaluation criterion. Each criterion is addressed through specific evaluation questions (EQs), with findings supported by qualitative and quantitative evidence. Chapter 4 (Conclusions and lessons learned) synthesises the key insights from the evaluation and offers forward-looking recommendations. The annexes provide detailed supporting material that complements the main report.

## 1.2. Context of the study

NextGeneration EU (NGEU) is the financial plan adopted by the European Union in response to the COVID-19 pandemic ([2]). The cornerstone of NGEU, the Recovery and Resilience Facility (RRF), is its main financial instrument, with up to EUR 650 billion (EUR 359 billion in grants and EUR 291 billion in loans) to be allocated to the Member States ([3]). The central objective of the RRF is, inter alia, to strengthen the EU's economic and social resilience, promote green and digital transitions, promote sustainable growth, and mitigate the social and economic impact of the crisis ([4]).

Three key elements characterise the RRF. First, its performance-based approach, where payments to Member States depend on the achievement of pre-defined milestones and targets (M&Ts) ([5]). EU Member States had to adopt national Recovery and Resilience Plans (RRPs), which are performance-based contracts in which they define their priorities and strategy for spending the funds through the definition of investment and reform measures and their related M&Ts. Second, the RRF also emphasises structural reforms alongside investments to ensure sustainability and the long-term impact of the mechanism ([6]). The RRF allows flexibility to Member States in designing RRPs to suit national circumstances. As a funding condition, as

([1]) R&I, RDI, R&D&I are used interchangeably throughout the report.
([2]) https://next-generation-eu.europa.eu/index_en
([3]) RRF Scoreboard, here.
([4]) Article 4 RRF Regulation, here.
([5]) CEPS (2023) The Recovery and Resilience Facility: What are we really monitoring with a performance-based approach?
([6]) https://www.ceps.eu/money-allocation-is-not-the-key-to-recovery-and-resilience-reforms-are/

per Article 18(4b) of the RRF Regulation EU 2021/241, Member States were required to design their RRPs to address all or a significant subset of challenges identified in the relevant Country Specific Recommendations (CSR) issued in the context of the European Semester. Since most Member States submitted their RRPs in 2021, the relevant CSRs were the recommendations from 2019 and 2020. This applied to the first 25 countries that submitted their RRPs, while for Poland and Hungary, the 2019, 2020 and 2022 CSRs were considered. In addition, the RRF has introduced the innovative use of joint debt issuance at the EU level, creating a large-scale fiscal support mechanism ([7]). This has been recognised as an important institutional innovation that promotes coordinated public investment and stimulates aggregate demand across the EU. By allocating funds on a solidarity basis, it provides vital assistance to Member States most affected by the crisis, helping to counteract post-pandemic disparities and support recovery across the European Union.

The RRF Regulation defines six broad policy areas on which Member States had to build their plans, the so-called RRF pillars ([8]). Although the contribution of each plan to the RRF pillars was also changed following the presentation of the revised plans and the changes in costs over time, Research and Innovation (R&I) is a recurring element in three of the six pillars. In particular, the "smart, sustainable and inclusive growth", "green transition" and "digital transformation" pillars make an explicit reference to it. More specifically, the European Commission's guidance documents on the design of the RRPs repeatedly mention the need for Member States to include in their plans R&I investment and reform measures aimed at strengthening national R&I systems, improving their functioning, and increasing their performance ([9]).

In response, all EU-27 Member States included reform or investment measures in the field of R&I ([10]). According to the thematic analysis of the RRF Scoreboard on R&I ([11]), a total of 395 measures are included in the plans across the 27 Member States (of which 77 are reforms and 318 are investments), amounting to EUR 55.6 billion. This represents 8.6% of the total expenditure in the plans, showing that R&I was considered by the EU Member States when designing their plans, in line with the RRF Regulation and the supporting documents.

In line with the RRF Regulation (Art.32), by 20 February 2024, the European Commission (EC) had provided the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions with an independent evaluation report on the implementation of the RRF ([12]). While the report presented an early assessment of how the RRF is delivering on its overall objectives, the report did not provide an in-depth assessment of the R&I-related RRF measures as defined in the RRPs. Thus, the purpose of this study is to provide an objective and independent assessment of the way RRF has supported R&I investments and reforms against the criteria of effectiveness, efficiency, relevance, coherence, and EU added value. Moreover, the purpose of the study is to provide useful background evidence and lessons learned for discussions on future R&I funding instruments in general and on the next Framework Programme for research and innovation (FP 10) in particular.

([7]) ECB Blog (2023) The opportunity Europe should not waste, available here.
([8]) Article 3 RRF Regulation, here.
([9]) Guidance to Member States, SWD(2021) 12 final, here.
([10]) Mileusnic, M. (2024) Research and innovation in the national recovery and resilience plans. Please note that Luxembourg is not part of the study as no relevant R&I measure were part of the selected 387 measures that fell within the scope of the evaluation.
([11]) RRF Scoreboard, Thematic analysis, Research and Innovation, here.
([12]) European Commission. (2024), Mid-term evaluation of the Recovery and Resilience Facility (RRF). Available here.

## 1.3. Purpose and scope of the study

The scope of the evaluation study is largely defined by the evaluation requirements set in the RRF Regulation and further supplemented in the terms of reference (ToR). The scope is presented in the table below.

*Table 1: Key scopes of the evaluation*

| Element of the scope | Short description |
|---|---|
| Coverage of measures | R&I-related measures contained in 26 Recovery and Resilience Plans ([13]), i.e., all the measures which have been assigned to the three R&I-related policy areas in FENIX ([14]), i.e. 'R&D&I', 'R&D&I in green activities (e.g. climate change mitigation and circular economy)' and 'Digital-related measures in R&D&I'. The specified number of R&I measures covered is 387 ([15]), see Annex VIII. |
| Cut-off date | March 2025 (particularly for FENIX data). |
| Geographical coverage | EU26 (and third countries for some comparisons in the descriptive analysis) |
| Evaluation criteria | The five main evaluation criteria in line with the Better Regulation Guidelines (BRG) / Toolbox (BRT):<br>• Effectiveness<br>• Efficiency<br>• Relevance<br>• Coherence<br>• EU added value |
| Themes in focus | The evaluation study has paid particular attention to the following key themes:<br>• The merits of **country-based instruments** to support research and innovation at the EU level and **their relevance and coherence within the country's R&I policy mix**;<br>• The effectiveness of programmes that link investment with reforms and that follow a performance-based approach in the area of research and innovation;<br>• (linked to the above) Background evidence and lessons learned for discussions on future R&I funding instruments in general and on the **next Framework Programme** for research and innovation; |

([13]) All Member States except for Luxembourg, as no relevant R&I measure were part of the selected 387 measures that fell within the scope of the evaluation study.
([14]) FENIX refers to the European Commission's internal RRF monitoring tool used to track and extract data on measures included in the Recovery and Resilience Plans (RRPs) of Member States.
([15]) There might be other measures that are relevant for R&I but have not been tagged in FENIX with one of the above-mentioned tags.

| | |
|---|---|
| | • **Synergies and comparisons with other R&I relevant EU/national programmes, initiatives and instruments** (most notably, Cohesion Policy and Horizon Europe at the EU level, New European Innovation Agenda – NEIA, European Research Area Policy Agenda);<br>• Potential crowding in/out effects of the RRF in the R&I sector.<br>**Sustainability** of the measures, particularly investments – what is the follow-up (to the extent that sustainability can be assessed at this stage). |

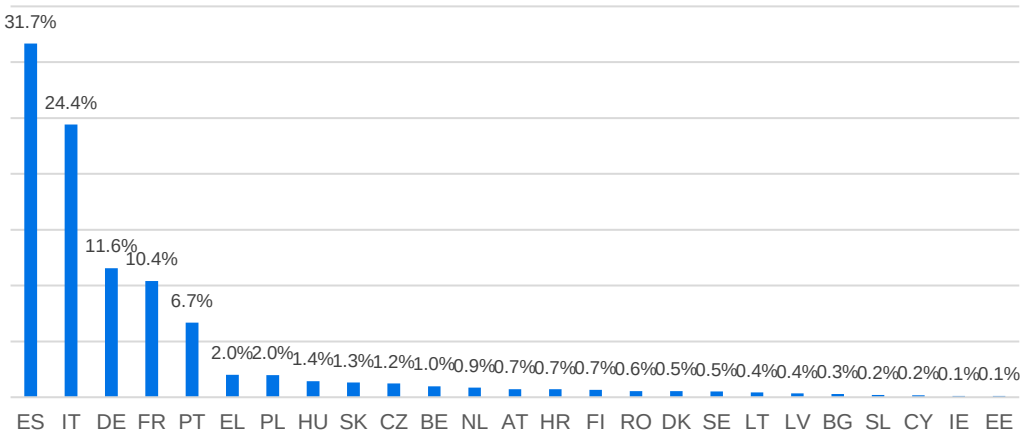
## 1.4. R&I measures under the RRF

In terms of funding allocated to investments and reforms in the area of R&I across the European Union, the total volume amounts to EUR 55.6 billion. The largest share is directed towards the green transition ('Green Transition pillar'), receiving EUR 23.5 billion, reflecting strong policy alignment with the EU's climate neutrality goals. This is followed by investments in Smart, Sustainable and Inclusive Growth, which includes horizontal investments in R&I in both public and private entities, at EUR 19.6 billion. Digital transformation is attracting nearly EUR 10 billion, emphasising the strategic importance of digital infrastructure, skills, and technologies. The other three primary pillars, Health and economic, social and institutional resilience (EUR 1.3 billion), Policies for the next generation, including education and skills (EUR 864.7 million), and Social and territorial cohesion (EUR 296.9 million), receive comparatively smaller shares.

Member States demonstrate diverse prioritisation patterns, reflecting the specific features of their R&I systems and national strategic goals. Spain ([16]) leads total R&I-related investments with approximately EUR 17.6 billion, focusing strongly on the Green Transition and Smart, Sustainable and Inclusive Growth. Italy, allocating EUR 13.6 billion, prioritises Smart, Sustainable and Inclusive Growth, followed by the Green Transition and Digital Transformation. Germany and France invest around EUR 6.4 billion and EUR 5.8 billion, respectively, distributing funds more evenly across several pillars but with larger shares dedicated to the Green Transition and Digital Transformation. In contrast, countries such as Lithuania, Latvia, Bulgaria, Slovenia, Cyprus, Ireland, Estonia, and Malta allocate significantly smaller amounts and display different funding patterns, often focusing on the Smart, Sustainable and Inclusive Growth pillar.

([16]) Since they have the biggest RRF envelopes, it is not surprising that Spain and Italy have the highest share of funding allocated to R&I from the total amount of R&I funding. To put the figures into perspective, further below, the text also presents the allocations as a share of the overall RRF funding per country.

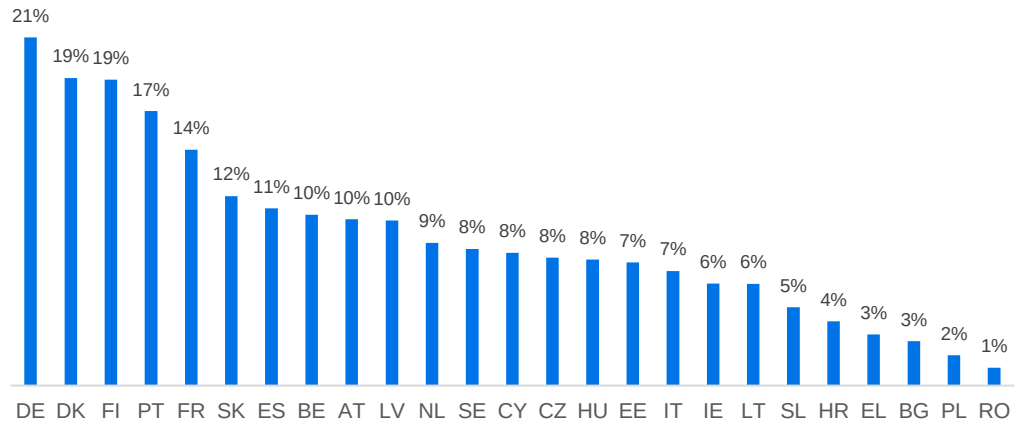
*Figure 1: Funding allocated to R&I investment and reforms by country (share of the overall RRF funding for R&I)*




Source: FENIX

When the R&I allocations are examined as a share of the overall RRF allocations (grants and loans), the patterns across countries are different, as shown in the next figure. Strong/leading innovator countries - Germany, Denmark, and Finland - exhibit the highest relative allocations, while emerging/moderate innovators (Bulgaria, Poland, and Romania) have the smallest shares of R&I allocations out of the overall RRF allocations. Nevertheless, some smaller countries, such as Portugal, Slovakia, and Latvia, also have high relative R&I allocations.

*Figure 2: Funding allocated to R&I investment and reforms by country (share of the overall Member State RRF funding)*




Source: FENIX and the Recovery and Resilience Scoreboard

Looking specifically at the typology of R&I investments and reforms ([17]), Scientific Excellence, Business Innovation, and R&D Ecosystems, the funding landscape reveals diverse national approaches to strengthening R&I systems (see Chapter 2.1 for more information on the

([17]) More information on the categorisation of investments and reforms is in Annex III.

categorisation). The category of Business innovation has the largest share of R&I investments – 51%, followed by Scientific excellence (26%), and R&D ecosystems (23%) – see Table 14 in Annex II. Spain is the largest investor in Business Innovation (more than EUR 11 billion), Italy is the largest investor in R&D ecosystems (EUR 4.5 billion) and in Scientific Excellence (EUR 4.4 billion). Member States followed very diverse patterns in allocating the investments. Countries like Finland and Italy chose an almost equal distribution of the investments across the three categories. However, others, such as Ireland, Estonia, and Sweden, allocated all the investments to a single category. Concerning the state of play of the R&I measures in the Recovery and Resilience Facility, as of 31.03.2025 ([18]), according to data from FENIX, there have been 387 measures ([19]), financed under the RRF, which have R&I-related objectives. About 80% of these measures are still ongoing (neither completed (not assessed) ([20]), nor fulfilled), as 23 (6%) have been completed (not assessed), with 59 (or 15%) of these measures being considered fulfilled. It has to be noted that measures can consist of multiple milestones and targets, and a measure is only considered to be fulfilled when all its M&Ts are fulfilled, even if not all of them are linked to R&I activities. Hence, solely looking at the state of fulfilment of measures does not provide a full picture of the level of completion of R&I measures.

*Figure 3: Status of the R&I measures*


Source: FENIX

Most of the measures are investments – 311, with the remaining 76 being reforms (see Table 2: Number of R&I reforms and investmentsTable 2 below). However, regarding the fulfilled measures, as of 31.03.2025, the number of fulfilled investments and reforms is 32 and 27, respectively. So far, 36% of the envisaged reforms have been fulfilled, while for investments, this share is just 10%. This is mostly due to general tendencies for countries to frontload reforms and backload investments, which typically take more time (e.g. due to planning and public procurement procedures).

*Table 2: Number of R&I reforms and investments*

| | Fulfilled Measures | Completed (not assessed) | Not completed/not fulfilled | Total Measures |
|---|---|---|---|---|
| Investment | 32 | 15 | 264 | 311 |
| Reform | 27 | 8 | 41 | 76 |
| Grand Total | 59 | 23 | 305 | 387 |

Source: FENIX

([18]) This cut-off date means that the data is from a previous reporting round. The most recent data that Member States have reported is from the end of April. Furthermore, the assessment of payment requests is a continuous process, so at the time of submission of this report there are more fulfilled measures now than there were at the end of March.
([19]) Statistics on the number of measures are inevitably influenced by how MS structured their measures, in particular, whether they introduced sub-measures or not. For example, Croatia has many measures, but 22 out of 30 are sub-measures. Czechia, on the contrary, has 15 measures but not a single sub-measure.
([20]) The data on “completed” measures is self-reported by Member States, i.e. it is not verified by the Commission.

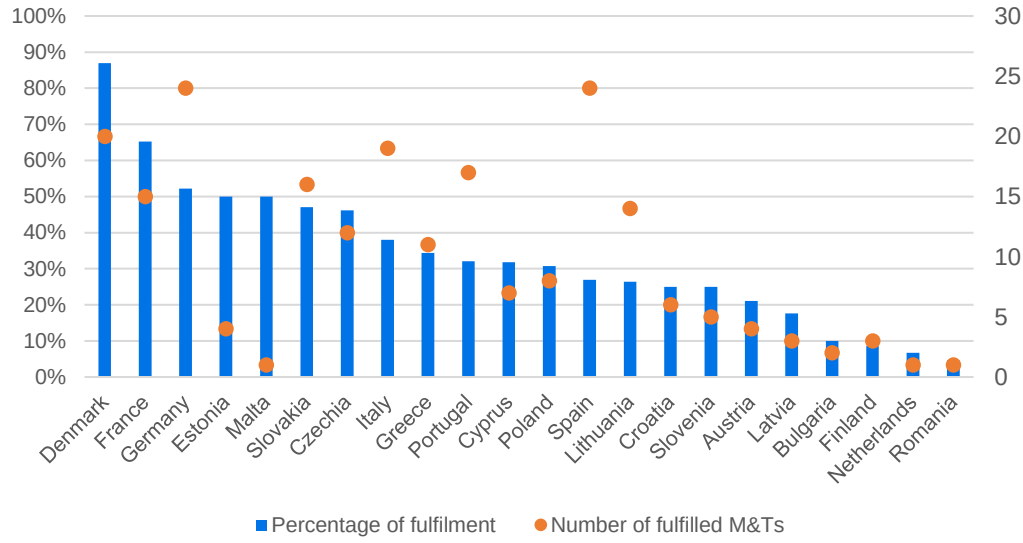
A key measure of the current state of progress of R&I measures is the status of completion/fulfilment of the milestones and targets. Out of 711 M&Ts relevant to R&I measures, as of 31.03.2025, 217 have been deemed fulfilled, and 117 were completed (not assessed), i.e., more than half of the relevant M&Ts are not yet completed (not assessed)/fulfilled.

*Figure 4: Fulfilled milestones and targets (M&T)*


Source: FENIX

The fulfilment percentage for each country demonstrates the varying pace of implementation, with some countries achieving higher proportional success despite a lower number of overall fulfilled M&Ts. Spain and Germany lead with the highest number of fulfilled M&Ts, while Germany, Italy, Denmark, and Finland also show strong performance, with a balance between the number of M&Ts achieved and their relative fulfilment percentages. The average fulfilment rate of R&I M&Ts is 45%, with 13 Member States having higher fulfilment rates.

*Figure 5: Status of fulfilment of R&I milestones and targets per country*




Source: FENIX

Further information on the allocations and progress under the RRF is presented in the Effectiveness section and in Annex II.

# 2. Methodology, data collection and limitations

## 2.1. Categorisation of R&I measures

### 2.1.1. Mapping of R&I investments

**This study maps all R&I-related investments into eight areas** to enable a granular and insightful analysis. The table in Annex III lists these areas and clusters them in three macro-areas: Scientific Excellence, R&D Ecosystem, and Business Innovation. This mapping by area feeds especially into the assessment of the relationship with Horizon Europe and Cohesion policy (under the Coherence criterion), because it ensures, as far as possible, comparability of measures across instruments, as established in Annex V. The full description of investment areas is available in Annex III.

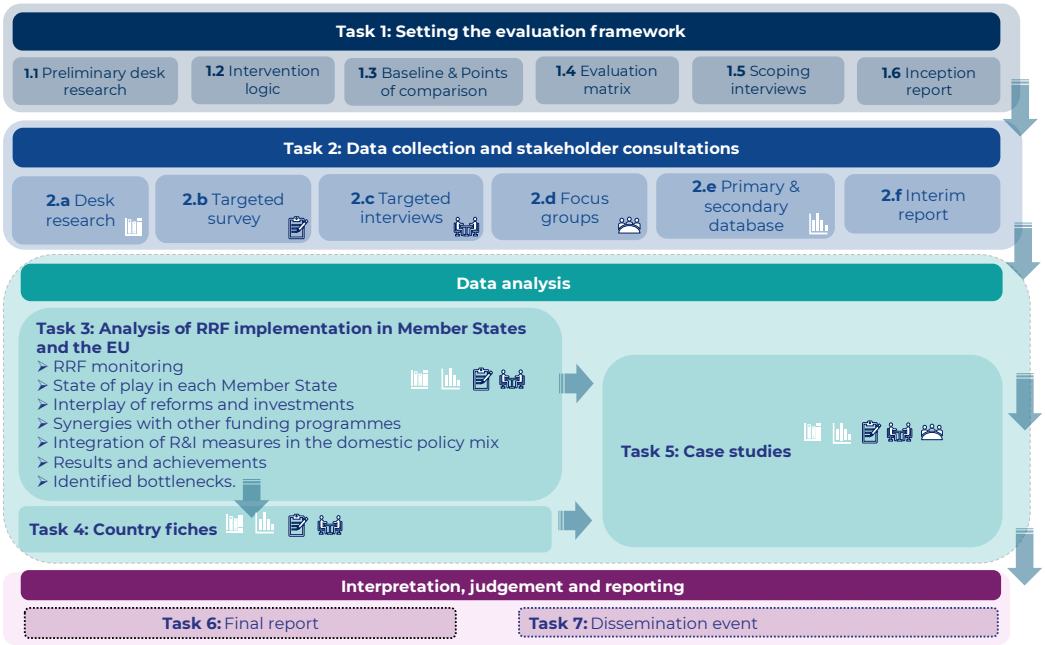
### 2.1.2. Mapping of R&I reforms

Similar to what has been done for R&I investments, the study mapped R&I reforms into seven areas and three macro-areas, to allow for a more systematic assessment of their impacts. Many RRF reforms aim to improve conditions – through new strategies, laws, or institutional changes – rather than financing R&D infrastructure or activities directly. The classification presented in Annex III captures those nuances as it breaks down macro-areas into areas, while remaining compatible with the investment categories. It also covers any additional aspects unique to reforms (such as legislative and governance changes) to ensure all measures are included and can be benchmarked against external programmes.

## 2.2. Methodology and data collection

This chapter describes the methods used for the purpose of the study. The methodology was conceived in view of the data and analytical needs emerging from individual evaluation questions. The overall approach to the study follows the four typical stages of an evaluation: 1) Setting the framework of the evaluation (Inception); 2) Proposing the methodology for data collection and stakeholder consultations (Data collection); 3) Proposing the methodology for data analysis, including tools and assessment criteria (Analysis); and 4) Proposing the methodology for interpretation, judgement and reporting (Reporting). The figure below showcases the diverse methods used in the implementation of the study's tasks.

*Figure 6: Overall approach to the evaluation*




Diverse data collection methods were employed, including desk research, targeted stakeholder surveys, targeted interviews, focus groups, preparation of case studies and country fiches. A total of 66 interviews were conducted at the national level between March and July 2025. The targeted surveys gathered insights from two main stakeholder groups, namely Member State authorities (e.g. RRF coordination bodies, Ministries of Research and Innovation/Education/Science, Cohesion Policy authorities) and national, regional, and local innovation agencies and target groups, including those with direct knowledge of what the measures have achieved on the ground, e.g. universities, research laboratories, businesses receiving support from the RRF. In total, the survey gathered 60 responses from Member State authorities across 20 Member States and 667 responses from target groups across 20 Member States. Country fiches were prepared for 26 EU Member States ([21]), focusing on providing an overview of the R&I measures implemented in the country as part of the RRF. Three case studies were prepared covering 10 Member States, corresponding to 90% of the total RRF allocation to RDI measures. Additionally, a descriptive statistical analysis was performed to provide quantitative evidence on the implementation. The full description of all methods used in the study is provided in Annex III.

The interpretation of data, information and judgment relied on the triangulation of evidence gathered via diverse data collection tools, which were presented in evidence tables to ensure transparent use of evidence by the entire study team and robust stakeholder input interpretation. The synthesis and judgement formulation were done by applying the judgement criteria developed for each evaluation question. For each evaluation question, the analysis relied on both stakeholder input and evidence collected through desk research, which was used to verify

([21]) No country fiche was prepared for Luxembourg as no relevant R&I measures were on the list of selected 387 measures that fell within the scope of the evaluation study.

stakeholder opinion. Where available, quantitative evidence (stemming from FENIX data analysis) was used to substantiate findings.

## 2.3. Main limitations

Several methodological and data limitations were identified. Where limitations related to data were identified, actions were taken to find additional data sources. Moreover, thorough checks were performed, ensuring that the data is robust, so that the overall reliability of the analysis and the findings is not affected. Specific methodological and data limitations are outlined below.

The principal limitation in terms of data collection has been an **uneven stakeholder response** to the survey and interview requests. For the interviews, some stakeholders declined to contribute to the study or remained unresponsive, which posed a challenge for reaching the intended number of interviews. Additionally, there were instances where stakeholders remained unresponsive. Furthermore, the distribution of survey responses is geographically unbalanced, with some countries lacking responses completely, while for others the sample is sizeable (>100). For those countries, where limited responses were collected, reminders were sent out to the RRF coordinating body and/or Ministry, urging them to send reminders to the target groups. In those countries where the list of the top 100 recipients of EU funds was reviewed to identify relevant contacts for survey distribution, reminders were sent to the mapped contacts centrally. The limitation stemming from the unbalanced sample was taken into account when interpreting the data to ensure that the overrepresentation does not affect the generalisability. An analysis of the survey was performed, excluding the contributions from Spain, which accounted for 50% of the responses, and compared to the overall results. Only minor imperceptible changes of 1–2 pp. on average have been observed.

Country experts were **unable to obtain comprehensive lists of funded projects and the list of target groups** (e.g., final/end beneficiary of R&I RRF-funded measures). Due to privacy data issues, the majority of RRF coordinating bodies and relevant ministries were not in a position to disclose the list of target groups and their contact details. This had an impact on the distribution of the online survey for which the team relied on the cooperative attitude of the majority of authorities. Furthermore, the coherence analysis that aimed to compare the overlap between Horizon and Cohesion policy, and RRF final/end beneficiaries was not feasible due to a lack of data, except for the Italian case.

There is a **lack of information regarding the results and impacts of the R&I measures**, as most of these measures are scheduled to be completed in 2025 and 2026. This had an impact on the assessment of the effectiveness of measures. For instance, the contribution to thematic priorities (green/digital transition, gender, cohesion, health, culture) was assessed in a descriptive manner and was not substantiated by analytical/ quantitative methods (such as by applying quantitative metrics, statistical analysis, or analytical modelling). While the literature review contributed to answering the evaluation questions, most of the available literature to date presents the expectations for the RRF, rather than offering a review of its implementation.

It was difficult to **assess the RRF impact**. While the research team intended to explore the impact of the RRF on R&I in the EU as a whole, and in specific member states using methods of causal inference, it was not possible to design and conduct a robust counterfactual analysis. One of the main issues was related to the selection of the control group. The attempt to identify a “high-income non-EU country” that did not implement stimulus packages, including support for R&I measures, during the analysis period is very challenging, as most advanced economies introduced such measures in some form. The assessment would therefore not be able to extrapolate the full effects of the RRF. Another challenge is related to the estimation of the impact on R&D intensity. Given that a significant share of the funding has not yet reached final beneficiaries, there is a considerable risk that the impact may be underestimated with the approach chosen. An alternative type of descriptive analysis was therefore conducted, where

the evolution of key R&I variables in the EU over a medium-term period is presented. Furthermore, trends in R&I expenditure are analysed, including how such spending was sustained (or not) during and after the COVID-19 crisis, which was compared to the period of the 2008 financial crisis.

Lastly, **limited information emerged from the analysis on the specific bottlenecks** (i.e., challenges) related to the implementation of RRF R&I measures through desk research. As a result, these bottlenecks were primarily identified through stakeholder feedback, which may lead to an overreliance on subjective perspectives.

# 3. Evaluation findings

## 3.1. Effectiveness

**Scope and general conclusion**

In this evaluation, Effectiveness is assessed in terms of whether the RRF has enabled the implementation of R&I reforms and investments as set out in the Council Implementing Decisions, the extent to which planned outputs and results have already been achieved, and its contribution to strengthening R&I capacities, addressing CSRs, and supporting broader policy goals such as the green and digital transitions. The most important caveat of the analysis is that measuring effectiveness is constrained by the early stage of many R&I measures. The general conclusion is that **the RRF has been broadly effective** in enabling substantial R&I reforms and investments, and in accelerating outputs such as research infrastructure upgrades, talent support, and science–business collaboration. However, **effectiveness has varied across Member States and innovation groups**: emerging and moderate innovators have used the RRF to tackle long-standing structural weaknesses, while strong and leader innovators have mainly leveraged it to reinforce existing strengths. Overall, while early evidence points to tangible improvements in innovation performance, scientific excellence, and green and digital R&I, these **results are uneven** and frequently tempered by delays as a result of administrative burdens and the limited time horizon before 2026.

### 3.1.1. EQ1.1. Has the RRF been effective in enabling the implementation of R&I-related reforms and R&I-related investments, respectively, as set out in the respective Council Implementing Decisions (CIDs)?

**Introduction:** The analysis for the first evaluation question (EQ) examines the general effectiveness of the RRF, while the achievement of outputs/results and more specific aspects of effectiveness are addressed in the subsequent questions.

**Main findings:**

- Both research at the country level and stakeholder input show that **the RRF has been effective** in enabling substantial reforms and investments in the area of R&I, as outlined in the CIDs.

The effective implementation of reforms and investments included in the various RRPs, as originally planned, is a prerequisite for receiving RRF funding ([22]). However, the RRF Regulation has enabled the possibility of revising the RRPs, among others, to account for objective circumstances that impede the proper implementation of the measures included in the different RRPs ([23]). Furthermore, the European Commission has recently issued a communication in which it provides guidance and recommendations on how to modify the plans (if necessary) to ensure seamless implementation for the EU Member States in the final years of the RRF's implementation ([24]).

To analyse the effectiveness of the RRF in enabling the implementation of R&I-related reforms and R&I-related investments respectively, as set out in the respective Council Implementing Decisions (CIDs), it is important to acknowledge that not all countries have yet fulfilled a measure, but that the majority of them - almost 70% (19 Member States) of the countries - have already fulfilled R&I-related measures and the associated milestones and targets, as outlined in the CID. Moreover, according to the amended versions of the RRPs, several countries, such as Cyprus, the Netherlands or Spain, have adjusted or downsized R&I measures. In most cases, investments, in particular those in infrastructure or digitalisation, have been the most impacted. This is due to a combination of factors, including elevated prices following inflationary pressures, challenges in the supply chain, and delays in procurement or lower demand than anticipated in other investment measures, such as grants to R&I projects. In the case of R&I-related reforms, these have been less prone to amendments, although in the Italian case, where legislative complexity has had a detrimental effect on an R&I reform, reforms have also been amended.

Findings from the interviews show that the process of amending the plans has been key in implementing the measures as outlined in the CIDs. According to most interviewees, this is an important element for R&I measures, as there are instances of changes in implementation, especially with regard to investment, which, due to changing circumstances such as inflationary pressure, may render the measures difficult to implement.

With regards to the survey results, as showcased in the following table, over **75% of the authorities consulted (overall n = 60) have considered the RRF to be effective *to some or to a large extent* in enabling the implementation of R&I-related reforms and investments**. Indeed, a significant proportion have considered it to be highly effective, especially for reforms. It is noteworthy that more than a third of the authorities surveyed declared the high effectiveness of the RRF in this regard. With regard to the investments, their effectiveness has been considered only *to a limited extent*, and this may be attributable to several factors. These include the time constraints under which these investments have to be implemented. Additionally, the **early stage of implementation** of the R&I projects has also impacted the process of evaluating the effectiveness of the RRF. This issue has been common among most Member States.

*Table 3: Responses to the question "To what extent has the RRF been effective in enabling the implementation of R&I-related…?"*

| | Reforms | Investments |
|---|---|---|
| To a large extent | 38% | 32% |
| To some extent | 38% | 58% |
| To a limited extent | 13% | 5% |

([22]) In this context, the term 'effectiveness' refers to the implementation of the various measures included in the plan in a seamless manner as originally intended. Conversely, 'efficiency' is defined as the correct allocation of resources to ensure that the objective of the policy is achieved.
([23]) European Parliament (2025), Changing for the better? Assessing changes to national RRF plans.
([24]) European Commission (2025), COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL NextGenerationEU - The road to 2026, Available here.

| | | |
|---|---|---|
| Not at all | 2% | 2% |
| I do not know | 8% | 3% |
| Grand Total | 100% | 100% |

Source: Authorities survey, N=60

The findings of the case studies are aligned with the findings resulting from the analysis conducted to answer this question. In particular, it has been found that in the case of innovation leaders and strong innovators, a majority of M&Ts (55%) have been realised, which is indicative of the RRF's effectiveness in implementing R&I measures as outlined in the CID. The case study on emerging innovators and moderate innovators demonstrated that these groups of countries exhibited a marginally diminished proportion of achieved M&Ts (around 40% in both cases) in comparison to other groups of countries, but that the R&I measures have nonetheless been achieved as outlined in the CIDs.

In addition, the research conducted at the country level has shown that, through the RRF, substantial **reforms and investments in the area of R&I have been implemented, as outlined in the CIDs in several MS**. The following examples are provided to illustrate the proper implementation of research and innovation reforms and investments as outlined in the CID.

- For instance, relating to the green transition, as a result of RRF investments and reforms in R&I, Austria has advanced in its transition towards a sustainable hydrogen economy through the IPCEI Hydrogen Initiative, in which EUR 125 million has been allocated to projects developed by two Austrian companies, following the Austrian CID.
- A key reform included in the Croatian plan, the reform introducing performance-based funding through the new Act on the Croatian Science Foundation, has been ambitiously implemented, as foreseen in the CID. It has replaced an outdated headcount-based system with a merit-driven model that prioritises excellence, societal impact, and stronger science-business collaboration. By establishing new programmes and monitoring frameworks, alongside strengthened operational capacities, Croatia has laid the foundation for a modern, competitive research environment. This measure marks a decisive shift towards quality-driven funding and strategic alignment with EU standards and shows an example of how the reform has been implemented as planned in the CID.
- Spain has adopted the reform of the Science, Technology and Innovation Law, which makes the necessary legislative changes aiming at enhancing the coordination of the Spanish R&I system, introducing a new scientific career and enhancing knowledge transfer, and constitutes another successful example of implementing the reforms as originally planned in the CID.

On another note, the positive experiences of countries such as Croatia, Latvia, and Slovakia, where the RRF was the main catalyst for implementing key R&I reforms, have supported the effectiveness of the RRF with no caveats in the implementation reported. Extensive desk research in the country-specific analysis has confirmed that these reforms have been implemented as originally outlined in the CID. Others, such as Finland and Spain, highlighted the instrumental nature of the RRF in supporting ongoing national policies on R&I, and similarly, the reforms have been implemented as originally planned in the CID.

### 3.1.2. EQ1.2. Which outputs/results have already been achieved?

**Introduction:** The analysis for this EQ explores the progress of the RRF-supported R&I measures in terms of outputs (measured through milestones and targets), common indicators, and identified results. It is important to acknowledge the potential differences among countries in terms of the status of reporting on R&I measures and the results that have been achieved. This may result in a more substantial amount of information from some countries compared to others, which may not fully reflect the status of implementation.

**Main findings:**

- 47% (334 out of 711) of all planned targets/milestones of the R&I-related measures have either been completed (not assessed) or fulfilled. Despite this progress, the completion and fulfilment of the milestones/targets is partially behind the indicative schedule provided in the Council implementing decisions on the RRPs.
- The levels of achievement of the milestones and targets vary between countries. For instance, countries such as Germany have fulfilled more than half of the M&Ts planned, while others, including Ireland and Sweden, have not completed any. It is important to note that this depends on the M&Ts allocation per year and the number of R&I-related M&Ts included in their plans.
- A majority of the surveyed entities (both RRF authorities and target group representatives) have reported that tangible results from the RRF are visible, at least to some extent, which is also confirmed by the country-level analysis.

#### Progress on milestones and targets

As noted in Section 1.4 and Annex II, as of end-March 2025, 47% (334 out of 711) of all planned targets/milestones have either been completed or fulfilled. Notwithstanding this progress, **the completion and fulfilment of the milestones/targets is partially behind the indicative schedule provided in the Council implementing decisions on the RRPs**. Although about 80% of R&I measures are still ongoing, the number of milestones/targets planned until Q4 2024 is 390, i.e., the completed (not assessed) and fulfilled targets/milestones stand at 86% of this indicative planning. In this respect, the implementation of the milestones and targets is underway, although there are delays compared with the indicative planning. Furthermore, the completed and fulfilled R&I milestones/targets encompass diverse policy domains of the RRF and the R&I systems of Member States (see Annex II).

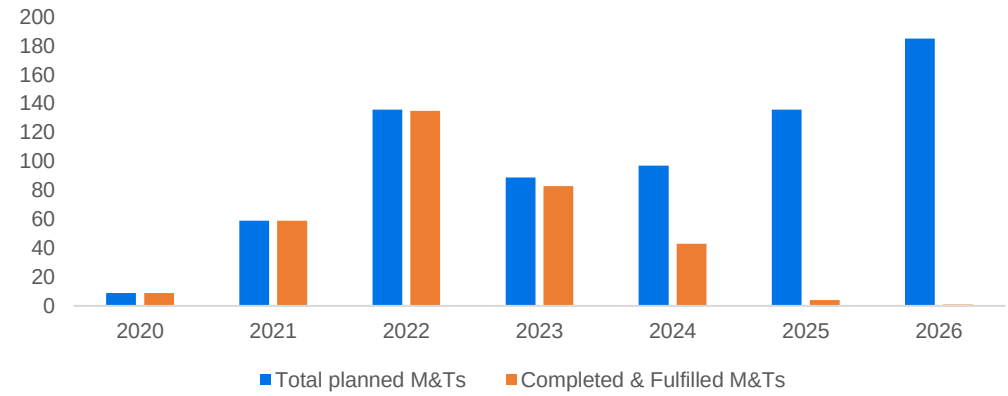
Looking at the data per Member State, **the levels of achievement of the milestones and targets vary between countries** ([25]). For instance, countries such as Germany have fulfilled more than half of the M&Ts planned, while others, including Ireland and Sweden, have not completed any. It is necessary to acknowledge that this interpretation is contingent upon the consideration of the indicative planning for their completion and the number of milestones and/or targets related to R&I measures included in each of the plans.

A general evaluation of the distribution, completion and fulfilment of M&Ts per year indicates that **the progress achieved in accomplishing the established milestones and objectives can be regarded as positive, although risks of delays have emerged**. However, as illustrated in the following figure, there is a discrepancy between the actual progress and the initial projections. This discrepancy can be observed by looking at the figures for 2024, where

([25]) Luxembourg is distinguished by the absence of any milestone or target related to R&I.

43 M&TS have been completed or fulfilled out of a total of 97 M&Ts planned, which may potentially result in delays in the implementation of R&I-related measures at the end of the RRF.

*Figure 7: Planned and completed and fulfilled milestones and targets per year*




Source: FENIX

### Progress on common indicators

To gain a comprehensive understanding of the progress made in implementing R&I-related measures, it is necessary to analyse the advancement of the implementation of the common indicators associated with these measures. In this regard, the RRF has demonstrated advancement across the common indicators related to R&I ([26]). It is noteworthy that the **RRF has provided support to over 163,000 researchers working in research facilities across 22 countries** ([27]). This figure constitutes approximately 6.3% of all researchers employed in research facilities within EU Member States, as compared to the figures recorded in 2019 (2,605,500) according to the mid-term evaluation of the RRF.

### Results

When it comes to the results achieved to date, the surveys with target group representatives and authorities have provided relevant insights.

**More than 40% of RRF beneficiaries surveyed (292 of 664) expressed that tangible results have been seen *to some extent* from their project(s), which are financed by the RRF in the area of R&I** ([28]). Some of the reasons for these tangible results include that RRF support reduces the financial risk of funding projects that are further from market application, allowing for a strengthening of research capacity and expanding opportunities for high-impact innovation. Furthermore, examples of results from RRF-funded projects in the area of R&I include the development of novel applications in key areas such as healthcare, as well as allowing for increased opportunities for green innovation.

Moreover, **an additional 42% of the surveyed RRF beneficiaries noted that R&I RRF-funded projects have seen tangible results *to a large extent***. This perceived increase in tangible results as part of the RRF is characterised by results such as digital transformation of SMEs, significant development of artificial intelligence innovation, and overall improvement of

([26]) Common indicator number 8: Researchers working in supported research facilities is the only common indicator related to R&I.
([27]) Source: Recovery and Resilience Scoreboard, data retrieved in 16/09/2025.
([28]) No pattern has emerged in this respect, and there are no significant differences among Member States when ES, CZ and HR are excluded, as the overall numbers remain very similar, with only minor changes in percentage points

research infrastructure and capacity. The responses from higher education and research institutions drive the results of this survey, as 45% of higher education institutions saw results *to a large extent*, 45% of them saw results *to some extent*, while research institutes saw results *to a large extent* 42% and 41% *to some extent*. 84% of business respondents reported at least some level of results, with 34% saying results are visible *to a large extent*.

Amongst the beneficiaries who claimed that no or few tangible results were experienced as part of RRF-funded R&I projects, the main reasons expressed included that projects are still at their initial stage or in progress, and therefore tangible results cannot yet be identified. See the table below for a comprehensive breakdown of answers provided by beneficiaries.

*Table 4: Responses to the questions "To what extent do you already see tangible results from your project(s) that is/ are being financed under the RRF? (e.g. increased research capacity, investments in research infrastructure and digital/green innovation, etc.)?"*

| | Responses | Percentage |
|---|---|---|
| To a large extent | 278 | 42% |
| To some extent | 292 | 44% |
| To a limited extent | 70 | 11% |
| Not at all | 12 | 2% |
| I do not know | 12 | 2% |
| Total general | 664 | 100% |

Source: Target groups survey, N=667

**A majority of RRF authorities (58%) expressed the view that tangible results have been seen *to some extent* from R&I measures under the RRF**, such as through key reforms and significant investments in research infrastructure and digital and green innovation. These tangible results include important reforms, for example, the adoption of new regulations on research and innovation in the case of Bulgaria and the improvement of the R&D&I legislation and governance in the case of Romania and Latvia. Furthermore, in the case of Denmark, the RRF funding has allowed for new ways of working focused on mission-based innovation, as well as increased development in areas such as green innovation. In other cases, such as in Slovenia, there has been more of an emphasis on investments, which has allowed for a broader range of R&I projects to be funded.

Few RRF authorities shared that tangible results had been seen to a *limited extent* with respect to R&I measures under the RRF. This was reflected by similar reasons as for beneficiaries, due to investments and reforms still being under implementation, and therefore, it is not possible to identify tangible results as of yet.

*Table 5: Responses to the question "To what extent do you already see tangible results from the R&I measures under the RRF? (e.g key reforms or significant investments in research infrastructure and digital/green innovation)?"*

| | Responses | Percentage |
|---|---|---|
| To a large extent | 14 | 23% |
| To some extent | 35 | 58% |
| To a limited extent | 7 | 12% |
| I do not know | 4 | 7% |

| | | |
|---|---|---|
| Total general | 60 | 100% |

Source: Member State authorities survey, N=60

Country-level research has also revealed that R&I measures funded under the RRF in most Member States have had tangible impacts, particularly for innovation and technological development for a range of sectors, as shown in the examples below. More broadly, the RRF-funded measures have been important for addressing specific elements of the R&I system across EU member states, as can be found in the country fiches of the different Member States.

*Box 1: Examples of results from the country-level research*

In Portugal, the Mobilising Agendas for Business Innovation has provided key results. With 50 out of 53 agendas already contracted, this initiative aims to strengthen the competitiveness and resilience of Portuguese business by supporting large collaborative projects in strategic value chains. It involves over 1,200 entities (including SMEs) and represents a total investment of EUR 7.8 billion, combining all sources of funding. Early outcomes include measurable revenue growth in the automotive sector and strengthened supply chains, demonstrating the programme's immediate economic impact.

In the Netherlands**,** the Quantum Delta NL project, backed by EUR 615 million from the National Growth Fund and complemented by RRF resources, has positioned the Netherlands as a European leader in quantum technologies. It has already established a pre-seed startup facility and allocated EUR 5.3 million to 16 research projects, accelerating both fundamental research and commercialisation. Moreover, it has improved the capacity for international talent attraction, the creation of new startups, and the consolidation of the Netherlands' role in pan-European quantum networks.

In Finland, the RDI Funding Package Supporting the Green Transition has enhanced collaboration between research institutions and industry, directly supporting Finland's national goal of reaching 4% of GDP in R&D investment. It has also strengthened partnerships in green technology fields, ensuring long-term impact beyond the RRF timeframe.

More specifically, in some countries, the **RRF has been instrumental in reform developments, as highlighted in the case studies**. For example, in Spain, the reform of the Science, Technology and Innovation Law has contributed to improving the coordination of the Spanish R&I system at national and regional levels. In some cases, new authorities with a mandate relating to R&I have been established such as in the case of the Innovation Agency Lithuania, which consolidated innovation support services across the country and introduced a new framework of incentives for businesses to invest in R&D. In the case of emerging innovators case study, which focuses on Poland, Slovakia and Croatia, the RRF has been key in addressing structural challenges facing the R&I national systems.

Nevertheless, country-level research has also revealed that in **some cases, results cannot yet be identified as investments and reforms are still under implementation** and their impacts can therefore not yet be measured, which is the case in Ireland, Denmark, Lithuania and Sweden. In other cases, e.g., the case of Bulgaria, some milestones related to innovative businesses, such as the number of notifications awarding projects by innovative SMEs and the Bankruptcy law, have been delayed.

### 3.1.3. EQ2.1. How effective has the RRF been in supporting reforms and investments that address country-specific recommendations relevant to R&I?

**Introduction:** This EQ explores the progress of Member States in R&I country-specific recommendations (CSRs) and the RRF's contribution to the process. The answer to the evaluation question is limited by the horizontal and structural nature of CSRs, which could result in progress often being slow or difficult to capture within the short timeframe of the RRF due to the depth and complexity of the reforms involved.

**Main findings:**

- The RRF has provided an important contribution to address R&I-related CSRs in many Member States but given that the CSRs cover long-standing issues (e.g., underinvestment in R&D), challenges within R&I-related areas remain across countries.
- Countries which receive a higher share of RRF resources demonstrate a greater level of adherence to R&I-related CSRs.

Since the creation of the RRF, several studies have highlighted the potential positive interaction between the European Semester and the RRF. Relevant literature ([29]) and reports from EU institutions, including the European Court of Auditors ([30]) have confirmed the positive contribution of the RRF to addressing a significant share of CSRs. According to the mid-term evaluation of the RRF ([31]), its ability to support the implementation of reforms has been considered one of the most effective features of the instrument.

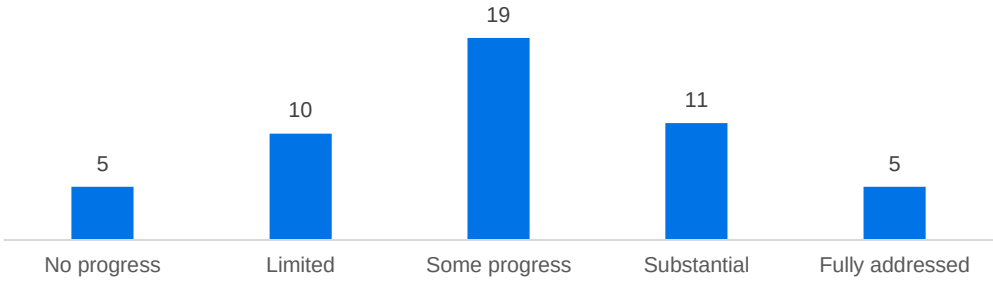
As a funding condition, as per Article 14(2) of the Proposal for establishing the RRF and related guidance, Member States were required to align their RRPs with the relevant CSRs. Since most Member States submitted their RRPs in 2021, the relevant CSRs were the recommendations from 2019 and 2020. This applied to the first 25 countries that submitted their RRPs, while for Poland and Hungary, the 2019, 2020 and 2022 CSRs were considered. These recommendations were designed to support the European Union's broader policy objectives, particularly in facilitating the green and digital transition. More specifically, the European Semester cycle of 2019 included R&I-related CSRs for all Member States, while the 2020 cycle targeted 21 Member States ([32]) ([33]).

Overall, the reforms and investments included in the RRPs of the EU Member States were mainly related to the broad topics of green and digital transitions, following the objectives defined in the regulation of the RRF. All countries had recommendations relating to these two overarching topics, and these also included elements which specifically related to R&I. Therefore, the RRPs of the Member States are inevitably and intrinsically linked to these objectives and recommendations.

([29]) See for example, Moschella, 2020; Vanhercke and Verdun, 2021
([30]) ECA Special report 21/2022, here.
([31]) European Commission. (2024), Mid-term evaluation of the Recovery and Resilience Facility (RRF). Available here.
([32]) Mileusnic, M. (2024) Research and innovation in the national recovery and resilience plans.
([33]) CSR database

Out of **50 CSRs relating to R&I from the years 2019, 2020, and 2022** ([34])**, 19 CSRs achieved some progress** based on the 2025 June cycle information. This was followed by 10 CSRs, which received limited progress, 5 where no progress was recorded, and 11 CSRs, which received substantial progress, while 5 CSRs received "full implementation".

*Figure 8: Status of R&I CSRs*




Source: Authors elaboration based on the CSR database.

As could be expected, **there is a positive correlation between countries that allocate RRF resources to R&I and higher levels of addressing R&I-related CSRs**, mainly led by Italy and Spain.

Looking closely at the progress in the implementation of the RRPs, the measures included in the different RRPs have played a key role in supporting investments and reforms, especially related to the green and digital transitions in the R&I sector. All RRPs demonstrate a strong alignment with the overarching objectives of these transitions, with notable progress in areas such as clean energy, digitalisation, and green technologies. These efforts reflect a clear commitment by Member States to integrate CSRs within their RRPs.

That said, the coverage of certain sector-specific recommendations – such as those related to R&I in sustainable transport and waste management – has been less explicitly outlined in some cases. This is largely due to the general and horizontal nature of R&I CSRs, which are usually aimed at improving national R&I systems in a structural manner, through stronger investments and reforms, rather than prescribing detailed sectoral actions.

Overall, the RRF R&I measures were effective in addressing the R&I-related country-specific recommendations. According to the European Semester Country reports, most national RRPs contain measures that align with long-standing R&I CSRs. These include increasing R&D investment in countries such as Finland, Spain, Italy, Greece, or Slovenia, strengthening science-business collaboration in Hungary, Portugal, or Finland, or improving governance structures and coordination across the different actors that are part of the R&I system, in the case of Lithuania and Romania. In countries with more developed R&I systems, such as the Netherlands, the RRF has focused on accelerating emerging technologies and supporting strategic autonomy. In another vein, the country reports of 2025 also underline ongoing challenges that are in need of further support beyond that of the RRF, including the low levels of private sector R&D investment, which remains a concern in several countries. Governance fragmentation remains a barrier to R&I development despite reforms in countries such as Spain, and brain drain and researcher mobility issues continue to be a problem in Eastern and Southern

([34]) In order to identify the CSRs relating to research and innovation, the CSR database was consulted, with a particular focus on the years 2019, 2020 and 2022 for Hungary and Poland. The CSR database was further filtered to select only those recommendations referring to the research and innovation policy area. Furthermore, in order to circumvent duplications, the analysis has concentrated on the multiannual monitoring carried out by the European Commission, leaving out the annual monitoring that the Commission also undertakes.

European countries, which shows the need for further support once the RRF is concluded to ensure its effectiveness over time.

To conclude, it can be said that while the RRPs have been effective in targeting R&I-related CSRs, the Semester outcome from 2025, with a total of 26 R&I-related CSRs, shows that important challenges still remain.

### 3.1.4. EQ2.2. Have R&I reforms and R&I investments in the plans been complementary and mutually reinforcing?

**Introduction:** This EQ focuses on one of the key features of the RRF – the interlinkage of reforms and investments, and explores the effectiveness of this approach in the R&I context.

**Main findings:**

- R&I reforms and investments in the RRPs are **largely complementary and mutually reinforcing** across the majority of EU Member States.
- Member States that have included reform and investments in their RRP that share objectives between them have exhibited higher levels of complementarity. However, this has not been uniformly the case across all Member States.
- In countries where **governance structures** have been established to facilitate the coordination of RRF reform and investment initiatives, there has been a concerted effort to ensure that these measures are mutually reinforced.

As observed through the country-level research, **in some Member States, R&I reforms and investments have been highly complementary and mutually reinforcing in different ways**. In some countries, mainly emerging and moderate innovators, this approach has focused on thematic alignment with shared objectives on specific sectors related to R&I in order to enhance the impact of R&I-related measures. In other countries, reforms and investment have been designed as a policy mix aiming to mobilise both public and private actors across the innovation ecosystem. Complementarities have been found to be strongest when reforms and investments are deliberately designed around a shared objective and embedded in governance structures that coordinate the different actors involved in implementation. Examples of this are provided below.

*Box 2: Examples of mutually reinforcing reforms and investments*

In Czechia, reforms and investments have been complementary and mutually reinforcing in the healthcare and industrial research sectors. For instance, the reform C6.2 R1: “The National Oncological Programme (NOP CZ 2030)” sets strategic healthcare priorities, while the investment “C5.1 I1: The Public R&D Support for Medical Sciences” builds capacity in biomedical research and is directly aligned with those priorities, with the objective of improving research quality and healthcare delivery. Furthermore, in Czechia, the introduction of a requirement that all investments need to be aligned with the goals of the R&I strategy of the country is also an important practice in ensuring complementarity and mutual reinforcement.

In Portugal, reforms relating to sustainable agriculture and food systems, the reform on the Research and Innovation Agenda for Sustainable Agriculture, Food, and Agroindustry defines goals and partnerships across the agri-food value chain, and the Investment E-C05-i03 ensures that sufficient and targeted funding is available to execute those goals. The reform provides strategic direction, while the investment acts as the enabling source, which

shows a good example of how shared objectives make reforms and investments mutually reinforcing.

As found in the case study, in the Croatian case, the design of its RRF measures was significantly supported by a comprehensive RDI portfolio analysis conducted by the World Bank in 2018–2019, which proved instrumental when the RRF emerged during the pandemic. Its up-to-date insights enabled Croatia to quickly develop a coherent and synergistic package of reforms and investments, and coupled with the technical assistance provided, resulted in a mutually reinforced and complementary set of reforms and investments.

Another example has been the case of Latvia, where reforms are accompanied by investments in order to allow for a proper implementation process and to cover the costs associated with the changes implemented through the reforms. A case in point is the reform "Innovation system governance and private R&D investment motivation" (LV-C[C5]-R[5-1-r-]), which aims to establish an ecosystem approach to innovation governance and enhance private R&D investment. This reform is directly supported by two complementary investments: the " Operationalisation of a fully-fledged innovation system governance model l" (LV-C[C5]-I[5-1-1-1-i-]), which funds the development and functioning of the new governance model, and "Support for research and internationalization" (LV-C[C5]-I[5-1-1-2-i-]), which provides targeted public funding across four programmes to stimulate private R&D and international collaboration. The Latvian example illustrates how combining reforms with targeted financial support creates a reinforcing policy mix that builds systemic capacity for innovation.

Other countries where reforms and investments have been planned with **thematic** complementarities and **shared goals** in mind include Austria, Bulgaria, Czechia, France, Greece, Latvia, Romania, Slovenia and Slovakia. In these cases, the overall idea is that the complementarities were either deliberately provided for in the RRP, or that reforms acted as a backbone for enabling investments, and this also increased the added value of the RRF for R&I measures, as shown in EQ15 below and in their respective country fiches. Furthermore, practices for ensuring the complementarity and mutual reinforcement of R&I reforms and investments under the RRF have been identified by national authorities. In these countries, coordination and communication platforms among different ministries are important in order to ensure the targeted launch of financing programmes and strategies. This underlines the importance of a coherent governance structure to reinforce the measures.

The reasons why these countries pursued this integrated approach could be multifaceted. In part, it reflects differences in institutional readiness, political will, and structural needs. Countries like Croatia and Latvia had long-standing structural weaknesses in their R&I systems, such as fragmented governance, underfunded institutions, or weak links between research and industry. This likely made the case for reform more urgent and the opportunity presented by the RRF more compelling. In contrast, countries with more mature R&I systems may have seen less need for structural reform. This is mainly the case in strong/leader innovators, as their systems are typically not in need of structural reforms and instead have focused on investments that leverage existing funding in particular areas. Such is the case of countries like Denmark, Sweden and the Netherlands, where reforms have not been deemed necessary due to a strong existing regulatory environment on R&I. Other countries faced greater political or institutional resistance to change. In some cases, the administrative complexity of designing and implementing reforms alongside investments within the tight RRF timeline may have led governments to focus on easily deployable or pre-existing investment projects rather than systemic transformation.

As for the national authorities, when asked about the extent to which synergies exist between R&I reforms and investments in their countries, **the majority of the 60 respondents answered either that synergies exist *to some extent*** (24 respondents) **or *to a large extent*** (19

respondents). This aligns with the findings for this question, as synergies are more likely to be found when reforms and investments are mutually reinforcing and complementary. However, it is also important to note that in a significant minority of cases, national authorities either identified that synergies exist *to a limited extent* (13 respondents) or that they did not know (4 respondents). This means that in 28% of cases, there is either uncertainty around synergies between reforms and investments, or that such synergies have been limited or weak for the reasons mentioned above.

### 3.1.5. EQ3. To what extent has the RRF been effective in strengthening Member States' R&I capacities?

**Introduction:** The analysis for this EQ explores the level of effectiveness of the RRF in strengthening Member States' R&I capacities, e.g. in terms of science-business collaboration, scientific excellence, innovation performance of firms, and strengthening researchers' careers. Furthermore, it explores concrete results, good practices and lessons learned in this regard.

**Main findings:**

- The RRF has generally been effective in strengthening research and innovation (R&I) capacities across most EU Member States. Moderate and emerging innovators have used RRF resources more to boost scientific excellence and system reforms, while stronger innovators use RRF predominantly for business-oriented innovation measures, leveraging existing excellence infrastructure.
- Strengthened science-business collaboration occurs in particular when RRP measures are explicitly mapped onto existing structures such as Smart Specialisation Strategies.

R&I capacities are central to the Union's competitiveness and to delivering the green and digital transitions, as explicitly recognised in the RRF Regulation ([35]). However, several reports from the European Commission have shown that EU Member States face heterogeneous and persistent R&I gaps ranging from insufficient public and/or private R&D intensity, low scientific excellence, low innovation performance of firms, or the need to strengthen science-business collaboration ([36]). In that regard, the RRF is expected to contribute to three key dimensions: science-business collaboration, enhancing scientific excellence and innovation performance of firms. Both national authorities and target group representatives were asked about their perceptions of the RRF's effectiveness in these three aspects. The results can be seen in the table and chart below, respectively.

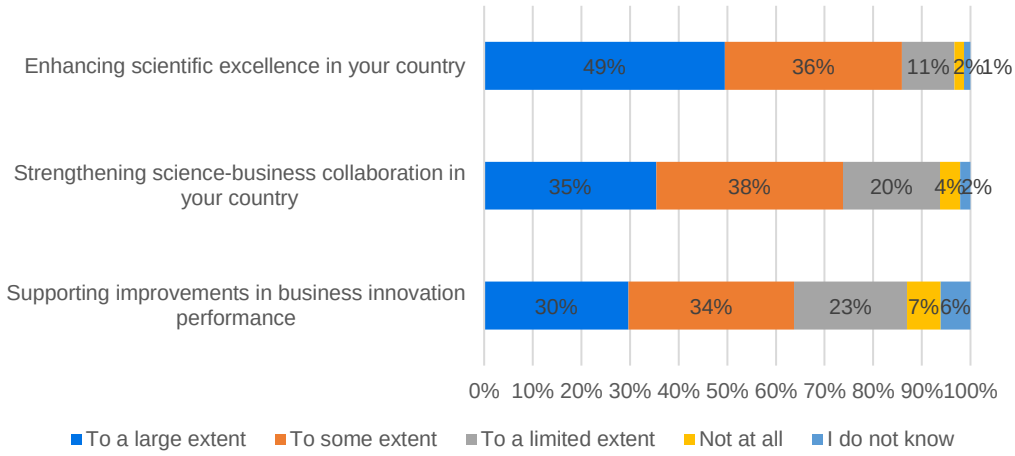
([35]) See Recitals 8, 9, 12 and 13 of the RRF Regulation.
([36]) European Commission, Science, Research and Innovation performance of the EU 2024 report 2024.

*Table 6: Responses to the question "To what extent has the RRF been effective in…?"*

| Effectiveness of RRF aspects (in %) | To a large extent | To some extent | To a limited extent | Not at all | I do not know |
|---|---|---|---|---|---|
| Enhancing scientific excellence in your country | 33% | 32% | 25% | 3% | 7% |
| Strengthening science-business collaboration in your country | 38% | 40% | 15% | 2% | 2% |
| Supporting improvements in business innovation performance | 25% | 42% | 18% | 5% | 10% |

Source: Member State authorities survey, N=60

*Figure 9: Responses to the question "To what extent do you think your project is (will be) effective in…?"*




Source: Target groups survey, N=667

## Enhancing Scientific Excellence

As shown in section 1.4 above, a total of EUR 13.99 billion have been allocated to enhancing scientific excellence in EU countries, leading by Italy (EUR 4.37 billion), Spain (EUR 2.6 billion), France (EUR 1.18 billion), Germany (EUR 1.17 billion) and Poland (EUR 943 million) in terms of absolute funding, and mainly by emerging innovators countries like Bulgaria (95%), Romania (92%), Poland (85%) and Slovakia (75%) in relative terms, where scientific excellence represents a central pillar of their R&I RRP strategy. On the contrary, stronger innovators (e.g., Denmark, Germany, France or Sweden) have not prioritised this area. When it comes to the reforms, 24 measures have been included in the different RRPs, targeting scientific excellence, with Slovakia and Lithuania leading.

However, the capacity of the RRF to enhance scientific excellence has been highlighted by the authorities interviewed in a limited set of Member States. In particular, the establishment of new research centres and institutes in countries such as Belgium and Greece ([37]), in fields as diverse as AI and robotics, would not have been possible without the financial support of the RRF, and these initiatives contribute to scientific excellence in these countries. The National Laboratories Programme of Hungary and the excellence consortia of Romania have, in a similar fashion, aimed at increasing the scientific excellence of these countries and raising the standard for coordinated high-quality research. However, both countries require further measures to increase their scientific excellence, which is currently low, and the implementation of these measures is ongoing ([38]). In Portugal, the strategy of augmenting the remuneration of researchers has been employed as a countermeasure to the phenomenon of brain drain, thereby contributing to the retention of talent and, in an indirect manner, supporting the pursuit of excellence.

In fact, researcher mobility, early-career support, and tenure systems were the focus of direct targeting in several Member States, which have the potential to contribute to improving the scientific excellence of these systems. Croatia is notable for a package of complementary measures (Mobility, Young Researchers, Tenure-Track, Entrepreneurship Traineeships) that combine career support with incentives for internationalisation and industry linkages; this kind of bundled approach appears repeatedly in the case evidence as effective at building capacity when paired with adequate funding and governance. The stakeholder interviews also highlighted focused career-development measures in Greece, Slovenia and Romania, while Spain and Italy reported substantial expansion in PhD and early-career opportunities, which help sustain institutional capacity.

Taken together, moderate and emerging innovators tend to use RRF resources more to boost scientific excellence and system reforms, while stronger innovators use RRF predominantly for business-oriented innovation measures, leveraging existing excellence infrastructure. This distribution aligns with the EIS and smart specialisation logic, as countries with a lower baseline tend to prioritise system-building and excellence creation.

In relation to the entities surveyed, both stakeholder groups - national authorities and target group representatives - **mostly endorsed the RRF contribution to the enhancement of scientific excellence**. Among the authorities surveyed, 33% respondents reported significant improvements, while 32% reported some degree of improvement. Among the target groups, 49.6% indicated substantial improvement, while 36.6% reported some level of positive change. A smaller proportion (around 28% in the case of authorities and 13% in the case of target groups) of respondents in both groups selected negative responses ("not at all" or "to a limited extent"), suggesting a higher proportion of opinions that the RRF has been effective in fostering scientific excellence.

Yet, despite this increased focus on scientific excellence, significant challenges remain. Several Member States continue to face structural weaknesses as reported in the European Semester CSRs. For instance, there is still fragmentation of the science base in Croatia and Bulgaria, which hinders the consolidation of critical mass and reduces international visibility. In Romania, persistent governance shortcomings in the research and innovation system constrain the translation of measures into sustained performance gains. Other countries, such as Slovakia and Hungary, still struggle with limited international cooperation and insufficient private sector engagement in research.

([37]) European Commission (2025), 2024 Country Report – Greece, Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Greece, here.
([38]) European Commission (2025), 2024 Country Report – Romania, Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Romania, here.

### Science-Business Collaboration

Based on Section 1.4, a total of EUR 11.2 billion has been invested in public-private partnerships and science-business cooperation, mainly led by Italy, Spain and Portugal, each of them investing more than EUR 3 billion in this. In relative terms, Slovenia, Portugal and Latvia stand out for dedicating a large share of the RRP R&I envelopes to these elements. On the reform side, Spain and Lithuania have the highest counts, including measures and sub-measures included in their plans ([39]).

Importantly, according to the case study and country-level analysis, these measures have typically been layered onto pre-existing national instruments and strategies (e.g., S3), and the RRP acted as an accelerator within established strategic frameworks.

According to the stakeholders interviewed, the RRF has notably fostered science-business collaboration in a wide range of countries. For instance, Lithuania, Czechia, and Croatia have reported an enhancement in the interface between academia and industry, notably through the utilisation of well-structured consortia and collaborative programmes (e.g., Proof of Concept and Start-up Calls in Croatia). In Czechia, long-term industry-academia collaborations were formed around centres of competence. These were enabled by grants, which mitigated firms' typical aversion to high-risk, long-payback R&D investment, as confirmed by the 2024 European Semester country report ([40]). The reform C5.2-R1 established the National Coordination Group for Industrial Research, which institutionalised the alignment of R&D calls with S3 priorities, thereby embedding public-private partnerships within existing strategies.

Spain has included measures in their RRPs aimed at having effective public-private partnerships within strategic sectors for the R&I system, including biomedical sciences. In Spain, the creation of industrial consortia for strategic R&D projects, which shows strong university-business collaboration, has been an important step towards improving the weak science-business linkages in the country ([41]). Denmark's mission-oriented approach was pioneering in nature, as it represented a significant departure from the norm by bringing together all eight public universities for the first time under a common R&I scheme related to the green transition, which focuses on building partnerships with private actors.

These examples confirm that strengthened science-business collaboration occurs when RRP measures are explicitly mapped onto existing structures such as S3, which is consistent with the literature on smart specialisation ([42]), which highlights that collaboration requires alignment with established strategies and governance frameworks.

With regard to the surveyed entities, the national authorities reported a predominantly positive view of progress in fostering collaboration between the scientific community and industry. More than a third of respondents (23 out of 60) consider that collaboration had improved "to a large extent," while 24 indicated improvement "to some extent." Only a minority (9 authorities out of 60) reported no improvement or were uncertain. Conversely, target groups exhibited a more diversified and marginally less optimistic outlook. While an important proportion (35%) attested to improvements "to a large extent" and 38% "to some extent," 133 respondents (20%) indicated only limited or no improvement. This finding indicates a discrepancy between the perceptions of authorities and target groups concerning the effectiveness of the RRF in facilitating science-

([39]) It is important to note that the classification also include sub-measures, which is why there could be a higher number of measures included as compared to those included in the plans.
([40]) European Commission (2024), 2024 Country Report – Czechia, Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Czechia, here.
([41]) European Commission (2025), 2025 Country Report – Spain, Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Spain, here.
([42]) Hegyi, F.B. and Prota, F., Assessing Smart Specialisation: Monitoring and Evaluation Systems, EUR 30654 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-32592-5, doi:10.2760/443642, JRC123734; Ferreira, H., Marques, C.S. & Farinha, L. Regional Smart Specialisation Strategies: A Systematic Literature Review. J Knowl Econ (2025). https://doi.org/10.1007/s13132-025-02736-3

business collaboration. Businesses and intermediary organisations were overall more positive than higher education and research institutions, which reported lower effectiveness of the RRF in strengthening science-business collaboration. This discrepancy can be explained by the fact that these target group representatives often face additional administrative burdens when accessing RRP support. Delays in receiving funds and in seeing results materialise may therefore influence their different perception of the impact.

Despite the positive developments, 2025 CSRs underscore that many Member States still face significant barriers in enhancing science-business cooperation. For instance, the need to strengthen science-business links by improving support structures, implementing targeted funding schemes, and creating incentives for researchers to engage with the private sector and the need to address fragmented public investment and insufficient private R&D have been challenges to be addressed for several countries (e.g. BG, CZ, DE, ES, FR, IT, CY, LV, LT, AT, PL, SK, FI). Thus, the 2025 CSR cycle confirms that while the RRF and related measures have fostered useful structures for science-business cooperation in many countries, persistent issues remain.

### Innovation performance of firms

Following Section 1.4 above, a total of EUR 27.5 billion has been invested in business innovation with the main allocators being Spain (over EUR 11 billion), Italy (EUR 4.7 billion), Germany (more than EUR 5 billion), and France (over EUR 4.4 billion). In relative terms, the majority of strong and leading innovator countries have used the RRF to support business innovation, and this is the primary area supported by the RRF investments in these countries. Moreover, this has also been the predominant area supported by moderate and leading innovators. In terms of reforms, a total of 16 measures has been adopted in this area. Lithuania stands out with four reforms on the innovation side, while Poland and Cyprus have adopted two each ([43]).

The interviewees from a number of Member States, most notably Croatia, Czechia and Hungary, stated that they had utilised the RRF to increase the innovation performance of their firms. Croatia's Proof of Concept and Start-up Calls provided direct support to SMEs and young researchers in developing innovations that were market-ready and contributed to the positive trend in innovation performance in recent years in the country ([44]). In the same vein, Slovenian SMEs developed market-ready innovations in robotics, digital tools, and green technologies. RRF supported investment in early-stage innovation. Conversely, in countries such as Latvia and Finland, RRF support was perceived as a stimulatory package to the measures that were already in place rather than a catalyst for structural transformation in the R&I system, attributable to the comparatively modest scale of funding relative to national R&I systems.

Several Member States (i.e., Cyprus, Denmark and Italy) chose to include tax incentives measures within their RRPs, having the potential to enhance firms' innovation performance. For instance, Cyprus introduced a tax exemption for legal entities investing in innovative companies as part of the measure "Incentives for Investments and Human Capital in R&I" (C3.2R2). In Denmark, tax schemes were core measures of its RRP, which accounted for nearly half of its RRF support. However, there is a lack of evidence so far on the impacts of these incentives. Moreover, Italy provided a tax credit for R&D projects.

The distribution of survey responses regarding the RRF's effectiveness in supporting innovation performance exhibited greater uniformity than the perceptions on its support to scientific excellence and science-business collaboration. From the authority group, a combined total of 36 respondents (72%) indicated moderate to large effectiveness, while 10 reported limited or

([43]) It is important to note that the classification also include sub-measures, which is why there could be a higher number of measures included as compared to those included in the plans.
([44]) European Commission (2025), 2024 Country Report – Croatia, Recommendation for a COUNCIL RECOMMENDATION on the economic, social, employment, structural and budgetary policies of Croatia, here.

no improvement. Among the target groups, 170 acknowledged moderate or significant gains (82 and 88, respectively), yet a notable subset (64) was less convinced of the RRF's effectiveness in this regard. Of the latter group, most businesses surveyed (56% of 103 businesses that participated in the survey) reported that the RRF has been effective to a large extent, and 30% of them to some extent in supporting improvements in business innovation performance. Furthermore, the limited effectiveness of the RRF in this regard can be attributed to an element emphasised by Hungary and Poland. These countries have emphasised that the Member States have chosen not to provide financial support from the RRF for projects with a higher risk of (non)-execution, which might require adjustments in their design to be implemented. This process was not entirely clear during the initial planning stages, and as a result, less complex projects were chosen to be financed.

Despite the developments, the 2025 CSRs highlight that challenges in the design and effectiveness of public support schemes for innovation persist across several Member States. For example, Belgium, Czechia, Denmark, Ireland, France, Latvia, Hungary, Malta, and Slovakia all received CSRs calling for more effective innovation support measures. These recommendations point to weaknesses such as fragmented funding instruments, insufficient targeting of SMEs and start-ups, limited uptake of riskier or breakthrough projects, and inadequate coordination with national R&I strategies. In some cases (e.g. Czechia and Hungary), the CSRs emphasise the need to increase the efficiency and transparency of state aid and support schemes, while in others (e.g. Denmark and Ireland), they underline the importance of better aligning incentives with green and digital transitions. These findings suggest that while the RRF has significantly boosted the scale of innovation funding, it has not yet resolved long-standing structural issues in public support schemes.

### 3.1.6. EQ4. Has the RRF support for R&I measures been effective in…?

**Introduction:** This EQ covers the multifaceted nature of the RRF measures, exploring the R&I measures' effects on the following key aspects: green and digital transition, gender equality in R&I, cohesion, health, and the cultural heritage. Given this very broad scope, the level of information available to provide an in-depth answer to the EQ differs.

**Main findings:**

- The RRF has been an **effective tool in directing R&I towards accelerating the green transition, and it has contributed to the different European Green Deal priorities** in several ways, as reported in the country-specific examples.
- The RRF has **effectively supported R&I measures related to the digital transition** in various EU Member States and has directed R&I towards supporting the digital transition, although it has been less of a priority as compared to the green objectives, following the RRF regulation.
- In the area of **gender equality in R&I, effectiveness is asymmetrical** concerning dedication to implementing a gender equality perspective in R&I. The countries that receive a higher share of the RRF have multiple measures, which include gender mainstreaming in R&I, while others have no mention of gender equality in their plans, measures, and related milestones.
- The RRF has demonstrated **varying levels of effectiveness in enhancing EU and national territorial cohesion**, as well as in addressing disparities in R&I performance within and between Member States. Furthermore, **the RRF has broadly been effective in supporting the promotion of R&I in the field of health**. Finally, only a few countries

have included measures related to the promotion of R&I in the **cultural and creative industries.**

#### *3.1.6.1. 4.a. …directing R&I support towards accelerating the green transition?*

The RRF has been an **effective tool in directing R&I towards accelerating the green transition,** and it has contributed to the different European Green Deal priorities in several ways, as will be developed in the following paragraphs.

Firstly, the European Commission conducted a preliminary analysis at the end of 2022. This analysis examined the contribution of the Recovery and Resilience Plans to key EU policy priorities and the contribution of the RRF R&I measures to the green transition. The study, following the RRF Scoreboard data showed that **more than 35% of the total R&I expenditure of the plans was allocated to green R&I**. This investment manifested in various forms, including the promotion of collaborative efforts between business and scientific communities in pertinent domains of the green transition, the facilitation of enhanced access to finance for SMEs and start-ups that contribute to the implementation of green transition projects, the reformulation of tax credit schemes to encourage a greater involvement of companies in green R&D activities, the conception of projects centred on low-carbon and/or decarbonised hydrogen, and the designation of IPCEI on green areas. **This demonstrates that the contribution of the RRF R&I measures to the green transition and, consequently, to the European Green Deal priorities was already foreseen during the planning and drafting of the plans** ([45]). This is consistent with the findings of the RRF mid-term evaluation, which emphasised the positive contribution of the RRF to the European Green Deal objectives.

Turning to the implementation of the plans, an analysis of the FENIX data has identified a total of 154 R&I measures that contribute to the green transition ([46]). Of these, 55 measures have been completed or fulfilled, according to the FENIX data. This allows for the identification of potential results, good practices, and lessons learned with regard to its contribution to the green transition. Concerning the milestones and targets associated with these measures, a total of 244 M&Ts have been completed and/or fulfilled, while 26 M&Ts planned to be completed by the first quarter of 2025 remain unfulfilled. This suggests that around 90% of the planned M&Ts have been completed and/or fulfilled, indicating the RRF's effectiveness in this regard.

The findings of the interviews with key stakeholders and country-level research also indicate that **the RRF has been effective in contributing to the objectives of the green transition.**

Belgium has also directed RRF investment towards clear hydrogen and sustainable mobility projects, aligning them with broader decarbonisation goals such as the Flemish Blue Deal. Cyprus has demonstrated a commitment to the promotion of renewable energy and sustainable transport initiatives, which are projected to result in a reduction of the country's greenhouse gas emissions. The Green Fund of Estonia, in conjunction with associated green technology initiatives, is beginning to scale green innovation in manufacturing and clean energy. Finland's initiatives in the field of low-carbon built environment, alongside its strategic investments in hydrogen, are already yielding substantial outcomes, in accordance with the national climate strategies. Greece's strategic investments in renewable energy, sustainable materials, and

([45]) It is important to note that the RRF Regulation requires that each Member State must dedicate at least 37% of its recovery and resilience plan's total allocation to measures contributing to climate objectives.
([46]) Measures were identified as contributing to the green transition if the primary or secondary policy pillar of the measure was the pillar on green transition. Of these, 128 measures had as primary pillar the green transition pillar, and 26 has it as secondary pillar.

green R&D have contributed to the formulation of national decarbonisation and circular economy strategies.

The case study on strong innovators also showed that these countries used the RRF to expand or accelerate existing green R&I initiatives rather than initiate new programmes and that targeted green R&I investments were in place (e.g., Denmark's green missions, France's green hydrogen measures and Germany's electromobility initiatives). Furthermore, the impact of these measures is less pronounced in emerging innovators, who prioritised horizontal R&I measures.

#### *3.1.6.2. 4.b. …directing R&I support towards accelerating the digital transition?*

**The RRF has effectively supported R&I measures related to the digital transition in various EU Member States.**

As was the case with the green transition, the European Commission analysis of the contribution of the Recovery and Resilience Plans to key EU policy priorities and a new EU R&I Policy landscape assessed the RRF R&I measures' contribution to supporting the digital transition. It was found that approximately 9.3% of the total R&I expenditure of the plans was devoted to measures aimed at fostering the digital transition, with 17 countries including measures contributing to the digital transition ([47]). In this regard, the RRF R&I measures also targeted the acceleration of the digital transition, but to a lesser extent than the green transition.

An analysis of the FENIX data reveals that a total of 96 measures have been identified as contributing to the digital transition ([48]). Of these, a total of 18 measures has already been completed or fulfilled according to the FENIX data. With regard to the milestones and targets associated with these measures, a total of 112 M&Ts have been completed and/or fulfilled, while 26 M&Ts planned to be completed by the first quarter of 2025 remain unfulfilled. This suggests that around 81% of the planned M&Ts have been completed and/or fulfilled, indicating the fRRF's effectiveness in this regard, although to a lesser extent as compared with the contribution to the green transition objectives.

This allows for the identification of potential results, good practices, and lessons learned with regard to its contribution to the digital transition. Furthermore, the effectiveness in contributing to the digital objectives was examined through interviews with the relevant stakeholders.

The analysis of the measures and the contributions of the stakeholders reveals that the RRF has facilitated the integration of digital innovation into national strategies by providing financial support for both digital infrastructure and enterprise-driven R&D.

For instance, Slovenia has implemented substantial reforms and investments under the RRF to support its digital transition. Key initiatives include the European Common Data Infrastructure and Services (C6 ID) and Low-Power Processors and Semiconductor Chips (C6 IE), which support industrial digital infrastructure, cross-border cooperation in AI and semiconductor autonomy, and participation in key EU digital ecosystems. In Portugal, the RRF-funded Interface Mission has advanced technology infrastructures such as Centres for Technology and Innovation (CTIs) and Collaborative Laboratories (CoLABs) to support digital and green transitions. These institutions play a crucial role in fostering technology transfer and cooperation between businesses and research centres, especially in digital fields such as Industry 4.0. Romania has focused on digitalising SMEs and strengthening cybersecurity through

([47]) As required by the RRF Regulation, each national plan has to earmark at least 20% of the total financing to achieve the digital targets.
([48]) Measures were identified as contributing to the digital transition if the primary or secondary policy pillar of the measure was the pillar on digital transformation. Of these, 80 measures had as primary pillar the green transition pillar, and 16 has it as secondary pillar.

Component 9 of its RRP. Other Member States have followed comparable paths, such as the Netherlands, which has co-funded its strategic quantum initiative through the RRF.

#### *3.1.6.3. 4.c. …promoting gender equality in R&I? (both in terms of participation, and addressing the negative impacts of the pandemic on women's productivity and careers, and in terms of integrating a gender perspective in R&I content)*

Following the RRF Regulation requirement to include in the RRPs an explanation of how the measures in the RRPs are expected to contribute to gender equality and equal opportunities for all, and the mainstreaming of those objectives, there are several elements in the MSs' RRPs that have helped in promoting gender equality in R&I. However, results relating to implementing a gender equality approach as part of measures and sub-measures on R&I have been more asymmetrical.

In terms of common indicators focused on the R&I sector, one is disaggregated by gender - **Common indicator 8: Researchers working in supported research facilities**, which measures the number of researchers in full-time equivalent (FTE) terms. Results from this indicator show that the RRF has not provided equal support, given that male researchers have been supported more than female researchers (see table below).

However, when comparing these figures with Eurostat statistics on R&D researchers, it becomes clear that the RRF has had a relatively stronger impact on women. Compared to the pre-RRF baseline in 2019, Women represented approximately 42% of all researchers in the EU in headcount terms in 2024, up from around 30% in 2019. In other words, although the absolute number of male researchers supported is higher, women's share among supported researchers is broadly in line with, or slightly above, their overall representation in the research workforce.

*Table 7: Researchers working in supported research facilities (gender disaggregation) by the RRF, and as a percentage of the total EU researchers ([49])*

| Category | Researchers supported by the RRF (2024-S2) | Total EU researchers according to Eurostat (2019) | Percentage of the total |
|---|---|---|---|
| Male | 36,704 | 1,299,137 | 2.8% |
| Female | 27,142 | 554,6608 | 4.89% |

Source: RRF Scoreboard and own calculation using Eurostat (rd_p_persocc)

In terms of specific measures undertaken by different member states in the area of gender equality in R&I, **effectiveness is asymmetrical concerning dedication to implementing a gender equality perspective in R&I, with some countries having multiple measures that include gender mainstreaming in the R&I, and with others having no mention of gender equality in their plans, measures and related milestones**. Those that have implemented gender equality in R&I measures have mainly done so through reforms and, to a lesser extent, through investments.

For example, some countries, such as Spain, have implemented several reforms through the RRF relating to R&I, which have specifically promoted R&I gender equality – this includes the Spanish Science, Technology and Innovation Strategy 2021-2027, the National Artificial Intelligence Strategy and the National Digital Competences Plan, all of which include a R&I gender perspective. In terms of investments, Spain has also contributed to female

([49]) While the total number of researchers working in supported research facilities is 163,613, the RRF scoreboard's disaggregation by gender provides only the figures included in the table.

entrepreneurship through the development or attraction to Spain of international events focusing on innovative companies and a programme to attract female talent. In other cases, such as Denmark, gender equality has been integrated in overarching investments in R&I, such as the green R&D programme, within which there are provisions for integrating gender balance and diversity of research teams in the overall assessment of the programme.

While most Member States have not included specific reforms or investments relating to gender equality in R&I, there are cases where gender requirements were integrated directly into R&I-related measures. In many Member States, gender mainstreaming has been included as an eligibility criterion in R&I funding calls or as a reporting requirement in the RRF measures. For example, Spain requires R&I projects funded through certain RRF measures to demonstrate how they contribute to gender equality. In Portugal, gender equality has been included as a cross-cutting criterion in the evaluation of R&I proposals under its Mobilising Agendas for Business Innovation. Finally, Italy introduced reforms and investments to increase the representation of girls and women in STEM, as well as cutting-edge research activities, and introduced requirements for gender balance in recruitment and participation in research projects funded through the RRP.

#### *3.1.6.4. 4.d. …enhancing EU and national territorial cohesion in light of the EU's innovation divide (in terms of tackling disparities in R&I performance within and between Member States)?*

The RRF has demonstrated varying levels of effectiveness in enhancing EU and national territorial cohesion, as well as in addressing disparities in R&I performance within and between Member States.

Firstly, the European Commission's analysis shows that several countries have allocated funding for their Recovery and Resilience Plans to key EU policy priorities ([50]). Almost EUR 2 billion of the total amount is dedicated to R&I measures ([51]) were allocated to measures that enhance territorial cohesion. Furthermore, it was found that larger countries, such as Italy, Spain and France, placed more emphasis on territorial cohesion in their plans, thereby aiming at reducing regional disparities. This aligns with the RRF mid-term evaluation's findings that territorial-cohesion design features are especially explicit in Italy, Spain and Croatia, although aggregate cohesion results remain somewhat mixed. Moreover, as the Regional Innovation Scoreboard (RIS) ([52]) and the Ninth Report on Economic, Social and Territorial Cohesion ([53]) show, innovation performance tends to concentrate where national performance is already high, with scientific excellence concentrated in moderate or emerging innovator countries, showing that the innovation divide persists.

An analysis of the data provided by the FENIX database reveals that a total of 21 measures have been identified as contributing to the social and territorial cohesion ([54]). Of these, 14 measures have already been completed or fulfilled according to the FENIX data, which shows good progress in this regard. Regarding the milestones and targets associated with these measures, a total of 47 M&Ts have been completed and/or fulfilled, while 9 M&Ts planned to be completed by the first quarter of 2025 remain unfulfilled. This suggests that around 84% of the planned M&Ts have been completed and/or fulfilled, indicating the RRF's effectiveness in

([50]) European Commission, 2022.
([51]) Please take into account that several disclaimers are included in the study concerning the amounts that should be taken into account, as there has been double-counting.
([52]) European Commission (2024). *European innovation scoreboard – Analysis of the regional innovation performance – Main report*, Publications Office of the European Union. Available herev.
([53]) European Commission (2024). *Ninth report on economic, social and territorial cohesion,* Publications Office of the European Union. Available here.
([54]) Measures were identified as contributing to the digital transition if their primary or secondary policy pillar was social and territorial cohesion. Of these, two measures had the social and territorial cohesion transition pillar, and 19 had it as a secondary pillar.

this regard. Furthermore, this allows for the identification of potential results, good practices, and lessons learned with regard to its contribution to territorial cohesion.

Several examples at the country level have shown this. For instance, in Poland, the RRF serves to complete the cohesion policy by addressing the gaps in R&I support that exist in cities such as Warsaw, where ERDF funds are less readily available for R&I infrastructure due to their higher levels of development. In Italy, the RRF allocated a significant proportion of its investments to the Southern regions through the so-called Mezzogiorno clause, which requires that at least 40% of total plan resources benefit the southern regions. This has translated into targeted support for digital infrastructure in schools, innovation ecosystems, and research centres in areas historically lagging, with the explicit aim of addressing structural disparities in territorial development. In Spain, a proportion of the RRF has been allocated to the enhancement of the scientific and technological systems of the regions. Specific calls for projects have been made to reinforce regional ecosystems and reduce fragmentation, although regional differences persist. Similarly, Romania has utilised the RRF to strengthen regional innovation ecosystems through the formulation of competitive regional smart specialisation strategies. In France, the RRF has been used to enhance research and innovation ecosystems at regional and local levels through the Programme d'Investissements d'Avenir and France 2030 initiatives, which channel RRF funding to universities, research organisations, and innovation clusters across regions. This approach fosters the enhancement of the R&I ecosystem at both the regional and local levels.

#### *3.1.6.5. 4.e. …promoting R&I in the field of health?*

While the situation varies from one country to another, **the RRF has broadly been effective in supporting the promotion of R&I in the field of health.**

A European Commission's study ([55]) indicates that more than EUR 3 billion (around 7% of the total amount dedicated to R&I) has been allocated by various EU Member States for the purpose of promoting research and innovation in the domain of health. Furthermore, the findings of the study align with the RRF mid-term evaluation in that the RRF has prioritised investments in health research infrastructures and dedicated support programmes, as opposed to reforms in the field of R&I dedicated to health. Health has thus been given due consideration during the planning phases of the plans.

Turning to the implementation of the plans, an analysis of the FENIX data has led to the identification of a total of 47 measures that contribute to the promotion of R&I in the field of health ([56]). Of these, 30 measures have been completed or fulfilled, according to the FENIX data. Regarding the milestones and targets associated with these measures, a total of 67 M&Ts have been completed and/or fulfilled, while 12 M&Ts planned to be completed by the first quarter of 2025 remain unfulfilled. This suggests that around 85% of the planned M&Ts have been completed and/or fulfilled, indicating the facility's effectiveness in this regard and aligned with the other areas targeted by the measures.

This approach facilitates the identification of potential outcomes, exemplary practices, and insights gained concerning its contribution to the advancement of research and innovation (R&I) in the domain of health.

([55]) European Commission (2022) Analysis of the contribution of the RRPs to key EU policy priorities and a new EU R&I Policy landscape. WK 17815/2022 REV 1 Available here.

([56]) Measures were identified as contributing to the promotion of R&I in the field of health if their primary or secondary policy pillar was Health and economic, social and institutional resilience, including objectives related to strengthening crisis response capacity and preparedness. Of these, 15 measures had as primary pillar the Health, and economic, social and institutional resilience, including with a view of increasing crisis reaction capacity and crisis preparedness pillar, and 32 have it as secondary pillar.

Additionally, the findings of the country-level research indicate that **the RRF has been overall effective in contributing to the promotion of R&I in the field of health**.

In Poland, the RRF has provided substantial backing for wide-ranging reforms, including PL-CD-R3.1, a legislative initiative that streamlined clinical trial regulations through the 2023 Act on Clinical Trials. This included reducing administrative barriers and establishing the Clinical Trial Compensation Fund. The Polish Medical Research Agency funded 280 non-commercial trials, thereby increasing patient access to innovative therapies and tripling trial participation rates. Greece has successfully implemented RRF-funded projects through the establishment of digital health platforms and e-health services, which have contributed to improving patient access and efficiency in health service delivery. Spain directed substantial investment into the PERTE for Vanguard Health, a major public-private initiative aimed at modernising the health sector through R&D and digital technologies. Germany also emphasised R&D in biotechnology, channelling funds towards the rapid development of vaccines, which were crucial during the COVID-19 pandemic. The Netherlands aims to standardise and connect health data across the country. The Dutch RRP supports the development of a support system for researchers, including eight regional service desks and one national service desk. In Czechia, the RRF aims to provide funding to hospitals to facilitate their connection to e-health services based on interoperability standards. Romania has invested in telemedicine and population screening programs. Italy's RRP combines reforms and investments to strengthen health-related R&I. It is a key reform that enhances translational research within Care and Research Institutes, while investments upgrade biomedical infrastructures, expand clinical trial capacity, and support advanced therapies. Latvia's RRP features a standalone public health research investment (LV-C[C4]-I[4-1-1-1-i-]), funding three pilot studies focused on epidemiological safety, vaccination strategies, and infection reduction. In Lithuania, funds will be devoted to the creation of a unified national genomic medicine infrastructure, including sequencing facilities and data repositories, and the development of a national genomic reference database.

#### *3.1.6.6. 4.f. …promoting R&I in the field of cultural heritage and the cultural and creative industries?*

RRF R&I-related measures focusing on cultural and creative industries have been allocated an overall funding of EUR 11.7 billion, representing approximately 1.8% of the total expenditure of the recovery and resilience plans, according to our classification of the measures based on the FENIX database, with Italy, Spain, and France leading in investment in these areas through the RRF. **Despite the inclusion of these measures, only a few Member States have used the RRF resources to promote R&I in the field of cultural heritage and the cultural and creative industries.**

Nonetheless, according to our analysis of the measures, some cultural and creative industries reforms and investments have had a research and innovation dimension, contributing to the implementation of the digital and green transitions overall. For example, in some countries, RRF measures in this area have contributed to the digitalisation of culture and media, which has allowed for a more accessible distribution of cultural content, bolstered by the development of digital skills for cultural actors and operators.

Regarding the RRF R&I measures promoting R&I in the field of cultural heritage and the cultural and creative industries (CCIs), several Member States included targeted reforms and investments in their RRPs. For example, in Spain, the creation of a public investment fund to finance innovative cultural projects and the development of a "hub" for audiovisual production have been included in the plan. In Greece, the RRP includes investments to promote cultural heritage through digital innovation, including the digitalisation of archaeological sites and museums and the creation of new cultural tourism services. Finally, in Croatia, part of the RRP investments support the protection and valorisation of cultural heritage through sustainable tourism projects, integrating cultural heritage into broader smart specialisation strategies.

Through Member States' experiences with RRF investments and reforms relating to research and innovation in the cultural and creative industries sector, some concrete results and good practices can be identified. In the case of Czechia, this reform has been comprehensive in that it includes a grant scheme for artists, which aims to upskill these individuals in order to enhance cultural innovation, drawing a clear link between R&I and the art and cultural sector.

In a number of countries, specific measures and sub-measures are dedicated to enhancing R&I in the field of cultural heritage and cultural and creative industries, corresponding to both investments and reforms. For example, in Greece, an RRF investment finances 13 companies that had previously received a Horizon 2020 "Seal of Excellence", thereby ensuring that high-quality but unfunded projects obtain support through RRF resources. One of the seven eligible sectors for this measure is tourism, culture, and creative industries, meaning that part of the support can contribute to R&I-driven innovation. A second Greek measure will finance 36 project proposals relating to smart specialisation strategies, again with culture and creative industries listed as one of the eight eligible sectors. Both measures are still under implementation and are expected to be fully delivered by the end of 2025, which justifies why there are no concrete results available yet. In Spain, an investment has been directed at the digitalisation and promotion of major cultural services, notably at the Museo Reina Sofía. Here, the RRF is not only used for digital infrastructure but also for developing innovative digital platforms to broaden access and enhance research, preservation, and public engagement, thereby creating an explicit link with R&I in cultural heritage.

### 3.1.7. EQ5. What have so far been the most/least effective aspects of the RRF in providing support to research and innovation?

**Introduction:** This EQ explores the most/least effective RRF aspects when supporting R&I measures. It draws from the answers to other evaluation questions, which are referred to below, and adds some additional input mostly from the stakeholder consultations.

**Main findings:**

- The effectiveness of the RRF – and different aspects of it – varies by European Innovation Scoreboard country group (emerging and moderate innovators, innovation leaders, strong innovators) (see also EQ1.1, EQ14, EQ15).
- The RRF has shown a limited flexibility during implementation, and, in the opinion of some interviewees, represented an administrative burden (see EQ6).

The survey towards the Member States' authorities shows that **the majority of respondents find the following aspects of the RRF to a large extent or to some extent effective**: 1) strengthening science-business collaboration, 2) enhancing scientific excellence in their countries, and 3) supporting improvements in business innovation performance. In the survey with target group representatives, enhancing scientific excellence has 85% of respondents saying that this has been the effect either to a large extent (49% of respondents) or to some extent (36% of respondents). Strengthening science-business collaboration in the respective country attracted 73% of respondents voting for either "to a large extent" (35%) or "to some extent" (38%). Supporting improvements in business innovation performance has 64% of respondents supporting these options (30% and 34%, respectively).

According to the interviewees, the RRF has been an effective tool in driving R&I reforms, particularly in areas such as green and digital innovation or enhancing research infrastructure: while 23 respondents confirmed that, 2 said that this was not the case, and 2 thought that it was difficult to determine. In addition, a Finnish interviewee mentioned that there was "increased

cooperation between stakeholders and ministries due to the horizontal nature of the RRF, strengthening coordination efforts across government bodies".

In a similar vein, the RRF has been judged equally effective regarding investments. As the country fiches show, this has been particularly evident in France, where the RRF funds provided a significant increase in funding to the National Research Agency, and in Germany, where these have contributed to reaching the federal target of 3.5% of GDP for R&I investment by 2025. Moreover, the RRF has proved to be an effective solution in bridging the two Multiannual Financial Framework periods (2014-20 and 2021-27). Furthermore, the case of Portugal (see both the country fiche and the case study on moderate innovators) shows that the RRF enabled the investments in R&I to be both more ambitious and effective.

The RRF has seen accelerated implementation and disbursements overall, which has a positive impact on effectiveness. However, its effectiveness has been reflected differently within different groups of countries as per the European Innovation Scoreboard classification. For "emerging innovators" Croatia, Poland and Slovenia, the RRF has contributed to strengthening national R&I systems. In the "moderate innovators" countries, the RRF has especially supported reforms and has showcased effectiveness in a coordinated and impact-oriented approach, as well as in building technologically advanced innovation ecosystems. In "innovation leaders" and "strong innovators" countries, the effectiveness can be seen through the fact that these countries have achieved complementarities between different funding sources. As per the conclusion of the case study on strong/leader innovators, countries that invested the RRF resources in areas of strength of their national R&I systems have been generally better positioned to implement their measures effectively. Also see EQ14.

Generally, the least effective aspects of the RRF result from a lack of sufficient flexibility during different implementation steps and an excessive administrative burden. A few interviewees mentioned this, but it is not a universally shared opinion. Some interviewees from Belgium, Lithuania, and Slovenia agreed on both these aspects. In addition, an interviewee from Austria underlined the former, while some interviewees from Germany and Greece characterised the RRF as having the latter characteristic. See EQ6 for further analysis of less effective aspects of the RRF.

### 3.1.8. EQ6. What have been so far the possible aspects (e.g. absorption capacity, …) that made the RRF less effective in providing support to research and innovation?

**Introduction:** This EQ focuses on the reasons for effectiveness and/or lack of it.

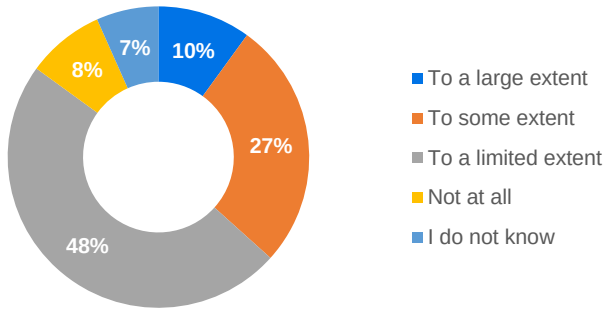
**Main findings:**

- The limited flexibility with respect to the assessment of M&Ts by the Commission and the possibility of changing the plans were often quoted as aspects negatively affecting the RRF's effectiveness.
- Both managing authorities and stakeholders agreed that the RRF lacked agility to adapt to evolving research priorities, economic conditions, or external shocks. This is problematic for R&I projects, which often evolve due to changing priorities or external shocks.
- Amending plans is possible (Article 21), but the process is often seen as bureaucratic and slow. This flexibility has lately increased.

The RRF brought a number of positive aspects that supported research and innovation in Member States (such as a good interplay between R&I investments and reforms, which were a

positive catalyst to strengthening R&I capacities and infrastructure in Member States, see under EQ2.2 and EQ9.1. Nevertheless, several factors have constrained its ability to fully support research and innovation. The main issues remain the same as stressed by the Study supporting the mid-term Evaluation of the Recovery and Resilience Facility, namely, the lack of sufficient flexibility with respect to: 1) the assessment of M&Ts by the Commission, and 2) the possibility of changing the plans. This sentiment was reiterated by stakeholders working on R&I measures, albeit a minority of stakeholders had a more positive view on the agility of the RRF when compared to other EU funds (Belgium) ([57]), Cyprus, Croatia, Portugal, Romania, Sweden). Nevertheless, the RRF is widely perceived as not sufficiently flexible or agile, especially for R&I projects that require adaptability due to their uncertain and evolving nature (Austria, Belgium, Bulgaria, Czechia, Hungary, Lithuania, Germany, Finland, Italy, Malta, Slovenia). The survey reflected these views, with the majority of stakeholders claiming that the RRF had limited flexibility to adjust to changing circumstances, particularly for R&I measures (e.g., adapting to evolving research priorities, economic conditions, or other external factors such as the war in Ukraine) (29 out of 60 respondents).

*Figure 10: Responses to the question "To what extent do you think the RRF is sufficiently flexible or agile to adjust to changing circumstances, particularly for R&I measures (e.g., adapting to evolving research priorities, economic conditions, or other external factors such as the war in Ukraine)?"*




Source: Member State authorities survey, N=60

The current system requires **adherence to specific milestones and targets**, such as funding a set number of projects or achieving concrete spending targets. Amendments to measures are possible as per Article 21 of the RRF due to objective circumstances ([58]) (see also EQ1.1). A recent analysis shows that a total of 2,014 measures were affected by revisions, with over two-thirds (1,385 measures) being justified based on "objective circumstances" ([59]). However, if projects start yielding unsatisfactory results midway, the RRF does not provide sufficient flexibility to pivot. In some cases, substantial changes to the project, or even full discontinuation, might be necessary to ensure responsible use of EU funds. In such situations, Member States can propose modifications, replacements, or removals of measures in their RRP, subject to Commission assessment and Council approval. Some authorities have highlighted less flexibility for larger amendments due to predefined M&T, specific wording, and strict guidelines. Nevertheless, following the mid-term evaluation of the RRF, efforts have been made to enhance flexibility in this regard through amendments to CIDs.

While the milestone and target-based funding model was praised for ensuring accountability and accelerating implementation by authorities interviewed, it was criticised for inflexibility due to its rigid deadline and M&T in long-term R&I projects, misalignment with the uncertain nature of research and difficulties in adapting to external factor such as cloud infrastructure and

([57]) Regional government and final recipient.
([58]) See Guidance on Recovery and Resilience Plans, C/2024/4618, here.
([59]) European Parliament (2025), Changing for the better? Assessing changes to national RRF plans, Available here.

cybersecurity (see also case study on emerging innovators), changes in construction prices or the rise in prices for electricity and gas. The lack of adaptability means that **the RRF struggled to fully accommodate evolving research priorities, changing economic conditions, or unexpected external factors. Nevertheless, the introduction of the REPowerEU chapters and the possibility to revise RRPs allowed Member States to include new measures and expand budgets**.

A recurring difficulty mentioned by RRF coordinating bodies and Ministries was the challenge of measuring scientific outcomes and tracking innovation impact. Interviewees (Austria, Belgium, Czechia, Lithuania, Finland, Portugal) noted the following aspects.

- Scientific and innovation outcomes are inherently long-term and uncertain, making it challenging to apply a performance-based model with long-term indicators. The difficulty is related to the manner in which M&Ts are defined in certain cases. Where M&Ts go beyond being defined as pure output indicators (e.g., when they imply completion of projects, delivery of proof of concepts and similar), there might be the need for flexibility in changing them mid-implementation.
- Indicators were often overly specific or rigid, complicating both the design and implementation phases (Lithuania, Finland, France). Additionally, standard metrics (such as publications, patents) are insufficient to capture the full scope of innovation, and more nuanced, long-term evaluation frameworks are needed (Austria, Lithuania, Belgium).
- Measuring impact (especially commercial or societal impact) was seen as premature, as many projects are still ongoing or in early stages (Portugal, Austria, Slovenia). This presents a structural issue with the design of the RRF, specifically the limited time frame in which it is implemented, which does not go hand in hand with the timing of R&I projects, as these tend to extend over a longer time horizon and yield impacts over the longer term. For this reason, M&Ts are not designed to measure impact.

This was echoed by survey respondents, where several responses highlighted that R&I impacts take time to materialise, especially for systemic or long-term changes (6 out of 60 respondents) ([60]).

Adjusting milestones or targets (i.e., the RRPs) is often described as a bureaucratic and slow process, requiring approval from the European Commission (Lithuania, Czechia, France). The lengthy amendment process is an issue given the RRF's rigid timeframe - all activities must be completed by August 2026. This is a very short time horizon, especially for inherently long-term R&D projects, oftentimes requiring iterations, tests, and unpredictable adjustments. the main difficulty that has been found by stakeholders consulted was adherence to project deadlines. In this regard, the Spanish authorities noted that the lengthy R&I cycle, which requires a minimum of five years from programming to execution and final reporting, can represent a challenge for some projects, which may require extensions beyond the initial execution period to ensure proper implementation and justified reporting ([61]). Moreover, the rigidity of predefined deadlines can hinder the Facility's ability to accommodate unforeseen delays, reducing the project's overall effectiveness, which is a particular element for R&I.

While stakeholders are generally supportive of the performance-based approach, they are challenged by the **necessity to report on costs and performance** at the national level, as this adds extra administrative burden. It should be noted that this requirement is not mandated at the EU level, but is introduced individually by Member States, leading to additional complexity for both authorities and target groups. For example, national accounting systems can lead to administrative as outlined by the Italian authorities, who noted burdens related to the fact that

([60]) Open ended question "Why have little or no impacts of R&I measures materialised yet?"
([61]) Case study on moderate innovators.

the simplification originally expected to be generated by the performance-based system did not materialise, as the emphasis on cost control increased considerably over time, adding complexity ([62]). This dual focus on both cost control and outcome delivery sometimes limits the RRF's agility and responsiveness to unforeseen changes ([63]). Furthermore, stakeholder input confirms the finding of the RRF mid-term evaluation, which stressed that there was a perception of an **excessive administrative burden** that is bound to pull down the effectiveness of the RRF (Belgium, Hungary, Spain, Germany, Lithuania, France) ([64]). Heavy documentation, procurement rules, and reporting requirements were frequently cited as barriers. Delays due to procurement or scientific developments were common, yet hard to accommodate within RRF timelines. A particular challenge was mentioned in relation to the need to meet the DNSH principle and ensuring the absence of conflicts of interest in procurement goes beyond national regulatory frameworks ([65]). Lack of top-down coordination between ministries and agencies hindered smooth implementation (Portugal, Czechia), with slow decision-making processes due to complex governance and the need for extensive consultations (Lithuania, Austria).

**The need to set up parallel administrative processes created a significant bottleneck** ([66]). Dedicated monitoring and reporting systems had to be established to comply with European Commission requirements. Stakeholders interviewed in Germany, Austria, Sweden, Denmark, Finland, the Netherlands, and Belgium reported that the establishment of parallel administrative systems placed a significant burden on their organisations, one that had not been anticipated when the programmes were initially designed without the RRF contribution. The resources needed to meet the obligations of the RRF Regulation, particularly in terms of personnel, were neither budgeted nor planned for, resulting in considerable additional workload across all levels.

Overall, target groups viewed the RRF as relatively flexible, with 69% indicating it allowed them to adjust to changing circumstances in the research and development landscape (e.g., adapting to evolving research priorities, economic conditions, or other external factors such as the war in Ukraine) to a large extent or at least to some extent (462 out of 667 respondents). However, some institutions are reluctant to reapply for funding due to the low cost-benefit ratio. In some Member States, staffing and continuity issues in research teams affected project implementation (Finland, Ireland). The same can be concluded for the low administrative capacity, causing low absorption, especially with local and regional authorities. These aspects are further described under efficiency, see EQ9.1.

### 3.1.9. EQ7. To what extent have R&I investment and reforms under the RRF leveraged other sources of funding to support R&I?

**Introduction:** This question begins with an overview at the macro level of the general R&I expenditure trends and then explores the leverage of other financing, particularly from private sources. Further below, EQ8 covers the national strategies/financing in more detail.

**Main findings:**

- The Difference-in-differences analysis shows that in the EU27, the reduction in R&D business expenditure was very similar during the two crises, but the reduction in government R&D expenditure was somewhat smaller during the crisis of 2020, when compared to the 2008 crisis.

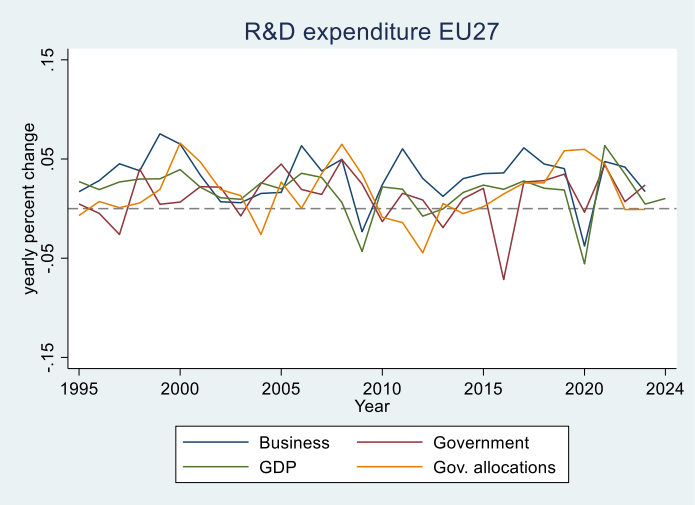
([62]) Case study on moderate innovators.
([63]) This issue is also tackled under EQ9.1
([64]) Case study on moderate innovators.
([65]) Case study on moderate innovators.
([66]) Case study on leading innovators.

- The projects that will apply for further financial support are more than four times higher than those that have not planned further assistance. Target group representatives are mostly looking for leveraging national and funding from Horizon Europe, while other sources, such as the Cohesion Policy Funds, are less sought. Only a few responded that they would use their own and/or business investments to continue the project activities

### Macro level

Focusing on **R&D expenditures**, there are good theoretical reasons and sufficient evidence to support the view that business R&D expenditure is procyclical ([67]). Typically, business R&D expenditure increases during economic expansions and decreases during recessions. On the other hand, government R&D expenditure can be anti-cyclical. Several studies indicate that in economic downturns, governments have greater capacity or willingness to borrow — or face favourable borrowing terms — especially in advanced economies with ample fiscal space ([68]). Hence, governments may be able to step in during downturns to smooth the overall R&D expenditure in the economy. To explore this assumption, Figure 11 shows GDP growth and yearly changes in R&D expenditure in the business sector and in the government sector (both government expenditures – GOVERD and government budget allocations - GBARD). Overall, EU27 R&D expenditure is not smoother in the government sector than in the business sector – the coefficient of variations around the trends in the series are not smaller in the government sector. However, **there are indeed signs that business R&D expenditure is procyclical, while the government's is not**. Changes in business R&D expenditure track GDP growth very closely during the crises of 2008 and 2020. The same is not true of R&D government expenditure, which responds less strongly to negative growth spells ([69]).

*Figure 11: Changes in R&D expenditure over the business cycle*




Source: OECD MSTI data

([67]) Barlevy, G. 2007, "On the Cyclicality of Research and Development." American Economic Review, Vol 97(4)).
([68]) Ahmad et al., 2021.
([69]) Pellens, M., Peters, B., Martin, H., Rammer, C., Licht, G., 2024, "Public R&D investment in economic crises",Research Policy, Vol. 53, Issue 10.

Taking a closer look at the trends in R&D expenditure, the study compared the government responses to the crises of 2008 and to the crisis of 2020 ([70]). In both circumstances, GDP fell sharply. As shown in detail in Annex IV, the **changes in overall R&D expenditure before and after the two crises in the EU27 were similar**, and the difference-in-difference is equal to zero. However, there was much heterogeneity across EU countries. In the EU27, the reduction in R&D business expenditure was very similar during the two crises, while the reduction in R&D government expenditure was somewhat smaller during the crisis of 2020. Most countries experienced similar reductions in business R&D expenditure across the two crises, but **some countries experienced much lower reductions in government R&D expenditure after the 2020 crisis in comparison to the period after the 2008 crisis** (see in particular Bulgaria, Croatia, Greece, Latvia, Poland, and Spain).

The government response to the two crises was investigated in a comparative way using government budget allocations (GBARD) rather than government expenditure by performing sector (GOVERD). The **changes in GBARD in the EU were smaller during the 2020 crisis in comparison to the 2008 crisis**, and smaller than those occurring in the US and in the OECD as a whole (see Annex IV). The difference in the response across the two crises was particularly large (>0.1) for Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Romania, Slovenia, and Spain. This is not surprising given that **several of these countries were among the largest beneficiaries of RRF disbursements directed to R&D activities**.

Table 8 shows the responses to the crises by countries grouped according to their beneficiary status. Member States are classified into four groups based on the size of their RRF-funded R&D disbursements relative to their pre-RRF R&D expenditure. The first group includes the largest beneficiaries (in proportional terms), while the fourth group includes those who received the least. Simple country averages within each group were computed. It would be expected that countries that received higher disbursements would be better able to withstand the 2020 crisis compared to the 2008 crisis. This pattern is confirmed across all indicators considered: **improvements in R&D expenditure indicators across the compared crises are consistently larger for the higher-beneficiary groups and decline progressively as the lower-beneficiary groups are looked at.**

*Table 8: Difference in differences between crises for different beneficiary country groups*

| Country | R&D exp. | Bus. R&D exp. | Gov. R&D exp. | GBARD |
|---|---|---|---|---|
| Group 1 (largest beneficiaries) | 0.09 | 0.02 | 0.26 | 0.17 |
| Group 2 | 0.08 | 0.05 | 0.10 | 0.12 |
| Group 3 | 0.04 | -0.06 | 0.23 | 0.14 |
| Group 4 (least beneficiaries) | 0.01 | 0.00 | 0.00 | 0.06 |

*Note: country groupings are based on the size of RRF-funded support to R&D in terms of pre-existing R&D expenditure levels (RRF-funded R&D disbursements as a fraction of the average R&D expenditure over the four years before 2020). Group 1: Latvia and Slovakia obtained a contribution to R&D expenditure equivalent to more than 100% of their pre-RRF yearly expenditure. Group 2: Cyprus, Croatia, Lithuania, Italy, Greece, Portugal, and*

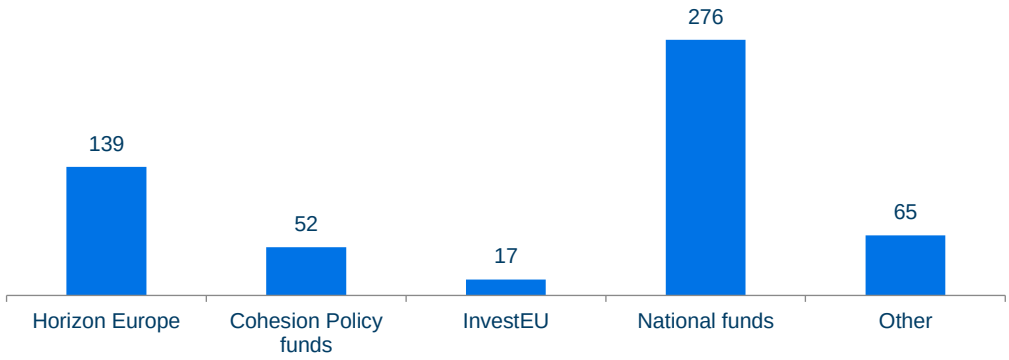
([70]) Note: The OECD MSTI (Main Science and Technology Indicators) on R&D expenditure are used for the calculations. The calculations involved the average growth in R&D expenditure for the 3 years preceding the crisis and for the 3 years following the crisis (i.e. 2009-2012 versus 2006-2008 – "crisis 2008" column, and 2020-2023 versus 2016-2019 – "crisis 2020 column"). A difference-in-difference between the two averages ("diff" column) was then calculated.

*Bulgaria received contributions of more than 50%, Group 3: Poland and Romania received contributions between 25% and 50%. Group 4: all other countries received contributions under 25%.*

### Micro level

On a **micro level** (i.e. R&I measure-level), roughly half of the respondents (335 out of 667), **stated that they are planning to use further financing for their research projects**. About a third (276 respondents) stated that further financing is expected to be leveraged via national funds, while Horizon Europe funds have been mentioned by a quarter of the respondents (n=139). Other financing sources, such as Cohesion Policy Funds and InvestEU are less frequently identified. Naturally, this also depends on the country, e.g. in countries like Croatia and Slovenia, the Cohesion policy funds have a more prominent role when compared to countries with much lower access to such funds, e.g. Austria and Ireland ([71]). Only a few of the target group respondents (10) have responded that **they would use their own and/or business investments** to continue the project activities. Furthermore, 62 respondents (or 7%) stated that their projects would not be continued with the support of any of the funding instruments presented in the figure below. Thus, **the projects that will apply for further financial support are more than four times those that have not planned further assistance**.

*Figure 12: Responses to the question "Will the research activities of your project be continued thanks to the support of one of the following funds?" ([72])*



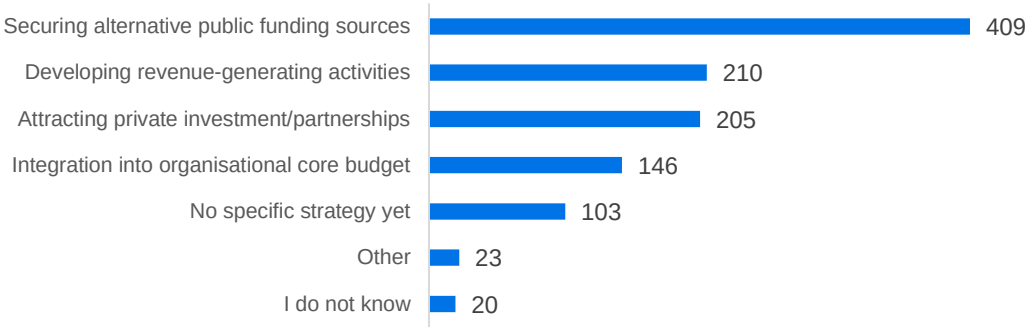

Source: Target groups survey, N=667

In addition, survey data collected from the target group provides insights into the strategies project they are using to ensure the financial sustainability of their project outcomes after RRF funding ends. Overall, the responses reflect a commitment among the target group to continue their initiatives beyond the funding period by actively seeking new opportunities and resources. Among the responses, the most cited approach is mobilising alternative public funding sources, with more than 60% (n=409) of respondents indicating this strategy, suggesting a continued reliance on external financing mechanisms. This strategy is the most frequently provided answer across different countries, as diverse as Astria, Ireland, Spain, and Slovakia ([73]). While this demonstrates proactive planning, it may raise questions about the long-term sustainability of some investments. Other strategies include developing revenue-generating activities (31%, n=210), attracting private investment or partnerships (31%, n=205), and integrating funding into

([71]) Comparing the results of the survey with and without Spain yields practically the same responses regarding the planned use of financing.
([72]) The question was a multiple-choice question and respondents selected more than one option. Further to the above, 234 responded "I do not know".
([73]) This analysis was performed for countries with more than 20 answers.

organisational core budgets (22%, n=146). Meanwhile, 15% (n=103) reported not having a specific strategy yet (this percentage markedly differs across countries, with between 0% and 2% such responses in Ireland, Austria, and Slovenia), and 3% (n=23) mentioned other approaches. Perhaps not surprisingly, the majority of responses claiming that revenue-generating activities will be sought after to ensure financial sustainability are coming from businesses (91 out of 210), while higher education institutions and research institutes will mostly rely on public funding sources (174 and 175 out of 409, respectively).

*Figure 13: Responses to the question "What strategies are you implementing to ensure the financial sustainability of your project outcomes after RRF funding ends?"*




Source: Target groups survey, N=667

**For a third of the respondents (n=210 out of 660), the RRF projects are a continuation of research activities funded under national funds**, while for other funds, the percentages are as follows: HE (9%, n=57), Cohesion Policy Funds (5%, n=32), InvestEU (0.3%, n=2). Considering also the responses 'Other instruments' (47), this means that in more than half of the cases (348 out of 660), the RRF projects are a continuation of research activities funded by other funds, which hints at a very high level of synergy with other funding instruments. For 42% of the surveyed target group representatives (n=276), their projects are not a continuation of research activities financed under other instruments. Only a few respondents (7, 4 of which are businesses) stated that the project is a continuation of work financed through their own funding. Finally, approximately half (314 out of 667) have not applied for any additional funding for the research activities falling within the scope of their RRF-funded projects, which also means that in half the cases, target group representatives applied for additional funding. Mostly they applied for HE financing (168 respondents), national/regional funds (116), with only a few (7) applying for financing from private banks/instruments.

Finally, while the RRF is characterised by the absence of co-financing requirements ([74]), **procedures under the RRPs required co-financing for many R&I projects, particularly for business projects**. There is no central database with all projects, **so it is not possible to calculate the precise amount of private co-financing leveraged**. For example, in Sweden, typical public funding rates range from 40% to 60%, meaning that private, national, and sometimes regional funds are usually involved in covering remaining investment needs. Another example is the procedure for innovative SMEs with a Seal of Excellence in Bulgaria, which had a 70% funding rate ([75]). The emerging innovators case study also finds that in Poland, the RRF had crowding-in effects, because the RRF projects catalysed additional public and private co-

([74]) COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL Recovery and Resilience Facility: Two years on A unique instrument at the heart of the EU's green and digital transformation.
([75]) For more information: Application documents.

investments (especially in digital and green transformation), while it also encouraged actors to apply for other EU funds like Horizon Europe for follow-up phases. However, according to consulted stakeholders for the case study, the long-term sustainability of the RRF projects will depend on triggering new models of collaboration, such as those established within the IPCEI on Cloud Infrastructure and Services, that can be further developed through **public-private partnerships** (including the use of venture capital and other private funding). A final example from country-level research concerns the design of France 2030, which emphasises the long-term viability of supported projects: project selection has taken into account the financial models of the promoters, including their ability to secure follow-on private financing (through banking, equity, or revenue streams) once public support phases out.

### 3.1.10. EQ8. How are Member States planning to sustain R&I funding initiated under the RRF and that will support national enhanced R&I capabilities in the years after 2026?

**Introduction:** To answer the evaluation question, the analysis examines how Member States plan to sustain R&I funding under the RRF beyond 2026. It begins with an introductory overview, then categorises Member States based on the maturity of their approaches and finally reviews their specific strategies and commitments in detail.

**Main findings:**

- Several Member States have been developing strategies to continue R&I investments post-RRF, aligning with the EU's 3% GDP target for R&D intensity. These plans typically combine national budgetary resources, future Cohesion Policy funding, and long-term initiatives to embed RRF-supported reforms into domestic frameworks.
- Countries vary significantly in their readiness and commitment. While some (e.g. Finland, Spain) have formalised legislative frameworks and multi-annual plans, others are still exploring options or remain reliant on future EU funding cycles and political decisions.
- Sustaining R&I investments depends on each country's fiscal strength and political commitment, with well-funded systems better positioned to maintain momentum than those lacking clear strategies or stable financing

**Several Member States have begun to articulate strategies to ensure the continuation of R&I investments beyond 2026**, in line with the EU target of reaching 3% of GDP in R&D intensity. These **strategies typically involve a combination of national budgetary resources, future Cohesion Policy funding, and the development of new, long-term national initiatives** aimed at embedding RRF-supported reforms and investments into domestic policy frameworks. The European Commission's recent communication ([76]), reinforces this direction by encouraging Member States to transition unfinished or long-term projects to national or other EU funding sources, including InvestEU, and to make greater use of financial instruments to support private investment. At the same time, it underscores that the RRF's temporary nature and strict implementation deadlines (culminating in final disbursements by December 2026) require Member States to act swiftly and strategically to avoid decommitment of funds and to preserve the momentum generated.

([76]) European Commission. (2025). NextGenerationEU – The road to 2026: Communication from the Commission to the European Parliament and the Council. COM(2025) 310 final/2. Brussels, 4 June 2025.

While the RRF has provided a significant boost to national research and innovation ecosystems across the EU (see Section 1.4 and Annex II) **Member States have adopted markedly different strategies for securing the long-term financial sustainability** of these efforts. As highlighted in interviews conducted, **some countries have already established robust mechanisms**, including legislative commitments, structural reforms, and stable multi-annual funding streams. Others, however, are **still in the process of assessing options**, with many pointing to future political decisions, evolving economic contexts, or the outcome of the upcoming Multiannual Financial Framework negotiations as critical to determining how R&I investments will be maintained beyond 2026.

**A key factor shaping these strategies is the fiscal context of each country**. The ability to sustain R&I investments post-RRF is closely linked to the strength and flexibility of national public finances, as well as the political commitment to prioritise R&I in future budgets. Countries with strong fiscal positions and established traditions of public investment in R&I (such as Finland and Germany) are generally better positioned to embed RRF-driven reforms and investments into long-term national frameworks. In these cases, legislative acts, multi-annual investment plans, and binding targets provide a stable foundation for continued growth, even as the RRF winds down. Conversely, in countries where public finances are more constrained, or where R&D has historically relied more heavily on EU funds, the continuation of R&I investments is more uncertain and often depends on the availability of future EU funding cycles, the outcome of political negotiations, and the integration of RRF measures into national strategies.

To structure the analysis, Member States are grouped into three categories based on the maturity and robustness of their strategies:

- **Countries with formalised national strategies, legislative commitments, or structured multi-annual plans**: Finland, Spain, Germany, Italy and France.
- **Countries with partial frameworks, ongoing reforms, or planned continuation of some RRP investments, but without guarantees of maintaining overall R&I investment levels**: Austria, Croatia, Slovakia, Slovenia, Lithuania, Bulgaria, Cyprus and Czechia.
- **Countries where strategies are still under development, fragmented, or largely reliant on future EU funding cycles**: Belgium, Poland, Romania, Portugal, Hungary, the Netherlands, Malta and Latvia.

### Countries with formalised national strategies, legislative commitments, or structured multi-annual plans

In Finland, the continuity of R&I investments initiated under the RRF is strongly underpinned by a comprehensive legislative framework and a clearly articulated national strategy. As explained in interviews with the Ministry of Finance and the Ministry of Education and Culture, the country has adopted the Act on Research and Development Funding for the period 2024–2030 (1092/2022)28, which sets a robust legal foundation for continued public investment. This includes a multi-annual investment plan that aligns with national policy goals and the trajectory initiated under the RRF. The act also supports Finland's ambition to raise R&D intensity to 4% of GDP by 2030, exceeding the EU target of 3%. While the RRF acted as a catalyst, long-term sustainability is now anchored in national legislation, positioning Finland to maintain and expand its R&I investments over the next decade.

Spain combines national and EU instruments to ensure the sustainability of R&I investment beyond 2026. The Spanish Science, Technology and Innovation Strategy 2021–2027 ([77])

([77]) Ministerio de Ciencia, Innovación y Universidades. Estrategia Española de Ciencia, Tecnología e Innovación 2021–2027. Gobierno de España. Available here.

commits to increasing national R&D funding, with a strong focus on boosting private-sector participation. It aims to align national spending with the EU average by enhancing access to public support and EU funds. The Centre for the Development of Industrial Technology (CDTI) plays a key role in this system, managing ERDF funds for 2021–2027 to support R&D projects, innovation, and public procurement. Spain has also strengthened its commitment through legislative action: the 2022 Science, Technology and Innovation Law (17/2022) ([78]) sets a binding target to raise public R&D investment to 1.25% of GDP by 2030. Although this remains below the EU's 3% overall target, the law, together with the State Plan for Scientific, Technical and Innovation Research 2024–2027, provides a structured path for sustained and increasing R&I funding in the medium term.

Italy is similarly moving to ensure the sustainability of RRF-funded R&I measures. The National Research Plan 2021–2027 ([79]) provides a multiannual framework for research priorities and funding. This is complemented by the National Plan for Complementary Investments ([80]), which allocates additional national resources for R&I with a longer eligibility period than the RRF. Furthermore, the National Medium-Term Fiscal-Structural Plan (2024) ([81]), commits Italy to a multi-year expenditure path that safeguards priority investments, including R&I, under the reformed EU economic governance framework. According to interviews with the Ministry of University and Research, major structural initiatives, such as research centres, public–private partnerships, and innovation ecosystems launched under Mission 4 of the RRP, will continue operating beyond 2026. These entities, which manage over EUR6 billion in RRF resources, are set to receive ordinary funding as outlined in the 2025 national budget. In addition, *National Operational Programme* (PON) funds are expected to maintain support in Southern regions from 2027 onwards. Interviews with the Ministry of Enterprises and Made in Italy confirmed that several RRF-initiated measures—such as the "Patents Plus" and "Proof-of-Concept" calls and support for technology transfer offices—are now embedded in national planning and will be financed through domestic resources.

Germany builds on a well-established national framework for sustaining R&D investment. Most R&I measures included in the RRP were drawn from a EUR 100 billion national crisis programme launched in 2020, with the RRF functioning as a temporary funding buffer. To support long-term R&D growth, the federal government continues to fund R&I through institutional support, project grants, and departmental programmes. Crucially, Germany recently expanded its national R&D tax incentive scheme (Forschungszulage), a non-RRF measure, by raising ceilings on eligible expenditure and improving access for SMEs. This aims to boost private-sector R&D and maintain momentum beyond 2026. Germany reached an R&D expenditure of 3.11% of GDP in 2023 ([82]), already exceeding the EU's 3% target. Nevertheless, progress toward Germany's own 3.5% target for 2025, set in the Future Research and Innovation Strategy 2023, has slowed down ([83]). Sustaining and advancing toward this target will depend on securing long-term budgetary commitments and ensuring policy coordination.

([78]) Gobierno de España. Ley 17/2022, de 5 de septiembre, por la que se modifica la Ley 14/2011, de 1 de junio, de la Ciencia, la Tecnología y la Innovación. Boletín Oficial del Estado, núm. 214, 6 de septiembre de 2022, pp. 123852–123922. Available here.
([79]) Ministero dell'Università e della Ricerca. (2020). Programma Nazionale per la Ricerca (PNR) 2021–2027. Available here.
([80]) Presidenza del Consiglio dei Ministri. (n.d.). National Plan for Complementary Investments. Available here.
([81]) European Commission (2024). National Medium-Term Fiscal-Structural Plan of Italy (2025–2029). Brussels: Directorate-General for Economic and Financial Affairs. Available here.
([82]) Eurostat (rd_e_gerdtot)
([83]) European Commission. (2024). Commission staff working document: Assessment of the national medium-term fiscal-structural plan – Germany (SWD(2024) 605 final). Directorate-General for Economic and Financial Affairs. Available here.

France adopted a multiannual programming law on Research in 2020, monitored under the RRP, which sets out a gradual increase in public R&D spending until 2030 and aims to provide greater stability and predictability for research funding. However, actual funding may still be influenced by broader fiscal constraints. In parallel, the France 2030 investment plan provides a partial response to the challenge of financial sustainability. This plan allocates EUR 54 billion to extend and deepen priorities from the previous France Relance programme, including major areas such as green hydrogen and the decarbonisation of industry. Interviews with the French Secretary-General for Investment and the National Agency for Territorial Cohesion confirmed that while France 2030 introduces a more strategic and long-term vision, its budget is only secured until 2026, and no formal decisions have been made for the period beyond.

### Countries with partial frameworks, ongoing reforms, or planned continuation of some RRP investments, but without guarantees of maintaining overall R&I investment levels

Croatia also presents a promising approach to R&I continuity planning. A cornerstone of its strategy is the R&D tax allowance scheme, introduced under the RRF and set to take effect in 2025. The reform allows additional tax base reductions for approved RDI projects, funded through national resources ([84]),([85]). According to the Ministry of Science, Education and Youth, Croatia has adopted a new legislative framework to support long-term R&I investment. Continued funding will be provided through the Programme for Competitiveness and Cohesion until 2027, and later through the next MFF. The DIGIT project ([86]), a EUR106 million World Bank-funded initiative running through 2028, adds complementary support, targeting transformation areas not addressed by other instruments. Together, these efforts aim to drive structural reform and enhance capacity in Croatia's R&I ecosystem.

Slovakia plans to sustain R&I investment after the RRF through dedicated national budget lines and continued Cohesion Fund support. Its National Strategy for Research, Development and Innovation 2030 ([87]) sets a target to increase public R&D spending by an average of 14% annually through an interdepartmental budget programme. Although total R&D intensity remains low, 1.3% of GDP in 2023, the strategy envisions reaching 2% by 2030, including 0.8% from public sources. Continued alignment with EU funding and national reforms will be essential for meeting this objective.

In Austria, the Federal Ministry of Finance and the Ministry of Education, Science and Research confirmed the intention to build on RRF-driven reforms, particularly in the fields of digitalisation, climate action, and mission-oriented innovation, through continued national funding and alignment with European Structural and Investment Funds such as the ERDF. Austria has already surpassed the EU's R&D intensity target, with expenditure reaching 3.29% of GDP in 2023 ([88]). As such, the RRF is not seen as critical for achieving this goal but has helped accelerate strategic reforms. Continued investment is expected to be driven primarily by the national budget and embedded in long-term policy frameworks.

Bulgaria has recently strengthened its R&I system through a programme to accelerate economic recovery and transformation via science and innovation. This programme includes amendments to the 2024 Law on the Promotion of Scientific Research and the establishment of an Innovation Board, aiming to create and develop research universities that are already

([84]) OECD. (n.d.). Innovation tax incentives – Croatia. STIP Compass. Retrieved July 14, 2025, here.
([85]) Council of the European Union (2021). ANNEX to the Council Implementing Decision on the approval of the assessment of the recovery and resilience plan for Croatia, here
([86]) Here: https://digit.mzom.hr/en/
([87]) Government Office of the Slovak Republic. National Strategy for Research, Development and Innovation 2030. Bratislava: VAIA, May 2025. Available here.
([88]) Eurostat (rd_e_gerdtot)

receiving support from the RRF. These reforms are part of a broader national strategy, including the National Strategy for Development of Scientific Research and the Innovation Strategy for Smart Specialisation, which together provide a long-term framework for R&I capacity building.

In Slovenia, the Ministry of Higher Education, Science and Innovation has expressed a clear commitment to sustaining core R&I measures initiated under the RRF. National funds will support the continuation and expansion of collaborative R&I initiatives, and the researcher mobility programme, initially launched with RRF support, will transition into a nationally financed, internationally oriented scheme. Although specific measures may have varying sustainability pathways, the overarching aim is to preserve the momentum created by the RRF and to further strengthen the country's R&I capacity in the coming years.

In Lithuania, key institutional reforms introduced during the RRF period will be preserved using national resources. Interviews with the Ministries of Finance, Education, Science and Sports, and Economy and Innovation confirmed that central changes, such as the consolidation of the national Innovation Agency and the creation of science officer roles in ministries, will not be reversed. While some future activities may still rely on EU funding, the core RRF-supported transformations are now structurally embedded. The government remains committed to using these reforms as a foundation to increase R&D intensity and move closer to the EU's 3% target.

In Cyprus, R&I activities are expected to continue beyond the RRF through a combination of national and EU funding. While the RRF will conclude in 2026, ERDF support will remain available until 2029. The Research and Innovation Foundation, which is publicly funded through the Deputy Ministry of Research and Innovation, plans to request increased funding within its budget line to maintain flexibility and support future R&I programmes and competitive calls. According to the national agency, continuity will rely on securing stable national support alongside cohesion policy instruments.

In Czechia, most RRF-financed R&I programmes are expected to extend beyond 2026, transitioning into standard national funding streams, while pre-existing programmes continue under state budgets. Newer schemes, such as those tied to the EIC Accelerator Seal of Excellence, face uncertainty unless further national funding is allocated. Although overall R&D intensity remains well below the EU's 3% target, the private sector plays a pivotal role, with large firms continuing independent R&D efforts. According to interviews with the Ministry of Health, RRF-financed research infrastructure (e.g., oncology equipment and facilities) will remain in use beyond 2026, supported through national healthcare and education systems.

### Countries where strategies are still under development, fragmented, or largely reliant on future EU funding cycles

In Belgium, R&D intensity has already surpassed the EU's 3% target, reaching around 3.32% of GDP in 2023 ([89]), driven primarily by strong private-sector investment. Political commitment to R&D remains strong in Flanders, where public funding is anticipated to grow, though not at the pace seen during the RRF period. Conversely, stakeholders in Brussels Capital have expressed concern that the RRF boost will not be matched by future budgets, raising questions about regional disparities and the need for a coherent national R&I strategy. The future of Belgium's R&I investment will depend on national budget allocations and the use of EU funding instruments.

In Poland, the sustainability of R&I investment is expected to depend primarily on EU instruments such as the Multiannual Financial Framework (MFF) and Horizon Europe.

([89]) Eurostat (rd_e_gerdtot)

Institutions supported under the RRP are aiming to leverage this foundation to secure additional grants. However, there is no national strategy or binding budget commitment in place to ensure continuity. Hence, the long-term impact of RRF investments will depend on their integration into a national innovation strategy supported by adequate domestic funding.

Romania has taken steps to institutionalise RRF-driven reforms, notably through the Policy Support Facility (PSF) ([90]), which is considered viable and likely to continue beyond 2026. Nonetheless, with R&D intensity standing at just 0.46% of GDP in 2022 ([91]), long-term sustainability will require significant increases in national public investment. National authorities acknowledge that maintaining progress will depend on securing adequate domestic funding, continuing performance-based funding reforms, and improving links between academia and industry to mobilise private R&D expenditure.

Portugal's national funding is seen as essential to achieving long-term R&I sustainability, with ongoing political discussions aiming to integrate R&I structurally into the national budget by 2030. However, there is currently no confirmed multi-annual funding framework in place. Interviews with national R&I agencies highlight the need for permanent base funding to support interface entities such as CoLABs and CTIs. Without follow-up investment, the risk of losing momentum after 2026 remains high.

In Hungary, although there is interest in launching a new mission-driven research programme post-2026, no detailed continuity plans exist yet. The sustainability of ongoing initiatives is expected to depend on national funding through the National Research, Development and Innovation Fund ([92]), but the outcome remains uncertain. In the Netherlands, while some RRF-funded projects are expected to create a foundation for future development, the decision to continue funding others will depend heavily on shifting political priorities and national budgeting processes.

Similarly, Malta has yet to define clear strategies for sustaining R&I investment beyond the RRF, though more clarity is expected as it finalises plans for the next EU programming period. Latvia sees the RRF as transitional support between EU funding cycles, not a long-term structural tool. While some programmes will continue under the cohesion policy, there is no national plan to increase or sustain R&D spending.

## 3.2. Efficiency

### Scope and general conclusion

Under Efficiency, this study concentrates on key RRF features and evaluates whether the integrated approach of pairing reforms with investments, along with a performance-based system, enables strategic deployment of resources, reduced duplication, and improved coordination. The general conclusion is that while **the RRF's integrated reforms–investments model and performance-based system** have indeed enabled **more strategic targeting of resources, improved coordination, and some streamlining** of R&I efforts, these efficiency gains were frequently **tempered by administrative hurdles, rigid processes, and capacity limitations**, which varied widely by national context.

([90]) https://projects.research-and-innovation.ec.europa.eu/en/statistics/policy-support-facility
([91]) Eurostat (rd_e_gerdtot)
([92]) https://nkfih.gov.hu/about-the-office

### 3.2.1. EQ9 To what extent have there been efficiency gains from pursuing R&I reforms and R&I investments together under one instrument and from the performance-based approach?

**Introduction**: In alignment with the evaluation question, the Efficiency evaluation covers first the availability of efficiency gains from the interplay of R&I reforms and investments, then explores the general efficiency of RRF and its inherent performance-based approach and concludes with an exploration of efficiency gains for other funding sources (e.g. national R&I investments). A key caveat is that efficiency gains cannot be fully attributed to the RRF alone, as many reforms and investments were already planned or supported by other funding instruments, making it difficult to disentangle the RRF's specific contribution.

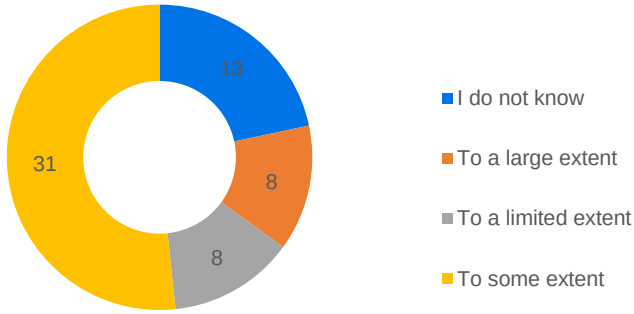
**Main findings**:

- Pursuing reforms and investments together under the RRF **created efficiency gains** as structural and legal R&I reforms created the necessary conditions for targeted investments.
- The general perception of the Member States authorities and target group representatives on the RRF efficiency is that it **causes an administrative burden, which can be very challenging**.
- **There is no strong or systematic evidence that the performance-based design of RRF has increased the efficiency of other funding sources** like national R&I budgets, Horizon Europe, Cohesion Policy, or InvestEU.

#### Efficiency gains from the interplay of reforms and investments

**Most Member States authorities consider that the approach combining reforms and investments has led to general efficiency gains.** Most of the MS authorities (52%, or 31 respondents) have expressed the opinion that there have been efficiency gains from pursuing R&I reforms and investments together under one instrument to some extent (see the figure below). Eight more respondents (13%) claimed that efficiency gains have been achieved to a large extent, resulting in 65% of answers in the positive scale. Even if comparisons are difficult, for some context, in the Mid-term evaluation study, 59% (out of 40 respondents) of the national RRF stakeholders said that integrating reforms and investments in a single instrument enhances efficiency, simplifying coordination and encouraging forms that support investments.

*Figure 14: Responses to the question "To what extent have there been efficiency gains in your country from pursuing R&I reforms and investments together under one instrument (e.g. the implementation of reforms increased the speed of implementation of an investment)?*




Source: Member State authorities survey, N=60

The examined country cases reveal **a consistent pattern of ensuring efficiency gains**: reforms establish the structural and legal conditions necessary for targeted investments to function effectively, while investments operationalise and scale the ambitions embedded in those reforms. This interplay between reforms and investments results in efficiency gains, as resources are **deployed more strategically and impact is expected to be maximised**, a finding that was also confirmed by input from Member State authorities in Denmark, Portugal, and Romania. Specific examples, illustrating this pattern, include:

- Italy: The reform of industrial property introduced by Law No. 102/2023 ([93]), within the framework of the RRP (M1C2 – Reform 1), streamlined patent registration and digital filing ([94]), which improved the efficiency of linked investments 6.1 (Strengthening of the industrial property system) and 2.3 (Technology Transfer Centres).
- Latvia: The Reform of Higher Education and Scientific Excellence and Governance (LV-C[C5]-R[5-2-1-r-]) tied funding to national priorities, ensuring more efficient allocation of resources for higher education investments ([95]).
- Bulgaria: Amendments to the Higher Education Act ([96]) introduced the status of 'Research University', enabling the efficient targeting of resources through the ensuing investment (BG-C[C2]-I[I1]-T[29]).
- Croatia: The reforms C3.2.R3 (RDI governance) and C3.2.R1 (Act on Scientific Activity and Higher Education) reduced fragmentation and introduced performance-based agreements, increasing the efficiency of investments in competitive RDI grants and programme agreements for research institutes.
- Lithuania: The reform C5-E1.2 (Innovation Policy and Start-up Ecosystem) established Innovation Agency Lithuania (C5-E1.2.1), along with the reorganisation of the Research Council of Lithuania (C5-E.1.4), consolidated several bodies, making investment support more streamlined and efficient ([97]).
- France: The reform C4.R1 (Governance of the Programme d'Investissements d'Avenir – PIA) provided a strategic steer, defined acceleration strategies, simplified procedures, and improved coordination, enhancing the efficiency of investment C6.I3 (R&D projects under PIA4) ([98]).

At the same time, as noted by Denmark and Croatia, efficiency gains did not occur consistently, as reforms did not always affect the full R&I landscape. Another caveat is that even if the RRF's joint pursuit of reforms/investments brought some efficiency gains, they cannot be fully attributed to the RRF alone, as, for example, in Germany, many reforms/investments had already been initiated in response to the COVID-19 pandemic before the RRF. Moreover, as Member State authorities from Latvia and Croatia noted, reforms/investments are also pursued by other funding instruments (not specified by the respondents, but likely referring to the

([93]) One of the most noteworthy aspects of the reform is the modification of article 65, i.e. the abolition of the so-called "professor privilege": with the approval of the reform, the ownership of inventions made within university structures, public research institutions and IRCSS belongs to the organisations and no longer of the responsible professor (as was the case for about 15 years – a system that, according to interview feedback, has not been successful).
([94]) Positive preliminary assessment of the satisfactory fulfilment of milestones and targets related to the fifth payment request submitted by Italy, here.
([95]) https://www.lsm.lv/raksts/zinas/latvija/06.12.2024-augstskolu-reformai-izdevies-specinat-izglitibas-iestades-darbs-norit-efektivak.a579150/
([96]) BG, First payment request, here.
([97]) European Commission. (2022). Operational arrangements between the European Commission and Lithuania. Retrieved April 7, 2025, here.
([98]) The fourth edition of the PIA (PIA4), over the period 2021-2025, has a target size of EUR 20 billion over five years, of which EUR 11 billion funded through the RRF.

Cohesion policy funding), thus making it difficult to isolate efficiency gains only attributed to the RRF.

Some Member States reported efficiency gains in terms of improved cooperation. For example, Hungary reported that the joint design of reforms and investments has encouraged more cooperation between academia, public administration, and the private sector, even if, despite the reforms, there remains a lack of strategic coordination between various R&I actors (universities, research institutes, government bodies). Denmark also noted that the RRF has enabled better planning and coordination between different parts of the administration, which has led to some efficiency gains. However, Czechia noted that in a short timeframe, as the one dictated by the RRF, some time was lost due to the fact that some reforms and investments were planned and administered by different departments.

### General efficiency of the RRF and its performance-based approach

While a few interviewees explained that since many projects are still running, it is difficult to conclude on the efficiency of the instrument, the general perception of the interviewees from Member State authorities/regional authorities/ agencies, on the RRF efficiency is that it **causes an administrative burden, which can be very challenging**, particularly for inexperienced administrations and project promoters. An underlying criticism is that while R&I interventions, supported through the RRF, were expected to have a clear focus on achieving milestones/targets, this objective is diluted due to the implementation that requires excessive resources for the administration of the spending and its reporting (Belgium, Czechia, Hungary, Lithuania, Romania, Spain).

Member State authorities (both interviewees and survey respondents) **largely perceive the administrative burden as very similar to that of the Cohesion Policy funding (CPF)**, with the difference that CPF has more established rules and procedures and is better-known to both administrations and project promoters. For 73% (or 44 respondents out of 60) of the surveyed authorities, the administrative burdens are the same, or somewhat higher or lower than for the CPF ([99]). Only six respondents consider the burden much lower (two) or much higher (four). For Horizon Europe (HE), only 23 participants responded differently from 'I don't know', with 15 of them stating that **the RRF burdens are higher (much higher or somewhat higher) than those under HE/H2020** ([100]). This is **corroborated by the results of the target group survey, where 45% of the respondents** (n=188 out of 421) disagreed or strongly disagreed with the statement that financial rules and reporting are simpler under the RRF than the HE/H2020, while only 23% (n=97) replied that the RRF **financial rules and reporting** were indeed simpler ([101]). The results as concerns management and implementation are very similar – 41% (n=175) disagreeing that **project management and implementation** are simpler under the RRF than under HE/H2020, while 29% (n=123) stated that this aspect is indeed simpler under the RRF ([102]).

Based on the input received from **national/regional authorities** and the country-level analysis, the following **issues related to the overall efficiency** of the implementation of the R&I measures under the RRF can be identified:

- The RRF is considered to place particularly high demands on transparency, documentation, and traceability (e.g., the achievement of goals and milestones). This has led the RRF to introduce **additional layers of control and reporting**, sometimes perceived as a "parallel structure" that added inefficiencies due to red tape, extensive

([99]) 17 responses 'somewhat higher' and 14 'somewhat lower'.
([100]) Four responses indicating lower administrative burden and four assessing the administrative burden to be the same as under HE.
([101]) A quarter (n=101) neither agreed, nor disagreed.
([102]) 22% (n=91) neither agreed, nor disagreed.

audits, and inflexible budgetary rules (Denmark, Croatia, Slovenia, Hungary, Czechia, Estonia);

- A **long process** for establishing the administration methodologies (Czechia) and coordination/implementation structures (Denmark, Hungary, Slovenia);
- **Insufficient flexibility and lengthy procedures** in terms of changing activities and milestones/targets, even when needed due to unforeseen circumstances, making it difficult to adapt to changing situations (Belgium, Hungary, Lithuania);
- Considering that the RRF was a new instrument, administrations and project leaders had to adapt to **new/changing requirements** (e.g. in terms of reporting requirements), which diminished its efficiency (Belgium, Czechia, Finland, Portugal);
- The existence of multiple authorities, not always with clearly defined roles, led to **fragmented governance**, which was also a reason for some delays in the RRF implementation in the Member States (Finland, Slovenia, Sweden);
- Countries also **struggle to find the right metrics and targets** to measure the outcomes/impacts of R&I measures (Austria, Belgium, Bulgaria, Czechia, Lithuania, Portugal, Slovenia) In this regard, some adjustments had to be performed to better account to inherent particularities of R&I measures, e.g. in Austria and Belgium, while several Member State authorities shared that measuring the impact and even the very definition of “innovation” is challenging;
- **Public procurement regulations and State Aid rules and restrictions for private enterprises** were described as rigid and incompatible with RDI project needs, which often require flexibility and specialised expertise (Hungary, Lithuania, Greece). Even if this issue is beyond the domain of the RRF system and procedures, procurement delays have led to delays in the implementation of R&I measures and consequently reduced efficiency.

All of the above challenges are linked to the general issue of **administrative capacity**, which was flagged as insufficient by several authorities. R&D institutions, including universities and research bodies, face limited administrative capacity to manage complex EU-funded reforms and projects such as those implemented under the RRF (e.g. Bulgaria, Croatia, Czechia, Finland, Ireland, Hungary, Lithuania, Portugal, Slovenia, Sweden). As concerns administrative capacity, a common sentiment is that the management of the RRPs has been based on “learning from experience”, considering the changing context, requirements, and the need to establish new structures and IT systems (although some countries opted for small tweaking of existing platforms, e.g. Bulgaria).

**The effect of governance arrangements on implementation** was investigated in interviews, and the responses were evenly split on whether the national governance settings had positively or negatively affected the delivery of R&I components. Several countries reported that their governance arrangements enabled smooth implementation, particularly where inter-ministerial coordination and role clarity were established early. In Austria, the holistic governance model, including coordinated work between ministries and research actors, was praised for its effectiveness, especially in the "Quantum Austria" programme. Similarly, Portugal emphasised the benefits of a centralised coordination structure that ensured constant dialogue across implementing entities. Ireland, Cyprus, and Hungary also noted that clear communication lines and small, well-coordinated teams contributed positively. Croatia highlighted that its RRF model improved on past ERDF governance by avoiding dispersed responsibilities across many institutions. These examples suggest that when governance promotes **structured and clear collaboration with clear rules from the start of implementation**, R&I measures are implemented more efficiently.

In contrast, several other countries, particularly Belgium, Czechia, Romania, and Finland, faced difficulties due to **the involvement of many institutions**. Belgium's complex multi-level structure led to redundancies and inefficiencies, especially for small projects or overlapping federal/regional responsibilities. In Czechia, the lack of clear ownership and overly centralised communication channels caused delays, while Romania struggled with weak coordination. Across these cases, interviewees often recommended greater integration, such as joint inter-ministerial teams or streamlined IT platforms, to reduce fragmentation and improve R&I governance outcomes.

A specific governance **challenge was the involvement of policy-making ministries without programme management/implementation capacity**. Lithuania's case clearly illustrates this challenge. For the first time, ministries were placed in the role of project promoters, which they were not traditionally equipped for. While they had strong policy expertise, they lacked the administrative infrastructure and human resources to manage implementation. As a result, capacity building and staff recruitment were necessary but time-consuming, slowing down the launch of measures. Bulgaria experienced similar early difficulties when institutions without prior EU funding experience were given significant implementation responsibilities. The lack of institutional familiarity with compliance, reporting, and procurement procedures led to delays at the outset of the RRP. Romania and Finland reported a lack of coordination and a shortage of experienced staff within key ministries and agencies responsible for R&I investments. These institutions, primarily policy-oriented, were ill-prepared for managing project calls, appraisals, and payments. These examples underscore that while ministries and high-level policy bodies play an essential role in strategic planning, they sometimes lack the operational expertise, systems, or staff required for effective and efficient project implementation.

Interestingly, even at a lower level of implementation, **some of the issues raised by the Member State authorities can also be discerned in the views of target group representatives**. Most target group representatives consistently described the RRF as **administratively heavy**, with **overly detailed reporting requirements and redundant documentation**. Interestingly, when compared to Horizon Europe, some respondents claimed that the focus on compliance over outcomes was seen as a major obstacle to efficient project execution under the RRF. Several respondents reported that their projects experienced delays before receiving contracts or initial funding, forcing beneficiaries to self-finance or compress implementation timelines for actual research and innovation work. There is a **perceived lack of sufficient flexibility** because rigid budget structures and staffing requirements has made it difficult to adjust projects to evolving needs, such as replacing personnel or reallocating resources. Even minor changes often required formal approval processes that slowed progress and added administrative burden.

The **opinion of target groups on the simplicity of the procedure for applying for RRF calls for proposals for R&I projects is split, but slightly more in the negative scale**, with 26% (n=176) considering the procedure "very" or "fairly" complex, while 25% (n=166) rated it as "very simple" or "fairly simple" ([103]). This is particularly the case for businesses, with 47% considering the application procedures 'very' or 'fairly' complex. The results show some geographical differences with responses from some countries being predominantly in the negative scale (e.g., Croatia – 41% and Slovenia – 40%), while for others they were in the positive scale (Austria – 46% and Ireland – 42%). However, no strong conclusions can be reached regarding the procedure complexity per Member State due to the lack of data for all countries ([104]) and the different representation of stakeholder groups per country. Furthermore, the complexity of procedures should be put into perspective. According to half of those applicants who also

([103]) Forty-three per cent (n=287) considered it "Neither simple nor complex", with 6% (38) responding 'I do not know'.

([104]) In this case, the geographical comparison is done only for 8 countries, which had more than 20 responses per MS. A comparison of the responses with and without Spain show only very minor differences, i.e. the number of Spanish responses did not have a substantial influence on the overall results.

applied for Horizon Europe or Horizon 2020 funding (51%, n=213), **the proposal preparation and submission in RRF is simpler than under the Framework Programmes for research** ([105]). As confirmed by all interviewees who were able to make a comparison, this is hardly surprising considering that generally the competition at the EU level is tougher than for national programmes (both RRF and CPF), and for HE/H2020, the international cooperation and scientific excellence are pivotal points, which makes the application efforts much more significant.

### Efficiency gains for other funding sources

The RRF has enabled important reforms and investments in R&I, and some synergies with other funding sources have emerged; however, **there is no strong or systematic evidence that the performance-based design of RRF has increased the efficiency of other funding sources** like national R&I budgets, Horizon Europe, Cohesion Policy, or InvestEU. The analysis does suggest, however, that precisely because the RRF has enabled important reforms and investments in R&I, some synergies with other funding sources have emerged.

Overall, complementarity was achieved with other EU programmes, minimising overlap of the RRF with other funding sources and potentially enhancing overall impact (see next section on coherence). However, synergies between the RRF and other EU programmes supporting R&I have been exploited to a limited extent (see detailed analysis under EQ13). Some Member States with historically low drawdown of Horizon Europe funds (due to weaker proposal capacity or ecosystem) used RRF to strengthen their R&I systems, potentially enabling greater future success in Horizon Europe. Investing in research facilities, human capital, or national grant schemes via RRF in "widening" countries ([106]) makes these countries better equipped to compete for Horizon calls. In that sense, RRF's efficiency impact spills over, improving the overall EU efficiency of research funding by bringing more researchers from all Member States to the starting line. Moreover, RRF often tackled local or infrastructure needs, enabling better absorption of Horizon funds. For instance, some Member States used RRF money to upgrade research facilities or fund junior researchers. This in turn makes their research community more competitive in applying for Horizon Europe projects – leveraging the initial RRF input for further grants (i.e., an efficiency gain across programmes). Some Member States used RRF to support Horizon Europe Seal of Excellence projects or to prepare institutions for Horizon participation. Thus, while the RRF acts as a catalyst at the national level, pushing countries to invest in R&I and adopt reforms, Horizon Europe continues to drive excellence and collaboration internationally.

Similarly, many RRF investments complement typical ERDF projects – e.g., building research infrastructure, supporting innovation in SMEs, and technology transfer programmes. However, RRF differed in scale and speed. As is the case for HE, if RRF introduced a reform to simplify R&I grant rules in a country, that simplification can benefit both RRF and, e.g., ERDF-funded projects. For instance, RRF reforms in Poland, particularly those aimed at fostering science-industry collaboration and improving research infrastructure, are expected to strengthen the Polish research ecosystem and increase its competitiveness in securing Horizon Europe funding. Another example includes Croatia, where reforms introduced a performance-based funding model and linked funding to performance indicators such as publication quality, international collaboration, and **research commercialisation, which extend beyond the RRF-funded projects**. It should be noted that some countries used the RRF funding for refinancing

([105]) Nineteen per cent (n=80) disagree that the proposal preparation and submission in RRF is simpler than those in Horizon Europe / Horizon 2020, and 25% (n=105) neither agree, nor disagree. Twenty-three (5%) responded ' I do not know'.

([106]) Widening countries" refers to EU Member States and Associated Countries that have lower performance in Research and Innovation (R&I) according to the European Union's Horizon Europe framework, including EU Member States like Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia.

existing R&I initiatives (e.g., France), thus showing that multiple Funds can be combined to act in a synergistic manner.

The Interim evaluation of the InvestEU Programme highlighted that the InvestEU Programme complements major EU programmes like the RRF and Horizon Europe. The RRF primarily offers grants and loans for public budgets, whereas InvestEU de-risks projects to attract private funding. In practice, a project could benefit from both, e.g., the RRF might fund the creation of a new venture capital fund law or incubator network, and then InvestEU guarantees could help a national promotional bank provide loans to innovative companies. InvestEU allows Member States to add funds to the EU guarantee's provisioning by voluntarily channelling RRF funds to the Member States compartment for each policy area. For instance, Greece stands out for having activated the RDI window of InvestEU, using RRF funds to support its "Loan Facility – Research and Innovation" measure (C4.7-I16980). By design, InvestEU relies on a conducive investment environment, which RRF reforms might help strengthen. For instance, if the RRF supports a reform to improve how public research results are commercialised, that could generate more viable startups, which then seek financing that InvestEU can support. This kind of indirect synergy increases the efficiency of the overall funding ecosystem. However, the level to which the RRF enhances the efficiency of InvestEU funds remains unclear at this stage, and synergies between the two are exploited to a limited extent.

As the RRF has, in many countries, helped improve the general policy framework for R&I, national funds now operate more efficiently too. For example, if the RRF required setting up a centralised project selection agency or a new monitoring system for R&I programmes, this capability will also be used to manage national R&I programmes going forward. In some Member States, the RRF is managed by the same agency that handles the national budget for R&I, ensuring a natural alignment between both funding sources. Such governance structures minimise potential overlap and allow for smoother integration of both budgets (e.g., Belgium, Cyprus). For instance, in Cyprus, a single regulatory framework encompasses all funding programmes, which largely prevents duplication of effort. This harmonisation of rules across different funding sources ensures consistency and reduces complexity for both the implementing agency and beneficiaries. Likewise, the majority of Member State authorities claim no issues of duplication or inefficiency when combining the RRF with other national R&I initiatives, mainly because all initiatives are compliant with the stated rules, which explicitly exclude double financing (e.g., Austria, Bulgaria, Belgium, Cyprus, Croatia, Denmark, Estonia, Greece, Lithuania).

**Several good practices increasing the efficiency of other funding sources have been identified**. Several Member States established national coordination groups or programming committees to align RRF with other EU programmes (e.g., Czechia, Slovenia, Lithuania, Finland). These structures facilitated regular communication, joint planning, and strategic alignment, especially on green and digital transitions. Furthermore, the RRF was often used to bridge gaps between EU funding cycles or to complement Horizon Europe by funding projects that were positively evaluated but not selected (e.g., funding Seal of Excellence projects, supporting research infrastructure not covered by other funds; as was the case in Slovenia, Slovakia, Lithuania, Czechia, Romania). In some Member States (e.g., Slovenia, Lithuania, Finland), the RRF supported the creation or enhancement of National Contact Points, Research Management Offices, and Open Science initiatives. These investments improved national capacity to engage with Horizon Europe and other EU programmes.

## 3.3. Coherence

**Scope and general conclusion**

In the Better Regulation framework, Coherence concerns the extent to which different interventions, EU policies or national/sub-national elements work together. This section focuses on whether RRF support has been complementary to other EU and domestic instruments supporting R&I, whether it has generated substitution effects, and which types of synergy have been established. In addition, it sheds light on the RRF's contribution to the European Research Area (ERA) Policy Agenda and the New European Innovation Agenda (NEIA). Several caveats apply: evidence of synergies is still limited and uneven; comparisons between Member States and/or policy actions require context and are not always straightforward; due to the broad nature of some of the measures in the plans, classification is challenging. The general conclusion is that **the RRF has broadly complemented Horizon Europe and Cohesion Policy Funds**, with some Member States using temporal or thematic demarcation to avoid overlaps. Overall, the RRF **complemented rather than replaced national funding**. The R&I-related measures under the RRF show significant contributions to both the European Research Area (ERA) Policy Agenda and the New European Innovation Agenda (NEIA). However, **synergies between the RRF and other R&I support programmes have been exploited to a limited extent**, particularly in strong and leader innovator countries.

### 3.3.1. EQ10. To what extent is the RRF coherent / complementary with other Union policies and instruments to support research and innovation? Have substitution (crowding out) effects with other EU funded programmes supporting R&I been identified and if so, to which extent?

**Introduction**: To answer the evaluation question, the analysis focuses on two aspects: (1) the complementarity ([107]) of the RRF with the three most relevant EU instruments supporting research and innovation, i.e., Horizon Europe, Cohesion Policy and, to a lesser extent, InvestEU; and (2) the possible substitution (crowding out) effects of the RRF.

**Main findings**:

- **The RRF has, overall, complemented other EU instruments for R&I**, notably Horizon Europe and Cohesion Policy (SO1.1), particularly by supporting systemic reforms, mobilising a significant amount of funds to address national-level priorities.
- In several countries, **complementarities with Cohesion Policy Funds were ensured through thematic or temporal demarcation**. Some Member States developed formal coordination mechanisms to prevent overlap, with varying success.

[107]) Complementarity refers to the ways in which different EU funding instruments align — e.g. by addressing different needs or stages of the research and innovation cycle, targeting distinct types of beneficiaries, or supporting complementary objectives—so as to work together in a coherent way, maximise overall impact and avoid overlaps.
Substitution refers to situations where one funding instrument replaces the role of another, thereby limiting the potential additional impact. Overlap denotes duplication, where two instruments support the same type of activities without generating added value.

- Overall, **the RRF did not displace other EU funding**. Most investments were additional, though in some countries (e.g., France, Czechia, Slovakia) easier access to RRF funds diverted applicants from Cohesion Policy or Horizon Europe, highlighting the need for strategic coordination.

Before evaluating the coherence/complementarity of the RRF with other instruments, the following paragraphs introduce the three most relevant EU instruments that support R&I:

- **Horizon Europe is the EU flagship research and innovation programme for the 2021-2027** period, aimed at fostering scientific excellence and driving technological breakthroughs. With a budget of **EUR 93.5 billion**, it is among the largest research and innovation programmes in the world. It is designed to boost Europe's global competitiveness, support the green and digital transitions, and strengthen resilience against societal challenges. It focuses on three main pillars: Excellent Science, which aims to enhance the EU's scientific leadership through funding projects led by top researchers; Global Challenges and European Industrial Competitiveness, which addresses pressing social and economic issues in fields such as health, climate, energy, and mobility; and Innovative Europe, which supports market-creating innovations and the scaling up of start-ups and SMEs. Horizon Europe also includes a sub-programme about Widening participation and strengthening the European Research Area, which aims to ensure a more connected and effective research and innovation landscape across Europe.
- **Cohesion Policy is the long-term investment policy of the EU addressing the objective of promoting the Union's economic, social and territorial cohesion**. The Cohesion Policy budget in the 2021-2027 Multiannual Financial Framework is **EUR 392 billion** ([108]), distributed between the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund Plus (ESF+), and the Just Transition Fund (JTF). Both the RRF and Cohesion Policy contribute to fostering digital transformation and the green transition, while increasing the economic growth and social and territorial cohesion of the EU. Also, both the RRF and Cohesion Policy provide support to R&I. Specifically, in 2021-2027, Cohesion Policy includes Priority Objective (PO1) dedicated to supporting a more competitive and smarter Europe. Under this PO, the ERDF/CF specific objective 1.1 "Developing and enhancing research and innovation capacities and the uptake of advanced technologies" is particularly relevant ([109]).
- **InvestEU is a programme aimed at boosting investment, innovation, and job creation across Europe**. Running from 2021 to 2027, it brings together various EU financial instruments under one umbrella, with a total budget guarantee of **EUR 26.2 billion** ([110]). InvestEU is expected to trigger more than EUR 372 billion in additional investment, supporting sustainable growth and addressing Europe's economic and social challenges. InvestEU is implemented through financial partners (the "implementing partners", e.g., national promotional banks) that invest in projects, benefitting from the protection of the EU guarantee, which backs their investments, increasing their risk-bearing capacity and thus allowing them to mobilise additional investment. In the domain of research and innovation, InvestEU plays a crucial role in bridging the funding gap for high-risk projects, enabling transformative ideas to move

([108]) Available budget of Cohesion Policy 2021-2027, here.
([109]) EU financing for SO1.1 amounts to EUR 32.1 billion (source: Cohesion Open Data Platform, retrieved in June 2025). The Member States with the largest allocations under this SO are Poland (EUR 6.1 billion), Spain (EUR 4.7 billion) and Germany (EUR 3.7 billion).
([110]) The EUR 26.2 billion EU budget guarantee is divided between four InvestEU policy windows: the window on Research, innovation and digitisation covers EUR 6.6 billion.

from the laboratory to the market. It supports companies, start-ups, and research institutions by providing access to finance for research-intensive projects that may otherwise struggle to secure investment due to their innovative nature or high risk.

While there is no clear-cut demarcation between the different instruments in terms of support to different stages of innovation (as all three instruments make resources available for a spectrum ranging from fundamental research to technology development and innovation support), some considerations can be put forward, considering the Member States' different levels of innovation performance. **For R&I actors in strong and leader innovator countries, Horizon Europe represents the most significant source of funding compared to the RRF and the Cohesion Policy funds**. These countries possess highly advanced R&I systems that enable them to benefit substantially from the competitive nature of Horizon Europe.

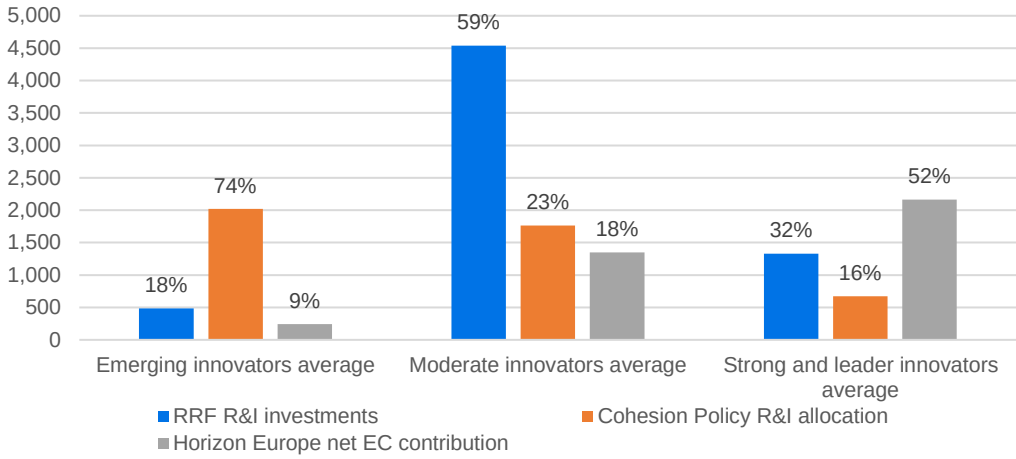
However, important nuances should be considered. In the case of leading innovators, such as Denmark, Sweden, Finland, and the Netherlands, the difference in funding between Horizon Europe and other programmes is particularly pronounced. For example, in Denmark, the net EU contribution from Horizon Europe is four times higher than that from the RRF. The situation in France and Germany is more complex. First, both countries have regions that receive significant ERDF funding with a strong focus on R&I. Second, the difference between Horizon Europe and RRF allocations is smaller. In France, the trend is even reversed, with RRF allocations surpassing those from Horizon Europe.

Conversely, **for R&I actors in emerging innovator countries, Cohesion Policy allocations represent the most significant source of funding for R&I compared to RRF and Horizon Europe**. Since most regions in this group of countries are classified as less developed according to the Cohesion Policy ([111]), the prevalence of these funds is not surprising. The weaker performance of these countries, both in terms of economic development and innovation, is also reflected in the smaller share of Horizon Europe funding awarded to their organisations.

Finally, **for moderate innovator countries, the RRF is the most significant source of funding for R&I compared to Horizon Europe and Cohesion Policy**. The top two Member States in terms of cost associated with RRF R&I measures, Italy and Spain, are both among the moderate innovators. Both are countries with a mix of more developed and less developed regions, which contributes to the fact that the average contributions of Cohesion Policy and Horizon Europe are closer to each other compared to emerging innovators (where Cohesion Policy prevails) and strong and leader innovators (where Horizon Europe prevails), as illustrated in the Figure below.

([111]) Cohesion policy distinguishes three groups of regions by their level of development. The group of less developed regions includes regions with a GDP per capita of less than 75% of the EU average.

*Figure 15: Distribution of funds by innovation category, million EUR.*




Source: Authors based on FENIX data, Horizon Europe country profiles and Cohesion Open Data platform.

*Note: For RRF, the total cost of RDI-related investments is considered based on the FENIX extraction received from the Commission. For Horizon Europe, the total EU net contribution retrieved from the Cordis database for each country is considered. For the Cohesion policy, the graph displays the 2021-2027 EU amount allocated to the Intervention Fields identified as pertaining to RDI and associated with a typology of investment as displayed in Annex V. Data was taken from the Cohesion Open Data Platform.*
*Note 2: Data labels display the share with respect to the total R&I allocation (considering all funds) by Innovation category. These shares sum up to 100% for each innovation category.*

To ensure comparability with the Horizon Europe framework, the RRF R&I-related investment measures and sub-measures have been classified along a spectrum ranging from fundamental research to technology development and innovation support (see Annex V). The same classification has been applied to Cohesion Policy funds. It is important to note that the RRF measures did not easily lend themselves to classification under Horizon Europe, as the RRF was not originally designed as a dedicated R&I funding instrument. Still, these categories provide insights into the types of RRF support for R&I in various countries and the comparison of funding allocation across RRF, Horizon Europe, and Cohesion Policy.

*Table 9: Share of financial allocation by categories of support and fund.*

| | RRF R&I investments | Cohesion Policy | Horizon Europe |
|---|---|---|---|
| Research infrastructure | 6% | 14% | 3% |
| Skills | 2% | 4% | 8% |
| R&D projects | 18% | 13% | 22% |
| Strategic instruments (e.g., roadmaps, strategies) | 2% | 0% | 4% |
| Public-private partnerships and science business collaboration | 21% | 11% | 59% |
| Grants for RDI in enterprises | 47% | 54% | 4% |
| Financial instruments and tax incentives | 4% | 4% | 0% |

*Note 1: Each investment measure and sub-measure in scope was assigned to one of the investment areas of the typology developed. For Cohesion Policy and Horizon Europe, the typology considers a subset of intervention fields and calls, respectively. See Annex V for the complete typology.*

*Note 2: The total share is with respect to the total R&I allocations by fund (i.e., for Cohesion Policy 21-27 and Horizon Europe only the mapped Intervention Fields and calls). In other words, it sums up to 100% for each fund. The colours illustrate the distribution by investment area of the resources each fund allocates to R&I, on a scale from red (least resources from the fund to this area) to dark green (most resources).*

Based on the comparative analysis of funding data across categories, **an element of complementarity between RRF and Horizon Europe emerges in the types of investments pursued by the two programmes**. While RRF R&I investment measures and sub-measures allocate 21% of their funds to the "public-private partnerships and science-business collaboration" area, this is the main typology of projects funded through Horizon Europe, with up to 59% of the funding (see the Table above) ([112]). Conversely, RRF R&I financial allocations pertain to up to 47% of the "grants for R&I activities in enterprises" area ([113]), a minor investment typology for Horizon Europe projects (4%). Finally, while the share of allocations to "R&D projects" is similar in the two programmes (18% in RRF and 22% in Horizon Europe), the emphasis on excellence and frontier science is stronger in Horizon Europe. At the country-level (see case studies), the typology of investments is more heterogeneous across RRF R&I measures than across Horizon Europe. This configuration is the result of strategic choices but is also influenced by the eligibility criteria of each funding source and the RRF's larger scope.

**Between RRF and Cohesion Policy, there are both elements of concurrency and complementarity based on the analysis of funding data, although the former appears to be stronger**. Both devote a large share of resources (47% RRF, 54% Cohesion Policy) to "grants for R&I activities in enterprises" ([114]). Also, the share of investments in "Financial instruments and tax incentives" and "Skills" is similar. Investments in "R&D projects" and "Public-private partnerships and science business collaboration", although relevant also for Cohesion

([112]) The "public-private partnerships and science-business collaboration" area is the main typology of projects funded through Horizon Europe also in each group of countries by innovation performance level: this area represents 56% of the Horizon Europe allocation in Strong/Leader innovators; 64% in Emerging innovators; 66% in Moderate innovators.
([113]) The "grants for R&I activities in enterprises" is the main area of RRF investments in Strong/Leader innovators (72% in this group of countries) and Moderate innovators (40%), but not in Emerging innovators (6%), where R&D projects prevail (34%).
([114]) The "grants for R&I activities in enterprises" is the main area of Cohesion policy projects across all three groups of countries: Strong/Leader innovators (44% of Cohesion policy R&I allocations in this group of countries); Moderate innovators (49%), and Emerging innovators (68%).

Policy, are more significant in RRF. Conversely, while 14% of Cohesion Policy funds are devoted to research infrastructure, only 6% of RRF allocations pertain to this area. At the country level, both Cohesion Policy and RRF display some heterogeneity (see case studies). Yet, the concurrency of the two funds also emerges at the country level: for instance, in nine countries ([115]) the main typology of investments, both for RRF and Cohesion Policy, is "grants for R&I in enterprises".

The scope of the support provided by the RRF is broader than other funds: notably, the RRF is the only instrument with dedicated financial allocations to support reforms ([116]) and in some cases supports tax incentives for R&I. Additionally, unlike Cohesion Policy, which is place-based, and Horizon Europe, which often requires transnational collaboration, RRF funding is not subject to geographic or partnership constraints ([117]).

Concerning the **sub-national dimension**, Molica and Marques Santos ([118]), analysing the territorial concentration of RRF, Cohesion Policy and Horizon Europe, write that an analysis on the RRF can only be made at the national level. While mentioning that "the current lack of data on the territorial concentration of RRF funds suggests […] caution in drawing conclusions from the comparison with the other two instruments", they state that whereas Cohesion Policy focuses on less developed regions and Horizon Europe on more developed regions, the RRF "shows a less clear-cut trend than the other two funding streams". Noting that in 2014-2020 the bulk of Horizon 2020 funding was geographically rather concentrated in territories leading in R&I, which may contribute to agglomeration dynamics, the authors note a high potential for complementarities with the RRF. On this topic, the analysis conducted as part of the present evaluation of the location of RRF R&I-related projects in Italy ([119]) offers data to support their conclusion that the RRF shows a less clear-cut trend than other instruments, providing a disaggregation at the regional level (see box below).

([115]) Austria, Estonia, France, Germany, Hungary, Ireland, Lithuania, Spain and Sweden.
([116]) However, many RRF R&I-related reforms do not have an associated cost.
([117]) Unless established by individual Member States.
([118]) Molica, F. and Marques Santos, A., In search for the best match. Complementarities between RandI funds across EU regions, European Commission, Seville, 2024, JRC136780
([119]) See, in the Case study on Moderate Innovators, the Annex "Comparing RRF, Horizon Europe and Cohesion Policy: the case of R&D projects in Italy". This analysis has been performed only for Italy because of the rich datasets Italy makes available on its national RRP portal, which are not available (at least not with the same breadth of information) in other countries.

Box 3: Italy – Regional distribution

**RRF support to R&I in Italy stands between Cohesion Policy and Horizon Europe in terms of concentration by type of region**, as shown in the first Figure below, which displays the share of R&I investments by type of region and source of funds. Horizon Europe participants tend to be in more developed regions, while Cohesion Policy has a higher focus on less developed regions. **RRF resources, while having the largest amount in absolute terms, are more balanced across the three categories of regions** ([120]). Figure 17 shows that relative to GDP, the RRF provides most of the support to less developed regions (0.57% of the less developed regions' GDP), while it has the same weight in transition and more developed regions (0.31% each).

*Figure 16: Distribution of funds in Italy by regions' development level and funding source, million EUR.*

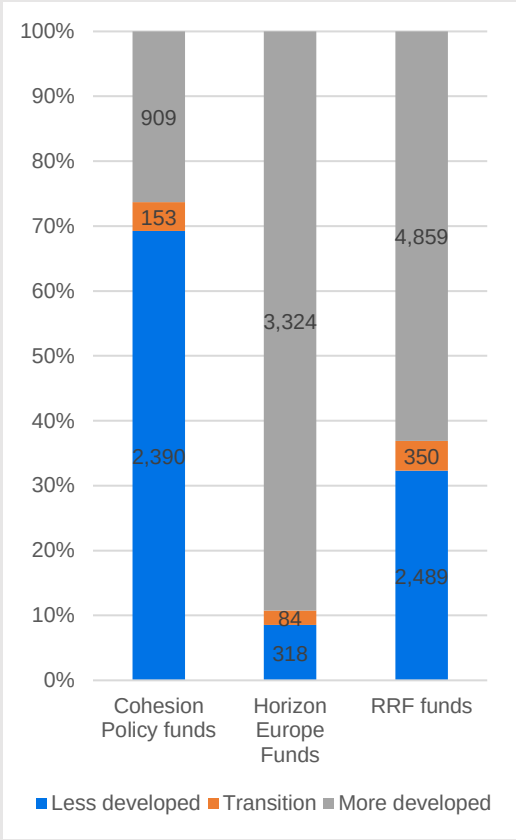
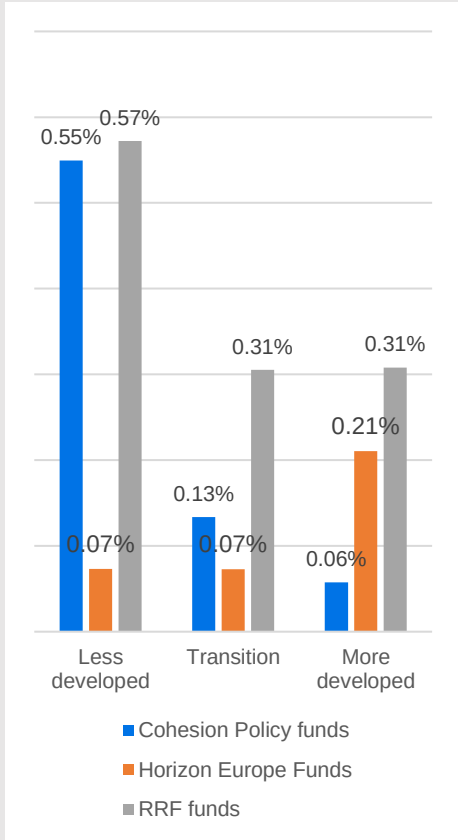



*Figure 17: Distribution of funds in Italy as a share of 2023 GDP of the regions' classes.*




Source: Authors based on Italian Open Data catalogue, Cordis and Cohesion Policy data.

*Note: RRF data refer to a subset of 25 R&I measures for which data are available.*

([120]) RRF data refer to a sub-set of 25 measures (out of the 34 measures tagged as R&I relevant by the European Commission) for which the Italian open data portal provides data concerning the associated projects. For further detail, see the Case study on Moderate Innovators.

In what follows, the RRF's relationships with Horizon Europe and Cohesion Policy are analysed separately, taking stock of evidence from country-level research and stakeholder consultation. For stakeholders' views on comparing the effectiveness of the different instruments, see EQ5.

#### *3.3.1.1. EQ10.1 To what extent is the RRF coherent/complementary with Horizon Europe?*

**The extent of complementarity between RRF and Horizon Europe funding is largely shaped by the thematic focus of national investments**. In strong and leader innovator countries where RRF resources were directed towards areas aligned with the strengths of the national R&I system and where R&I ecosystems are particularly strong, such as Germany, France, and Denmark, there were cases in which the same actors benefited from both funding streams ([121]), thereby reinforcing their strategic positioning through complementary support. Some examples are illustrated in the following box.

*Box 4: Complementarity with Horizon Europe*

In France, Arkema, one of the companies participating in the IPCEI Hydrogen project, co-funded through the RRF, is engaged in several Horizon Europe projects, many of which are linked to the clean hydrogen sector. IPCEIs and Horizon Europe projects can indeed be complementary, especially when Horizon Europe supports upstream R&I and IPCEIs' downstream scale-up and deployment.

In Denmark, the strong participation of Danish R&I actors in Horizon Europe confirms a relative position of strength in areas aligned with the focus of RRF investments in green science and innovation: Danish participants have achieved a success rate of 24% in the Climate, Energy and Mobility cluster and 29% in the Food, Bioeconomy, Natural Resources and Environment cluster. Participation in Horizon Europe has become increasingly important for Danish R&I stakeholders, as national funding for research has remained relatively stagnant in recent years. Organisations that perform well in securing Horizon Europe funding are also actively involved in the green missions supported by the RRF, along with all Danish universities, the Danish Technology Institute, and a range of partners from industry.

In Germany, several research and innovation domains financed by the RRF have also been beneficiaries of support from Horizon Europe projects, including, but not limited to, green hydrogen, electromobility, digitalisation, and the use of advanced technologies in public administration. Interviewed stakeholders perceive that the contribution to the EU's twin transition of the two programmes acts on a different level. While Horizon Europe primarily funds knowledge generation and innovation, RRF enables the deployment and scaling of solutions, particularly within Member States' economic and social recovery plans.

**In emerging innovators, R&I support in the RRF has contributed to their capacity to apply to Horizon Europe by strengthening the national R&I ecosystems**. While Horizon Europe supports competitive, cutting-edge research, often at the experimental or frontier stage, the RRF in countries belonging to the emerging innovator group plays a foundational role by investing in research capacities, infrastructure, and public-private collaboration. For example, in Poland, this takes the form of targeted reforms and investments ([122]) aimed at equipping universities and

([121]) A systematic analysis is not possible, as the authorities did not disclose complete lists of project beneficiaries. Additionally, some beneficiary organisations are large and active across multiple technology areas, making it difficult to determine the extent to which RRF funding complemented either upstream or downstream Horizon Europe support.

([122]) Specifically, investment A2.4.1 on developing research capacities and reform A2.4 on strengthening science–industry cooperation are expected to equip Polish universities and businesses with the necessary resources to enhance collaboration and competitiveness.

businesses to engage more effectively in Horizon Europe. In Croatia, RRF investments support talent and systemic innovation capacity, thereby enhancing participation in European research in priority fields such as health, energy, and digital technologies ([123]). Together, the two instruments provide a mutually reinforcing framework that advances both excellence in science and national innovation potential.

**Among moderate innovators, countries used the RRF to strengthen the national R&I systems with a good degree of alignment with Horizon Europe.** Lithuania's participation in Horizon Europe, for instance, is strategically aligned with national R&I priorities and complements key investments under the RRP, particularly in promoting green innovation and digital transformation. The thematic orientation of Lithuanian Horizon Europe projects closely mirrors national Smart Specialisation Strategy (S3) priorities, such as health technologies, ICT, and sustainable production, which are also embedded in the RRF's innovation and green transition agenda. In Italy, under the measure "Projects presented by young researchers", research grants were awarded to Marie Skłodowska-Curie Individual Fellowships and Postdoctoral Fellowships (MSCA), as well as to Seal of Excellence (SOE) and European Research Council (ERC) grantees.

*Box 5: Italy – Complementarities*

The availability of detailed data on RRF projects, as well as their participants and location, allowed us to deepen the analysis of RRF-Horizon Europe complementarities for Italy (see case study on Moderate Innovators, Annex IV "Comparing RRF, Horizon Europe and Cohesion Policy: the case of R&D projects in Italy"). **While caution is warranted in interpreting the findings, the analysis of Italian RRF and Horizon Europe data reveals a limited but noteworthy overlap between the beneficiaries of the two programmes**. Although only a small share of RRF beneficiaries (322 organisations) also participate in Horizon Europe, these entities are highly active, implementing a substantial portion of projects under both instruments and receiving significant funding. A project similarity analysis indicates that **complementarity and potential synergies between RRF and Horizon Europe are more pronounced among universities and research organisations than among private companies**. This may suggest that such actors are better positioned to strategically leverage both funding streams for complementary or thematically aligned research and innovation activities.

According to interviewees, **the participation of institutions supported by the RRF in Horizon Europe projects creates challenges in some Member States** ([124]), **particularly in determining whether the support is truly additional** or if it reflects some degree of overlap — an assessment that often requires detailed technical knowledge. Another difficulty relates to the risk of double funding (see also EQ13), where projects receive support from both the RRF and other EU initiatives. Interviewees from Czechia emphasised that a key challenge is the lack of access to detailed information on EU-funded projects due to legal and confidentiality constraints, which hampers the ability to cross-check projects and ensure alignment between funding streams. Finnish authorities noted that administrative inefficiencies can arise concerning reporting requirements and the need to clearly separate funding sources to avoid double funding. In Spain, the process for justifying the avoidance of double funding was deemed burdensome by national authorities and discouraged the establishment of synergies in terms of

([123]) Based on an overview of summaries of selected Horizon Europe projects where Croatia is identified as contributor the most common research areas funded through Horizon Europe in the 2021-2024 period include biomedical and health research, research into high-efficiency power systems, advanced materials for energy applications, sustainable energy technologies, quantum and advanced computing, digital transformation, and inclusive technology development.
([124]) Belgium, Czechia, Finland.

co-funding between RRP R&I measures and Horizon Europe, but thematic complementarities between RRF and Horizon Europe can nevertheless be found in fields such as renewable energy or artificial intelligence.

According to interviewees, **the participation of institutions supported by the RRF in Horizon Europe projects creates challenges in some Member States** ([125]), **particularly in determining whether the support is truly additional** or if it reflects some degree of overlap — an assessment that often requires detailed technical knowledge. Another difficulty relates to the risk of double funding, where projects receive support from both the RRF and other EU initiatives. This can complicate fund management and the proper allocation of resources. Belgian authorities acknowledged that, while widespread duplication is not observed, some overlap does exist, especially in the area of hydrogen R&D. Interviewees from Czechia emphasised that a key challenge is the lack of access to detailed information on EU-funded projects due to legal and confidentiality constraints, which hampers their ability to cross-check projects and ensure better alignment between funding streams. Finally, Finnish authorities noted that administrative inefficiencies can arise, particularly regarding reporting requirements and the need to clearly separate funding sources to avoid double funding.

**In emerging innovators, R&I support in the RRF has contributed to their capacity to apply to Horizon Europe by strengthening the national R&I ecosystems**. While Horizon Europe supports competitive, cutting-edge research, often at the experimental or frontier stage, the RRF in countries belonging to the emerging innovator group plays a foundational role by investing in research capacities, infrastructure, and public-private collaboration. For example, in Poland, this takes the form of targeted reforms and investments aimed at equipping universities and businesses to engage more effectively in Horizon Europe. In Croatia, RRF investments support talent and systemic innovation capacity, thereby enhancing participation in European research in priority fields such as health, energy, and digital technologies. Together, the two instruments provide a mutually reinforcing framework that advances both excellence in science and national innovation potential.

**Among moderate innovators, countries used the RRF to strengthen the national R&I systems with a good degree of alignment with Horizon Europe. Lithuania**'s participation in Horizon Europe, for instance, is strategically aligned with national R&I priorities and complements key investments under the RRP, particularly in promoting green innovation and digital transformation. The thematic orientation of Lithuanian Horizon Europe projects closely mirrors national Smart Specialisation Strategy (S3) priorities, such as health technologies, ICT, and sustainable production, which are also embedded in the RRF's innovation and green transition agenda. In Italy, under the measure "Projects presented by young researchers", research grants were awarded to Marie Skłodowska-Curie Individual Fellowships and Postdoctoral Fellowships (MSCA), as well as to Seal of Excellence (SOE) and European Research Council (ERC) grantees. **Co-funding between RRP R&I measures and Horizon Europe was, however, difficult to establish** (see also EQ13). In **Spain**, for instance, the process for justifying the avoidance of double funding was deemed burdensome by national authorities and discouraged the establishment of such synergies, but thematic complementarities between RRF and Horizon Europe can nevertheless be found in fields such as renewable energy or artificial intelligence.

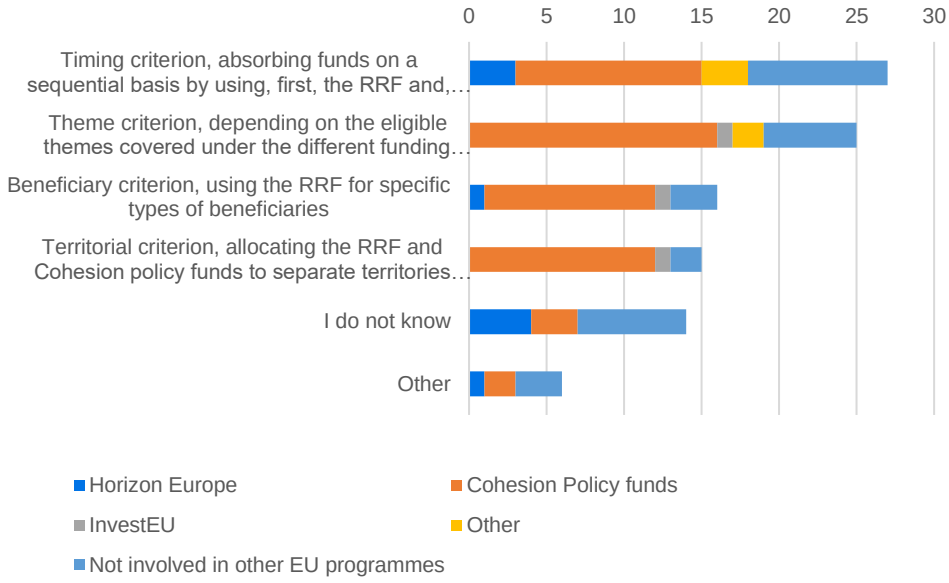
#### *3.3.1.2. EQ10.2 To what extent is the RRF coherent/complementary with Cohesion Policy funds, especially ERDF funding under SO1.1?*

The RRPs include guidelines on how to coordinate their implementation with Cohesion Policy funds. However, as noticed by the European Court of Auditors ([126]), the RRPs are brief and

([125]) Belgium, Czechia, Finland.
([126]) ECA Review 01/2023 EU financing through cohesion policy and the Recovery and Resilience Facility: A comparative analysis (2023)

general in outlining how to utilise the RRF and Cohesion Policy funds in a complementary rather than concurrent manner. According to a study by the European Committee of the Regions ([127]), this issue reflects the limited role of local and regional authorities in the design and implementation of the RRPs. Nonetheless, there are examples of Member States where national authorities set up a clear demarcation framework (e.g., France and Croatia ([128])). According to the ECA, the establishment of such frameworks was useful in establishing the main principles, although further coordination during implementation at the regional and project levels is still needed. Based on the responses to the survey of Member State authorities, **various combinations of criteria have been used to ensure coherence and complementarity between the RRF and Cohesion Policy programmes supporting R&I.** Of the 60 respondents, 47 reported using at least one such criterion (see figure below). Focusing only on the 32 respondents who also reported being involved in Cohesion Policy (light blue bars in the chart below) —and who might therefore be more knowledgeable about the topic— 30 of them (94%) indicated that at least one criterion had been applied.

*Figure 18: Responses to the question "How has coherence/complementarity between the RRF and Cohesion Policy programmes for R&I support been ensured?" Broken down by respondent involvement in other programmes.*




Source: Member State authorities survey, N=60

**The most commonly cited criterion for ensuring complementarity between the RRF and Cohesion Policy programmes supporting R&I**, according to survey respondents, **was the thematic criterion, followed by timing and territorial criteria**. According to the MS-level research, for example, Latvia has established a clear temporal separation between funding instruments to avoid overlaps. Some RRF-funded programmes—such as competence centres and applied research support—have already been launched and will remain active until 2026, after which support will be redirected through Cohesion Policy funds. In the case of the

([127]) European Committee of the Regions (2021) *Regional and local authorities and the national recovery and resilience plans*.
([128]) In Croatia, RRP and ERDF SO1.1. funding are used in a sequential manner, with RRP investments being mostly implemented until 2025-26 and the ERDF kicking in thereafter.

digitalisation support programme, early results have already been observed, and plans are in place to continue providing support through Cohesion Policy funds, thereby creating synergies between the different funding sources. Croatian stakeholders reported that the current strategic priority is to maximise the absorption of RRF funds (2021–2026). As a result, Cohesion Policy funding will become a primary focus only from mid-2025 onwards, and especially in 2026. Similarly, in Slovakia, it was initially planned that RRF interventions would commence first, followed by continued support from CP funds. An interdepartmental coordination platform was also established to oversee the process and complementarities (see further in the case study on emerging innovators). Despite these efforts, some calls under both CP and RRF were launched simultaneously, requiring adjustments or redesigns of the boundaries. To prevent duplication, a decision was made to allow applicants to apply to only one of the two calls. Consequently, effort has primarily focused on avoiding duplication, rather than fully leveraging complementarities.

Italy offers another example of complementarity between RRF and Cohesion Policy, more based on a demarcation between different themes. The actions envisaged by the National Research and Competitiveness Programme (PN RIC) 2021-2027, financed by the Cohesion Policy funds, have been formulated with a clear demarcation from the measures of the RRP, precisely to avoid overlaps and duplications. The RRP focuses especially on strategic investments and structural reforms, while Cohesion Policy funds (and Horizon Europe) support specific projects and basic and applied research activities. At the same time, interview feedback suggests that, while the implementation of Cohesion Policy programmes suffered from the parallel implementation and prioritisation of the Italian RRP (as proved by the low fund absorption of these programmes), a sort of temporal complementarity will de-facto come about, since Cohesion Policy programmes can be expected to “inherit” projects that will have difficulties respecting the RRF’s timing and thereby give them continuation in funding.

**Effective coordination among implementing agencies and programme design has helped minimise overlaps of concurrent measures supported by the RRF and Cohesion Policy**. For example, in the case of Denmark, both the ERDF and the JTF have allocated resources to areas linked to the green transition and decarbonisation of the economy, which partially overlap with the RRF investments in carbon capture, Power-to-X ([129]), and circular economy. However, while the RRF fosters public-private partnerships to develop new technologies, the ERDF focuses on SMEs, promoting uptake of technologies through clusters and business networks. Compared to Denmark, France received more substantial support from the ERDF, and this is being deployed regionally, which made coordination with the RRF, deployed at the national level, more difficult, according to the French National Agency for the Cohesion of Territories (ANCT). Nevertheless, the agency confirmed that efforts were made to avoid overlaps through strong initial coordination among authorities, ensured by thematic meetings held between 2020 and 2021. Based on these consultations, it was agreed that for concurrent measures in the field of R&I, the articulation between ERDF and RRF should be established at the level of specific projects or local measures, mainly by regional and local authorities in charge of ERDF implementation. The demarcation of responsibilities was also expected to follow the principle that the RRF was primarily intended to support large projects led by large operators, while ERDF was mainly devoted to supporting research in SMEs. Local authorities responsible for ERDF implementation also established specific procedures to mitigate the risk of double funding. Although regional authorities identified instances where the same beneficiary had received both RRF and ERDF support, no cases of actual double funding were found.

In relation to governance, interviews also revealed that some **Member States implemented effective strategies in managing the dual funding streams for R&I. A good practice involves strong central coordination**, ensuring a coherent national perspective on R&I

([129]) Power-to-X (also known as PtX or P2X) is a collective term for conversion technologies that turn electricity into carbon-neutral synthetic fuels, such as hydrogen, synthetic natural gas, liquid fuels, or chemicals.

investments. In Latvia, the existence of a unified national R&I governance system under which both RRF and EU funds must operate ensures that all R&I-related investments contribute to a shared national vision and are subject to regular performance monitoring. In other cases, coordination was ensured by consolidating the oversight of RRF and Cohesion funds (not specifically for R&I) under a single ministry. In Cyprus, where both the Managing Authority for Cohesion Policy and the Coordinating Authority for the RRF are located within the Ministry of Finance, such **institutional overlap has proven advantageous**, simplifying implementation and promoting internal coherence across funding streams, including for R&I. In Italy, the consolidation of RRF and Cohesion oversight under the responsibility of a single ministerial authority helped ensure some alignment ([130]), especially during the revision of the RRP, where projects removed from the plan were shifted to the Cohesion Funds.

**At the same time, fragmented governance can be a hindering factor for R&I investments and reforms implemented through the RRF, as well as for their complementarity with Cohesion Policy**. The interviews highlight that in Belgium, governance complexity stemming from the federal structure presents unique coordination challenges. With authority shared across seven governments, aligning RRF investments with other EU funding sources, including Cohesion Policy, is inherently difficult. For instance, while the Cohesion Funds focus on regional development, the federal government lacks direct experience with them, which may hinder the strategic use of all available resources for R&I. The lack of a central coordinating body with cross-level competence undermines the potential for complementarity. According to interviews, experience in Slovenia similarly points to fragmentation and inefficiency. The separate handling of R&I reforms and investments, combined with the proliferation of governance layers, led to slower information flows and implementation delays. Moreover, the decision to create temporary structures specifically for the RRF, with no plan for integration or continuity, may limit the legacy of institutional capacity built during this period and the continuation of RRF investments with Cohesion Policy funds.

**Another good practice is the strategic alignment of RRF R&I investments with existing Smart Specialisation Strategies (S3)**. References to these strategies (at national or regional level) can be found in RRF measures of the following countries: Belgium, Croatia, Czechia, Greece, Italy, Latvia, Lithuania, Malta, Portugal and Spain. Some countries (Croatia, Poland, and Greece) successfully leveraged their established S3 frameworks to guide RRF investments. This approach ensured a more strategic and impactful use of funds, building upon existing regional strengths and avoiding the selection of ad-hoc projects. By integrating RRF funding into pre-existing, evidence-based strategic priorities, these Member States were able to reinforce their innovation ecosystems and achieve greater coherence in their R&I spending. In other countries, single references to S3 can be found (for instance, in Italy, coherence with regional S3 strategies is an assessment criterion in one measure's call for projects ([131])), but the role of S3 in shaping the set of RRP R&I investments overall appears smaller. A study on ten Spanish regions has shed light on the lack of ex-ante alignment between RRF and Smart Specialisation Strategies ([132]), and the Commission's Joint Research Centre has undertaken work to identify ex-post potential synergies between RRF and S3 ([133]).

Finally, **an important form of complementarity between the RRF and Cohesion Policy is the possibility to use RRF resources to support territories that receive limited funding from Cohesion Policy.** According to interviews, this happened in Hungary, Poland, Finland, and Lithuania (see box below). It is worth noting that these countries differ significantly in terms of the scale of Cohesion Policy support they receive and the level of development of their regions.

([130]) See for instance Coletti and Filippetti (2025), available here.
([131]) Measure "Innovation ecosystems" [M4C2I1.5].
([132]) Gañán de Molina C, Guerrero Ginel JE and Sillero Illanes C., (2022) S3 and Recovery and Resilience Funds: A Case Study Built on the Experience of 10 Spanish Regions. Front. Res. Metr. Anal. 6:801370.
([133]) See Tolias (2022) on Greece, Prota and Viesti (2022) on Italy, Fernández-Zubieta (2022) on Spain.

*Box 6: Complementarity with Cohesion Policy Funds.*

In Hungary, the RRP enables large-scale investments in research infrastructure and supports developed regions like Budapest, which typically receive limited ERDF funding. Meanwhile, the EDI Operational Programme Plus focuses on fostering SME cooperation and market-driven innovation. Importantly, the RRP helps fill a key territorial gap by allowing support for developed regions, including Budapest.

In Poland, Cohesion Policy funds play a major role, as the country is the largest beneficiary of these funds. The RRP has covered a broad range of areas that the Cohesion Policy has not addressed. Specifically for R&I investments, strong complementarity has been observed in cities such as Warsaw, where Cohesion Policy does not cover R&I, and the RRF has been crucial for the development of research infrastructure.

In Finland, Cohesion Policy funding is geographically limited, available only to higher education institutions in certain regions. In contrast, the RRF has funded national RDI projects aligned with Finland's national objectives, with no geographic restrictions on eligibility. This has made RRF funding more widely accessible across the country, reflecting national rather than regional or institutional priorities.

In Lithuania, territorial complementarity is, for example, evident in interventions regarding innovative business creation and startups. In this field, Cohesion Policy funds focus on supporting a specific region (Mid-West Lithuania), while the RRF targets interventions in the capital region.

**Looking ahead, both the ongoing review of the RRPs and the recent mid-term review of Cohesion Policy could contribute to enhancing complementarity** and synergies between the RRF and Cohesion Policy funds. The review ([134]) encourages Member States to identify RRF projects that could be continued under Cohesion Policy ahead of upcoming programme amendments, facilitating a smoother transition between instruments. Moreover, the recently published Communication to the European Parliament and the Council on NextGenerationEU – The road to 2026 ([135]) suggests that Member States could split RRF projects for continuation under other EU funds. Specifically, projects that can no longer be completed by the RRF deadline of August 2026 may be downscaled, retaining only the components that can be implemented within the timeframe. The remaining parts could then be carried forward using national resources or, where eligible, other EU funding instruments over a longer implementation period.

#### *3.3.1.3. EQ10.3 To what extent is the RRF coherent/complementary with InvestEU?*

**There is limited evidence on complementarity between RRF and InvestEU for R&I**. In principle, InvestEU enables Member States to channel part of their RRF (or Cohesion Policy) funds to a so-called “Member State compartment”. This mechanism allows Member States to implement part of their RRPs through InvestEU, which has the advantage of representing a ready-made delivery mechanism for financial instruments under the EU budget. However, under the RRF, most countries preferred to opt for either grants or nationally-run financial instruments. Only some (Bulgaria, Greece, Portugal, Romania, Spain) activated the Member State

([134]) European Commission (2025) Communication from the Commission to the European Parliament and the Council. A modernised Cohesion policy: The mid-term review. COM(2025) 163 final
([135]) European Commission (2025) Communication from the Commission to the European Parliament And The Council, NextGenerationEU - The road to 2026, COM(2025) 310 final/2

compartment with RRF resources ([136]). The Interim Evaluation of the InvestEU Programme ([137]) notes that the timing of RRP preparation influenced this choice: countries that established compartments early were able to allocate RRF resources, while those finalising their plans later had fewer opportunities to do so. Based on the desk research, only Greece activated the "RDI window" of InvestEU with RRF funds ([138]). However, it cannot be excluded that support provided under other windows, especially the "SME window", also partially benefited from financial instruments supporting R&I in SMEs.

**Nonetheless, the contribution of RRF to InvestEU might increase in the near future, including for R&I**. The recently published Communication to the European Parliament and the Council on NextGenerationEU – The road to 2026 ([139]) encourages Member States to explore all available options to safeguard their RRF allocations, including using RRF resources to support other EU programmes such as InvestEU. Specifically, Member States can transfer funds to the InvestEU Member State Compartment for an amount up to 4% of their total RRF allocation and an additional 6% for measures contributing to the Strategic Technologies for Europe Platform (STEP) objectives.

#### *3.3.1.4. EQ10.4 Have substitution (crowding out) effects with other EU-funded programmes supporting R&I been identified, and if so, to which extent?*

Substitution or crowding out effects refer to situations where funding from one EU policy instrument (e.g. the RRF) **replaces or displaces** funding that would otherwise have come from another instrument (e.g. Cohesion Policy or Horizon Europe), rather than **adding** to the overall level of investment or policy effort. These effects can occur at both strategic and project levels. At the strategic level, the general feedback from interviews and the survey to Member State authorities is that the R&I funding in the RRF has not substituted Cohesion Policy funds and Horizon Europe but addressed specific gaps that other EU programmes could not fill in areas such as systemic reforms and governance improvements. While most EU funding typically focuses on investments, the RRF has also supported activities related to legislation and systemic structural changes, which are crucial for achieving R&I's long-term impact. At the project level, the situation is more mixed.

**Some examples of crowding out of Cohesion Policy funds were reported in France, Czechia, Poland and Slovakia during interviews or focus groups**. In France, these cases of competition between RRF and Cohesion Policy funding concerned grants for R&I in enterprises. Despite efforts to ensure coordination between the two funding programmes, a crowding-out effect on ERDF funding was observed. The French National Agency for the Cohesion of Territories (ANCT) highlighted that, in general, beneficiaries preferred RRF funding over ERDF support, including in the R&I field, which contributed to the slow start of the 2021-2027 programming period and the slower absorption of ERDF funds. The main reason for this was that RRF funds were typically easier to access, with simpler administrative procedures

([136]) According to information contained in the Interim evaluation of the InvestEU Programme (pp. 40-41) and the EIF website.
([137]) Available here.
([138]) The Greek RRP's measure "Loan Facility – Research and Innovation" (C4,7-I16980) has made significant progress in mobilizing financing for research and innovation aligned with Greece's sustainability, digital transition, and climate goals. Key milestones have been achieved, including the signing of operational agreements with international financial institutions (IFIs), the launch of a call for commercial banks, the agreement for an equity platform, and the InvestEU contribution agreement. As of Q4 2024, EUR 5.9 billion in loans had been deployed. The total loan deployment is projected to rise to EUR 11.7 billion by mid-2026. These funds are primarily supporting equity platforms such as Innovate Now Equifund and are subject to InvestEU Investment Committee approval to ensure alignment with transition objectives.
([139]) European Commission (2025) Communication from the Commission to the European Parliament And The Council, NextGenerationEU - The road to 2026, COM(2025) 310 final/2

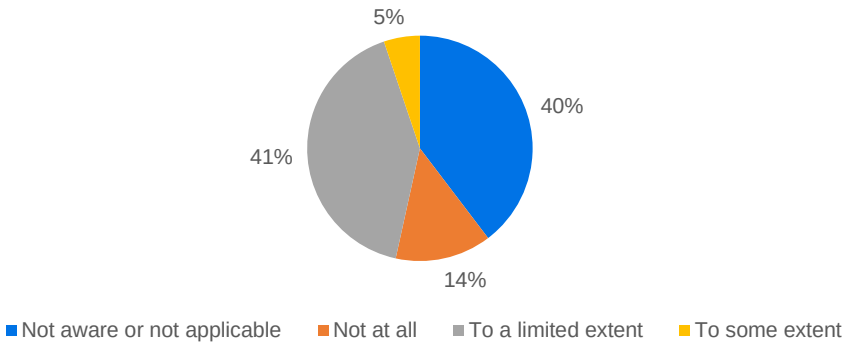
compared to the ERDF. Specifically, the RRF financing, not being tied to specific costs, required fewer justifications of expenses, thus reducing the administrative burden on recipients. Additionally, the ANCT noted that RRF funding was primarily managed by national agencies such as ADEME, BpiFrance, and the ANR, which have greater visibility amongst enterprises than regional authorities. In Czechia, interviews revealed that many SMEs favour national or RRF funding due to lower competition and simpler administrative processes, which have limited their participation in Cohesion Policy programmes. For Slovakia, focus group participants reported a degree of crowding out with respect to Cohesion Policy funding. A substantial portion of structural funds previously allocated to R&D was reportedly reduced, with the justification that these resources would now be covered by the RRF. Similarly, in Poland, crowding-out effects were observed where RRF resources displaced Cohesion Fund allocations due to the latter's perceived complexity or slower timelines. Some stakeholders shifted their focus to RRF calls, which were considered simpler and more immediate, resulting in the underutilisation of complementary instruments.

**The substitution effect with Horizon Europe seems more difficult to grasp**. In Slovakia, although definitive data is lacking, some degree of crowding out is anticipated in relation to Horizon Europe, as RRF funding is generally perceived as easier to access. This perception could potentially divert researchers from applying for more competitive Horizon Europe grants. However, it should also be acknowledged that the RRF includes measures specifically designed to support access to Horizon Europe. The overall net effect, therefore, remains to be seen. In Italy, the fact that the RRF offered numerous funding opportunities for universities and research institutes has strengthened their capacity to manage participation in EU-funded projects (which is expected to benefit Italian participation in the Framework Programme in the medium term) but had the consequence that their participation in Horizon Europe diminished over the last few years (in terms of both applications submitted and financial contribution obtained), as shown in a 2025 report ([140]). University grant offices, critical for participation in Horizon calls, have reportedly been heavily absorbed by the administrative demands of RRP implementation. Although no formal causality analysis has been conducted, the correlation is notable. According to stakeholders from Spain and Portugal, this negative effect on participation in Horizon Europe did not occur in their countries.

According to the survey with Member States authorities (see Figure 19), the substitution effect has been limited. Similarly, according to the survey of the target groups (see Figure 20), **most respondents across all categories reported that they did not shift planned research and innovation activities from other EU funding programmes**, such as Horizon Europe, Cohesion Policy funds, or InvestEU, to **the RRF**. This suggests that RRF funding was predominantly used to support new activities, rather than substituting or reprogramming existing ones. This pattern is particularly evident among research institutes (see Figure 20), where 80 respondents (32% of all respondents in this category) applied for RRF funding exclusively for new activities. Similar responses were recorded among businesses and among higher education institutions. A more limited reallocation of activities took place in some cases, especially among higher education institutions and research institutes, where 58 and 78 respondents respectively reported shifting a small portion of planned activities to the RRF, and an additional 26 and 30 respondents indicated a moderate reorganisation of their funding strategies. By contrast, businesses engaged less frequently in such reallocation. Very few organisations reported a large-scale reallocation of activities from other EU programmes to the RRF—only 27 cases overall (about 4% of the sample)—suggesting that the RRF did not displace existing EU instruments in operational terms.

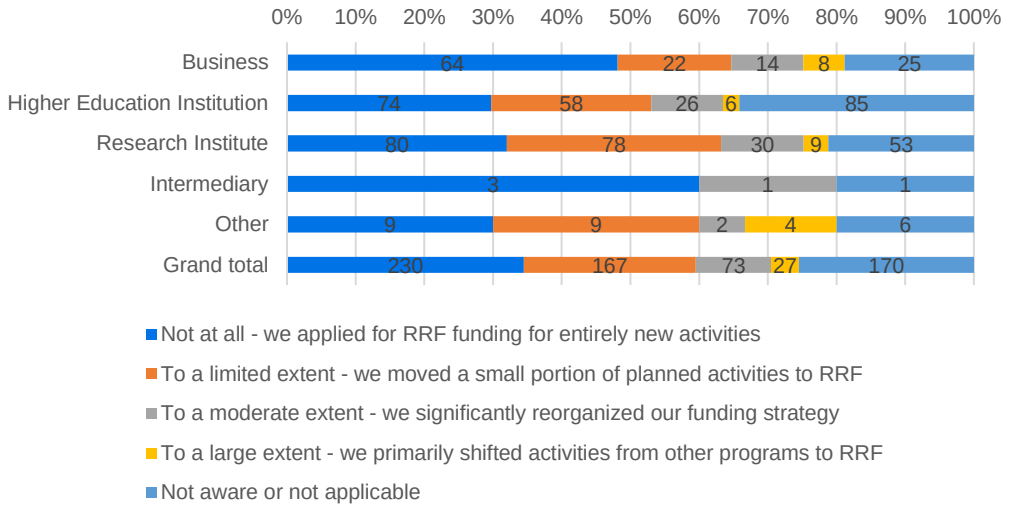
([140]) See data on Italian participation in Horizon Europe that can be found in APRE (2025), Rapporto sulla partecipazione italiana a Horizon Europe, which also provides data disaggregated by Horizon Europe pillar.

*Figure 19: Responses to the question "To what extent has the RRF caused substitution effects in the R&I domain with respect to Horizon Europe, Cohesion Policy and/or InvestEU?"*




Source: Member State authorities survey, N=58

*Figure 20: Responses to the question "To what extent has your organisation shifted planned research and innovation activities from other EU funding programmes (such as Horizon Europe, Cohesion Policy funds, or InvestEU) to the Recovery and Resilience Facility (RRF)?"*




Source: survey of the target groups, N=667

*Note: the shares with and without Spain are similar.*

### 3.3.2. EQ11. To what extent have the RRF/RRPs been coherent/complementary with relevant Member States' domestic instruments to support research and innovation?

**Introduction**: To answer the evaluation question, the analysis focuses on three aspects: (1) the role of the RRF in supporting R&I relative to government R&I spending; (2) the complementarity of the RRP with national R&I policy; and (3) the possible substitution (crowding-out) effects of national support by the RRP.

**Main findings:**

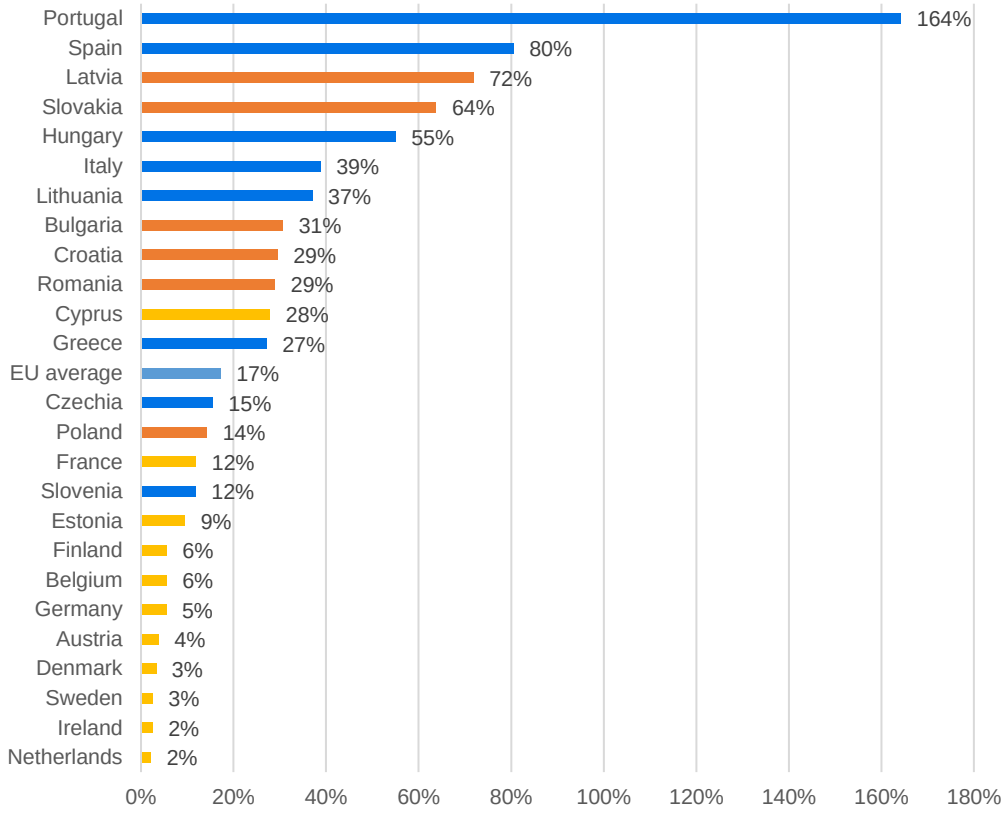
- **The role of RRF has varied substantially depending on the existing capacity and innovation maturity of each Member State**. In strong/leading innovator countries, RRF funding reinforces existing strategic priorities such as clean technologies and digitalisation. In emerging innovators, it has often represented a large share of public R&I budgets, and has helped to strengthen governance and capacity. Moderate innovators used RRF resources to implement reforms alongside measures that complemented their existing ones.
- Overall, **the RRF complemented rather than replaced national funding**, though limited substitution occurred in countries like Czechia and Sweden.

#### The RRF's role in supporting R&I relative to government R&I spending

**The weight of the RRF R&I allocation over Member State government budget allocation to R&I varies widely across MS**. On average, the share of RRF R&I over the government R&I budget allocations has a relationship with the level of R&I performance of the MS, as measured by the European Innovation Scoreboard in 2024 ([141]). This share is on average 24% and 53% among emerging and moderate innovators, respectively, while it is 7% and 3% among strong and leader innovators. These figures show evidence of how the RRF has supported R&I investments in Member States with a weaker innovation performance. Among Member States, Portugal (moderate innovator) stands out as the country where RRF R&I investments are most relevant compared to the national allocations. It is followed by Spain, Latvia and Hungary (two moderate innovators and one emerging innovator, Latvia). The countries where the RRF R&I investments are relatively less important compared to the government ones are Ireland, the Netherlands, Sweden and Denmark (all leader innovators, except for Ireland, which is classified as a strong innovator).

([141]) Which classifies EU countries in 4 categories: emerging innovators, moderate innovators, strong innovators and leader innovators. The 2025 edition of the EIS was released in July 2025. Three Member States experienced changes in their performance group compared to 2024: Croatia moved from the Emerging Innovators group to the Moderate Innovators group; Cyprus moved from the Strong Innovators to the Moderate Innovators; Hungary moved from the Moderate Innovators to the Emerging Innovators.

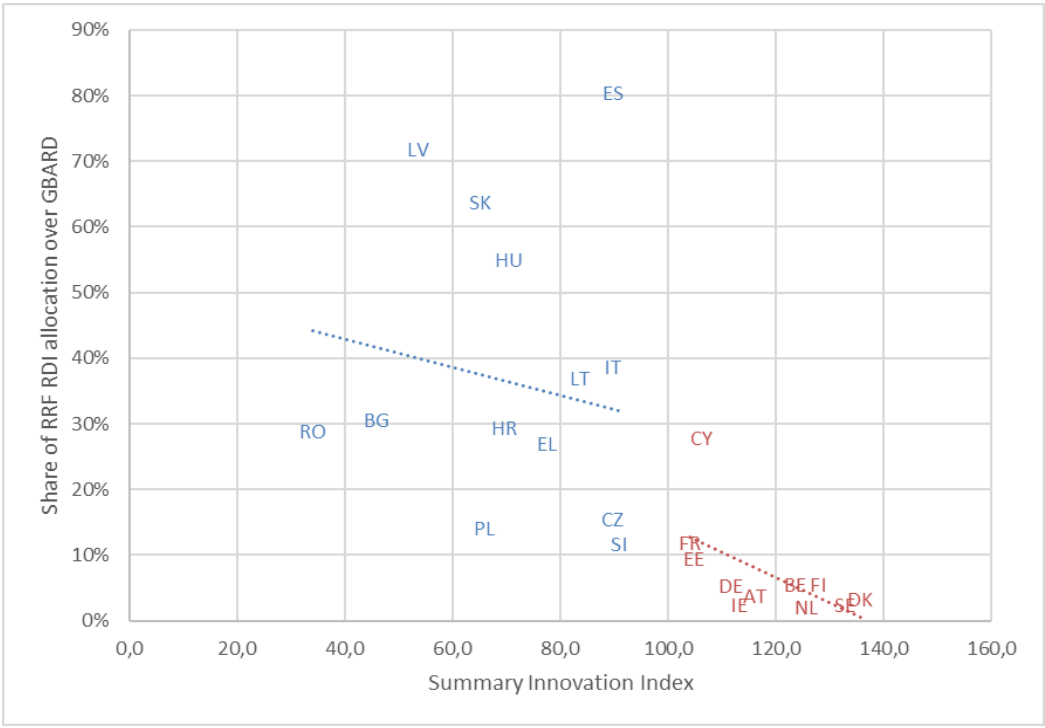
*Figure 21: Share of RRF R&I allocation over GBARD allocation between 2021 and 2023, by Member State.*




*Note: the colours of the bars reflect the level of innovation performance based on the 2024 European Innovation Scoreboard (Light blue: Emerging innovators; Dark blue: Moderate innovators; Orange: Strong/Leader innovators).*

*Note 2: The total Government Budget Allocations on Research and Development (GBARD) have been cleaned from the allocations to defence and to transnational entities or organisations performing Research and Development. Note as well that the share compares the total RRP allocations on RDI (a multi-annual fund) to the sum of GBARD (an annual measure) between 2021 and 2023. Malta and Luxembourg do not have RRF R&I allocations.*

*Figure 22: Share of RRF RDI allocation over GBARD allocation between 2021 and 2023 (y axis) and Summary Innovation Index in 2024 (x axis).*




*Note 1: The total Government Budget Allocations on Research and Development (GBARD) have been cleaned from the allocations to defence and to transnational entities or organisations performing Research and Development. Note as well that the share compares the total RRP allocations on RDI (a multi-annual fund) to the sum of GBARD (an annual measure) between 2021 and 2023.*

*Note 2: The graph excludes Portugal, which is considered an outlier for this analysis. Its share of RRF R&I allocations relative to GBARD is extremely high compared to all other countries, as shown in the figure above. It also excludes Luxembourg and Malta since these countries do not have any R&I-related RRF allocations.*

*Note 3: The Summary Innovation Index pertains to the European Innovation Scoreboard. It is a summary index resulting from the combination of all the indicators analysed in the European Innovation Scoreboard. It is normalised to assume the value of 100 for the European Union (considered as a single country, not as an average of the MS). The Summary Innovation Index data used in this graph refers to 2024.*

### The complementarity of the RRP with national R&I policy ([142])

**R&I-related RRF measures in strong/leading innovator countries tend to target nationally priority domains identified in pre-existing strategies and programmes, which benefit from additional funding and accelerated implementation**. In interviews, national R&I strategies were frequently cited as key frameworks guiding the selection of RRP's measures in the R&I domain. The limited time available to prepare the RRPs, combined with the RRF's strict timeline, constrained opportunities for extensive consultation processes. However, most countries in this group were able to capitalise on already well-established R&I frameworks, which provided a solid foundation. Investments were thus directed at reinforcing industrial competitiveness and sovereignty in strategic value chains, where they aim to reinforce or establish leadership in innovation. The general approach was to integrate the RRF funding into existing programmes and project pipelines. Rather than introducing entirely new initiatives, the

([142]) This section relies on evidence from desk review and stakeholder consultation.

available resources were used to scale up planned investments or to accelerate their implementation timelines. Most measures were already part of the national project pipeline and likely would have been carried out even without RRF support, albeit on a smaller scale and over a longer period. The RRF also provided an opportunity to reinforce funding for previously underfunded initiatives or to address gaps in specific priority areas (e.g. innovation infrastructure in Finland).

**In moderate innovator countries, the R&I measures have a heterogeneous relationship with the pre-existing policy context and instruments: some measures represent new policy initiatives, while others represent the continuation of already existing initiatives**. As shown in the case study on moderate innovators, strictly R&I-related structural measures (for example, reforms of R&I framework legislation and strategies in Lithuania**,** Portugal and Spain, but also structural investments such as so-called "systemic actions" ([143]) in Italy) are mostly of a transformative nature. On the contrary, measures that give more firepower to existing R&I policies, measures representing the deployment of R&I-intensive sectoral policies (e.g. space) and measures covering R&I aspects of traditional sectors (e.g. industrial policy, agriculture) tend to be the continuation of existing policies (see case study). In moderate innovator countries, and especially in Italy and Spain, as the largest beneficiaries, the diversified set of RRF measures tackles a large variety of needs. The measures target multiple actors (e.g. universities, research centres, businesses), multiple technology readiness levels (from basic research to technology transfer) and multiple sectors, resulting in a composite mix of measures. Ultimately, moderate innovators implemented a combination of transformative and complementary measures.

**Evidence for emerging innovator countries reveals a more diverse and context-dependent picture. While all countries in this group used the RRF to strengthen domestic R&I systems, the level of ambition and degree of integration with national policies varied**. As is shown in more detail in the case study on emerging innovators, in Croatia, RRF is closely aligned with the National Development Strategy 2030. Also, the RRP design in Croatia leveraged a comprehensive RDI portfolio analysis conducted by the World Bank in 2018-2019 (see also the case study). In Poland, beyond an overarching reform (C[A]-R.2.4) aimed at strengthening collaboration between science and industry and an overarching investment (C[A]-I[2.4.1) supporting research infrastructure, the other measures reinforce green innovation, hydrogen tech, and health research. The alignment with existing sectoral strategies (see case study) is therefore much more pronounced than in other emerging countries. Differently, Slovakia leveraged the RRF to build a national R&I policy framework from the ground up. It tackled chronic institutional fragmentation, established a unified governance structure, and addressed key funding gaps that national resources had been unable to fill. The RRF was instrumental in creating a coherent strategic and legal framework that now governs both national and RRF-funded R&I measures. In this sense, the RRP acted as a catalyst for systemic reform, particularly by strengthening interdepartmental coordination and improving policy governance.

On a different note, **a particular example of a close relationship between national funds and RRF measures is the one characterising IPCEIs**. While IPCEIs are generally supported from national budgets, the RRF provides co-funding for a total of 17 measures or sub-measures among those under scope in this study. Most of them are in France (8, all sub-measures within the RePowerEU component) and Germany (4). More in general, 15 out of 17 are in strong or leader innovators and two are in moderate innovators. Reflecting on the IPCEI experience, participants in the focus group on moderate innovators highlighted the need to promote a stronger interaction between EU countries in the research and innovation domain, in light of a highly competitive global landscape. In this regard, introducing a sort of horizontal line in the IPCEI framework (i.e. not country-specific) would have been beneficial, as it could have contributed to more communication and cooperation on research among EU countries on the

([143]) M4C2I1.3, M4C2I.4 and M4C2I.5.

same kind of topics or sectors. For a programme such as the RRF (where all Member States contribute to improve their own structural conditions, but where there are also common European objectives), R&I was precisely a terrain where there could have been more cross-country projects or investments, in the participants' view. The RRF could have put more leverage on cooperation research projects among European countries, to achieve a stronger EU-level dimension on top of strengthening domestic R&I systems ([144]).

**The upcoming review of the RRPs could potentially increase the degree of RRF complementarity and synergies with national funds**. Among the several possibilities to streamline RRF funding foreseen in the recently published Communication to the European Parliament and the Council on NextGenerationEU – The road to 2026 ([145]), the EC states that Member States could split RRF projects for continuation with national funds. Specifically, projects that are no longer achievable by August 2026 can be downscaled to only retain the elements ([146]) to be financed under the RRF that can be implemented within this timeframe. The rest of the project could then be implemented by national (or, if eligible, other EU funds) on a longer timeline.

### Crowding out effects of national support by the RRF

**Interviewees in most countries ([147]) indicated that no substitution of national funding occurred. However, two exceptions emerged during interviews in Czechia and Sweden, where instances of funding reallocation were reported**. In Czechia, the RRP initially aimed to increase overall national R&I investment, but over time, the national R&I budget was reduced in light of RRF allocations. Although the RRF did not directly replace existing investments, it contributed to a shift in priorities, leading to a reduction in national funding for certain research areas. This raises sustainability concerns, as restoring previous national funding levels after the RRF ends may prove difficult. At the same time, the RRF in Czechia also played a reinforcing role by complementing existing support mechanisms and crowding in additional funding. For example, the National Competence Centres prompted large companies, excluded from direct RRF support, to co-invest. The RRF also provided substantial backing to SMEs, with funding data suggesting many have benefited, though the full extent is hard to quantify. In Sweden, while the RRF largely complemented national R&I policies and strengthened the national strategy, some minor substitution occurred where national funds were redirected to other areas covered by the RRF. Nonetheless, the prevailing view is that the RRF functioned more as an additional layer of support than a replacement. Initiatives such as the Industrial Leap illustrate how RRF funding amplified national efforts. On a different note, in Romania, a case of overlap led to a lack of interest in one of the RRF-funded measures. Specifically, the investment "Strengthening excellence and supporting Romania's participation in partnerships and missions in Horizon Europe" saw limited uptake because UEFISCDI (the Executive Agency for Higher Education, Research, Development and Innovation Funding) had already launched a similar national call for co-financing projects under European partnerships and missions. As a result,

([144]) Recent analyses on the future of EU competitiveness and strategic investments have also pointed to the need for more coordination and EU-level strategic steering. See for instance the following two contributions: Demertzis et al. (2024). Accelerating strategic investment in the European Union beyond 2026; Saulnier et al. (2025). Benefit of an EU strategic innovation agenda – Cost of non-Europe. European Parliamentary Research Service.

([145]) European Commission (2025) Communication from the Commission to the European Parliament And The Council, NextGenerationEU - The road to 2026, COM(2025) 310 final/2

([146]) The Communication also specifies that the part that remains financed under the RRF should constitute a standalone investment in the RRP. This means that the 'retained' elements should not be limited to intermediary steps such as the launch of a call for tender.

([147]) Austria, Belgium, Bulgaria, Croatia, Cyprus, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Portugal, Romania, Slovenia.

demand for this RRF investment was low, prompting the authorities to propose its removal from the RRP.

**In a few cases, crowding-in effects were mentioned during interviews**. Beyond the Czech case that has already been mentioned above, the Austrian authorities reported that Quantum Austria complemented existing national research programmes by bridging basic, applied, and industrial research, rather than replacing them. The initiative also acted as a catalyst for new national efforts aimed at sustaining strong R&I funding beyond the RRF period. Notably, the RRF injected EUR 107 million into a single research area, providing direct support for PhD students, postdoctoral researchers, and potentially new professorships. This substantial investment strengthened the research ecosystem, contributing to long-term continuity and impact. In Slovakia, the adoption of the National Research and Innovation Strategy (measure C9.R.1.2) led to a significant increase in national R&I funding. The budget of the Slovak Research and Development Agency (SRDA) rose from EUR 33 million to EUR 45 million, while funding for the Slovak Academy of Sciences and universities also increased.

### 3.3.3. EQ12. To what extent do the R&I-related reforms and investments put forward by Member States in their RRPs contribute to EU R&I priorities, as outlined notably in the ERA Policy Agenda and the New European Innovation Agenda?

**Introduction:** The analysis for this evaluation question begins by presenting briefly the key EU R&I agenda - ERA and NEIA. What follows presents, first, the results of a comparative reading of the R&I-related measures in the RRPs— initially with reference to the ERA Policy Agenda, and then to the NEIA. This is followed by a summary of the feedback received from the survey of Member State authorities.

**Main findings:**

- Even though they were not originally designed to align with their objectives, **the R&I-related measures under the RRF show significant contributions to both the European Research Area** (ERA) **Policy Agenda and the New European Innovation Agenda** (NEIA).
- Most Member States have implemented reforms and investments that support key ERA actions, particularly in areas such as access to excellence, knowledge valorisation, and the green and digital transitions. Similarly, substantial alignment exists with NEIA flagship 3 on innovation ecosystems. Importantly, **the extent and nature of alignment vary across countries and innovation performance groups**, reflecting different national priorities, capacities, and RRP design logics.

The RRPs have a national focus and are meant to address structural weaknesses identified in the European Semester Country-Specific Recommendations (CSRs). They were also developed—and in most cases officially submitted to the European Commission—before the launch of the first ERA Policy Agenda 2022-2024 and the New European Innovation Agenda (NEIA). As a result, their intervention logic was not intended to align with, or directly support, the objectives of these two EU-level strategies. Nevertheless, while the R&I measures under the RRF were not originally conceived to enhance the coordination of EU R&I policies, strengthen the European Research Area, or tackle the innovation gaps identified in the NEIA (see box below), many of them are likely to contribute to these goals in practice.

*Box 7: ERA priority areas and NEIA flagships*

According to the ERA Policy Agenda for the period 2022-2024 ([148]), the ERA priority areas ([149]) are: 1) Deepening a truly functioning internal market for knowledge (e.g. research assessment, attractive research careers); 2) Taking up together the challenges posed by the twin green and digital transition, and increasing society's participation in the ERA ((e.g. ERA for green transformation, engaging citizens); 3) Amplifying access to research and innovation excellence across the Union; 4) Advancing concerted research and innovation investments and reforms. Each area is structured into several actions.

The New European Innovation Agenda (NEIA) adopted by the European Commission ([150]) lists 25 actions gathered under five flagships: 1) Funding scale-ups, i.e. initiatives on access to finance; 2) Enabling innovation through experimentation spaces and public procurement; 3) Accelerating and strengthening innovation in European Innovation Ecosystems across the EU and addressing the innovation divide; 4) Fostering, attracting and retaining (deep tech) talents; and 5) Improving policy-making tools.

A preliminary mapping and analysis of alignment between the R&I-related reforms and investments put forward by Member States in their RRPs and the EU R&I priorities, as outlined notably in the ERA Policy Agenda 2022-2024 and the NEIA, was conducted in the study "Analysis of the contribution of the RRPs to key EU policy priorities and a new EU R&I Policy landscape" by the European Commission ([151]).

In the context of the present evaluation, an updated mapping and analysis of alignment between the R&I-related reforms and investments put forward by Member States in their RRPs and the ERA Policy Agenda and the NEIA has been carried out ([152]). Before presenting results, as also noted by DG R&I in their exercise, it is important to mention two methodological elements to prevent potential misinterpretations:

- **Due to the broad nature of some of the measures, double tagging/counting is inevitable**. The R&I-relevant measures in the RRPs can be multifaceted and have a broad scope (e.g. Reform aiming at enhancing the R&I capacities of the public research sector in Croatia) and can thus be linked to multiple ERA actions and NEIA flagships. Out of the 322 measures linked to at least one ERA action, 158 were linked to two or more actions, and out of the 233 measures linked to at least one NEIA flagship, 32 were linked to more than one.
- **Comparisons between Member States require context and are not always straightforward**. Certain actions (ERA) or flagships (NEIA) can be more investment- or reform-prone than others (e.g. ERA action 3 on Research Assessment is more likely to be addressed by reforms). Certain actions can be more relevant to certain Member States than others (e.g. ERA action 16 on Access to Excellence, for Widening

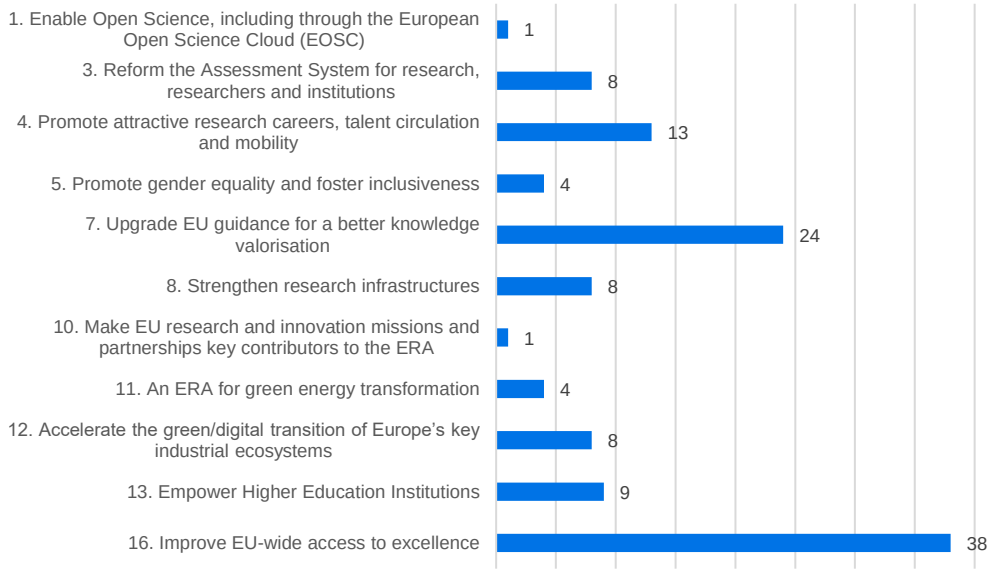
([148]) Available here.
([149]) The ERA Priority Areas have been defined in the Pact for Research and Innovation in Europe in 2021.
([150]) New European Innovation Agenda, here.
([151]) Analysis of the contribution of the Recovery and Resilience Plans to key EU policy priorities and a new EU R&I Policy landscape, here.
([152]) In the context of this study, the matching was conducted through a comparative reading of the R&I-related measures in the RRPs and the respective policy documents by the Country Desks in DG R&I, applying a judgment call and following an internal review process to ensure the consistency and quality of the exercise. The established connections allowed to measure the size of both the potential and actual contribution (in terms of funding) of each RRP to the various ERA and the NEIA actions.

Countries ([153])). The role of the RRP should also be seen in light of the national context, where other funding sources may contribute to a particular objective.

### ERA Policy Agenda 2022-2024

**The analysis shows that RRF R&I reforms contribute significantly to the implementation of the ERA actions**. Only 12 reforms are not associated with any ERA action. At the same time, most of the actions are supported by at least one reform, although there is a strong variability (see the Figure below).

*Figure 23: ERA actions by number of supporting reforms.*



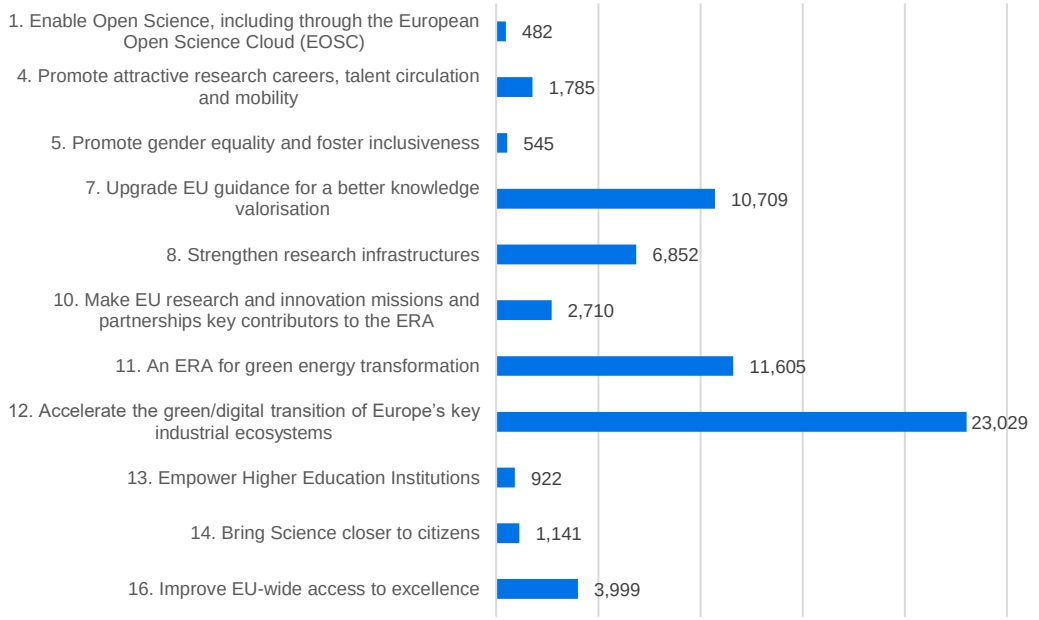

Source: Authors based on FENIX data and manual matching with ERA actions

**ERA action 16, "Improve EU-wide access to excellence", which concerns Widening Countries, is the action linked to the largest number of reforms**. Lithuania and Slovakia are the countries that emerge as the most committed in this ERA action, with 10 and 6 reforms each. **ERA actions 7, "Upgrade EU guidance for a better knowledge valorisation", and 4 "Promote attractive research careers, talent circulation and mobility"** emerge as key priorities across Member States. 24 and 13 RRF R&I reforms respectively display links with them. 13 Member States have linked at least one reform to ERA action 7, and notably Bulgaria and Croatia have four measures linked to it. 11 countries have one reform linked to ERA action 4, with only Italy having two. Finally, it is interesting to note the low adoption of reforms connected to ERA actions 1 "Enable Open Science, including through the European Open Science Cloud (EOSC)" and 10 "Make EU research and innovation missions and partnerships key contributors to the ERA". Only one Croatian and one Spanish reform contribute to these missions.

([153]) There are measures linked to ERA Action 16 in Bulgaria, Croatia, Cyprus, Czechia, Greece, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia.

**As far as investments are concerned, MSs have committed a significant amount of RRF resources to measures contributing to the ERA policy agenda**. Only 53 of the 311 investment measures and sub-measures are not linked to any ERA action. The remaining investments are connected with a minimum of 1 to a maximum of 5 actions (47% contribute to more than one).

*Figure 24: Total RRF R&I investment allocations by ERA action, million EUR.*




Source: Authors based on FENIX data and manual matching with ERA actions.

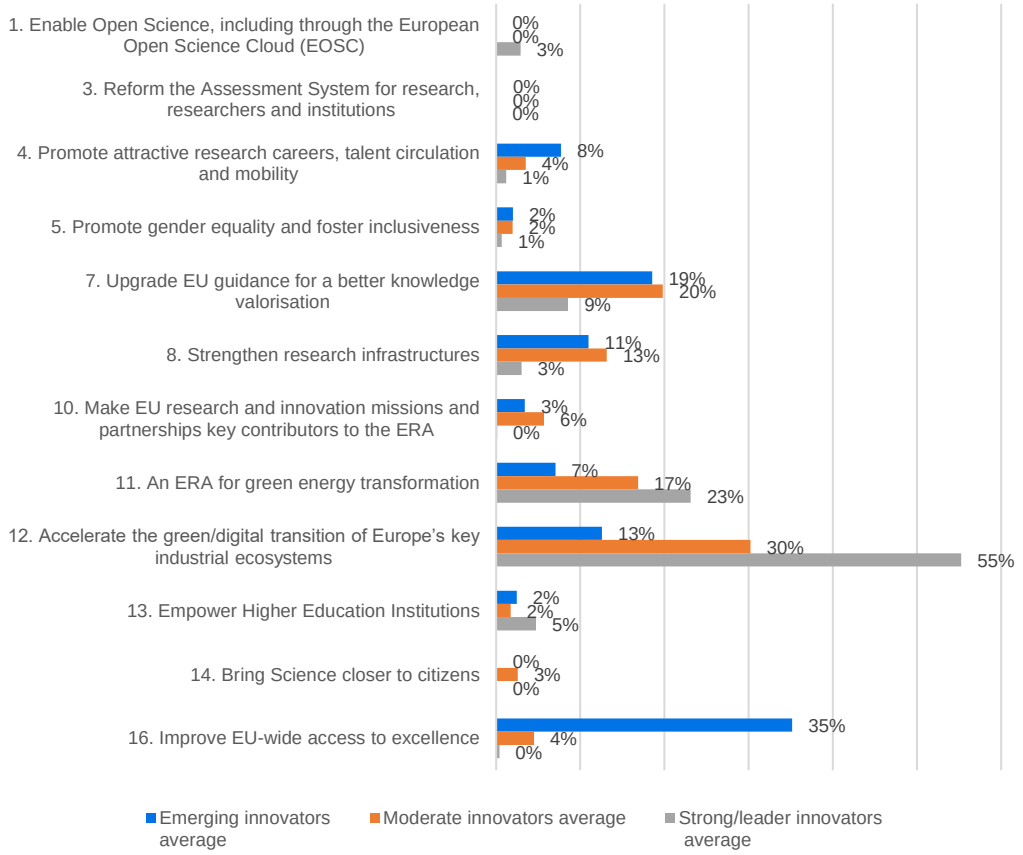
**The largest share of RRF R&I investments contributes to ERA action 12, "Accelerate the green/digital transition of Europe's key industrial ecosystems"**. Cumulatively, the RRPs are investing more than EUR 23 billion in measures related to this action. This aligns with the RRF Regulation's expenditure targets for the green and digital transition. Italy, Spain, Germany, and France account for the largest contributions, reflecting the overall size of their RRP R&I allocations.

**Two other ERA actions that receive significant support through RRF R&I investments are ERA action 11,** "An ERA for the green energy transformation", **and ERA action 7**, "Upgrade EU guidance for better knowledge valorisation". ERA action 11 is also linked to the green transition, and this, similarly to ERA action 12, explains the large RRF R&I funds contributing to it, confirming the RRF as an excellent framework for R&I investments for the green transition. The EUR 10.7 billion contribution to ERA action 7 is consistent with the large number of reforms in this area. This can be connected back to the intervention logic of the RRF, insofar as science-business linkages are a challenge that was relatively frequently covered in previous European Semester Country Specific Recommendations, which the RRPs were meant to address.

**Relatively limited amounts of investment contribute to ERA actions 5** "Promote gender equality and foster inclusiveness" (see also EQ4) **and ERA action 1** "Enable Open Science […]".Investments from only 5 countries (Austria, Belgium, Croatia, Czechia and Portugal) contribute to ERA action 5, while only Austria and Germany have investments contributing to ERA action 1, further confirming its low connection with RRF measures, already visible when looking at reforms.

**Among emerging innovators, the support for the ERA action 16, "Improve EU-wide access to excellence", is particularly relevant**. These countries have overall devoted 35% of their RRF funds to measures supporting this action. Among moderate, strong, and leader innovators, this figure is considerably lower. Strong and innovative leaders have mainly devoted their resources to ERA actions 12 and 11. Moderate innovators do not show a similar focus on any of the actions instead. Their measures support a wider set of ERA actions, and most notably ERA actions 12, 7, 11 and 8.

*Figure 25: Share of RRF R&I investments by ERA action and innovation group.*




Source: Authors based on FENIX data and manual matching with ERA actions.

*Note: the shares are computed with respect to the total RRF RDI amount by innovation group.*

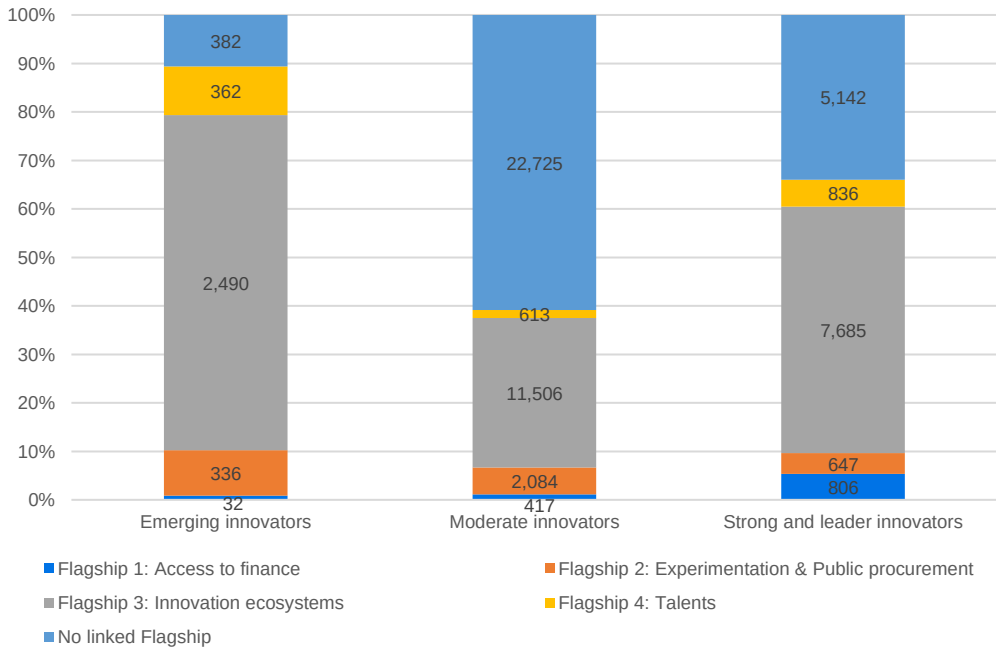
## New European Innovation Agenda

**RRF R&I reforms have been found to contribute to NEIA flagships in all MS implementing them**. Only 10 reforms (out of 76) are not linked to any flagship. 40 reforms contribute to Flagship 3, "Innovation Ecosystem", driven by 11 Lithuanian and 6 Slovakian reforms linked to it. A total of 12 Member States have reforms linked to this flagship. The other flagship benefitting from a wide number of reforms is Flagship 2, "Experimentation & Public Procurement". Spain has 7 reforms, out of a total of 24, contributing to it. The other 11 countries have reforms linked to this flagship. Flagships 1, "Access to finance", and 4, "Talents", are supported by just 3 and 6 measures respectively instead. None of the Member States supported all four NEIA flagships through its reforms.

**As far as investments are concerned, the contribution to NEIA flagships is more limited**. More than half of the RRF R&I investment allocations (52%) do not contribute to any flagship. Flagship 3, "Innovation Ecosystems", is the one benefiting the most (EUR 21.7 billion) from the investments. Twenty countries have investments linked to this flagship, with the largest amounts in Italy, Spain, Germany and France. The other flagships benefit from much smaller amounts of investments: EUR 3 billion for flagship 2, EUR 1.8 billion for flagship 4 and EUR 1.3 billion for flagship 1.

**Among the 25 countries with RDI investments foreseen in their RRPs, 21 have investments linked to NEIA flagships, with Denmark, Estonia, Ireland and Sweden having none**. Only Slovakia has planned investments related to all four NEIA flagships. Among innovation groups, the main difference arises from the share of investments not linked to any flagship (see Figure 26). This figure is lowest for emerging innovator countries (11%) and highest for moderate innovators (61%). Among strong and leader innovators, 34% of the investments are not linked to any NEIA flagship. Shifting the focus only on investments linked to at least one NEIA Flagship, "Innovation ecosystems" remains the Flagship to which the largest share of investments aligns among all innovation groups.

*Figure 26: RRF RDI investments by NEIA Flagship and innovation group, million EUR.*




Source: Authors based on FENIX data and manual matching with NEIA Flagships

## Feedback from the survey and the interviews

Although the RRF's R&I-related measures were not specifically designed to align with or directly support the objectives of the European Research Area and NEIA, **the majority of respondents to the survey of Member State authorities believe that RRPs are aligned with these two EU initiatives to some extent (22%) or to a large extent (45%).**

**Interviews revealed some interesting insights into the various degrees of alignment between RRPs and the EU R&I initiatives**. Interviewees from Austria, Croatia, Lithuania, the Netherlands, and Romania stressed the importance of the alignment with ERA actions and NEIA flagships. Austrian and Lithuanian interviewees reported that they aligned their national RDI

measures with EU R&I initiatives through strategic national plans. These plans serve as key frameworks guiding RDI investments (including those from RRF) and are aligned with the ERA Policy Agenda and the New European Innovation Agenda. In the Netherlands and Romania, interviews highlighted the strong alignment between specific RRF measures and ERA Actions and NEIA Flagships.

**Evidence of a limited alignment due to timing emerged from the interviews of Czech, Hungarian and Slovenian stakeholders**. In these countries, the timing differences (mentioned above) hindered the explicit integration of these initiatives in the RRF measures. Nevertheless, Czech and Slovenian stakeholders recognised an indirect alignment between some of their RRF measures and EU R&I initiatives.

**Other interviews, notably those in Belgium, Poland and Portugal, evidenced the absence of alignment due to the strategic focus of their RRPs**. Notably, interviewees from Belgium and Portugal highlighted how the prioritisation of local needs in the design of the RRP measures over top-down EU agendas led to little alignment between the two. Polish interviewees instead underlined how the differences between the Polish and the European R&I landscape hinder the extent to which this alignment can help close the gap.

### 3.3.4. EQ13. To what extent have potential synergies between the RRF and other R&I support programmes (in particular Horizon Europe) been identified and exploited? What have been good practices and hurdles in this regard?

**Introduction:** To answer the evaluation question, the analysis focuses on the synergies of the RRF with the three most relevant EU instruments supporting research and innovation, i.e., Horizon Europe, Cohesion Policy, and, to a lesser extent, InvestEU.

**Main findings:**

- **Synergies between the RRF and other R&I support programmes have been exploited to a limited extent**, particularly in strong and leader innovator countries.
- The main reasons for the low use of relevant instruments are two. First, **administrative fragmentation has hindered coordination**, as RRF, Horizon Europe, and Cohesion Policy are often managed by separate authorities with limited interaction. Second, **during the initial phase of RRF planning, there was little policy guidance and incentive** for Member States to foster complementarities with other EU programmes.

Throughout this study, synergies refer to the strategic and planned use of the RRF alongside other sources of R&I funding. Building on the Commission Notice on Synergies between Horizon Europe and ERDF ([154]), this study analysed the following types of relevant synergies:

- **Co-funding**. An operation/project receives support from more than one fund or instrument, provided that such financial support does not cover the same costs. Cumulative funding can follow a) a sequential logic (building on the output/result of a previous intervention); b) an expansion logic (expanding an already existing intervention).

([154]) European Commission (2022), C(2022) 4747 final, Synergies between Horizon Europe and ERDF programmes, available here.

- **Seal of Excellence**. The RRF provides support to projects that received the Seal of Excellence, a quality label awarded to project proposals submitted to Horizon Europe certifying that they are of high quality, but could not be funded by Horizon Europe due to budget constraints.
- **Upstream/Downstream funding**. Different EU instruments provide a coordinated and seamless framework for all steps of the research and innovation process.
- **Supporting access to another programme**. Funding training, technical assistance, or digital tools that improve the capacity of i) public authorities to manage or apply for EU programmes; or ii) SMEs and researchers to submit competitive proposals to Horizon Europe, ERDF, or InvestEU.

#### *3.3.4.1. Horizon Europe*

**Planned synergies between the R&I-related RRF measures and Horizon Europe appear limited. Most of the countries that explicitly report such synergies are widening countries or relatively low R&I spenders**, such as Spain and Italy. Based on the analysis of the titles and descriptions of the measures and sub-measures, as well as their associated M&T, only 13 out of 387 R&I measures and sub-measures make explicit reference to Horizon Europe or its components (see table below). More specifically, 4 RDI-related measures explicitly support the Seal of Excellence: two from Bulgaria, one from Greece, and one from Romania. The number of measures aimed at "co-funding European Partnerships" and "supporting the access to programmes like Horizon Europe" is also limited, respectively, 3 and 5. Finally, only one measure can be clearly identified as supporting EU missions: another measure from Romania, which is the only country with measures covering all types of synergies.

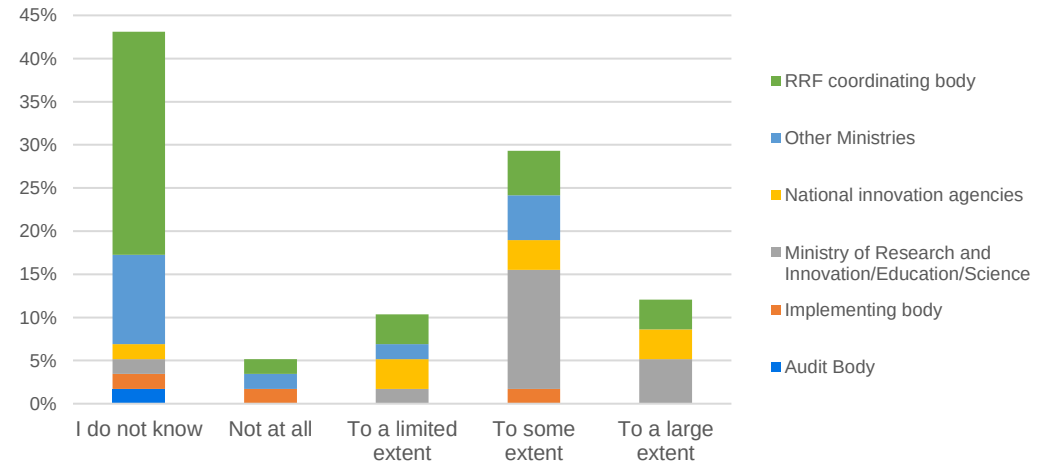
*Table 10: Number of R&I measures and sub-measures making explicit reference to Horizon Europe or its components*

| Support to/for… | N of cases per country | Total |
|---|---|---|
| Seal of Excellence | 2 Bulgaria; 1 Greece; 1 Romania | 4 |
| Co-funding European Partnerships | 1 Croatia; 1 Greece; 1 Romania | 3 |
| Access to programmes, incl. Horizon Europe | 1 Lithuania; 1 Romania; 1 Slovakia; 1 Slovenia; 1 Spain | 5 |
| Alignment of national R&I organisations with EU missions | 1 Romania | 1 |

Source: FENIX

Based on the responses received in the survey of Member State authorities, **the opinion on the existence of synergies between RRF measures supporting R&I and Horizon Europe is generally positive**. Specifically, 41% (24 out of 58) indicated that synergies exist to a large or some extent, while 15% (9 out of 58) indicated that they exist to a limited extent or not at all. The remaining respondents were either not aware or did not answer.

*Figure 27: Responses to the question "To what extent do synergies exist between RRP measures supporting R&I and Horizon Europe?"*




Source: Member State authorities survey, N=58

Asked about the existing synergies between Horizon Europe and RRF, **22 out of 59 respondents** indicated at least one form of synergy. The remaining respondents answered either "none" (5) or "Not aware or not applicable" (32). The most frequently mentioned was **support to the Seal of Excellence**, followed by **upstream/downstream synergies** and the **co-funding of European Partnerships**. These figures suggest that instances of synergy between Horizon Europe and RRF-related R&I measures are **more common than what can be directly inferred from the FENIX database**.

Indeed, research at the Member State level found, for instance, synergies between R&I-related measures and Horizon Europe that stakeholders considered successful as they helped boost participation and improve outcomes in the programme. One example is Lithuania's sub-measure C[C5]-R[E-1-3-.E.1.3.3], which, according to the RRF coordinating body, has strengthened participation and performance in Horizon Europe by providing training, support, and incentives to encourage engagement. A further positive element recalled by the coordinating body is the coordinated use of RRF and Cohesion Funds to reinforce these efforts ([155]). The RRF has contributed to increasing the participation in Horizon Europe, while Cohesion Policy funds have helped address the oversubscription issue that might otherwise discourage Lithuanian researchers from applying. As another example, in Slovakia, the RRF (investment C9.I.1) provides direct support for the preparation of Horizon's applications and/or matching financial sources for the projects that succeeded in Horizon Europe.

The interviews also uncovered other examples of synergies between RRF measures and Horizon Europe. **Different RRF measures offer support to projects positively evaluated under Horizon Europe**. The above-mentioned measure from Slovakia, for instance, also provides support to successful Seal of Excellence projects. Another example comes from Slovenia, where an RRF-funded mobility scheme supports projects that were positively evaluated under Horizon Europe but did not receive funding. Similarly, the RRP in Slovenia supports researchers whose projects receive high evaluations internationally but may not secure Marie Skłodowska-Curie ([156]) (Pillar I) funding due to Horizon Europe budget limitations

([155]) Lithuania also transferred funds from ERDF (EUR 18.5 million) to Horizon Europe to support applicants with excellent proposals but who fail to make the final cut.
([156]) European Commission. (n.d.). Funding opportunities under MSCA. Retrieved April 2, 2025, here.

and facilitates the reintegration of researchers returning to Slovenia after mobility under the Marie Skłodowska-Curie Actions. In Italy, under the measure funding "Projects presented by young researchers" [M4C2I1.2], research grants were awarded to Marie Skłodowska-Curie Individual Fellowships and Postdoctoral Fellowships (MSCA), as well as to Seal of Excellence (SOE) and European Research Council (ERC) grantees. Moreover, ERC researchers were hired as second-level university professors or second-level researchers; MSCA and SOE researchers were hired as researchers. In Spain, calls to fund Seal of Excellence holders were already in place before the RRF, but the RRF offered the chance to significantly increase the available funding ([157]). In Czechia, in the area of business innovation, a key instrument is the support for research and development in synergy with the Framework Programme for Research (C5.2.I4), which supports SMEs with high growth potential, notably through the funding of nine EIC Accelerator Seal of Excellence projects. Upstream and downstream synergies with Horizon Europe funding were also occasionally mentioned (for instance, in the Netherlands and Estonia), but this was rarely the result of strategic planning.

**There are also examples of RRF-Horizon Europe synergies initially foreseen that were eventually not pursued anymore**. Italy offers the example of an initial ambitious approach to synergies between RRP and Horizon Europe, which, however, did not prove successful. The original Italian RRP, in fact, included a measure called "Partnerships for research and innovation – Horizon Europe" (M4C2I2.2), with an associated cost of EUR 200 million, which aimed to fund research projects identified through calls for participation in 7 EU partnerships. However, in 2024, the Italian government requested the removal of this measure from the RRP, because "market evolution had determined an insufficient demand" ([158]), which had put into question the ability of this measure to reach its targets in time ([159]). In Romania, the measure "Investment 7 - Strengthening excellence and supporting Romania's participation in partnerships and missions in Horizon Europe" experienced implementation issues due to an overlap with another initiative. The Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) had launched a similar call for projects as the call for co-financing of research projects recommended for funding within European partnerships and EU missions. As a result, interest in Investment 7 was low, which led to the proposal to eliminate this investment from the RRP.

**Rules on double funding represented a hurdle to the establishment of synergies between RRF and Horizon Europe**: according to interview feedback, this has been the case particularly in Spain, where the process for justifying the avoidance of double funding was perceived as very time-consuming by Spanish authorities. According to interview feedback, a reason for the removal of the abovementioned measure from the RRP in Italy was the difficulty of justifying the avoidance of double funding. The Italian authorities argued that creating synergies between Horizon Europe, Cohesion Policy, and the RRF requires both a regulatory framework at the European level and sufficient administrative capacity at the national level. While Horizon Europe has introduced a more robust enabling framework at the EU level, the remaining bottlenecks now lie at the national and regional levels. Many subnational administrations still struggle to manage even conventional funding instruments, reflecting a broader lack of technical capacity. This hinders the practical realisation of funding synergies, despite the formal existence of supportive regulations.

([157]) For instance, the 'ISCIII-HEALTH Seal of Excellence' subsidies, within the framework of the Strategic Action for Health (AES) 2022, utilised European funds from the RRF: this call for proposals involved direct funding, with a total of EUR 10 million, in grants for 37 research projects endorsed with the Seal of Excellence.
([158]) https://data.consilium.europa.eu/doc/document/ST-9399-2024-INIT/it/pdf (own translation)
([159]) The Council accepted the replacement of this measure with the new investment "Innovation agreements". Originally, Innovation agreements were a measure funded through the National Complementary Plan (PNC). They were included in the RRP in 2024 to facilitate timely RRF funds absorption. Vice versa, the funding for Partnerships originally foreseen in the RRP was shifted to the PNC.

#### *3.3.4.2. Cohesion Policy*

Based on the FENIX extraction received from the Commission, **there are only a few cases of RRF RDI measures establishing explicit synergies with Cohesion Policy in terms of co-funding**. Beyond a few examples from Czechia and Spain, the only country that has put in place a co-funding strategy for a number of measures is Latvia. In the field of healthcare, for instance, the RRF measure "Support for public health research" funds studies on antimicrobial resistance, causes of non-vaccination, and reduction of infectious diseases, while the ESF+ implements health promotion measures, disease prevention, and complementary public health research, ensuring a good demarcation. In addition, three other Latvian measures benefit from concurrent funds from the 2021-2027 ERDF programme.

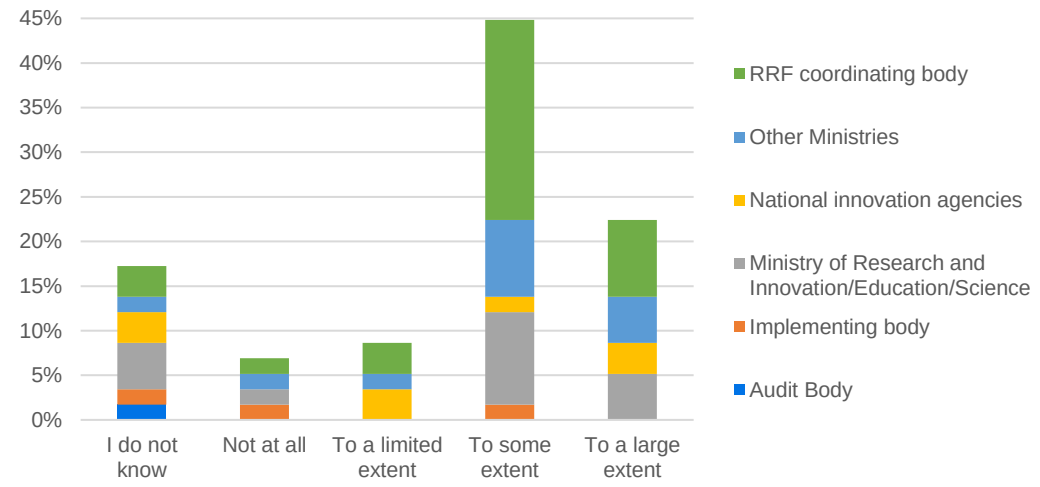
*Table 11: Number of R&I measures and sub-measures making explicit reference to Cohesion Policy funds*

| Support to/for… | N of cases per country | Total |
|---|---|---|
| Synergy with the Cohesion policy | 4 Latvia; 2 Czechia; 1 Spain | 7 |

Source: FENIX

Based on the responses received in the survey of Member State authorities, **the opinion on the existence of synergies between RRF measures and Cohesion Policy funding for R&I is generally positive.** Specifically, 67% (39 out of 58) indicated that synergies exist to a large or some extent, while 15% (9 out of 58) indicated that they exist to a limited extent or not at all. The remaining respondents were either not aware or did not answer. When asked about the existing types of synergies between Cohesion Policy and RRF R&I measures, **38 out of 59 respondents indicated at least one form of synergy**. The remaining respondents answered either "none" (3) or "Not aware or not applicable" (18). The most frequently mentioned was **upstream/downstream synergies**. These figures suggest that instances of synergy between Cohesion Policy and RRF-related R&I measures are **more common than what can be directly inferred from the FENIX database**.

*Figure 28: Responses to the question "To what extent do synergies exist between RRP measures supporting R&I and Cohesion Policy funding?"*




Source: Member State authorities survey, N=58

**The interviews provide anecdotal evidence of actual RRF-Cohesion Policy synergies**. In Italy, in the case of scholarships for university access ([160]), RRF funding was combined with both ordinary national funds and resources from a National Programme (NP) co-funded by EU Cohesion Policy funds. This approach enabled an expansion of the pool of eligible beneficiaries ([161]). In Lithuania, the joint co-funding of key measures, such as those supporting digital innovation (C3.C.1.4), the establishment of knowledge centres (C2.B.3.1), and energy system planning (C8.H.1.3), demonstrates how Cohesion Policy complements RRF by financing regionally anchored infrastructure, expanding access to applied innovation, and increasing the territorial reach of national innovation objectives. In Spain, RRF-Cohesion Policy synergies materialised especially under the measure C17.I1 Supplementary Research and Development plans with Autonomous Communities. The objective of the measure was to foster the coordination of the State and the Autonomous Communities in the areas of R&I through the establishment of supplementary R&I plans to be co-financed by the RRF and the ERDF. The areas of research are aligned with the S3 of the regions and the Spanish Strategy for Science, Technology and Innovation 2021-2027 to improve knowledge generation and technological innovation in targeted areas. With ERDF funds, Spain is also going to launch a national programme on technology transfer in cooperation with regions, aiming to scale up these eight plans.

#### *3.3.4.3. Other EU programmes*

**There are only a few cases of RRF RDI measures establishing synergies with other EU funds** (i.e., beyond Horizon Europe and Cohesion Policy), based on the FENIX extraction received from the Commission (see table below). For instance, two Slovak digital-related measures "shall also serve as a co-funding mechanism for projects that succeed in directly managed EU programmes (Digital Europe, Horizon Europe and the Connecting Europe Facility)", according to their description. Beyond these four measures, however, it is worth noting that the 5 measures mentioned earlier about access to international programmes, while focusing on access to Horizon Europe, in some cases also mention other EU programmes (e.g. EU4Health) or generically "international programmes". Moreover, as mentioned under EQ10.3, Greek RRP's measure "Loan Facility – Research and Innovation" (C4,7-I16980) did rely on InvestEU resources.

*Table 12: Number of R&I measures and sub-measures making explicit reference to other EU funds*

| Support to/for… | N of cases per country | Total |
|---|---|---|
| Co-funding | 1 Finland; 1 Latvia; 2 Slovakia | 4 |

Source: FENIX

Based on the responses received in the survey of Member State authorities, **there is only limited opinion on the existence of synergies between RRF measures and InvestEU for R&I** (63% of respondents are either not aware or did not answer, n=58). Among those who provided a judgment, 52% (11 out of 21) indicated that synergies exist to a large or some extent, and 48% (10 out of 21) indicated that they exist to a limited extent or not at all. From the MS-level analysis, it emerged that **occasionally other EU programmes were mobilised to support the full-scale implementation of pilot initiatives supported by the RRF**. For

([160]) RRP measure out of scope in this study but considered relevant by the Italian authorities in the field of R&I.

([161]) Notably, over the past three years, increases in the financial thresholds (in terms of ISEE - Equivalent Economic Situation Indicator) have broadened access to scholarships, prompting increases in financial allocations.

**example,** in France, Faurecia got a EUR 315 million InvestEU loan from the EIB Group for hydrogen technology and mobility innovations. Faurecia, which is also a beneficiary of RRF funding under the IPCEI Hydrogen framework, will use this InvestEU loan to finance research and development in hydrogen technology, including applications for mobility and advanced driver assistance systems. Faurecia also produces carbon fibre hydrogen storage tanks and works on hydrogen fuel cell assemblies through its joint venture, Symbio, with Michelin. This initiative supports the development of sustainable technologies for vehicle electrification and decarbonisation, contributing to a hydrogen technology ecosystem in the automotive sector. As another example, in Denmark, the EU Innovation Fund has awarded EUR41 million to a consortium led by a Danish oil and gas operator for the Greensand Future project, which will store $CO_2$ in a depleted oil and gas field in the North Sea. This project builds on a successful pilot phase that received support under the RRF and aims to scale up carbon capture and storage to an industrial level.

## 3.4. EU added value

**Scope and general conclusion**

In this evaluation, EU added value is assessed in terms of the RRF's unique contribution to R&I reforms and investments across three dimensions: whether measures would have been implemented or severely delayed without it, whether simultaneous reforms and investments created additional benefits, and whether cross-country projects generated EU-level spillovers. Several caveats apply: attribution is complex since some initiatives were already planned, results are still unfolding given the RRF's limited timeframe, and impacts vary greatly between Member States. The general conclusion is that the **RRF has provided significant added value in emerging and moderate innovator countries** by initiating or accelerating reforms and investments that national systems could not have supported alone, and by fostering more coherent ecosystems where reforms and investments were strategically aligned. By contrast, in **stronger innovators, the added value has been less pronounced**, with the RRF largely reinforcing existing pipelines. At the EU level, the contribution to multi-country projects has so far been modest, with benefits mainly in scaling and speeding up initiatives rather than launching new ones.

### 3.4.1. EQ14. Would the R&I-related investments and reforms included in the plans have been implemented and/or severely delayed in the absence of the RRF?

**Introduction:** To answer the evaluation question, the analysis focuses on two aspects - the RRF's role in (1) initiation/realisation and (2) shaping/accelerating of R&I reforms and investments.

**Main findings:**

- The added value of the RRF-supported measures was **particularly high among emerging innovators**, where many R&I reforms and investments would have been delayed or not implemented at all without RRF dedicated funding and reform conditionality.
- In **more advanced innovator countries**, some measures would have likely been implemented without the RRF, and in those contexts, the RRF's added value is less pronounced.

- In most Member States, rather than introducing entirely new initiatives, the available RRF resources were used to **expand the scale of planned investments or to accelerate their implementation timelines**.

### The RRF's role in the initiation/realisation of R&I reforms and investments

**About 20% (19.4%) of the fulfilled R&I-related milestones/targets were fulfilled before, or in the quarter of adoption of the relevant Recovery and Resilience Plan** - 2020 (9), 2021 (31), and 2022 (2). i.e., 42 out of 217 milestones/targets (M/Ts) so far. Thus, the RRF impact on them could have only been minimal (through negotiation leverage), if any. This number is very similar to the general estimates in the RRF mid-term evaluation, which concluded that approximately 22% of all the milestones/targets fulfilled have been fulfilled before the date of the official endorsement of the RRPs. At the same time, the planned R&I-related milestones/targets are 711, and the majority are yet to be fulfilled; thus, the overall percentage of M/Ts fulfilled before the RRP adoption will keep falling significantly until the end of 2026, and if all envisaged M/Ts are fulfilled, it would fall to about 6%.

According to half of the Member State authorities (30 out of 60 respondents), **the R&I-related investments or reforms were already planned or underway** before the RRF was introduced to a large extent or to some extent. For 45% (27 of the respondents) ([162]), such investments/reforms were on the way to a limited extent, and only two respondents answered that they were not launched at all before the RRF introduction. Interestingly, when the innovation classification of the countries is considered, for emerging innovators, the majority of respondents (79%, or 15 respondents) answered that the investments/reforms were already planned or underway only "to a limited extent", while in all other groups of innovators, the majority of the answers were in the positive scale. These results hint that **in emerging innovators, the RRF has likely also acted as an initiator of reforms/investments.**

As concerns **reforms**, the results of the Member State authorities survey show, as illustrated in Table 13**Error! Reference source not found.**, that for the majority of the respondents, the RRF contributed only to a small extent to initiating and/or implementing R&I reforms/investments that would not have been implemented otherwise (40% of answers are in the scale "to a limited extent", or 24 out of 60). The analysis of the Member State's survey results again demonstrates that respondents **from the emerging innovator countries were more positive regarding the initiation/non-implementation of R&I reforms under the RRF** (11 responses out of 19 in the positive scale for emerging innovators, and only 1 out of 7 for leaders).

([162]) Three respondents answered "Not aware or not applicable".

*Table 13: Responses to the question "To what extent has the RRF contributed to…?"*

| | Initiating and/or implementing R&I reforms/investments that would not have been implemented otherwise | | Accelerating the implementation of R&I reforms/investments that were already foreseen | | Shaping/improving the quality of R&I reforms/investments | |
|---|---|---|---|---|---|---|
| | Reforms | Investments | Reforms | Investments | Reforms | Investments |
| To a large extent | 17% | 38% | 27% | 22% | 13% | 27% |
| To some extent | 27% | 32% | 32% | 40% | 48% | 37% |
| To a limited extent | 40% | 13% | 20% | 20% | 13% | 13% |
| Not at all | 8% | 10% | 2% | 13% | 13% | 12% |
| I do not know | 8% | 7% | 20% | 5% | 12% | 12% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |

Source: Member State authorities survey, N=60

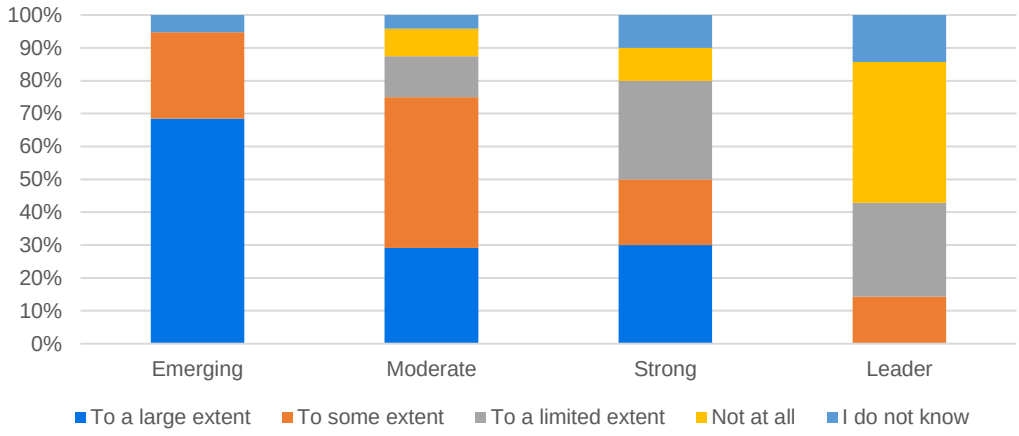
The results are more positive regarding the RRF's contribution to the initiation/implementation of **investments** (70% on the positive scale ([163])), largely due to the limited national budgets in some countries. Target group representatives also confirm the added value of the RRF for R&I investments, with around 40% (258 out of 667) of them responding that their project would not have been implemented at all without the RRF. Only about 6% of the target group representatives claimed that their projects would have been implemented without the RRF through their own resources (2%, or 11 out of 667 responses) or through alternative funding for their full projects (4%, or 26 responses).

**The added value of the RRF-supported measures in initiating/implementing R&I reforms and investments was particularly high among emerging innovators** rather than in Member States with stronger innovation performance. As with reforms, Member State respondents from emerging innovator countries are much more positive about the role of the RRF when compared to countries with higher innovation classification (see Figure 29) – close to 70% of the respondents rated the RRF contribution to initiating/implementing R&I investments "to a large extent", while for moderate/strong innovators the percentage is more than half as low, and there was no such rating by respondents from leading innovators. A similar trend can be observed with the target group respondents. When the countries with 10 or more responses to the survey are compared, **for emerging countries 48% responded that they would not have implemented their projects without RRF support, while for moderate innovators, the share was 10 percentage points lower** (38%). Different interviewees from countries like Bulgaria, Croatia, Greece, Latvia, Portugal, Poland, Romania, Slovakia, and Spain explicitly highlighted the lack of national resources or institutional instruments as a barrier, noting that many reforms or investments would not have been feasible without RRF support.

The case studies also show that in emerging (e.g. Slovakia) and moderate (e.g. Portugal) innovator countries, many of the RRF measures currently driving their R&I progress would not have been possible. On the other hand, the case study on **leading innovators shows that most measures were already part of the national project pipeline** and likely would have been carried out even without RRF support, albeit on a smaller scale and over a longer period.

([163]) 42 answers, out of 60 in the scale "To a large extent" and "To some extent".

*Figure 29: Responses to the question "Concerning investments, in your view, to what extent has the RRF contributed (or will contribute) to Initiating and/or implementing R&I investments that would not have been implemented otherwise?"*




Source: Member State authority survey, N=60

For a comparison with the above results, while the general assessment of stakeholders on RRF added value was positive in the mid-term evaluation, about a quarter of the participants in both the national coordinators survey and the public consultation expressed a negative opinion on the extent to which the RRF supported measures that would not have been implemented by MSs. For investments, the results presented above are also similar for the R&I measures (23% on the negative scale), while for R&I reforms, they are more negative in terms of the RRF's role in initiating and/or implementing reforms (48% on the negative scale).

Finally, for the sake of illustration, the country-level analysis provides the following **two examples of R&I reforms/investments that would have likely not have materialised without the RRF support**:

- Slovakia operated without a national R&I strategy for approximately seven years, but the RRF provided the impetus to collaboratively develop a new strategy ([164]), to establish a central institution for strategic R&I management ([165]), and alternative funding sources beyond minimal state budget allocations.
- According to interviewees, the adoption of the Research and Innovation Act in Bulgaria would not have taken place without the RRF. Moreover, the RRF investments linked to the reform have applied a new approach focusing on research universities, which would not have materialised in the under-budgeted national R&I support system.

### The RRF's role in shaping/accelerating R&I reforms and investments

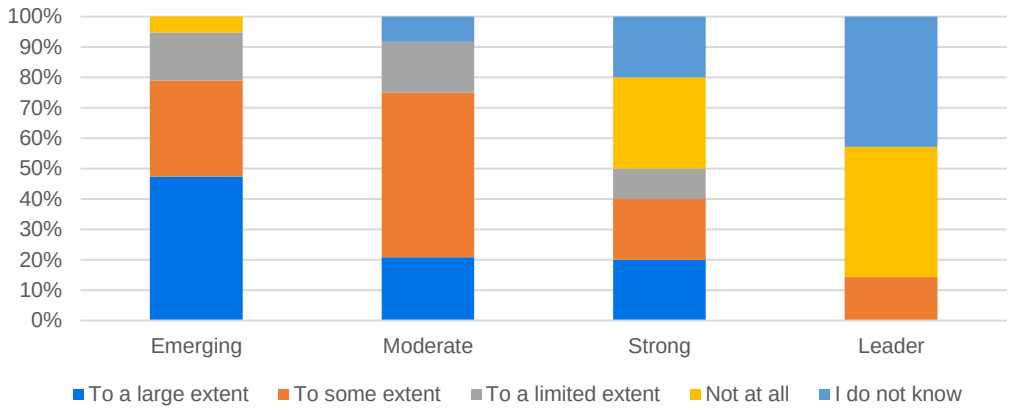
**The RRF has contributed to accelerating and shaping/improving R&I reforms and investments** across the EU. According to Member State authorities, the RRF generally acted as an accelerator of R&I reforms. As shown in Table 13 in the previous sub-section, around 60% (35 out of 60 responses) of Member State authorities consider R&I reforms to have been accelerated by the RRF, and 62% (37 out of 60) believe that they were improved by the RRF. When the country classification is explored, the shaping/improving the quality of R&I reforms has the highest positive share of answers among **emerging innovators** (84% or 16 out of 19

([164]) For more information on Slovakia's R&I strategy, see the ERA 2023 country report on Slovakia
([165]) For more information on the R&I governance reform, see the 2023 Country Report - Slovakia

respondents), while as concerns the acceleration of reforms, no clear pattern can be observed in the responses.

The results regarding the acceleration and improvement of **investments** are very similar to those of reforms (62% and 64% on the positive scale, respectively). Moreover, the **RRF is credited for shaping/improving the quality of investments, particularly for emerging innovators** (see Figure 30). As for reforms, there is no clear pattern identified regarding the geography of accelerating investments, although 7 Member State survey respondents from emerging innovators (out of 19 respondents from that group) claimed that they did not observe RRF effects in accelerating investments.

*Figure 30: Responses to the question "Concerning investments, in your view, to what extent has the RRF contributed (or will contribute) to shaping/improving the quality of R&I investments?"*




Source: Member State authorities survey, N=60

**The RRF played a crucial role in enabling or accelerating R&I initiatives that would have faced delays or limitations under existing national instruments**. While a few countries (e.g. Austria, Germany, Netherlands, Cyprus, Sweden) noted that similar outcomes could have been achieved through national tools, the majority emphasise that the scale, speed, and strategic focus of the RRF made a difference. The accelerator and expansion role of the RRF was identified particularly by interviewees from **emerging/moderate innovators** such as Czechia, Slovenia, Latvia, Lithuania, Portugal, Romania, and Slovakia. Stakeholder input from Italy (survey) suggests that the national RRP helped define and improve the quality of investments thanks to greater resource availability and a clearer strategic vision, i.e., it acted as a catalyst, reinforcing and accelerating existing initiatives rather than generating radically new investments. This point is even clearer in the three countries analysed under the leading innovators case study (Denmark, France, Germany), where the RRF served primarily as a financial reinforcement for existing R&I programmes. Rather than introducing entirely new initiatives, the available resources were used to **expand the scale of planned investments** or to **accelerate their implementation timelines** (as also observed in Belgium).

Other interviewees (Finland, Estonia, France, Hungary, and Bulgaria) stressed that the RRF not only filled funding gaps but also brought added value through **political steering, faster implementation, and alignment with EU priorities**. This catalysing effect is evident in projects such as Estonia's hydrogen and bioeconomy pilots, Austria's IPCEIs, and Greece's Precision Medicine Network, all of which would have been significantly delayed or downscaled without RRF support. In this line, most Member State authorities responding to the survey highlighted addressing long-standing structural challenges as the main reason to use the RRF (36 out of

60 respondents), followed by alignment between RRF goals and investments planned (29 respondents) and overcoming national budget constraints (also 29 respondents).

An important point regarding the acceleration of investments was raised in the case study research. While the RRF has undeniably accelerated certain investments, to a certain extent, **this acceleration reflects a selective approach**. In the case of emerging innovators like Poland, the tight implementation deadlines led to a pragmatic focus on projects at higher Technology Readiness Levels (TRLs), favouring applied research with quicker commercialisation potential over foundational or long-term research. While this aligned with the RRF's urgency-driven structure, it sidelined projects that inherently require more time and continuity, as flagged by Croatian stakeholders who stressed the need for more predictable and extended funding timelines. Similarly, for moderate innovators, the temporal pressure of meeting the 2026 RRF deadline has pushed less time-sensitive or complex projects toward Cohesion Policy funds instead. These cases underscore how the RRF's design has driven a strategic narrowing of focus, favouring fast-tracked, near-market activities at the expense of longer-term innovation capacity.

### 3.4.2. EQ15. To what extent did the simultaneous implementation of R&I-related reforms and investments across Member States create added value?

**Introduction:** EQ15 assesses the extent to which the simultaneous implementation of R&I-related reforms and investments across Member States created added value. It should be noted that while progress has been made, the full impact of these combined efforts is still unfolding, and long-term outcomes remain uncertain due to the limited timeframe of the RRF.

**Main findings:**

- Strategic alignment of R&I reforms and investments within national plans enabled more coherent and coordinated approaches, resulting in **higher added value, especially where Member States conducted prior impact assessments**.
- The combination of R&I reforms (e.g. governance, legal frameworks) and investments (e.g. infrastructure, capacity) created functioning ecosystems that **translated policy into practice, improving implementation outcomes and institutional performance.**

The RRF's simultaneous implementation of R&I-related reforms and investments is **expected to generate added value**, particularly in Member States where both components were strategically aligned within clear national plans. In these cases, the integration of reforms and investments has laid the groundwork for more coherent and coordinated approaches. In contrast, where reforms were absent or loosely connected to investments, the anticipated added value may be more fragmented or limited to specific projects. A key condition for generating the highest added value is a strategic assessment of underlying R&I needs, which was done in some Member States through impact assessments before the drafting of the RRPs.

Most Member States have **combined R&I-related reforms and investments** in two main approaches, which are further described below: some Member States included **clearly defined reforms accompanied by linked investments** in their plans, while others opted for **broader, more horizontal R&I reforms** not explicitly tied to specific investments, which are still expected to enhance and support the overall impact of the investments. Some countries, **mainly strong**

**or leading innovator countries** ([166])**,** did not have R&I reforms, but rather focused on targeted investments in areas such as digitalisation, green technologies, and research infrastructure.

For the first group of countries mentioned above, **reforms provided specific direction, such as new governance models, performance-based funding, or legal frameworks, while investments operationalised these changes** by providing the necessary infrastructure, capacity, and incentives. In Croatia, for instance, the Act on Higher Education and Scientific Activity introduced performance-based funding to boost budgets for research institutions delivering impactful results. This reform was backed by targeted investments supporting 13 public research institutes and one university of applied sciences through programme agreements. Additional funding enabled competitive tenders aligned with institutional strategies, with over EUR 19.7 million allocated to strengthen research governance. The case study on emerging innovators highlights how Croatia's approach is widely regarded as a successful example of reform-investment interplay under the RRF. Similarly, Latvia's innovation governance reform was made effective through investments in innovation clusters and excellence grants, creating a cohesive and functioning innovation ecosystem. Poland included several reforms and linked investments in industry-academia, health, and green-related topics. For example, a reform to streamline clinical trial regulations was paired with investments in clinical trial infrastructure and biomedical research capacity (see also the case study on moderate innovators). Portugal's reform on Interface Institutions aimed to strengthen academia–business collaboration and improve technology transfer. It expanded the CoLABs network, established Technology Interface Centres (CTIs), and was supported by investments in innovation agendas, including one on low-carbon and circular technologies.

The second approach of **more horizontal R&I reforms** with mutually reinforcing investments is illustrated, for example, in France, where the reforms of the PIA4 governance were designed to improve the strategic selection and management of R&I projects and have been linked to several RRF investments. By enhancing the governance of project selection, the reform strengthens the institutional capacity to direct public funding toward high-impact innovation areas more transparently and effectively. According to stakeholder interviews, the PIA4 reform enhanced the selectivity and effectiveness of the programme, and its governance structure continues to guide project selection under the broader France 2030 investment strategy. In Austria, the alignment between the RTI Strategy 2030 and investments in hydrogen, microelectronics, and digital infrastructure helped translate long-term policy goals into concrete action. In Germany, a reform of data governance was linked to large-scale investments in cloud computing and microelectronics, ensuring that regulatory frameworks evolved in step with technological advancements. In the cases of Austria and Germany, reforms provided strategic direction, while investments enabled practical implementation, reinforcing national and EU-level priorities in the digital and green transitions.

### 3.4.3. EQ16. To what extent did the RRF contribute to the implementation and further development of R&I-relevant multi-country projects?

**Introduction:** This question examines whether the RRF contributed to the launch of new collaborative, multi-country initiatives and facilitated the expansion or acceleration of existing ones. A key caveat is the limited availability of granular data on project outcomes and the difficulty in isolating the RRF's specific impact from other funding sources.

**Main findings:**

([166]) Belgium, Denmark, Estonia, Finland, Ireland and the Netherlands. Hungary is the only country with no R&I-related reforms which is not a strong or leader innovator, but moderate.

- The RRF has accelerated and scaled up existing R&I multi-country initiatives, especially IPCEIs in hydrogen, microelectronics, and cloud infrastructure, rather than initiating new ones.
- Despite limitations, such as administrative complexity, rigid timelines, and cross-country dependencies, the RRF has generated spill-over effects, particularly in green and digital sectors, strengthening EU-wide R&I industrial ecosystems and contributing to strategic autonomy.

During the preparation of the plans, the Commission encouraged Member States to participate in key multi-country projects to **maximise the effectiveness of investments** and create spill-over effects across countries ([167]). Article 18(4)(f) of the RRF Regulation 2021/241 requires National Plans to highlight cross-border or multi-country projects. In its guidance (European Commission, 2021a; 2021b), the Commission encouraged collaboration on value chains, industrial resilience, and Single Market integration, key to recovery and aligned with the EU's flagship initiatives. The 2022 annual report on the implementation of the RRF ([168]) noted that several RRPs include measures participating in a number of multi-country projects, with most projects contributing to the green and digital transition. However, a recent report from the ECA ([169]) on the support for the digital transition in EU Member States from the RRF confirms that multi-country projects, despite their potential to advance the EU's digital technologies and capabilities, have been included in only a limited number of Member States. The REPowerEU chapter and consequent modifications of the RRPs in 2023 have represented an occasion for including multi-country projects, with most Member States having taken advantage of the REPowerEU chapters to include reforms and investments to upgrade their energy storage capacities and power grids, some of which have an R&I focus ([170]).

Based on the Staff Working Documents assessing NRPPs, it emerges that **more than half of the Member States** included R&I multi-country projects in the initial Plan. These are Austria, Belgium, Czechia, Estonia, Finland, France, Germany, Greece, Italy, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia and Spain. However, not all measures are part of those under the scope of the evaluation based on FENIX. While these can be considered R&I measures, their budget allocation and progress in terms of M&T cannot be considered part of the study, as they are not within the scope of the 387 measures. These include, for example, Finland's investment [P1C2I1] on low-carbon hydrogen and carbon capture and utilisation, or Romania's investment in IPCEI on Low-power processors and semiconductor chips [C9.I.4]. Cross-border measures in the scope of the study are listed in Annex VI.

While several Member States engaged in **IPCEIs**, particularly in hydrogen, microelectronics, and cloud infrastructure, the RRF's contribution to initiating new multi-country R&I projects appears **limited**. This can be linked to several factors. As highlighted by Dias et al ([171]) the setting up of cross-border or multi-country projects usually requires intense articulation between the Member States involved, which might not be compatible with the short time frame of deploying RRF funds, but also with the timeline for drafting the plans, taking into account the lifespan of investments and reforms under the RRF. Moreover, as a performance-based instrument, in the context of cross-border projects, a Member State's progress may rely on another country completing its share of a joint task. This creates a dependency between Member States' performance, despite the European Commission's January 2021 guidance recommending that such links be avoided. As a result, some Member States may be unwilling

([167]) Pfeiffer et al., Quantifying Spillovers of Next Generation EU Investment, 2021.
([168]) Recovery and Resilience Facility Annual Report 2022.
([169]) ECA Special report 13/2025, here.
([170]) Recovery and Resilience Facility Annual Report 2024.
([171]) Dias et al (2021) Recovery and Resilience Plans - Thematic overview on cross-border projects.

to assume this kind of risk. Additionally, other EU funding instruments may be better suited for delivering cross-border initiatives.

Stakeholders consulted generally confirm that the RRF only **partially contributed** to implementing and developing multi-country projects. In particular, 38% (23 replies out of 60) of Member States' authorities who responded to the survey see the RRF contribution to multi-country R&I projects as limited, while 25% consider the support more substantial.

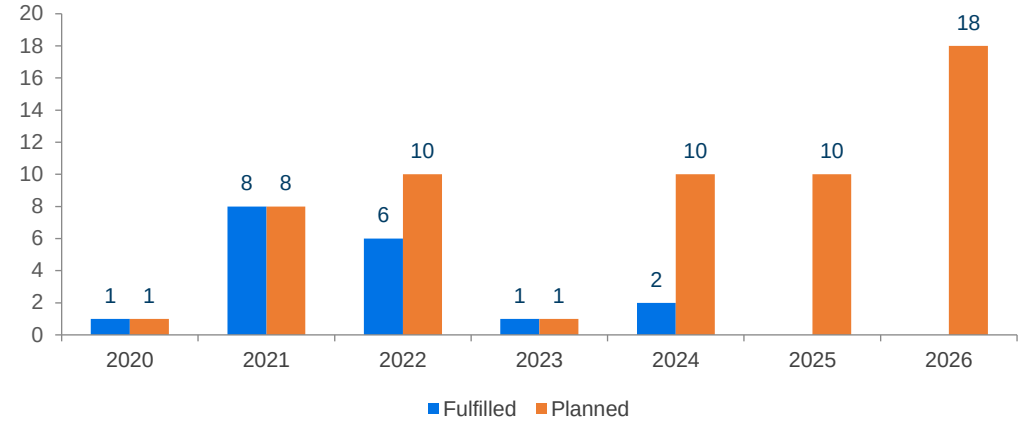
In Austria, despite the relatively modest overall RRF envelope compared to other Member States, the RRF has played a pivotal role in strengthening national R&I capacities, particularly through Austria's participation in the IPCEIs on Hydrogen and Microelectronics, which together represent 62% (EUR 250 million) of the country's total R&I allocation under the RRF. National authorities interviewed highlighted that these initiatives had long been national priorities but lacked funding until the RRF provided a complementary boost, aligned with strategies like the Austrian Hydrogen Strategy. In Poland, the RRF has represented a way to participate in cross-border, high-impact projects, notably under the IPCEI on Cloud Infrastructure and Services (CIS). Polish authorities emphasised that without RRF support, involvement in such strategic initiatives would have been unlikely due to the absence of appropriate national funding mechanisms. The RRF helped fill key gaps in scale, speed of deployment, and cross-border coordination, which are seen as difficult to address with traditional funding tools. These investments facilitated science-business collaboration and were seen as vital for enhancing Poland's technological sovereignty and alignment with the European Digital and Data Strategies. For Poland, similarly to Austria, the strategic value of the IPCEIs themselves, rather than the RRF alone, was the primary driver, but RRF funding was essential to enable and accelerate participation.

According to the survey of target groups, around 25% of respondents reported not being involved in any multi-country projects (23%, or 155 out of 665 responses) ([172]). Around a third indicated that the RRF has contributed positively to multi-country research and innovation (R&I) projects, either to a large extent or to some extent (35%, or 235 out of 667 responses). In contrast, a smaller share of respondents felt that the RRF supports multi-country projects only to a limited extent or not at all (27%, or 181 out of 667 responses), while 14% indicated they did not know.

The implementation progress of multi-country M&T started on track in the first few years, but a growing gap between planned and fulfilled values is evident from 2022 onward, suggesting **potential issues**. More in detail, around 50% of the milestones (15 out of 32) have been fulfilled, with the number increasing to 66% if also the completed (and not assessed) are considered, highlighting that progress has been made. In addition, it is worth mentioning that milestones linked to multi-country projects are mainly concentrated in the **planning, preparation, and approval stages** rather than implementation. Some milestones define the financial envelopes and confirm funding commitments to selected projects while relating to high-level frameworks or roadmaps (e.g. Hydrogen Roadmaps). Only a smaller set of milestones marks the start of tangible outputs (e.g. installation of pilot lines or demonstrators), usually at an early stage of execution. On the other hand, most of the targets (23 out of the 26 R&I targets) are planned for the second half of the implementation period (2024-2026). So far, only 12% of them have been fulfilled (3 out of 26). While a greater number of targets do relate to deployment and disbursement, many still reflect **early-stage rollout and financial commitment**, rather than full-scale execution. The focus remains on laying the foundations for cross-border collaboration, industrial capacity, and strategic autonomy, potentially limiting concrete results by 2026.

([172]) If replies from Spanish target groups are not taken into account, the figure increases to 29% (96, N= 332)

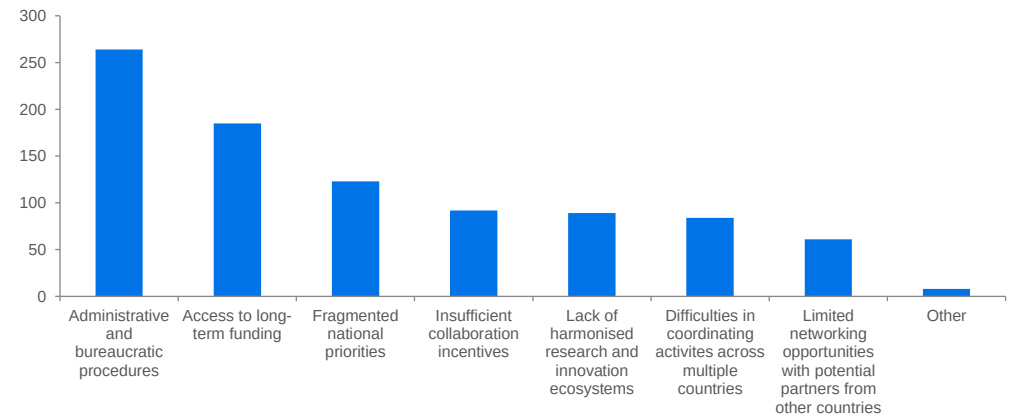
*Figure 31: Implementation progress of multi-country projects M&T*




Source: Authors based on FENIX

When asked about the **challenges and barriers** to developing multi-country R&I projects despite RRF funding, respondents identified administrative and bureaucratic procedures as the most significant obstacle by a large margin. This was followed by access to long-term funding and fragmented national priorities. Other commonly reported barriers, mentioned at similar levels, included the lack of harmonised research and innovation ecosystems, insufficient collaboration incentives, and difficulties in coordinating activities across multiple countries. Limited networking opportunities with potential partners from other countries were also noted, though to a lesser extent.

*Figure 32: Challenges and barriers to developing multi-country R&I projects despite RRF funding*




Source: Target groups survey, N=398

According to an interview in Austria, one of the main challenges is the rigid timeline and related limited flexibility of the RRF, especially for innovation-driven projects that require adaptability. This was acknowledged also in the Commission mid-term evaluation, especially in the impact on REPowerEU measures. As for IPCEIs, Hydrogen Europe ([173]) noted how obstacles and challenges at the national level, as well as external factors such as inflation and rising energy

([173]) The Hydrogen Europe Quarterly Q1 2025, here.

prices, have further intensified the difficulty of meeting the RRF's strict spending deadline of 2026. While not all countries rely on RRF funding, those that do face added time constraints, underscoring the need for more efficient notification and disbursement processes to ensure timely project implementation. In addition, a recent ECA report ([174]) further illustrates this issue. It found that for the IPCEI on microelectronics in the Romanian plan, only one of three intended goals, namely coordination at the EU level, was achievable within the RRF timeframe. The other goals, including skills development and securing intellectual property, depend on long-term implementation and delivery by participating companies. National authorities noted that results such as production typically require 8–10 years, far exceeding the RRF's scope, due to the complexity and cross-border nature of the sector.

Almost half (45%, 300, N=667) of target group representatives acknowledge that the RRF created **spill-over effects** that benefited multiple countries to a large or some extent, while 20% (134, N=667) consider only limited or no spillovers. A recent analysis ([175]) estimates that approximately one-fourth to one-third of the RRF impact on GDP is attributed to spillover impacts across Member States. The RRF's total GDP impact comes from these cross-border effects. RRPs with a stronger focus on cross-border projects could thus strengthen the European Single Market and lead to more substantive spill-over effects across countries than currently estimated ([176]). These spill-over effects are particularly relevant in the areas of the green transition and digitalisation ([177]). Germany's approach is an example of the European added value of joint investments. Germany emerges as the largest beneficiary of spillover effects within the EU ([178]). This is not merely a function of economic size, but of deep industrial integration, as well as the strong cross-border dimension ([179]) of the Plan.

## 3.5. Relevance

**Scope and general conclusion**

In this study, Relevance is assessed in terms of whether the RRF's R&I objectives remain aligned with evolving EU and national priorities and whether the measures continue to be feasible for implementation until 2026. The main caveat for this analysis is its mostly qualitative nature (due to reliance on consultation input) and the difficulty in predicting with certainty the achievement of the milestones/targets until 2026. The general conclusion is that the **RRF's R&I support remains highly relevant**, as its original objectives—such as reducing fragmentation, improving technology transfer, and strengthening research careers—are still central in the context of the green and digital transitions and the EU's push for competitiveness and strategic autonomy. **Most measures are considered feasible and adaptable**, with most countries expecting implementation by 2026. However, there are concerns about potential **delays, structural obstacles, and the risk of focusing on short-term results rather than lasting impact**.

([174]) ECA Special Report 13/2025, Support from the Recovery and Resilience Facility for the digital transition in EU member states, here.
([175]) Economic Impacts of the Recovery and Resilience Facility: New Insights at Sectoral Level and the Case of Germany, here.
([176]) Pfeiffer et al., Quantifying Spillovers of Next Generation EU Investment, 2021.
([177]) Corti et al (2021) The European added value of the Recovery and Resilience Facility.
([178]) European Commission: Directorate-General for Economic and Financial Affairs, Michels, A., Ciriaci, D., Rueda-Cantuche, J. M., Pedauga, L., Ferreira, V., Kattami, C., Schulz, D., Pilati, M., Economic Impacts of the Recovery and Resilience Facility: New Insights at Sectoral Level and the Case of Germany, Publications Office of the European Union, 2025, https://data.europa.eu/doi/10.2765/4285022
([179]) Analysis of the recovery and resilience plan of Germany, SWD(2021) 163 final, here.

### 3.5.1. EQ17. To what extent does the R&I support in the RRF continue to be relevant in view of its objectives?

**Introduction:** To answer the evaluation question, the analysis focuses on the continued relevance of the RRF's original R&I objectives in light of evolving EU and national priorities.

**Main findings:**

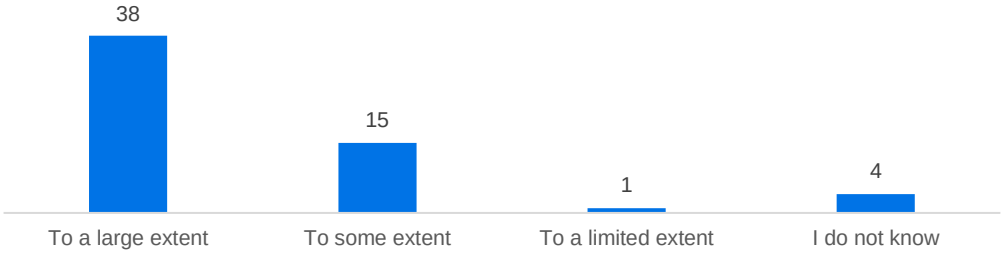
- The **RRF's R&I support remains highly relevant**, with original objectives, such as reducing fragmentation in the scientific research system, improving technology transfer, and strengthening research careers, which are still central to EU and national priorities, especially under the green and digital transitions.
- The RRF is also **aligned with evolving EU priorities**, particularly those outlined in the Competitiveness Compass.

The R&I support provided through the RRF continues to be **highly relevant in view of its original objectives**, which remain central to both national and EU-level strategic priorities. As outlined in the Recovery and Resilience Scoreboard ([180]), the RRF initially sought to address long-standing structural weaknesses in Europe's R&I landscape. These included reducing fragmentation in the scientific research system, making research careers more attractive, lowering administrative barriers to funding access, improving technology transfer from public research institutions to private companies, and enhancing the coordination between R&I and education policies to meet emerging skills needs. While these goals predated the pandemic, they have since gained even greater significance given the increased urgency of the EU's green and digital transitions and the push for greater strategic autonomy in the face of global challenges. The RRF's evolving alignment with the European Green Deal, the Digital Strategy, and initiatives such as REPowerEU underscores this adaptive relevance ([181]). More recently, the Competitiveness Compass ([182]) has further sharpened the EU's focus on innovation-driven growth, identifying R&I as a cornerstone of Europe's long-term competitiveness.

Survey evidence, shown in the figure below, **affirms that the RRF's R&I-related measures are widely perceived to remain aligned with current strategic priorities**. When asked to what extent R&I-related measures in the RRPs continue to align with national and EU-level objectives, 91% (53 out of 58 respondents) of national authorities responded positively: 66% (38 out of 58 respondents) agreed to a large extent, and 26% (15 out of 58 respondents) to some extent. Only 2% (1 out of 58 respondents) reported limited alignment, while 7% (4 out of 58 respondents) were unsure. This strong consensus indicates that the original RRF objectives retain their policy relevance and are seen as responsive to today's economic, technological, and societal priorities.

([180]) RRF Scoreboard, Thematic analysis, Research and Innovation, here.
([181]) Recovery and Resilience Annual Report, 2024 and European Commission's National Recovery and Resilience Plan Country Pages, 2024
([182]) A Competitiveness Compass for the EU, COM(2025) 30 final, here

*Figure 33: Responses to the question "To what extent are the R&I-related measures in the RRPs still aligned with national and EU strategic priorities?"*




Source: Member State authorities survey, N=58

**Interviews with national authorities further substantiate the RRF's continued relevance** by illustrating how the original objectives are being implemented and adapted across diverse contexts. In countries where systemic fragmentation and chronic underinvestment have hindered R&I performance, the RRF has been instrumental in delivering structural reforms and strategic investments. Romania's RRP, for instance, includes high-impact reforms such as the establishment of a unified R&I coordinating body, career orientation centres, and five Centres of Competence aligned with Horizon Europe missions. Legislative reforms under Law no. 25/2023 have tackled institutional fragmentation by enabling voluntary mergers and strengthening Romania's integration into the European Research Area. These efforts reflect direct and ongoing engagement with the RRF's R&I goals, especially in reducing system fragmentation and making research careers more attractive and sustainable.

The relevance of R&I support is also evident in Croatia and Lithuania, where the RRF enabled reforms that would have been difficult to implement through national budgets alone. In Croatia, initiatives strengthened scientific excellence, SME innovation, and science-business collaboration. In Lithuania, the RRF supported systemic capacity building and better integration of R&I into broader policy frameworks. These efforts directly contributed to the RRF's objectives, including technology transfer, career development, and the creation of innovation ecosystems essential for green and digital transformation. Belgium further illustrates this relevance through the establishment of a national AI research institute, a development made possible by RRF funding and described as a unique advancement in digital innovation capacity.

The RRF's continued relevance is also evident in its **alignment with evolving EU priorities**, particularly those outlined in the Competitiveness Compass. These priorities include boosting R&D investment, accelerating research commercialisation, supporting start-ups and scale-ups, and promoting advanced technologies. RRF-funded initiatives across Member States reflect these goals. For example, Spain has expanded AI applications through its national strategy, while the Netherlands and Austria have invested in quantum research ecosystems. Bulgaria has launched a national quantum platform, and Cyprus has targeted early-stage companies and SMEs to improve access to finance. Portugal has supported collaborative R&D, and France has promoted sustainable biotech innovation. These examples demonstrate how RRF measures contribute to competitiveness and innovation-driven growth.

### 3.5.2. EQ18. To what extent have the R&I-related measures of the RRPs remained relevant/feasible to implement until 2026 (i.e., scope of changes made to the RRPs till the cut-off date)?

**Introduction:** To answer the evaluation question, the analysis examines the relevance and feasibility of R&I-related measures by assessing the scope and nature of changes made to the RRPs, stakeholder perceptions of adaptability, and implementation progress across Member States.

**Main findings:**

- Most R&I measures continue to be relevant. The revisions to RRPs have helped preserve the relevance by adapting measures to changing priorities, though fl**exibility remains limited**, especially for long-term or complex R&I initiatives.
- Most countries view implementation as feasible until 2026, but concerns persist about **delays, structural bottlenecks, and the risk of prioritising short-term deliverables over lasting impact**.

The relevance and feasibility of R&I-related measures under the RRF until 2026 are shaped by their implementation progress, alignment with evolving national priorities, and the capacity of Member States to adapt to emerging challenges. Drawing on qualitative insights from interviews and desk research, alongside quantitative survey data, the analysis reveals that **while most R&I measures remain relevant and broadly feasible, implementation is marked by uneven progress, persistent risks, and structural constraints that may impact their timely delivery**.

According to the European Commission's Country Pages and the Recovery and Resilience Scoreboard ([183]), **many Member States have revised their RRPs over time**, exploring options to safeguard their RRP allocations, particularly by modifying milestones and targets and reallocating funds. According to the European Parliament's analysis ([184]), all 27 Member States have requested and received approval for at least one revision of their national RRP to date. Many of these amendments involve scaling up existing measures, cutting down oversubscribed plans or downscaling the loan envelope, and splitting RRF projects for continuation with other national or EU funds, thereby making the plans more realistic and attainable. As noted in a Commission's communication on NextGenerationEU ([185]), the Commission is actively supporting Member States by offering guidance to streamline their RRPs and prepare their final payment requests in 2026.

Interview data point to some limitations in Member States' ability to fully leverage the RRP adjustments. Approximately one-third of national authorities interviewed viewed the RRF as **insufficiently flexible in adapting to new circumstances**, an issue particularly critical for the R&I domain, where uncertainty and long-term horizons are intrinsic. Another third expressed mixed views on this point, while the remaining interviewees did not see flexibility as a major concern. In Belgium, for example, the requirement for fixed national plans from the outset of the RRF was seen as a barrier to responsive implementation, especially during unforeseen shocks such as energy price spikes or inflation in material costs. In Hungary, the RRF's milestone- and

([183]) RRF Scoreboard, Thematic analysis, Research and Innovation, here.
([184]) European Parliament (2025), Changing for the better? Assessing changes to national RRF plans, Available here.
([185]) COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL, NextGenerationEU - The road to 2026, here.

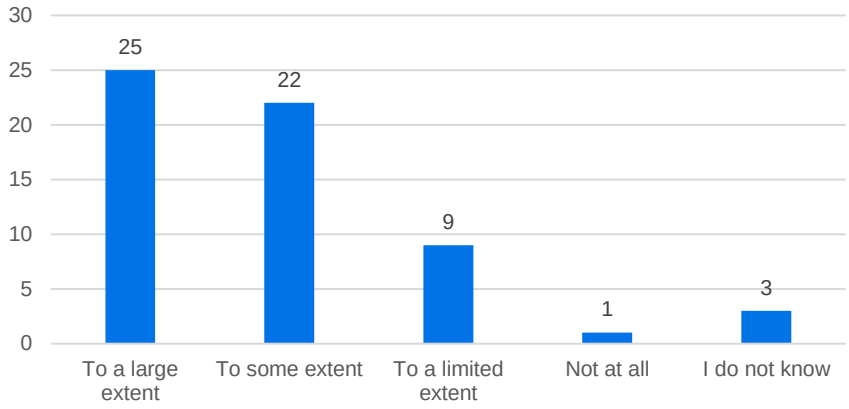
target-driven structure was described as misaligned with the inherent unpredictability of R&I, where results often diverge from initial plans. Other stakeholders similarly pointed to time-consuming and bureaucratic amendment processes, with approvals requiring European Council or Commission validation, even for minor changes (see the Efficiency section). In contrast, survey data from **beneficiaries** paint a more nuanced picture. Among 667 respondents, 28% (189 out of 667 respondents) indicated that **RRF funding had adapted to changing circumstances in the research and development landscape to a large extent**, while 41% (273 out of 667 respondents) said it had done so **to some extent**. Some geographical differences also emerge: for example, respondents in Southern Europe, particularly Spain and Portugal, tended to report a higher extent of positive impact of RRF funding, adapting to changing research and development circumstances. In contrast, responses from Czechia showed a more mixed pattern, with a notable share indicating limited or no impact. However, smaller samples from other Member States displayed diverse results, making it difficult to draw firm conclusions. Overall, as mentioned in the Limitations section (Section 2.3), while some variation is visible, these patterns should be interpreted with caution, as not all Member States were equally represented in the survey. Aggregated findings reveal a divergence in perceptions between institutional stakeholders and beneficiaries: while many interviewed stakeholders highlighted structural rigidity and limited flexibility in adapting to evolving R&I needs, a majority of surveyed beneficiaries reported experiencing some degree of adaptation in RRF funding. This contrast suggests that, despite procedural constraints, a certain level of responsiveness was felt at the implementation level.

As noted in the Effectiveness section, as of the end of March 2025, 305 measures are still in progress. Additionally, about 53% (377 out of 711) of all planned targets and milestones have yet to be completed or fulfilled. With the majority of these scheduled for completion during the critical 2025–2026 period, the **feasibility of meeting all remaining requirements is increasingly challenging**. Recent evaluations and mid-term assessments of national recovery and resilience plans highlight that without intensified efforts and resource allocation, delays may continue to hinder the timely achievement of remaining milestones and targets, risking compliance and effective use of funding ([186]).

Despite this challenging progress, **survey results indicate that national authorities remain broadly optimistic about completing R&I measures by the 2026 deadline**. In response to the question on feasibility, as shown in the figure below, 78% (47 out of 60 respondents) expressed a favourable view (to a large extent and to some extent). However, 15% (9 out of 60 respondents) rated feasibility as limited, with only one respondent claiming it was not feasible at all. This indicates that while a clear majority of countries perceive implementation as possible, a substantial minority face serious operational challenges. In parallel, **qualitative feedback from interviews and open-ended survey responses reveals growing concern** among stakeholders about the constraints posed by the 2026 deadline. Several authorities questioned the overall feasibility of completing more complex reforms and investments within the remaining timeframe. Challenges cited include limited administrative capacity, lengthy procurement processes, and the absence of a flexibility mechanism such as the N+2/N+3 rule ([187]) used in other EU funding instruments. Some stakeholders also warned that **the tight schedule may lead to a focus on measures that are faster or easier to implement, potentially at the expense of more ambitious or structurally impactful initiatives**. These insights point to a need for careful monitoring of implementation progress and possible support measures to mitigate delivery risks in the final stages.

([186]) European Commission. (2024), Mid-term evaluation of the Recovery and Resilience Facility (RRF), here.
([187]) The N+2/N+3 rule is a spending flexibility mechanism used in some EU funding instruments, whereby Member States have two or three years after the year of budget commitment ("N") to spend the allocated funds. This helps reduce the risk of losing funds due to delays in implementation.

*Figure 34: Responses to the question "To what extent do you think it is feasible to conclude the RRF measure in the R&I domain in your country by 2026?"*




Source: Member State authorities survey, N=60

Country-specific examples illustrate this variation. In Finland, broad political consensus and parliamentary support facilitated smoother adaptation of R&I measures. Croatia also benefited from clearer rules compared to other EU instruments. Conversely, governance and administrative challenges limited responsiveness elsewhere. In Czechia, centralised structures created bottlenecks and prevented direct communication with the Commission. In Belgium, decentralised governance led to overlaps between federal and regional responsibilities, especially on cross-sector themes. In Lithuania, ministries lacked prior experience as project promoters, requiring rapid capacity development that initially slowed implementation. However, the country also offers an example of how such challenges can be addressed through strategic institutional development (see the box below).

*Box 8: Lithuania – examples for measures to improve feasibility*

Lithuania's RRP includes measures that demonstrate both **short-term feasibility** and **long-term relevance**. Notable examples are the establishment of the **Innovation Agency Lithuania** (C5-E1.2.1), along with the **reorganisation of the Research Council of Lithuania** (C5-E.1.4), supported through the RRF. These twin agencies centralised access to funding and advisory services, improving coordination between national innovation efforts and RRP implementation, while also fostering stronger science-business collaboration. Complementary initiatives, such as the Green Finance Competence and Knowledge Centre (C2-B.3.1) and the Horizon Europe Acceleration Programme funded by the Research Council of Lithuania, further reinforced institutional capacity and alignment with national R&I goals.

# 4. Conclusions and lessons learned

This chapter presents the conclusions per evaluation criterion and indicates lessons learned.

## 4.1. Effectiveness

The RRF has been broadly effective in enabling substantial R&I reforms and investments across Member States, though its effectiveness varies across countries, and many R&I measures are still ongoing. Around **70% of EU countries** have already fulfilled R&I-related milestones and targets, and **over 75% of national authorities** report that the RRF was **effective** to some or a large extent. At the same time, the overall **implementation is partially behind the indicative schedule provided in the CIDs** of the plans, raising the risk of delays in comparison with the original indicative planning. The number of R&I-related milestones/targets planned until Q4 2024 is 390, i.e., the completed (not assessed) and fulfilled targets/milestones (334) as reported by the end of April 2025 stand at 86% of this indicative planning. Nevertheless, a significant share of survey respondents reported tangible results: more than 40% of beneficiaries and over 20% of national authorities indicated that substantial outcomes have already been observed. The RRF has already provided support to over 163,000 researchers working in research facilities across 22 countries.

For some countries, the share of RRF R&I allocation over government budget allocations on research and development (GBARD) between 2021 and 2023 has been more than 50%, which shows the prominence of the RRF. The RRF has been an effective tool in directing R&I towards accelerating the **green transition** as well as **digitalisation** objectives. Around 35% of the total R&I expenditure of the plans was allocated to green R&I. Digital R&I was allocated a lower, but still significant proportion of the total budget for R&I than green R&I (9.3% of the total R&I budget). While the situation varies from one country to another, the RRF has broadly been **effective in supporting the promotion of R&I in the field of health**. The RRF R&I measures have **enhanced territorial cohesion within the EU and at the national level in a limited number of countries**, particularly in larger countries that receive more funding from the RRF, both in absolute and relative terms. The **effectiveness of the RRF in addressing gender equality in R&I has been uneven across Member States**. Some countries that received a higher share of RRF support included multiple measures with explicit gender mainstreaming in R&I, while others did not refer to gender equality in their plans, measures, or related milestones. Similarly, only a few countries have included measures related to the promotion of R&I in the cultural and creative industries.

The RRF has functioned as a **strategic lever for the European Semester**. Notably, the R&I-related CSRs have been integrated into RRPs, fostering enhanced ownership and aligning with prior research and findings. The RRF has facilitated progress in addressing the structural and long-standing challenges of R&I systems in the different Member States (e.g., in countries facing underinvestment in R&I) - out of 50 CSRs relating to R&I from the years 2019, 2020 (as well as 2022), 19 CSRs achieved some progress, 11 achieved substantial progress, and 5 were considered fully addressed. Nonetheless, the majority of R&I-related CSRs are broad in scope and necessitate structural reforms, as well as the maintenance of financial and political commitment.

Member States that deliberately designed their reforms and investments closely intertwined (e.g., Portugal, Czechia, Croatia, Latvia and Romania) were able to establish **mutually reinforcing ecosystems** that increased the impact of R&I policies. In the case of sector-specific R&I reforms and investments, such as healthcare in Czechia and agriculture in Portugal, there was a demonstrable increase in their relevance and uptake. This was due to a combination of factors, but chief among them was the complementary nature of the objectives of these reforms and investments.

The RRF has successfully acted as a **catalyst for strengthening the R&I capacities of EU Member States**. In particular, RRF funding allocated to R&I measures has been primarily used to increase the innovation performance levels of firms, especially in moderate, leading and strong innovators, where this area has absorbed the largest share of allocations. The RRF has also been instrumental in improving business-science collaboration, particularly in emerging innovator countries, where it often operated as an **accelerator of pre-existing strategies such as S3**. Scientific excellence was also enhanced in many Member States, primarily through infrastructure development, grants for research and talent acquisition and retention, with notable examples including new research institutes in Belgium and Greece, career-development packages in Croatia, and expanded PhD and early-career opportunities in Spain and Italy. The RRF functioned **as a catalyst for policy development, particularly in emerging and moderate innovator countries** such as Croatia, Bulgaria and Hungary. In these countries, the RRF facilitated the implementation of reforms and the enhancement of capacities that had previously been stalled. In conclusion, while the RRPs have been effective in targeting R&I-related CSRs, the Semester outcome from 2025, with a total of 26 R&I-related CSRs, shows that important challenges still remain.

In terms of leveraging additional financing, at the **macro level**, the performed Difference-in-differences (DiD) ([188]) analysis shows that in the EU27, the reduction in R&D business expenditure was very similar during the two crises, but **the reduction in government expenditure was smaller during the 2020 crisis when compared to the 2008 crisis**. Furthermore, improvements in R&D expenditure indicators (across the compared crises in the DiD analysis) are consistently larger for the higher-beneficiary ([189]) group of countries (e.g. Latvia and Slovakia) and decline progressively as the focus becomes more on lower-beneficiary groups (e.g. Austria and the Netherlands). At the micro level, there is generally a proactive attitude among beneficiaries in seeking further funding, particularly from public sources. The projects that will apply for further financial support are more than four times those that have not planned further assistance. However, the target group representatives are primarily looking for leveraging national and Horizon Europe financing, while other sources, such as the Cohesion Policy Funds, are less sought after. In only a few cases, the RRF projects represent a continuation of projects financed by private funds or have already applied for support under private banks/instruments.

To ensure the **sustainability** of the RRF measures, several Member States have taken **concrete steps to sustain R&I funding beyond 2026**, combining national budget allocations, structural reforms, and alignment with EU funding instruments (e.g. ERDF, Horizon Europe). At the same time, countries vary significantly in their readiness and commitment. While some (e.g. Finland, Spain) have formalised legislative frameworks and multi-annual plans, others are still exploring options or remain reliant on future EU funding cycles and political decisions.

## 4.2. Efficiency

A majority of Member State authorities perceived the **integration of R&I reforms and investments** under the RRF as **generating efficiency gains**. Most survey respondents believed that combining reforms and investments under one instrument (RRF) improved implementation, especially by aligning structural reforms with targeted funding. Several Member States demonstrated how reforms (ranging from legal frameworks to governance structures)

([188]) The effectiveness of the RRF is examined in response to the COVID-19 pandemic crisis compared to the response following the 2008 financial crisis. To do this, changes in R&D indicators before and after each crisis (first difference) are compared, followed by a comparison of these changes between the two crises (difference-in-differences).

([189]) Country groupings are based on the size of RRF-funded support to R&D in terms of pre-existing R&D expenditure levels (RRF-funded R&D disbursements as a fraction of the average R&D expenditure over the four years before 2020).

created enabling conditions for investment measures to proceed more smoothly, particularly in streamlining procedures, improving institutional coordination, and strengthening performance-based funding systems.

However, efficiency was hampered by **administrative burden**, especially in countries with fragmented governance or limited administrative capacity. Stakeholders consistently reported that the administrative burden, rigid procedures, and complex reporting requirements slowed implementation. In several Member States, fragmented governance structures and the limited experience of national administrations in managing performance-based instruments further compounded these challenges, sometimes leading to delays in procurement, weak coordination, and uneven capacity across ministries and agencies. The limited flexibility of mechanisms on allocations and spending, in contrast to other EU funding instruments such as the Cohesion Policy's rules, reduced Member States' ability to adapt to unforeseen circumstances. Collectively, these factors constrained the timely delivery of some R&I reforms and investments.

## 4.3. Coherence

The RRF has **complemented other EU instruments for R&I**, particularly Horizon Europe and Cohesion Policy, by supporting systemic reforms and mobilising a significant amount of funds to address national-level priorities.

- RRF support to R&I stands out, **compared to other funding instruments**, for its support to national reforms, and while, like Horizon Europe, the RRF covers the whole innovation cycle, the **RRF shows a relatively higher focus on downstream investments.**
- The relationship between the **RRF and Cohesion Policy has been marked by both complementarity and some overlap**. In several countries, complementarities were ensured through thematic or temporal demarcation. Some Member States developed formal coordination mechanisms to prevent overlap, and plan alignment, e.g., through Smart Specialisation Strategies, but with varying success. In some cases, RRF helped fill territorial gaps in funding, supporting more developed regions or centralised institutions that received less support from ERDF. However, in some instances, both instruments supported similar types of R&I investments (especially grants to enterprises), leading to competition for beneficiaries and crowding-out effects in some cases, especially in countries where RRF procedures were simpler and faster than those of Cohesion Policy.
- **Complementarity between the RRF and InvestEU has remained modest**, as few Member States activated the InvestEU Member State compartment using RRF funds.

Overall, the RRF did not systematically displace other EU funding sources. Survey responses and data analysis suggest that most RRF R&I investments supported new or complementary activities. However, in some countries (e.g. France, Czechia, and Slovakia), the relative ease of accessing RRF funding diverted applicants away from Cohesion Policy or Horizon Europe, revealing issues in implementation and underlining the importance of strategic coordination.

The RRF has **played a complementary and, in many cases, significant role in reinforcing national R&I systems across the EU**. Its impact, however, has varied substantially depending on the existing capacity and innovation maturity of each Member State. In strong and leader innovator countries, where robust national strategies and instruments were already in place, the RRF was largely used to scale up or accelerate existing programmes and investments. Rather than initiating entirely new policies, these countries integrated RRF resources into well-established pipelines to enhance their strategic priorities, particularly in sectors like clean technologies, digitalisation, and industrial competitiveness. The RRF thus reinforced national

R&I efforts, contributing to faster implementation and deeper impact in areas already deemed important. In contrast, in emerging and moderate innovator countries, where domestic resources for R&I have traditionally been more limited, the RRF served as a critical source of additional funding. In some cases, especially in emerging innovator countries, RRF allocations represented over half of public R&I budgets between 2021 and 2023. This funding not only addressed structural gaps but also helped to build or strengthen national R&I governance frameworks. Moderate innovator countries, particularly large RRF beneficiaries like Italy and Spain, displayed a hybrid approach. Their RRPs combined transformative reforms, such as structural improvements to innovation governance, with complementary measures that extended existing support schemes.

In most Member States, **the RRF complemented rather than replaced national R&I funding**, providing an additional layer of support to advance strategic priorities. The country-level research provides several examples of this. Limited substitution effects were reported in Czechia and Sweden, where national budgets were partially adjusted in light of RRF allocations, raising concerns about the sustainability of funding once the RRF ends. Romania's experience illustrated the risk of overlap, as similar national measures led to low demand for an RRF-funded investment. Conversely, positive crowding-in effects were observed in Austria and Slovakia, where RRF investments strengthened national commitment and boosted public funding for R&I.

Even though the R&I-related measures under the RRF were not specifically designed to align with the objectives of the **European Research Area (ERA) Policy Agenda or the New European Innovation Agenda (NEIA),** they nonetheless show significant contributions to both. Most Member States have implemented reforms and investments that support key ERA actions, particularly in areas such as access to excellence, knowledge valorisation, and the green and digital transitions. Similarly, substantial alignment exists with NEIA flagship 3 on innovation ecosystems, although coverage across all four flagships remains more limited. Importantly, the extent and nature of alignment vary across countries and innovation performance groups, reflecting different national priorities, capacities, and RRP design logics.

**Synergies between the RRF and other EU programmes supporting R&I have been exploited to a limited extent**. Explicit synergies were found in a limited number of measures (24 out of 387), often concentrated in a small group of Member States. Nonetheless, Member State-level evidence and survey responses suggest that actual instances of synergy are more widespread than the programming data alone indicates. Positive examples from countries such as Lithuania, Slovenia, Slovakia, the Netherlands, and Spain demonstrate the added value of coordinated use of EU funds - particularly in enhancing participation in Horizon Europe, supporting Seal of Excellence projects, and fostering regional innovation ecosystems. Several obstacles limited the scale and depth of synergies' exploitation: (i) weak policy incentives and guidance at the early stages of RRF design; (ii) administrative fragmentation across programme authorities; and (iii) practical hurdles such as the risk of double funding and limited administrative capacity, especially at the subnational level. These constraints were particularly pronounced in countries with already well-established national R&I ecosystems, where the perceived need for synergy with other EU programmes was lower.

## 4.4. EU added value

**The RRF played a significant role in enabling, accelerating, and shaping R&I reforms and investments, particularly in emerging and moderate innovator countries**. Currently, around 20% of fulfilled R&I milestones and targets were achieved before or near the approval of national RRPs, suggesting limited RRF influence, but this share is expected to decrease over time as more milestones are completed. Most Member State authorities reported that while many reforms and some investments were already foreseen, the RRF contributed to accelerating their implementation and enhancing their strategic focus and design. Survey responses and interviews show that the RRF was especially **critical for R&I investments**: 70%

of Member State authorities indicated that R&I investments would not have been initiated or implemented, while only 44% said the same for reforms. The added value of the RRF-supported measures in initiating/implementing R&I reforms and investments was particularly high among emerging innovators rather than in Member States with higher innovation classifications. Leading innovator countries often viewed the RRF as a financial accelerator of already established priorities, rather than a source of new strategic direction. Nevertheless, even in those contexts, the RRF helped to scale or fast-track existing initiatives.

While the **inclusion of R&I multi-country projects in RRPs has been uneven**, the groundwork laid by the RRF holds significant potential to generate EU added value, particularly in strategic areas such as hydrogen, microelectronics, cloud infrastructure, and quantum technologies. More than half of the Member States included R&I-related multi-country projects in their initial plans, often through participation in Important Projects of Common European Interest (IPCEIs). However, the actual implementation of these projects remains at an early stage. Most milestones achieved so far relate to planning, coordination, and funding commitments, while the majority of tangible targets are scheduled for the latter half of the RRF period (2024–2026). The RRF's contribution has been catalytic in several cases, especially where projects were already in the pipelines and participation would have otherwise been financially or administratively out of reach by scaling up national ambitions and accelerating involvement in IPCEIs. Yet, the RRF's rigid timelines, administrative complexity, and performance-based structure have posed challenges for cross-border coordination, especially in sectors where outcomes require long-term investment horizons. Finally, the RRF-supported multi-country projects have generated spill-over effects, particularly in green and digital sectors, strengthening EU-wide industrial ecosystems.

## 4.5. Relevance

The R**&I support provided through the RRF continues to be highly relevant in light of its original objectives and the evolving strategic context** at both EU and national levels. The R&I measures in the RRF were designed to address long-standing structural weaknesses in Europe's research and innovation systems, such as fragmentation, unattractive research careers, and weak technology transfer, and these challenges remain pressing today. In fact, the urgency of addressing them has increased due to the green and digital transitions, the EU's competitiveness agenda, and the need for greater strategic autonomy. Evidence from the Recovery and Resilience Scoreboard, national implementation reports, and stakeholder interviews confirms that the RRF remains aligned with its initial goals and has also adapted to emerging priorities. Ninety-one per cent of the surveyed national authorities affirm the continued alignment of R&I measures with strategic priorities. The RRF has also demonstrated its catalytic role in shaping longer-term national strategies and encouraging sustained investment beyond its operational timeframe. This dynamic relevance is evident in the alignment of RRF-funded initiatives with the EU's evolving policy frameworks, such as the European Green Deal, the Digital Strategy, and the Competitiveness Compass.

While most Member States consider the implementation of R&I measures under the RRF to be **feasible within the 2026 timeframe**, persistent concerns remain regarding delays and structural bottlenecks (see above). Survey results indicate that a clear majority of national authorities are optimistic about completion, yet interview evidence highlights that administrative capacity constraints, lengthy procurement processes, and rigid milestones may hinder timely delivery. These challenges create a risk that governments may increasingly **prioritise measures that are faster or easier to implement**, thereby securing disbursements, but **at the expense of more ambitious and structurally impactful initiatives**.

## 4.6. Lessons learned

Building on the main conclusions and the overall findings of the study, the paragraphs below provide takeaways for future policy-making that present either strategic or operational implications, as explained by the lessons learned listed below.

### 4.6.1. Strategic lessons learned

**Future instruments should maintain a strong focus on R&I-related Country-Specific Recommendations (CSRs)**

The evaluation reveals that the RRF served as a strategic lever of the European Semester, with R&I-related CSRs explicitly incorporated into the design of RRPs. This ensured that reforms and investments addressed **structural bottlenecks** such as low R&D intensity, weak science–business collaboration, and limited institutional capacity, particularly in emerging and moderate innovator countries. The CSR focus also facilitated convergence between EU and national priorities, reinforcing coherence and policy relevance. Importantly, the 2025 European Semester cycle issued a substantial number of 26 CSRs directly related to R&I, underscoring the importance of continuous EU support for national reform.

**Future EU instruments should provide equally strong incentives for deeper R&I reforms in better-performing Member States**

Member States with weaker R&I systems often used the RRF as a catalyst to establish new policy structures and strengthen institutional capacity. Reforms created new agencies, governance mechanisms, or funding frameworks that were subsequently operationalised and scaled up through RRF-supported investments. This dual approach allowed emerging and moderate innovators to address long-standing structural bottlenecks such as low R&D intensity, fragmented governance, and limited science–business collaboration**. However, in some strong/lead innovator countries, reforms were limited or absent**, with RRF support focused on targeted investments. The R&I systems in these countries are well-established, but the RRF has not been used extensively to effect further structural changes, such as enhancing R&I governance, making research careers more attractive, and creating a supportive environment for startups and scaleups. This was largely driven by the rationale that national R&I systems were already well established, and the RRF was therefore used more as a temporary accelerator than a driver of structural change. Yet, R&I systems in strong/leading innovators also continue to face important challenges, as confirmed by the 2025 Semester analysis and CSRs. This underlines that, despite their relative strength, even high-performing systems would have benefited from more ambitious reform incentives under the RRF, particularly in tackling systemic challenges that cannot be resolved through investments alone.

**Future RRF-like interventions should be systematically anchored in Smart Specialisation Strategies (S3) and existing national frameworks**

The evaluation shows that the RRF was **most effective when reforms and investments were embedded in existing national or regional strategies**, particularly Smart Specialisation Strategies (S3). For example, measures explicitly mapped onto established S3 structures fostered **stronger science–business collaboration** and improved alignment with regional innovation ecosystems. Similarly, case studies illustrate that when RRF R&I interventions were built on pre-existing institutional frameworks and regional strengths, they achieved greater coherence and more sustainable impacts. Such a strategic approach would ensure that reforms and investments leverage national and regional strengths, foster complementarities, and generate sustainable impact. Furthermore, as most RRPs were drafted before the adoption of the ERA Policy Agenda (2022–2024) and the NEIA (2022), they could not explicitly incorporate these frameworks. However, in countries where national R&I strategies were already in place and aligned with EU goals, RRPs ended up supporting ERA and NEIA objectives more

systematically. This highlights the value of having robust, forward-looking national strategies that can act as anchors for EU-level coherence even when new policy frameworks are introduced after national plans are in motion.

### Embed policy evaluation systematically in the policy cycle as a way of increasing the impact of reforms/investments

Another aspect that could increase the impact of reforms and investments is **systemic evaluation**. The study found that in some Member States, ex-post assessments of pre-RRP initiatives, public consultations, needs assessments, and other ex-ante assessments helped identify relevant R&I measures to put in place (in terms of both strengthening previous successful initiatives and introducing new ones). Relevant EU instruments can be used to support these assessments, e.g. Horizon Europe Policy Support Facility and the Technical Support Instrument. Furthermore, determining whether interventions generate the intended policy effects requires structured, ongoing evaluation efforts, which are currently not mandated within the RRF framework, leaving this responsibility to the European Commission without binding requirements for Member States.

### A balance is needed between quick results and long-term impact, so the focus does not fall mostly on higher TRL technologies

The RRF's accelerated timeline sometimes prompted a **selective focus on projects with higher Technology Readiness Levels (TRL),** particularly in emerging innovators, where applied research with quicker commercialisation potential was prioritised. This urgency-driven structure aligned with the RRF's design but sidelined longer-term or foundational research. In moderate innovators, the pressure to meet the 2026 deadline often redirected more complex or time-intensive projects toward Cohesion Policy instruments, revealing a strategic narrowing toward fast-tracked, near-market initiatives. Businesses reported that RRF support was effective mainly in **supporting improvements in innovation performance**, but this was closely tied to measures with clear, output-driven targets (e.g. equipment, infrastructure, applied R&D) rather than exploratory or basic research. The milestone-and-target framework, by design, rewards **measurable outputs** over longer-term, uncertain outcomes.

### More government efforts are needed to sustain R&I investments after 2026

Concerning the **financial/organisational sustainability of the measures post-RRF**, significant variation persists across the EU, with many countries still lacking clear, binding commitments. In these cases, long-term sustainability will depend on future political decisions, evolving fiscal conditions, and the successful integration of RRF-driven reforms into national innovation ecosystems and EU budgetary frameworks. Stakeholders expressed concern that without clear national commitments, there is a risk that some of the gains achieved, particularly in infrastructure upgrades and business innovation schemes, could be temporary. Only a few of the target group respondents announced that they would use their own and/or business investments to continue the project activities, which clearly shows the need for public investments. Naturally**, government efforts need not only be related to financing**. The IPCEI study also shows that the long-term sustainability of the RRF projects will depend on triggering new models of collaboration, such as those established within the IPCEI on Cloud Infrastructure and Services, that can be further developed through public-private partnerships. Another example is the design of France 2030, which emphasises the long-term viability of supported projects in project selection.

### Future EU instruments should consider more dedicated support for gender equality

**Dedication to gender equality in R&I varied widely across Member States.** Some countries with larger allocations included multiple measures explicitly integrating gender perspectives, while others did not refer **at all to gender equality** in their plans, measures, or related milestones. This unevenness highlights the lack of a systematic requirement or framework for gender mainstreaming in the RRF. The absence of consistent gender provisions meant that the

RRF **did not fully seize the opportunity to tackle persistent gender gaps in R&I systems**, such as women's underrepresentation in STEM fields, limited access to leadership roles, and barriers to participation in innovation ecosystems. Without explicit incentives or targets, these inequalities risk being perpetuated.

### The design of future EU instruments needs to combine national flexibility with stronger incentives for transnational cooperation

While the RRF succeeded in strengthening domestic R&I systems, **it fell short of realising its full potential to foster EU-wide collaboration in the R&I field**. With few cross-border initiatives and limited emphasis on shared European priorities in R&I, the opportunity to build a more integrated and resilient European innovation ecosystem was only partially seized. Despite R&I being central to shared EU priorities, the RRF was implemented largely through national channels, with minimal cross-border cooperation in the area of R&I. While several Member States engaged in IPCEIs, particularly in hydrogen, microelectronics, and cloud infrastructure, the RRF's contribution to initiating new multi-country R&I projects appears limited. This experience shows that voluntary cooperation is not sufficient. Future EU funding instruments could include stronger incentives and dedicated mechanisms to promote transnational R&I projects, especially in strategic sectors where shared investment and knowledge exchange can amplify impact and strengthen Europe's global competitiveness. In addition, for future EU funding instruments aiming to support multi-country R&I projects, greater flexibility in timelines, streamlined administrative procedures, and stronger coordination mechanisms are essential. The rigid structure and short implementation window of the RRF, combined with fragmented national priorities and limited cross-border collaboration incentives, significantly constrained the potential for joint innovation-driven initiatives. Addressing these barriers will be critical to unlocking the full added value of cross-border R&I cooperation.

## 4.6.2. Procedural/operational lessons learned

### Future EU instruments should reduce administrative complexity and increase procedural flexibility in the implementation of R&I measures

The RRF experience shows that **administrative complexity and rigid procedures** can significantly hinder the efficient implementation of R&I measures. Excessive documentation and time-consuming approval processes for changes created delays and additional burdens for both authorities and target groups. Ideally, **future instruments should further aim to simplify reporting requirements and allow for more agile budget modifications**, enabling projects to adapt to evolving needs without compromising accountability. Furthermore, the **reporting requirements should be communicated clearly from the beginning**, because to a certain extent, the widespread negative perceptions of the RRF's efficiency are ingrained in earlier expectations of a much more light-touch approach when the instrument was conceived.

### Amending future national plans should follow a simple procedure

The process of amending RRPs has been identified as a **key aspect in the context of R&I measures in several countries**. This is particularly relevant in the context of evolving economic priorities and changing circumstances, such as inflationary pressures, procurement delays, and the uncertainty surrounding the achievement of desired outcomes in R&I projects. The process is often criticised for its lack of flexibility and the significant time investment it demands, even though flexibility has improved.

### More attention is needed on the governance models

A key lesson from the implementation of R&I measures under the RRF is the critical importance of a **well-structured governance system** that ensures clear coordination and sufficient administrative capacity. Countries with streamlined governance models, where roles were clearly defined and coordination between ministries, implementing agencies, and research

stakeholders was institutionalised, were able to deliver reforms and investments more efficiently. In contrast, fragmented governance and the involvement of policy-making institutions without implementation experience often led to delays, inefficiencies, and a steep learning curve. Future EU funding frameworks could promote **integrated coordination structures**, ideally with joint planning bodies and/or shared IT systems, to ensure smoother implementation, reduce duplication of efforts, and facilitate synergies across funding streams.

### Complementarity must be deliberately planned, and early coordination is key

**Complementary** use of the RRF, Horizon Europe, and Cohesion Policy **does not occur automatically**. It necessitates a clear, overarching strategic vision at the national level. Member States that engaged in early coordination and demarcation (whether thematically, temporally, or territorially) were more successful in creating synergies. Late or weak coordination often led to competition between instruments rather than strategic alignment. Furthermore, complementarity goes beyond funding, and the coordination of reforms is also crucial for R&I measures. Continued strengthening of institutional coordination is essential to ensure the feasibility of R&I measures through 2026, but it is also critical for any future RRF-type instrument to work in an effective and efficient way.

### Better data sharing, interoperable systems, and common tracking tools are needed to support coordinated planning and monitoring

Data access and transparency are essential for identifying and avoiding duplication. Some Member States indicated that better access to detailed information on EU-funded projects across different funding mechanisms could help in boosting coherence. Furthermore, there is an **absence of a centralised database tracking co-financing for R&I projects under the RRF**. While national procedures often required co-financing (especially for business-oriented measures), there is no EU-level mechanism to quantify the extent of private or additional public investment leveraged. Accounting for this data gap in future instruments would contribute to a comprehensive assessment of its full catalytic impact on the R&I funding landscape.

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# Annex II: Descriptive analysis

This section presents additional tables and figures regarding the RRF-supported R&I measures, which provide further insights into the ones presented in section 1.4 of the report.

The following table presents the total funding allocation of R&I investments per country.

*Table 14: Total funding allocation of R&I investments per country ([190])*

| MS | Scientific excellence | | | R&D ecosystems | | | Business innovation | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | (in eur) | (%) | N | (in eur) | (%) | N | (in eur) | (%) | N | (in eur) |
| Austria | 3 | 150,700,000 | 38% | | | 0% | 2 | 250,000,000 | 62% | 5 | 400,700,000 |
| Belgium | 15 | 320,816,283 | 59% | 1 | 2,900,000 | 1% | 6 | 224,507,537 | 41% | 22 | 548,223,820 |
| Bulgaria | 6 | 158,624,293 | 95% | 1 | 8,180,000 | 5% | | | 0% | 7 | 166,804,293 |
| Croatia | 15 | 242,784,007 | 62% | 8 | 136,173,601 | 35% | 3 | 14,305,694 | 4% | 26 | 393,263,302 |
| Cyprus | | | 0% | 4 | 15,400,000 | 16% | 6 | 83,130,000 | 84% | 10 | 98,530,000 |
| Czechia | 6 | 466,676,435 | 68% | 1 | 58,911,319 | 9% | 4 | 159,742,228 | 23% | 11 | 685,329,982 |
| Denmark | 4 | 8,337,816 | 3% | 4 | 94,136,634 | 31% | 5 | 201,721,356 | 66% | 13 | 304,195,806 |
| Estonia | | | 0% | | | 0% | 3 | 71,400,000 | 100% | 3 | 71,400,000 |
| Finland | 5 | 111,000,000 | 31% | 2 | 140,000,000 | 39% | 6 | 111,920,000 | 31% | 13 | 362,920,000 |
| France | 6 | 1,178,000,000 | 20% | 2 | 180,000,000 | 3% | 21 | 4,420,273,000 | 76% | 29 | 5,778,273,000 |
| Germany | 2 | 1,176,470,588 | 19% | | | 0% | 12 | 5,055,476,468 | 81% | 14 | 6,231,947,056 |
| Greece | 2 | 320,819,914 | 64% | 3 | 162,718,649 | 32% | 1 | 18,215,653 | 4% | 6 | 501,754,216 |
| Hungary | 1 | 183,732,171 | 23% | | | 0% | 3 | 615,376,585 | 77% | 4 | 799,108,756 |
| Ireland | 2 | 71,613,000 | 100% | | | 0% | | | 0% | 2 | 71,613,000 |
| Italy | 10 | 4,371,140,000 | 32% | 9 | 4,482,800,752 | 33% | 12 | 4,702,340,000 | 35% | 31 | 13,556,280,752 |
| Latvia | 2 | 1,615,000 | 1% | 3 | 196,000,000 | 99% | | | 0% | 5 | 197,615,000 |
| Lithuania | 1 | 2,400,000 | 7% | 2 | 16,541,621 | 49% | 1 | 15,000,000 | 44% | 4 | 33,941,621 |
| Netherlands | 7 | 208,250,000 | 44% | 1 | 263,900,000 | 56% | | | 0% | 8 | 472,150,000 |
| Poland | 4 | 943,829,916 | 85% | | | 0% | 1 | 161,963,888 | 15% | 5 | 1,105,793,804 |

([190]) The table covers only investments, not reforms (for this reason, in countries with RDI reforms associated to costs, for instance Lithuania, the total amounts do not correspond to their RRPs' total funding to RDI).

| MS | Scientific excellence | | | R&D ecosystems | | | Business innovation | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | (in eur) | (%) | N | (in eur) | (%) | N | (in eur) | (%) | N | (in eur) |
| Portugal | 19 | 619,445,927 | 17% | 10 | 3,068,616,000 | 83% | 1 | 21,000,000 | 1% | 30 | 3,709,061,927 |
| Romania | 7 | 279,600,000 | 92% | 1 | 25,000,000 | 8% | | | 0% | 8 | 304,600,000 |
| Slovakia | 9 | 555,254,922 | 75% | 2 | 149,137,656 | 20% | 1 | 31,905,543 | 4% | 12 | 736,298,121 |
| Slovenia | 2 | 17,671,560 | 20% | 4 | 72,641,145 | 80% | 2 | 0 | 0% | 8 | 90,312,705 |
| Spain | 10 | 2,599,279,000 | 15% | 11 | 3,276,996,000 | 19% | 12 | 11,062,850,000 | 65% | 33 | 16,939,125,000 |
| Sweden | | | 0% | | | 0% | 2 | 286,419,752 | 100% | 2 | 286,419,752 |
| Total | 138 | 13,988,060,832 | 26% | 69 | 12,350,053,377 | 23% | 104 | 27,507,547,704 | 51% | 311 | 53,845,661,913 |

Source: FENIX

In terms of **themes** covered by the R&I measures, most measures (combined primary and secondary) are in the pillar ([191]) "Smart, sustainable and inclusive growth including economic cohesion, jobs, productivity, competitiveness, research, development and innovation, and a well-functioning internal market with strong SMEs" – 419 measures. This pillar is followed by the Green transition pillar (154 measures) and the Digital transformation pillar (96 measures). The pillars on Health, and economic, social and institutional resilience (47 measures), Policies for the next generation (37 measures), and Social and territorial cohesion (21 measures) are much less pronounced. In terms of progress of the measures, the fastest pace of implementation is observed in the Health, and economic, social and institutional resilience pillar (30% fulfilment rate), while the slowest progress is in the digital domain.

The review of the R&I measures per primary and secondary policy area ([192]) shows that, as can be expected, the R&D&I policy areas are the ones with the highest number of measures (Research, Development And Innovation and R&D&I In Green Activities (E.G. Climate Change Mitigation, Circular Economy). Nevertheless, other areas like digitalisation, education, competitiveness, and healthcare are also well-covered.

*Table 15: Primary and secondary policy area – Top 20 R&I areas*

| | Completed | Fulfilled | All measures | % Completed | % Fulfilled |
|---|---|---|---|---|---|
| Research, Development and Innovation | 54 | 40 | 313 | 17% | 13% |
| R&D&I In Green Activities (E.G. Climate Change Mitigation, Circular Economy) | 27 | 21 | 107 | 25% | 20% |
| Digital-Related Measures In Research, Development and Innovation | 9 | 5 | 46 | 20% | 11% |
| General, Vocational, And Higher Education: Accessibility, Affordability, Quality and Inclusiveness, Including Digitisation And Infrastructure | 11 | 9 | 37 | 30% | 24% |
| Competitiveness | 9 | 7 | 35 | 26% | 20% |
| Digital Capacities and Deployment Of Advanced Technologies | 1 | 0 | 20 | 5% | 0% |
| Effectiveness of Public Administration and | 8 | 7 | 20 | 40% | 35% |

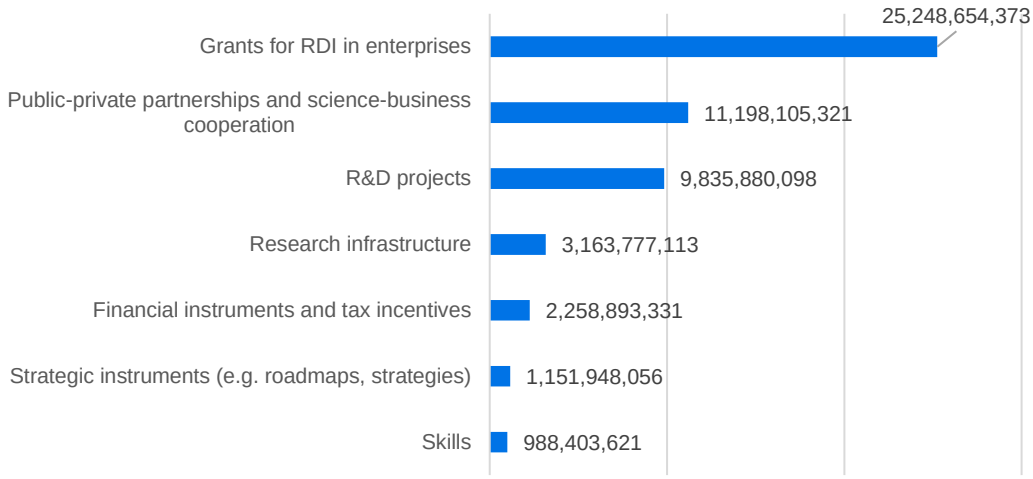
([191]) The 'pillars' represent six policy areas of European relevance, which are defined in Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility. For more information on the pillar tagging, see the Pillar tagging methodology for the Recovery and Resilience Scoreboard.
([192]) Policy areas are a further sub-categorisation of the policy pillars. For more information on the pillar tagging, see the Pillar tagging methodology for the Recovery and Resilience Scoreboard.

| | Completed | Fulfilled | All measures | % Completed | % Fulfilled |
|---|---|---|---|---|---|
| National Systems, Including Minimising Administrative Burden | | | | | |
| Healthcare: Resilience, Sustainability, Adequacy, Availability, Accessibility and Quality, Including Digitisation and Infrastructure | 4 | 4 | 20 | 20% | 20% |
| Digitalisation of Businesses | 3 | 0 | 18 | 17% | 0% |
| Business Environment/ Entrepreneurship | 5 | 4 | 17 | 29% | 24% |
| Support to SMEs | 5 | 2 | 17 | 29% | 12% |
| Renewable Energy and Networks | 2 | 1 | 14 | 14% | 7% |
| Regulatory Changes for Smart, Sustainable and Inclusive Growth | 8 | 5 | 11 | 73% | 45% |
| Industrialisation and Reindustrialisation | 1 | 1 | 10 | 10% | 10% |
| Territorial Infrastructure and Services | 4 | 3 | 10 | 40% | 30% |
| Sustainable Mobility | 1 | 1 | 9 | 11% | 11% |
| Business Infrastructure | 1 | 0 | 7 | 14% | 0% |
| Human Capital in Digitalisation | 0 | 0 | 7 | 0% | 0% |
| Other Climate Change Mitigation (e.g., Sustainable Industry) | 0 | 0 | 7 | 0% | 0% |
| Strategic Autonomy | 4 | 3 | 6 | 67% | 50% |

Source: FENIX

**The highest volume of financing for research and innovation has been allocated to Grants for RDI in enterprises** (more than EUR 25 billion), followed by Public-private partnerships and science-business cooperation (EUR 11.2 billion), and R&D projects (approx. EUR 10 billion). The lowest volume of financing is allocated to the sub-category of Skills (less than EUR 1 billion).

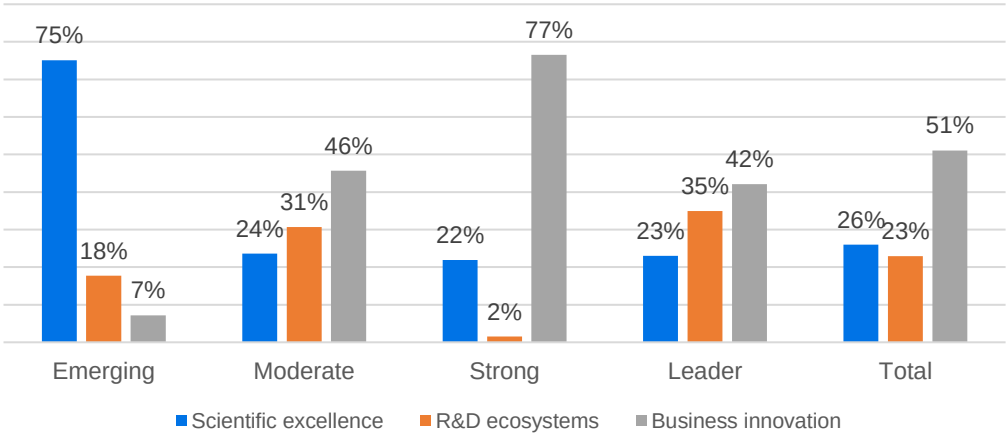
*Figure 35: R&D funding per sub-category*




Source: FENIX

When the European Innovation Scoreboard performance is considered, **emerging innovators show higher allocations in the category of Scientific excellence**, followed by R&D ecosystems, and only then Business innovation. For all other categories, **Member States chose to invest more in Business innovation** (see the following figure).

*Figure 36: R&D funding allocation per innovation scoreboard categorisation*




The distribution of R&D reforms ([193]) under the three main categories shows a mirror image of the investments. **Most reforms target R&D ecosystems** – 36, followed by Scientific excellence (24), and Business innovation (16). However, it has to be acknowledged that the categorisation of the reforms is not clear-cut, and they can fall into several categories. This is particularly the case for cross-cutting reforms. For example, in Czechia, Reform 1 under C5.3 aims at establishing a strategically managed and internationally competitive R&D ecosystem, but it also

([193]) It should be noted that there is no uniform approach as regards to what is an individual reform measure across plans. Some Member States have bundled several reforms into one reform measure under their RRP, while others kept the reforms totally separate.

includes the creation of an excellence program. Another example is the reform of C8 RA in Slovenia, which is very horizontal, and while it mostly contributes to the R&D ecosystem, it also contributes to Scientific Excellence and Business Innovation.

The overall number of countries with reforms is 18: **the country with the highest number of reforms is Lithuania**, with 13 reform measures, distributed evenly across the three categories.

*Table 16: Distribution of the R&D reforms per category*

| MS | Scientific excellence | R&D ecosystems | Business innovation | Total |
|---|---|---|---|---|
| Austria | | 1 | | 1 |
| Bulgaria | | 2 | 1 | 3 |
| Croatia | 3 | | 1 | 4 |
| Cyprus | | 1 | 2 | 3 |
| Czechia | | 3 | 1 | 4 |
| France | 1 | 1 | | 2 |
| Germany | 3 | 4 | | 7 |
| Greece | 1 | | 2 | 3 |
| Italy | 2 | 1 | | 3 |
| Latvia | 1 | 1 | | 2 |
| Lithuania | 4 | 5 | 4 | 13 |
| Malta | | 1 | | 1 |
| Poland | 1 | 1 | 2 | 4 |
| Portugal | | 2 | 1 | 3 |
| Romania | 1 | 3 | | 4 |
| Slovakia | 4 | 3 | | 7 |
| Slovenia | | 1 | 1 | 2 |
| Spain | 3 | 6 | 1 | 10 |
| Total | 24 | 36 | 16 | 76 |

In terms of **sub-categories**, the highest number of R&D reforms falls into the category of Strategies and governance (21), followed by the cross-cutting category (13). Collaboration and knowledge transfer, Skills and careers, Financing & incentives for private R&I, Research institutions and funding have a very similar number of reforms, and an Innovation-friendly business environment, between 6 and 10. Unlike investments, which showed different patterns among the countries, depending on their innovation scores, in the case of reforms, all categories (emerging, moderate, and strong) have a predominant number of R&D reforms in the R&D ecosystems category.

# Annex III: Methodological annex

## Classification of investments

The mapping of RRF RDI investment measures by area has been performed based on the measure name and description, and on the related milestones and targets (in particular, their name as well as their description). In addition, the classification has been double-checked, taking into consideration the Council Implementing Decisions (CID) on the approval of the assessment of each RRP, including the Annexes to the CIDs.

*Table 17: Areas of RRF R&I investments*

| Macro-area | Area | Description |
|---|---|---|
| **Scientific excellence** | **Research infrastructure** | Measures whose goal (or part of the goal) is to build or upgrade research infrastructure. |
| | **Skills** | Measures related to skills are those designed to directly support people in the development and upgrading of their skills, as well as supporting a scientific research career. |
| | **R&D projects** | Research projects in universities and research institutes, and research projects that are open to either universities or companies. |
| **R&D ecosystems** | **Strategic instruments (e.g. roadmaps, strategies)** | Roadmaps, agendas, strategies, programmes, and other measures having the goal of strengthening the RDI ecosystem and facilitating collaboration between various actors relevant for the field. |
| | **Public-private partnerships and science-business cooperation** | Measures aimed at supporting cooperation between science and businesses within a country. |
| **Business innovation** | **Grants for RDI in enterprises** | Measures supporting RDI projects inside enterprises, or the acquisition and deployment of RDI assets or technologies in enterprises. |
| | **Financial instruments and tax incentives** | Measures enhancing access to finance in the context of RDI, or promoting RDI-related tax incentives for companies |

## Classification of reforms

Following the same logic used for the classification of investments, RRF R&I reforms can be grouped into three macro-areas – Scientific Excellence, R&D Ecosystem, and Business Innovation. Each macro-area is further broken into specific categories (“Areas”) with a short description of the types of reforms included. Scientific excellence reforms cover policies to improve the functioning of research institutions and develop research talent (analogous to investments in infrastructure and skills), and Business innovation reforms cover laws and

incentives for enterprise R&I (analogous to grants for firms in the investments context). The R&D ecosystem category encompasses strategic planning and collaboration-enabling reforms.

Many RRF reforms are multifaceted and could fit into more than one category because they address several aspects of the R&I system simultaneously. However, for clarity, each reform is classified by its primary objective or "macro-area," while noting secondary aspects in the analysis. For instance, Cyprus's "Incentives for investments and human capital in R&I" reform spans two areas. It extends an R&D tax incentive to companies (a Business innovation – financing measure) and simultaneously reviews visa schemes to attract foreign researchers and startup founders (a Scientific excellence – skills and careers aspect). This reform was classified mainly under Business innovation, given a large impact on private R&D investment.

*Table 18: Areas of R&I reforms*

| Macro-area | Area | Description |
|---|---|---|
| **Scientific excellence** | **Research institutions and funding** | Reforms aimed at strengthening the public science base – including governance or funding of universities and research institutes, research infrastructure planning, and initiatives to boost the quality and output of research institutions (e.g. new research funding frameworks, performance-based financing, institutional mergers or reorganisations). |
| | **Skills and careers** | Reforms designed to develop human capital for R&I by improving skills, training, and research careers. This includes higher education reforms (curriculum updates, new programs in emerging fields), measures to attract or retain researchers (e.g. STEM talent programs, simplified research visas), and changes to research career paths (merit-based promotion systems, postdoctoral funding schemes). |
| **R&D ecosystem** | **Strategies and governance** | Systemic reforms that set strategic direction or improve coordination in the R&I system. Examples are national R&I strategies, roadmaps, or action plans, new or updated R&I framework laws, and creation of high-level governance structures (e.g. inter-ministerial councils, innovation agencies) to oversee implementation. |
| | **Collaboration and knowledge transfer** | Reforms that facilitate cooperation between academia, industry, and other stakeholders in the innovation system, including policies to strengthen public-private partnerships and legislative changes to incentivize collaboration (e.g. intellectual property law updates to ease spin-offs or joint R&D). |
| **Business innovation** | **Financing & incentives for private R&I** | Reforms that provide financial incentives or support mechanisms for enterprises to invest in research and innovation, such as improvements to R&D tax incentive schemes, creation of public innovation financing instruments, or new grant programs defined in legislation. |
| | **Innovation-friendly business environment** | Reforms focused on the regulatory and administrative environment to make it more conducive to innovation and entrepreneurship, including introducing startup visas and easier migration procedures for innovators, |

| Macro-area | Area | Description |
|---|---|---|
| | | updating insolvency or bankruptcy laws to encourage risk-taking, creating regulatory sandboxes, simplifying commercial company law to accommodate innovative business models, and strengthening intellectual property frameworks. |
| **Cross-cutting reforms** | | Those reforms that cover multiple areas, without any area being prioritised or taking a larger share of the reform. |

## Desk research

Extensive desk research was carried out to gather and analyse relevant background information for the evaluation questions. The following types of documents were consulted:

- EU legislation and EU secondary documents (including EC's preliminary assessment of payment requests, European Semester country reports and Country-Specific Recommendations, and thematic analyses);
- grey literature such as news articles, white papers, policy briefs, technical reports, research reports from institutes or think tanks, publications by NGOs or industry, etc.;
- academic literature;
- national-level legislation and documents.

Desk research also included the analysis of available data—primarily FENIX extractions provided by DG Research and Innovation (RTD), as well as data from the CORDIS database, the Cohesion Policy Open Data platform, and Eurostat. Annex I provides the bibliography.

## Interviews

Targeted interviews were conducted to gather detailed qualitative and contextual insights from key stakeholders involved in the design, implementation, and assessment of R&I measures under the RRF. This qualitative component complemented the broader evaluation by exploring challenges, bottlenecks, coordination issues, and synergies that may not be captured through document analysis or quantitative data alone. The interviews also served to gather stakeholder views in relation to the five evaluation criteria.

The interviews targeted a range of national stakeholders with direct responsibility or involvement in reforms and investments. These included national authorities designated for the RRF, Ministries responsible for Research/Innovation/Education/Science, additional ministries where relevant (e.g. economy or digital policies) depending on the selected measures, national innovation and research agencies, representatives of R&I target groups (such as academic or business actors), and Cohesion Policy coordinating bodies. Before launching the national-level engagement, the team carried out scoping interviews with four European Commission officials from DG RTD, SG REFORM, and DG ECFIN. **A total of 66 interviews were conducted at the national level** between March and July 2025. More information can be found in Annex VII.

## Targeted survey

The targeted surveys aimed to gather insights from a broad spectrum of stakeholders, including Member State authorities (e.g., RRF coordination bodies, Ministries of Research and

Innovation/Education/Science, Cohesion Policy authorities), national, regional, and local innovation agencies, and relevant target groups, i.e., the final recipients and beneficiaries of the RRF. The survey questionnaires were specifically designed to accommodate multiple stakeholder categories, ensuring each respondent only encountered questions relevant to their profile.

Two distinct surveys were launched to address two differentiated stakeholder groups:

- Member State authorities, national, regional, and local authorities that are directly involved in overseeing or benefiting from the implementation of R&I measures under the RRF, and other relevant Member State authorities involved in other EU funding instruments.
- Target groups - those with direct knowledge of what the measures have achieved on the ground, e.g. universities, research laboratories, businesses receiving support

A total of 60 responses were received from Member State authorities and 667 responses from target groups across 20 Member States. Both surveys were launched in March 2025 with multiple extensions and outreach efforts to ensure broad participation. Despite this, the geographical distribution of responses remains a key limitation, with Spain accounting for 50% of target group responses. This overrepresentation may affect the generalisability of the findings and has been considered when interpreting the results. A detailed breakdown of responses by country is provided in Annex VII: Synopsis report.

# Country fiches

The country fiches are short documents prepared for 26 EU Member States ([194]), focusing on providing an overview of the R&I measures implemented in the country as part of the RRF. They mainly draw on findings from desk research and interview input. While providing an overview of R&I funding and key initiatives, the fiches also examine the interplay between reforms and investments, the synergies with other funding programmes, and the integration of these measures into domestic policy frameworks. Additionally, the fiches identify any bottleneck encountered during implementation and highlight key achievements. The analysis aims to provide a concise and comprehensive picture of each Member State's progress in deploying R&I measures under the RRF, as well as to identify areas for improvement and examples of best practices.

# Case studies

## Objective, scope and structure:

The case studies provide an in-depth examination of the support provided by RRF R&I investments and reforms in different contexts. The agreed approach consists of performing three case studies covering groups of Member States with similar innovation performance, based on the 2024 classification of the European Innovation Scoreboard ([195]). The case studies first provide an overview of the measures implemented in all the Member States that belong to the type of innovators considered. Then, they focus the analysis on a subset of Member States, examining their reforms and investments more in-depth.

([194]) No country fiche was prepared for Luxembourg as no relevant R&I measures were on the list of selected 387 measures that fell within the scope of the evaluation study.
([195]) In the 2025 scoreboard, published in July 2025, three Member States experienced changes in their performance group compared to 2024: Croatia moved from the Emerging Innovators group to the Moderate Innovators group; Cyprus moved from the Strong Innovators to the Moderate Innovators; Hungary moved from the Moderate Innovators to the Emerging Innovators.

The case studies are the following:

- **Case Study 1: Emerging Innovators,** which focuses **on Croatia, Poland and Slovakia.**
- **Case Study 2: Moderate Innovators**, which focuses on **Italy, Lithuania, Portugal and Spain.**
- **Case Study 3: Strong and Leader Innovators**, which focuses on **Denmark, France and Germany.**

Altogether, the three case studies cover 10 Member States, corresponding to 90% of the total RRF allocation to RDI measures. The selection covers all the most relevant countries under multiple indicators ([196]). Table 20 lists the main data considered for selecting Member States for the case studies. The case studies are based on desk research, interviews, survey results, and focus groups, one per case study. A detailed summary of the focus groups is provided in Annex VII: Synopsis report.

The objective of the case study is to address the following aspects, highlighting any common trends among the considered group of countries, as well as differences across countries and the underlying reasons for that:

- Allocations and types of measures dedicated to R&I, including the complementarity between reforms and investments, the coherence among different investments, and the alignment of these investments with the priorities of the renewed European Research Area (ERA) and the New European Innovation Agenda (NEIA).
- The rationale behind RRF support for R&I, focusing on the distribution of allocations across policy areas, the types of support provided, and the extent to which investments and reforms are grounded in national policy frameworks.
- Implementation progress of R&I-related RRF measures, including an overview of targets and milestones achieved across the group of countries, selected examples of R&I outcomes, and a discussion on the long-term sustainability of the changes triggered by the RRF.
- Complementarities and synergies with other major EU funding instruments, primarily Horizon Europe and Cohesion Policy.

*Table 19: Structure of the case studies*

| Section | Contents | Related evaluation questions ([197]) |
|---|---|---|
| **Introduction** | Brief context; Objective; Scope; Structure of the case study. | N/A |
| **Overview of measures** | It outlines the RRF measures and allocations dedicated to R&I in the selected group of countries, discusses the complementarity between reforms and investments as well as between different investments, and examines | EQs 2 (as regards complementarity between reforms and investments), EQ12 (contribution to ERA |

([196]) I.e., the 5 countries with the highest number of RDI measures (ES, IT, PT, FR, HR); the 7 countries with the highest number of RDI investments (ES, IT, PT, FR, HR, DE, DK); the 4 countries with the highest number of RDI reforms (LT, ES, DE, SK); the 8 countries with the highest number of completed RDI measures (FR, ES, DK, SK, HR, PL, PT, IT); the 5 countries with the highest allocation to RDI measures in absolute terms (ES, IT, DE, FR, PT).

| Section | Contents | Related evaluation questions ([197]) |
|---|---|---|
| | the alignment of these investments with the priorities of the renewed European Research Area (ERA) and the New European Innovation Agenda (NEIA). | Policy Agenda and New European Innovation Agenda) |
| **Alignment with countries' R&I policies** | It examines the rationale behind RRF support for R&I, focusing on the distribution of allocations across policy areas, the types of support provided, and the extent to which these investments are grounded in national policy frameworks. | 11 (coherent/complementary with relevant Member States' domestic instruments); 14 (R&I measures being implemented in the absence of RRF) |
| **Implementation progress and achievements** | It presents an update on the implementation progress of the R&I-related RRF measures. It includes an overview of the targets and milestones achieved across the group of countries, along with a discussion of selected examples of R&I outcomes in the selected countries. Also, it considers the long-term sustainability of the changes brought about by the RRF. | EQs 1 (as regards the achievement of outputs/results), EQ3 (achievement of outputs/results), EQ8 (sustainability over time of changes brought about by the RRF) |
| **Synergies with other EU programmes** | It examines the measures' synergies with other large EU financing instruments, mainly Horizon Europe and Cohesion policy. | EQs 7 (as regards leveraging Horizon Europe to support R&I), 10 (complementarity with other EU policies and instruments), 11 (substitution effects with other EU programmes), 13 (synergies between RRF and other R&I support programmes, good practices and lessons learnt) |
| **Conclusions** | Concluding remarks highlight the main findings of the case study | See above. |
| **Annexes** | List of measures in the three selected countries<br>Further data elaborations and charts<br>Classification of funds for comparison | N/A |

### Additional information on case study methodology and data analysis

**Methodology:** The case study triangulates evidence from multiple sources: literature and document review, data from public sources and the FENIX database, semi-structured interviews, and two surveys. A focus group was also conducted to validate preliminary findings and enrich the analysis. More specifically:

- **Review of desk-based evidence collected in the context of the MS-level analysis**, especially for the countries selected for in-depth analysis.
- **Review of evidence from interviews**. In the interviews foreseen for all 26 Member States (with the RRP National Coordinating Body and Ministries of Science/Research/Innovation), questions were added in case the respective country was selected for a case study. Depending on the country and the outcomes of the horizontal interviews, additional interviews target the following groups: an additional relevant ministry, a key national innovation/research agency, a key representative of target groups, the national body coordinating Cohesion Policy in the country (with some flexibility depending on the country: for instance, in countries where Cohesion Policy plays little role, the related interview might risk having little added value, and therefore a more relevant interviewee could be considered as a replacement).
- **Analysis of data,** specifically:
  - The data feeding into the "Overview of measures" section are elaborations mainly based on FENIX datasets received from the Commission. To provide data on the weight of the RRP RDI allocation over the national government allocation to RDI, data from the Eurostat Government Budget Allocations for Research and Development (GBARD) have been used.
  - For the "Alignment and contribution to ERA and NEIA" section, the data analysis has been based on own elaborations of the FENIX data and inputs contained in the "Analysis of the contribution of the RRPs to key EU policy priorities and a new EU R&I Policy landscape" mentioned in the ToR and made available by DG RTD. As the underlying database to this previous analysis has not been shared, the matching between the 387 measures within the scope of this evaluation and the objectives of the ERA Policy Agenda and the New European Innovation Agenda has been conducted. This has been done in a manual way based on the previous analysis, but by refining it.
  - For the section on "Synergies with Horizon and Cohesion policy", the data analysis exploited the datasets available for the various programmes of interest. The analysis focused on the allocation of the resources of a programme into specific areas of action (see Section 2.1). For the RRF, the considered allocation just refers to investments. The second level of analysis, concerning the final projects and recipients benefiting from the programmes, has been carried out only for Italy (belonging to the case study on moderate innovators), as this analysis was conditional on the availability of such data.
- **Integration of evidence from the focus group** conducted with targeted representatives of the countries selected for in-depth analysis. Specifically, two focus groups were held, one for the case study on emerging innovators and one for the focus groups on moderate innovators. Despite the various attempts, the third focus group was not conducted due to a lack of interest from the representatives of the relevant countries ([198]). The focus groups were organised to discuss the preliminary findings of the case study, enrich the evidence base, and ensure that the conclusions are well-founded and nuanced.

([198]) The focus groups for the case study on strong/leader innovators was initially scheduled for 21 May but had to be postponed due to limited interest from stakeholders in France and Germany. Despite postponing the focus group to 10 June and extending invitations beyond the three selected countries (i.e. including all the Member States classified as Strong and Leader innovators), registrations remained low. In agreement with the Commission, the focus group was cancelled.

*Table 20: Data considered for selecting MS for case studies*

| MS | TOTAL RRP ALLOCATION (EUR million) | TOTAL NUMBER OF RDI INVESTMENTS | TOTAL NUMBER OF COMPLETED RDI INVESTMENTS | TOTAL NUMBER OF RDI REFORMS | TOTAL NUMBER OF COMPLETED RDI REFORMS | TOTAL COST OF RDI MEASURES (EUR) | TOTAL COST OF RDI MEASURES OVER TOTAL RRP | BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT AND BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT ALLOCATION TO CIVIL RDI OVER GDP (2023) | INNOVATION SCOREBOARD PERFORMANCE 2024 | CASE STUDY SELECTION, WITH MAIN RATIONALE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria | 3,961 | 5 | 0 | 1 | 0 | 400,700,000 | 10% | 2.3% | 3.3% | 0.9% | Strong | |
| Belgium | 5,298 | 22 | 1 | 0 | 0 | 548,223,820 | 10% | 2.5% | 3.3% | 0.6% | Strong | |
| Bulgaria | 5,689 | 7 | 0 | 3 | 1 | 166,804,293 | 3% | 0.5% | 0.8% | 0.2% | Emerging | |
| Croatia | 10,041 | 26 | 3 | 4 | 3 | 393,263,302 | 4% | 0.8% | 1.4% | 0.6% | Emerging | SELECTED (Emerging)<br>Among emerging innovators: the highest number of RDI investments; the highest number of completed RDI investments. |
| Cyprus | 1,220 | 10 | 1 | 3 | 1 | 98,530,000 | 8% | 0.3% | 0.7% | 0.4% | Strong | |
| Czechia | 9,227 | 11 | 0 | 4 | 2 | 689,650,145 | 7% | 1.2% | 1.8% | 0.5% | Moderate | |
| Denmark | 1,626 | 13 | 11 | 0 | 0 | 304,195,806 | 19% | 1.8% | 3.0% | 0.9% | Leader | SELECTED (Strong/ Leader)<br>Among leader innovators: highest number of completed RDI investments; the highest share of allocation to RDI over total RRP. |
| Estonia | 953 | 3 | 0 | 0 | 0 | 71,400,000 | 7% | 1.1% | 1.8% | 0.8% | Strong | |
| Finland | 1,949 | 13 | 0 | 0 | 0 | 362,920,000 | 19% | 2.1% | 3.1% | 0.8% | Leader | |
| France | 40,270 | 29 | 16 | 2 | 1 | 5,778,273,000 | 14% | 1.4% | 2.2% | 0.6% | Strong | SELECTED (Strong/ Leader)<br>Among the EU27: the highest number of completed RDI investments. Among strong innovators: the highest number of |

| MS | TOTAL RRP ALLOCATION (EUR million) | TOTAL NUMBER OF RDI INVESTMENTS | TOTAL NUMBER OF COMPLETED RDI INVESTMENTS | TOTAL NUMBER OF RDI REFORMS | TOTAL NUMBER OF COMPLETED RDI REFORMS | TOTAL COST OF RDI MEASURES (EUR) | TOTAL COST OF RDI MEASURES OVER TOTAL RRP | BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT AND BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT ALLOCATION TO CIVIL RDI OVER GDP (2023) | INNOVATION SCOREBOARD PERFORMANCE 2024 | CASE STUDY SELECTION, WITH MAIN RATIONALE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | RDI investments; second-highest allocation to RDI in absolute and relative terms. |
| Germany | 30,325 | 14 | 2 | 7 | 0 | 6,421,442,852 | 21% | 2.1% | 3.1% | 1.0% | Strong | SELECTED (Strong/ Leader)<br>Among strong innovators: the second-highest number of completed RDI investments; the highest number of RDI reforms; the highest allocation to RDI in absolute and relative terms. |
| Greece | 35,948 | 6 | 0 | 3 | 0 | 1,130,531,616 | 3% | 0.7% | 1.5% | 0.6% | Moderate | |
| Hungary | 10,430 | 4 | 0 | 0 | 0 | 799,108,756 | 8% | 1.0% | 1.4% | 0.2% | Moderate | |
| Ireland | 1,154 | 2 | 0 | 0 | 0 | 71,613,000 | 6% | 0.0% | 0.0% | 0.2% | Strong | |
| Italy | 194,382 | 31 | 0 | 3 | 3 | 13,556,280,752 | 7% | 0.8% | 1.3% | 0.6% | Moderate | SELECTED (Moderate)<br>Among EU27: The second-highest number of RDI investments; the second-highest allocation to RDI over total RRP. |
| Latvia | 1,969 | 5 | 0 | 2 | 1 | 197,615,000 | 10% | 0.3% | 0.8% | 0.3% | Emerging | |
| Lithuania | 3,867 | 4 | 1 | 13 | 0 | 237,854,621 | 6% | 0.4% | 1.0% | 0.4% | Moderate | SELECTED (Moderate)<br>Among EU27: The highest number of RDI reforms. Among moderate |

| MS | TOTAL RRP ALLOCATION (EUR million) | TOTAL NUMBER OF RDI INVESTMENTS | TOTAL NUMBER OF COMPLETED RDI INVESTMENTS | TOTAL NUMBER OF RDI REFORMS | TOTAL NUMBER OF COMPLETED RDI REFORMS | TOTAL COST OF RDI MEASURES (EUR) | TOTAL COST OF RDI MEASURES OVER TOTAL RRP | BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT AND BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT ALLOCATION TO CIVIL RDI OVER GDP (2023) | INNOVATION SCOREBOARD PERFORMANCE 2024 | CASE STUDY SELECTION, WITH MAIN RATIONALE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | innovators: second-highest number of completed RDI investments. |
| Luxembourg | 241 | 0 | 0 | 0 | 0 | - | 0% | 0.5% | 1.0% | 0.5% | Strong | |
| Malta | 328 | 0 | 0 | 1 | 1 | - | 0% | 0.3% | 0.6% | 0.2% | Moderate | |
| Netherlands | 5,441 | 8 | 0 | 0 | 0 | 472,150,000 | 9% | 1.4% | 2.1% | 0.8% | Leader | |
| Poland | 59,818 | 5 | 0 | 4 | 4 | 1,105,793,804 | 2% | 1.0% | 1.6% | 0.4% | Emerging | SELECTED (Emerging)<br>Among emerging innovators: highest allocation to RDI measures; second-highest number of completed RDI reforms. |
| Portugal | 22,216 | 30 | 0 | 3 | 3 | 3,709,061,927 | 17% | 1.1% | 1.7% | 0.3% | Moderate | SELECTED (Moderate)<br>Among moderate innovators: The highest share of RDI allocation over total RRP; the third-highest number of RDI investments; the third-highest allocation to RDI in absolute terms. |
| Romania | 28,497 | 8 | 1 | 4 | 0 | 308,030,000 | 1% | 0.3% | 0.5% | 0.1% | Emerging | |
| Slovakia | 6,408 | 12 | 0 | 7 | 6 | 738,938,121 | 12% | 0.6% | 1.0% | 0.3% | Emerging | SELECTED (Emerging) |

| MS | TOTAL RRP ALLOCATION (EUR million) | TOTAL NUMBER OF RDI INVESTMENTS | TOTAL NUMBER OF COMPLETED RDI INVESTMENTS | TOTAL NUMBER OF RDI REFORMS | TOTAL NUMBER OF COMPLETED RDI REFORMS | TOTAL COST OF RDI MEASURES (EUR) | TOTAL COST OF RDI MEASURES OVER TOTAL RRP | BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT AND BUSINESS EXPENDITURE IN RDI OVER GDP (2023) | GOVERNMENT ALLOCATION TO CIVIL RDI OVER GDP (2023) | INNOVATION SCOREBOARD PERFORMANCE 2024 | CASE STUDY SELECTION, WITH MAIN RATIONALE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | Among emerging innovators: The second-highest number of RDI investments; the highest number of RDI reforms; the highest number of completed RDI reforms; the highest share of RDI allocation over total RRP. |
| Slovenia | 2,685 | 8 | 0 | 2 | 1 | 106,012,705 | 4% | 1.5% | 2.1% | 0.6% | Moderate | |
| Spain | 163,014 | 33 | 8 | 10 | 7 | 17,579,125,000 | 11% | 0.8% | 1.5% | 0.6% | Moderate | SELECTED (Moderate)<br>Among EU27: The highest number of RDI investments; the highest number of completed RDI investments. |
| Sweden | 3,446 | 2 | 0 | 0 | 0 | 286,419,752 | 8% | 2.6% | 3.6% | 0.7% | Leader | |

## Descriptive statistics and Difference-in-Differences (DiD) approach

To explore the impact of the RRF on R&I in the EU as a whole, and in specific Member States, descriptive statistics have been used along with a difference-in-differences approach. Specifically, a descriptive analysis of changes in key R&D indicators at both the EU and country levels was done, aiming to shed light on the effectiveness of the Recovery and Resilience Facility (RRF) in supporting R&D. The analysis will: a) present and discuss time series of key R&D indicators over the past 30 years; b) illustrate the magnitude of RRF support for R&D expenditure; and c) identify patterns in R&D indicators during major economic crises through a comparative approach.

For the latter, the effectiveness of the RRF is examined in response to the COVID-19 pandemic crisis compared to the response following the 2008 financial crisis. To do this, changes in R&D indicators before and after each crisis (first difference) are compared, followed by a comparison of these changes between the two crises (difference-in-differences), as follows:

$$DD=[(Y1post-Y1pre)-(Y0post-Y0pre)],$$

where (Y1post−Y1pre) is the difference between the average of the R&D indicators three years before and after the 2020 crisis, and (Y0post−Y0pre) is the difference between the average of the R&D indicators three years before and after the 2008 crisis. The first difference captures the change in R&D indicators surrounding each crisis, while the double difference reflects the relative difference in responses between the two crises.

Our analysis primarily uses the Main Science and Technology Indicators (MSTI) dataset collected by the OECD ([199]), which reports gross domestic expenditure on R&D, R&D personnel by sector, and government budget allocations for R&D in high-income countries from 1981 to 2023. This data is complemented with Eurostat data on government budget allocations by socioeconomic objective (e.g., health, environment, energy) ([200]), as well as patent application data from the World Intellectual Property Organization (WIPO) ([201]).

The analysis relies mainly on descriptive statistics, including charts of historical trends, cross-country comparisons of means, and changes over time. It was decided not to conduct statistical hypothesis testing or causal inference analysis. Several methods were explored to construct a valid counterfactual, including macroeconomic simulations, synthetic control analysis, and structural time series models. However, the limited data availability and the short implementation period of the RRF relative to its long-term effects made it impossible to establish a robust control group. The results obtained were highly uncertain and could only be regarded as exploratory.

([199]) Available here.
([200]) Available here.
([201]) Available here. at https://www3.wipo.int/ipstats/key-search/indicator

# Annex IV: DiD results

## Descriptive analysis of key R&D indicators

This section presents a descriptive analysis of developments in key R&D indicators at both the EU and country levels, with the objective of exploring the role of the Recovery and Resilience Facility (RRF) in supporting R&D. Specifically, (a) time series of key R&D indicators over the past three decades were examined; (b) patterns in R&D indicators during major economic crises through a comparative perspective were identified.

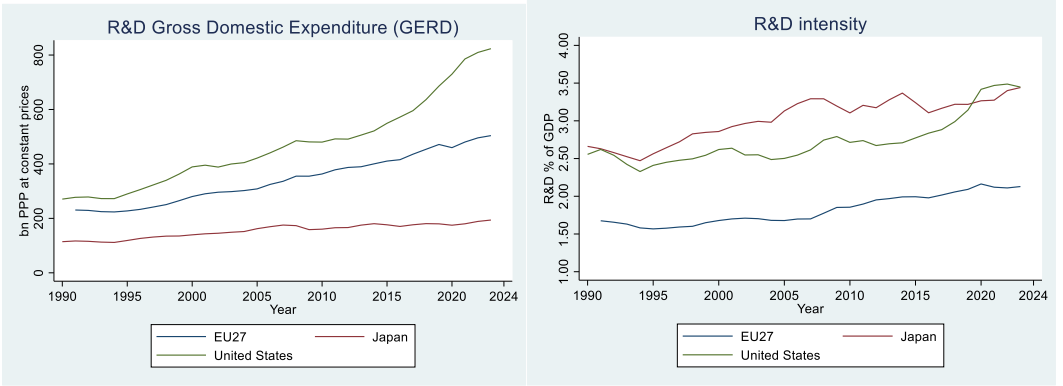
The OECD reports aggregated data on the EU27 since 1991 retrospectively, summing up the data from the current EU27 member states for all years back to 1991. Two indicators were considered:

- Gross domestic expenditure on R&D (GERD) in constant billions at purchasing power parity
- Gross domestic expenditure on R&D as a percentage of GDP (R&D intensity)

Absolute R&D expenditure shows how overall R&D effort in the EU27 compares to other large economies. The left chart in Figure 37 shows that although R&D expenditure in the EU27 has increased considerably over the period, it remains well below the expenditure levels of the US. The gap between the US and the EU27 has increased over time, particularly over the last 10 years.

R&D as a percentage of GDP indicates the proportion of economic output dedicated to R&D activities, reflecting the varying levels of innovation commitment among different countries in relation to their economic size. The chart on the right side of the Figure below shows that **R&D intensity in the EU27 declined slightly after 2020 and struggled to recover thereafter**. R&D intensity reached a peak of 2.2% after a slow growth over the previous 25 years and remained virtually flat after that. The pattern is not dissimilar to the one observed in the US, where R&D intensity reached a peak of 3.4% in 2020 but did not increase significantly after that.

*Figure 37: Gross domestic R&D expenditure*




Source: OECD MSTI data

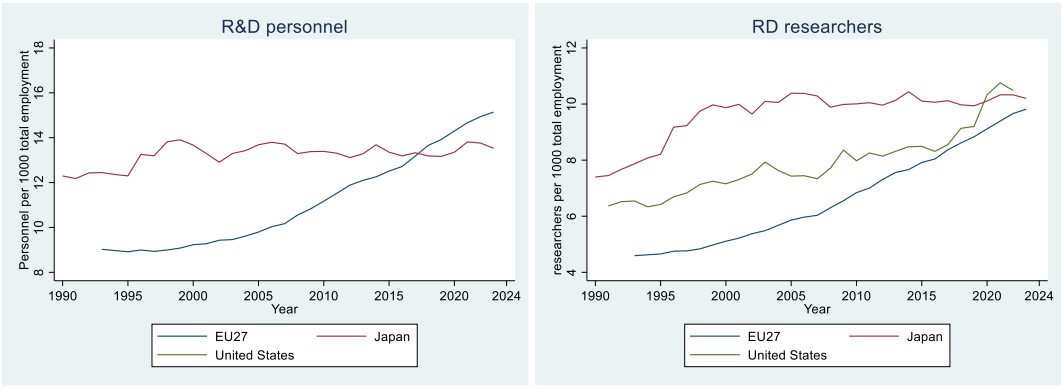
Next, **employment** in R&D activities through two indicators was considered:

- The share of all workers (personnel) employed in R&D activities as a percentage of total employment
- The share of researchers as a percentage of total employment

The first indicator includes not only researchers but also technicians, support staff, and other personnel involved in R&D activities, measuring the proportion of the labour force devoted to innovation activities. The second indicator focuses on core research activities by considering only workers actively conducting research.

The trends have been positive, and **the two indicators have been growing steadily and linearly over the period**. In comparative terms, the EU27 has been catching up with other major economies and now has a share of researchers in total employment that is very similar to that observed in the US and Japan. There is a very small sign of a reduction in growth after 2020 for both indicators. The small adjustments of employment to economic shocks in comparison to the larger adjustments suffered by R&D expenditure presumably reflect a rigidity in the R&D labour market.

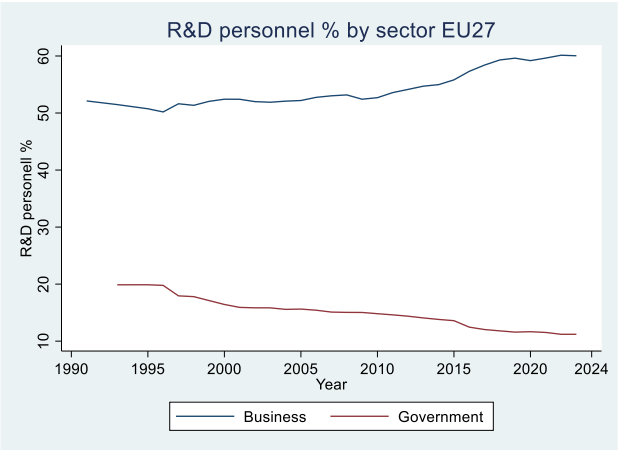
*Figure 38: R&D personnel and researchers*




Source: OECD MSTI data. Note that the data do not report series on R&D personnel for the US

Figure 39 shows that there is a long-term trend towards an increasing share of personnel (and researchers) in the business sector and **a decreasing share in the government sector**. The pattern has not changed over the last 10 or 5 years.

*Figure 39: R&D personnel in the business and government sectors.*

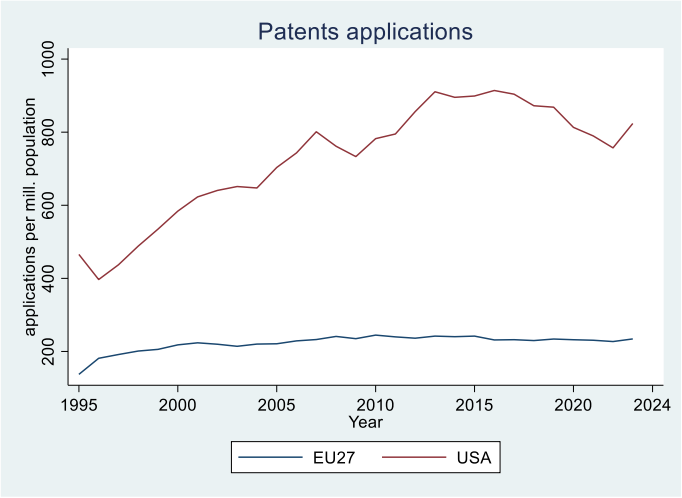



Source: OECD MSTI data.

Finally, the number of **patent applications** submitted by residents per million inhabitants was considered using data provided by the WIPO (the World Intellectual Property Organisation), which is often used to monitor progress in a country's innovation systems. **Growth in the**

**number of patent applications by the EU27 as a whole has been slow,** and there is no sign of a significant change in recent years.

*Figure 40: Patent applications by residents.*




Source: WIPO.

The patterns of R&D intensity and number of researchers by country (figures not reported) reveal a great amount of cross-country heterogeneity. The trends in R&D intensity and personnel in the EU27 are largely driven by trends in the major economies (Germany and France in particular). Other major economies (Spain, Poland, and Italy) move in different directions, and much heterogeneity is visible in all other countries.

## Difference in differences results

Taking a closer look at the trends in R&D expenditure, in the following paragraphs, government responses to the crises of 2008 and to the crisis of 2020 are compared. In both circumstances, GDP fell sharply. The first two columns of Table 21 indicate that the **changes in overall R&D expenditure before and after the two crises in the EU27 were similar**, and the difference-in-difference is equal to zero. However, there was much heterogeneity across EU countries. The data in Table 21 also suggest that in **the EU27, the reduction in R&D business expenditure was very similar during the two crises, while the reduction in R&D government expenditure was somewhat smaller during the crisis of 2020**. These patterns are not dramatically different from those observed in other large economies, such as the US and the UK, and OECD countries as a whole. Again, there is a large cross-country heterogeneity of the results. Most countries experienced similar reductions in business R&D expenditure across the two crises, but **some countries experienced much lower reductions in government R&D expenditure after the 2020 crisis in comparison to the period after the 2008 crisis** (see, for example, Bulgaria, Croatia, Greece, Latvia, Poland, and Spain).

*Table 21: Changes in R&D expenditure before and after the 2008 and 2020 crises compared*

| | R&D expenditure | | | Business R&D expenditure | | | Gov. R&D expenditure | | |
|---|---|---|---|---|---|---|---|---|---|
| Country | Crisis 2008 | Crisis 2020 | diff | Crisis 2008 | Crisis 2020 | diff | Crisis 2008 | Crisis 2020 | diff |
| EU27 | -0.02 | -0.02 | 0.00 | -0.02 | -0.03 | -0.01 | -0.02 | 0.01 | 0.04 |
| Austria | -0.03 | -0.01 | 0.03 | -0.04 | -0.01 | 0.03 | -0.09 | -0.15 | -0.07 |
| Belgium | 0.01 | -0.06 | -0.07 | 0.02 | -0.07 | -0.09 | -0.04 | -0.03 | 0.01 |
| Bulgaria | 0.03 | 0.01 | -0.02 | 0.19 | 0.02 | -0.17 | -0.10 | 0.00 | 0.10 |
| Croatia | -0.08 | 0.00 | 0.08 | -0.09 | 0.05 | 0.14 | -0.10 | 0.05 | 0.15 |
| Czechia | 0.01 | -0.04 | -0.06 | 0.01 | -0.06 | -0.07 | -0.05 | 0.00 | 0.05 |
| Denmark | -0.04 | 0.02 | 0.06 | -0.06 | 0.02 | 0.08 | 0.15 | -0.05 | -0.20 |
| Estonia | -0.01 | -0.03 | -0.02 | 0.08 | -0.06 | -0.14 | -0.12 | -0.06 | 0.06 |
| Finland | -0.07 | 0.01 | 0.08 | -0.10 | 0.02 | 0.12 | 0.00 | 0.00 | -0.01 |
| France | 0.01 | -0.01 | -0.02 | 0.02 | -0.01 | -0.03 | -0.02 | -0.01 | 0.01 |
| Germany | -0.01 | -0.04 | -0.03 | -0.01 | -0.04 | -0.03 | -0.01 | -0.05 | -0.04 |
| Greece | -0.14 | -0.02 | 0.11 | -0.12 | -0.11 | 0.01 | -0.40 | 0.02 | 0.41 |
| Hungary | -0.01 | -0.07 | -0.06 | -0.02 | -0.08 | -0.07 | -0.07 | 0.03 | 0.10 |
| Ireland | -0.05 | 0.11 | 0.16 | -0.02 | 0.12 | 0.14 | -0.08 | -0.04 | 0.05 |
| Italy | -0.03 | -0.05 | -0.02 | -0.06 | -0.09 | -0.03 | 0.09 | 0.00 | -0.09 |

| | R&D expenditure | | | Business R&D expenditure | | | Gov. R&D expenditure | | |
|---|---|---|---|---|---|---|---|---|---|
| Latvia | -0.17 | 0.02 | 0.18 | -0.12 | 0.10 | 0.22 | -0.25 | 0.12 | 0.37 |
| Lithuania | -0.06 | 0.00 | 0.06 | -0.09 | -0.12 | -0.03 | -0.07 | -0.12 | -0.05 |
| Luxembourg | -0.09 | -0.03 | 0.06 | -0.13 | -0.07 | 0.05 | -0.04 | 0.05 | 0.09 |
| Netherlands | 0.04 | 0.00 | -0.03 | 0.09 | 0.00 | -0.09 | 0.06 | -0.02 | -0.08 |
| Poland | 0.06 | -0.05 | -0.12 | 0.11 | -0.14 | -0.24 | 0.03 | 0.46 | 0.43 |
| Portugal | -0.23 | 0.01 | 0.24 | -0.35 | 0.02 | 0.37 | -0.08 | 0.03 | 0.11 |
| Romania | -0.21 | 0.00 | 0.21 | 0.00 | -0.06 | -0.07 | -0.26 | 0.00 | 0.25 |
| Slovak Republic | 0.11 | 0.11 | 0.00 | 0.14 | -0.05 | -0.19 | 0.00 | 0.14 | 0.14 |
| Slovenia | 0.00 | 0.01 | 0.01 | 0.05 | 0.00 | -0.05 | -0.17 | 0.05 | 0.22 |
| Spain | -0.12 | 0.03 | 0.14 | -0.13 | 0.01 | 0.14 | -0.14 | 0.07 | 0.21 |
| Sweden | -0.04 | -0.01 | 0.04 | -0.07 | -0.01 | 0.06 | -0.14 | -0.11 | 0.03 |
| Japan | -0.04 | 0.01 | 0.06 | -0.06 | 0.01 | 0.07 | 0.00 | 0.04 | 0.05 |
| United Kingdom | -0.04 | -0.04 | 0.00 | -0.03 | -0.04 | -0.01 | -0.03 | 0.03 | 0.05 |
| United States | -0.04 | -0.01 | 0.03 | -0.06 | -0.01 | 0.05 | 0.00 | -0.03 | -0.03 |
| OECD | -0.03 | -0.01 | 0.02 | -0.04 | -0.01 | 0.03 | -0.01 | 0.00 | 0.01 |

*Note: The OECD MSTI (Main Science and Technology Indicators) on R&D expenditure is used for the calculations. The calculations involved the average growth in R&D expenditure for the 3 years preceding the crisis and for the 3 years following the crisis (i.e., 2009-2012 versus 2006-2008 – "crisis 2008" column, and 2020-2023 versus 2016-2019 – "crisis 2020 column").* A *difference-in-difference between the two averages* was then calculated *("diff" column).*

The table below comparatively shows the government response to the two crises using government budget allocations (GBARD), rather than expenditure actually carried out by government research institutions, and does not include government funding of the higher education and business sectors. Conversely, GBARD measures the planned or allocated government budget for R&D expenditure, regardless of who performs the research. GBARD, therefore, includes funding of research conducted by the higher education and private sectors. As such, GBARD better reflects government commitments and spending plans, and it is better suited to assess the responses to the recessions of 2008 and 2020.

The changes in GBARD in the EU were smaller during the 2020 crisis in comparison to the 2008 crisis, and smaller than those occurring in the US and in the OECD as a whole. The difference in the response across the two crises was particularly large (>0.1) for Estonia, Greece, Hungary, Ireland, Latvia, Lithuania, Romania, Slovenia, and Spain. Perhaps this is not surprising given that several of these countries were among the largest beneficiaries of RRF disbursements directed to R&D activities.

*Table 22: Changes in government R&D expenditure commitments and the number of researchers before and after the 2008 and 2020 crises, compared*

| | GBARD | | | Researchers | | |
|---|---|---|---|---|---|---|
| Country | Crisis 2008 | Crisis 2020 | diff | Crisis 2008 | Crisis 2020 | diff |
| EU27 | -0.04 | -0.01 | 0.03 | 0.01 | 0.00 | -0.01 |
| Austria | -0.01 | 0.03 | 0.04 | -0.03 | 0.00 | 0.03 |
| Belgium | -0.06 | -0.05 | 0.01 | 0.03 | 0.05 | 0.02 |
| Bulgaria | -0.10 | 0.01 | 0.10 | 0.02 | -0.05 | -0.07 |
| Croatia | . | -0.01 | . | 0.06 | -0.06 | -0.13 |
| Czechia | -0.03 | -0.08 | -0.05 | -0.12 | 0.01 | 0.13 |
| Denmark | -0.03 | 0.02 | 0.05 | -0.02 | 0.04 | 0.05 |
| Estonia | -0.14 | 0.07 | 0.22 | 0.03 | 0.02 | -0.01 |
| Finland | -0.01 | 0.02 | 0.03 | 0.02 | 0.02 | 0.00 |
| France | -0.03 | -0.03 | 0.01 | 0.01 | -0.01 | -0.02 |
| Germany | 0.01 | -0.02 | -0.03 | 0.01 | 0.00 | -0.02 |
| Greece | -0.23 | -0.12 | 0.11 | 0.03 | 0.06 | 0.03 |
| Hungary | -0.09 | 0.07 | 0.16 | 0.01 | -0.08 | -0.08 |

| | GBARD | | | Researchers | | |
|---|---|---|---|---|---|---|
| Ireland | -0.14 | 0.04 | 0.18 | 0.13 | 0.03 | -0.10 |
| Italy | -0.03 | 0.02 | 0.05 | -0.02 | -0.04 | -0.02 |
| Latvia | -0.38 | 0.01 | 0.39 | -0.02 | 0.04 | 0.07 |
| Lithuania | -0.25 | 0.05 | 0.29 | -0.01 | -0.02 | -0.01 |
| Luxembourg | -0.08 | -0.03 | 0.05 | 0.00 | -0.01 | -0.01 |
| Netherlands | -0.02 | 0.04 | 0.06 | 0.11 | 0.01 | -0.10 |
| Poland | 0.04 | -0.04 | -0.08 | 0.05 | -0.06 | -0.11 |
| Portugal | -0.10 | -0.03 | 0.07 | -0.15 | 0.00 | 0.15 |
| Romania | -0.47 | -0.03 | 0.44 | 0.03 | 0.06 | 0.03 |
| Slovak Republic | 0.05 | 0.00 | -0.06 | 0.04 | 0.01 | -0.03 |
| Slovenia | -0.01 | 0.13 | 0.14 | -0.06 | -0.03 | 0.03 |
| Spain | -0.21 | 0.04 | 0.25 | -0.01 | 0.02 | 0.03 |
| Sweden | 0.03 | 0.00 | -0.03 | -0.01 | 0.01 | 0.02 |
| Japan | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 | 0.01 |
| United Kingdom | -0.02 | 0.02 | 0.04 | -0.01 | . | . |
| United States | 0.00 | -0.02 | -0.01 | 0.01 | 0.03 | 0.01 |
| OECD | -0.02 | 0.00 | 0.02 | 0.00 | 0.01 | 0.01 |

The last table looks at the changes in GBARD by category during the 2020 crisis. In particular, environment, energy, and health expenditures were considered, as these have been a focus of R&D funding under the RRF. Environmental expenditure refers to R&D activities intended to protect, understand, or improve the natural environment. This includes research aimed at solving environmental problems, improving sustainability, and managing natural resources. Health expenditure includes medical research, public health, and pharmaceutical R&D. Energy covers all R&D activities intended to improve the supply, distribution, and rational use of energy, including traditional and renewable sources.

The table below shows that the EU27 functional shares were very similar before and after the 2020 crisis. The environment and energy shares increased a little, but there was no noticeable change in health expenditure shares. There is, however, much heterogeneity across countries, and again, there are some noticeable changes in environment and energy shares among countries that were amongst the largest recipients of RRF disbursements linked to R&D activities, such as Latvia, Croatia, and Hungary.

*Table 23: Changes in shares of government R&D expenditure commitments by functional category during the 2020 crisis*

| | Environment % share | | | Energy % share | | | Health % share | | |
|---|---|---|---|---|---|---|---|---|---|
| Country | Before 2020 | After 2020 | diff | Before 2020 | After 2020 | diff | Before 2020 | After 2020 | diff |
| EU27 | 2.32 | 2.46 | 0.15 | 4.67 | 4.89 | 0.22 | 7.83 | 7.77 | -0.06 |
| Austria | 1.30 | 1.00 | -0.30 | 2.83 | 3.11 | 0.27 | 4.95 | 5.01 | 0.05 |
| Belgium | 0.84 | 0.63 | -0.21 | 1.56 | 1.71 | 0.15 | 2.00 | 1.77 | -0.23 |
| Bulgaria | 0.39 | 0.43 | 0.04 | 0.53 | 0.61 | 0.08 | 2.16 | 2.72 | 0.56 |
| Croatia | 0.64 | 1.48 | 0.83 | 0.51 | 0.53 | 0.02 | 0.96 | 0.96 | -0.01 |
| Cyprus | 0.92 | 0.39 | -0.53 | 0.01 | 0.04 | 0.03 | 5.67 | 6.47 | 0.80 |
| Czechia | 2.07 | 2.49 | 0.41 | 4.38 | 3.91 | -0.46 | 7.63 | 6.69 | -0.94 |
| Denmark | 1.09 | 1.23 | 0.14 | 3.28 | 5.53 | 2.25 | 14.73 | 17.71 | 2.98 |
| Estonia | 1.17 | 1.21 | 0.05 | 0.08 | 0.20 | 0.13 | 2.86 | 1.64 | -1.22 |
| Finland | 2.61 | 6.37 | 3.76 | 2.86 | 4.61 | 1.75 | 2.94 | 2.18 | -0.76 |
| France | 1.77 | 2.17 | 0.40 | 8.27 | 8.33 | 0.07 | 10.91 | 8.19 | -2.73 |
| Germany | 2.70 | 2.92 | 0.22 | 5.44 | 6.03 | 0.59 | 5.95 | 6.43 | 0.48 |
| Greece | 4.41 | 2.65 | -1.76 | 2.71 | 1.95 | -0.76 | 11.00 | 10.68 | -0.32 |
| Hungary | 3.60 | 3.07 | -0.53 | 3.31 | 5.60 | 2.29 | 16.14 | 14.27 | -1.87 |
| Ireland | 1.47 | 2.14 | 0.67 | 1.13 | 1.46 | 0.33 | 6.51 | 6.07 | -0.44 |
| Italy | 2.76 | 2.64 | -0.12 | 3.22 | 3.41 | 0.18 | 10.98 | 11.80 | 0.82 |
| Latvia | 5.03 | 8.12 | 3.09 | 3.03 | 4.07 | 1.04 | 12.22 | 11.91 | -0.31 |
| Lithuania | 0.12 | 0.52 | 0.40 | 3.30 | 3.46 | 0.16 | 3.32 | 1.91 | -1.41 |

| | Environment % share | | | Energy % share | | | Health % share | | |
|---|---|---|---|---|---|---|---|---|---|
| Luxemburg | 1.64 | 1.32 | -0.32 | 0.11 | 0.04 | -0.07 | 15.68 | 16.65 | 0.97 |
| Malta | 0.69 | 1.20 | 0.51 | 0.23 | 2.60 | 2.37 | 7.09 | 4.02 | -3.06 |
| Netherlands | 0.68 | 1.03 | 0.35 | 3.58 | 2.24 | -1.34 | 5.97 | 7.70 | 1.72 |
| Poland | 3.21 | 0.54 | -2.66 | 0.62 | 0.71 | 0.09 | 5.36 | 3.00 | -2.36 |
| Portugal | 4.35 | 4.24 | -0.10 | 2.10 | 2.53 | 0.43 | 10.50 | 9.77 | -0.73 |
| Romania | 6.01 | 4.37 | -1.64 | 4.17 | 2.32 | -1.85 | 2.99 | 3.56 | 0.57 |
| Sweden | 1.62 | 2.42 | 0.80 | 4.40 | 4.57 | 0.17 | 2.31 | 4.14 | 1.82 |
| Slovenia | 5.54 | 5.20 | -0.34 | 4.76 | 4.23 | -0.53 | 11.39 | 11.79 | 0.40 |
| Slovakia | 2.91 | 3.06 | 0.15 | 1.38 | 0.93 | -0.45 | 8.98 | 8.24 | -0.74 |
| Spain | 3.59 | 3.15 | -0.43 | 2.49 | 2.69 | 0.21 | 13.18 | 12.51 | -0.67 |
| Japan | 3.17 | 2.52 | -0.65 | 7.95 | 9.61 | 1.66 | 5.42 | 4.98 | -0.45 |
| United Kingdom | 1.90 | . | . | 3.75 | . | . | 21.07 | . | . |
| United States | 0.35 | 0.32 | -0.03 | 2.86 | 3.29 | 0.43 | 28.27 | 26.53 | -1.74 |

# Annex V: Classification of investments and correspondence with Horizon Europe and Cohesion Policy

| Areas | Sub-areas name | Sub areas description | Horizon Europe | Cohesion policy intervention fields |
|---|---|---|---|---|
| Scientific excellence | Research infrastructure | Measures whose goal (or part of the goal) is to build or upgrade research infrastructure. | Research Infrastructures (under Pillar I); | 004 R+I fixed asset investment: Public research centres + HEI |
| | Skills | Measures related to skills are those designed to directly support people in the development and upgrading of their skills, as well as supporting a scientific research career. | Marie Skłodowska-Curie actions (MSCA) (under Pillar I) | ESF - 03 Investing in research + innovation and smart specialisation |
| | R&D projects | Research projects in universities and research institutes, and those that are open to either universities or companies. | European Research Council (ERC) (under Pillar I); | 012 R+I activities in public research centres, HEI |
| | | | EIC Pathfinder (under Pillar III) | |
| R&D ecosystems | Strategic instruments (e.g., roadmaps, strategies) | Roadmaps, agendas, strategies, programmes, and other measures having the goal of strengthening the RDI ecosystem and facilitating collaboration between various actors relevant for the field. | European Innovation Ecosystems (Pillar III) | |
| | | | Widening Participation and Spreading Excellence actions under Horizon Europe (WIDERA) | |
| | Public-private partnerships and | Measures aimed at supporting cooperation between science and businesses within a country. | Partnerships and missions | 029 Low carbon R+I processes, tech-transfer and cooperation; |

| | | | | |
|---|---|---|---|---|
| | science business collaboration | | Pillar II, including Research and Innovation Actions across six thematic clusters | 030 Circular economy R+I processes, tech-transfer + cooperation |
| Business innovation | Grants for RDI in enterprises | Measures supporting RDI projects inside enterprises, or the acquisition and deployment of RDI assets or technologies in enterprises. | EIC Transition (under Pillar III)<br>EIC Accelerator (under Pillar III) | 002 R+I fixed asset investment in SMEs;<br>003 R+I fixed asset investment in large enterprises;<br>005 R+I intangible asset in micro enterprises;<br>006 R+I intangible asset in SMEs<br>007 R+I intangible asset investment in large enterprises<br>009 R+I activities in micro enterprises;<br>010 R+I activities in SMEs;<br>011 R+I activities in large enterprises;<br>027 Innovation processes in SMEs;<br>029 Low carbon R+I processes, tech-transfer and cooperation; |

| | | | | |
|---|---|---|---|---|
| | | | | 030 Circular economy R+I processes, tech-transfer + cooperation |
| | Financial instruments and tax incentives | Measures enhancing access to finance in the context of RDI, or promoting RDI-related tax incentives for companies | | Only when financing SO1.1, enhancing research and innovation, the following form of support: |
| | | | | 02 Financial instruments: equity or quasi-equity; |
| | | | | 03 Financial instruments: loan; |
| | | | | 04 Financial instruments: guarantee; |
| | | | | 05 Financial instruments: grants within a FI operation. |

# Annex VI: Cross-border measures within the scope of the study

| Country | Name | Financial allocation | % of total R&I RRF allocation |
|---|---|---|---|
| AT | IPCEI Hydrogen | 125 EUR million | 89% |
| | IPCEI Microelectronics and Connectivity | 125 EUR million | |
| | Quantum Austria — Promotion of Quantum Sciences | 107 EUR million | |
| BE | An industrial value chain for hydrogen transition of the Federal State | EUR 50 million | 15% |
| | An industrial value chain for hydrogen transition of the Flemish Region | 7.8 EUR million | |
| | Strengthen R&D ([202]) | 23 EUR million | |
| HR | Establishment of a hydrogen-based economy (through the North Adriatic Hydrogen Valley) | 48.5 EUR million | 12% |
| CZ | IPCEI Microelectronics and Communication Technologies | 46.5 EUR million | 9% |
| | Scientific research activities related to the development of 5G networks and services | 13.6 EUR million | |
| FI | Accelerating key technologies (microelectronics, 6G, artificial intelligence and quantum computing) | 10 EUR million | 3% |
| FR | IPCEI Hydrogen | 651 EUR million | 11% |
| DE | Hydrogen projects within the framework of IPCEIs | 1,000 EUR million | 45% |
| | IPCEI Microelectronics and Communication Technologies | 1,500 EUR million | |
| | IPCEI Next Generation Cloud Infrastructure and Services (IPCEI CIS) | 375 EUR million | |
| IT | IPCEI green | 600 EUR million | 1% |

([202]) As outlined in the Annex of the CID the investment 'Strengthen R&D' of the Flemish Region' [I-5.11] foresees support for participation to the planned IPCEI on micro-electronics. Based on the preliminary positive assessment of the second payment (milestone 186) support to participation in IPCEI has been demonstrated, with two projects approved in the context of an expression of interest for the IPCEI micro-electronics.

| | | | |
|---|---|---|---|
| | | | |
| LT | Improving the quality and accessibility of health services and promoting innovation | 6.3 EUR million | 0.3% |
| SK | Engaging in multi-country European projects related to the digital economy | 85 EUR million | 1% |
| SI | Cross-border and multi-country projects - European common data infrastructure and services | 6.5 EUR million ([203]) | 0.4% |
| | Cross-border and multi-country projects - Low-Power Processors and Semiconductor Chips | | |
| ES | Hydrogen roadmap: a commitment to renewable hydrogen | No allocation | |
| Total | | | |

Source: FENIX database

([203]) Slovenia SWD(2023) 325 final https://commission.europa.eu/document/download/8c36e453-3f5c-4a63-bae1-b0d74c78da21_en?filename=SWD_2023_325_1_EN_autre_document_travail_service_part1_v3.pdf

# Annex VII: Synopsis report

This Annex provides an overview of the consultation activities carried out in line with the consultation strategy for this evaluation, as well as the responses and results received.

## Consultation strategy

The stakeholder consultation strategy aimed to complement the information collected through desk research in policy documents, reports, literature and databases and provide additional inputs. The aim was to gather both qualitative and quantitative insights from key actors to strengthen the analysis and ensure a more comprehensive and grounded understanding of the R&I initiatives and policy landscape under the RRF. The consultation included the following tools:

- **Targeted consultation:** which aims to gather both general and context-specific information, capturing diverse experiences and viewpoints from national and regional authorities, implementing agencies, and other actors involved in the implementation of EU funding instruments. This included:
  - **Targeted surveys:** to collect (to the extent possible, quantitative) information, which cannot (easily) be found in written sources.
  - **Targeted interviews**: to collect more qualitative insights and complement the inputs collected through the desk research and surveys.
- **Focus group/workshop**: which aims to discuss the preliminary findings of the case study, enhance the evidence base, and ensure that conclusions are well-founded and nuanced.

The table below presents an overview of the stakeholder groups targeted through the different consultation activities.

*Table 24: Overview of stakeholder groups consulted per consultation activity*

| Activities | Stakeholder targeted | Timing |
|---|---|---|
| **Surveys** | Survey for Member State authorities and regional and local authorities | 12 March until 25 June 2025 |
| | Survey for targeted groups | 12 March until 25 June 2025 |
| **Interviews** | • Member States' authorities<br>• Relevant Ministry of Education/Science/Research<br>• Additional relevant ministry<br>• National Innovation/Research Agency<br>• Target group representative<br>• Cohesion fund coordinating body | Between March and July 2025 |
| **Focus group** | • Moderate innovators: Representatives of relevant | Moderate innovators: 28-05-2025 |

| Activities | Stakeholder targeted | Timing |
|---|---|---|
| | ministries and implementing bodies in ES, IT, LT, PT.<br>• Emerging innovators: Representatives of relevant ministries and implementing bodies in HR, PL, SK. | Emerging innovators 29-05-2025 |

# Results of the consultation activities

## Targeted surveys

### *Respondents' profile*

#### Member State authorities

A total of 60 responses were received from representatives across 20 EU Member States. The majority of respondents (97%, 58 out of 60 respondents) identified as representatives of Member State authorities, while the remaining 3% (2 out of 60) were from regional or local authorities.

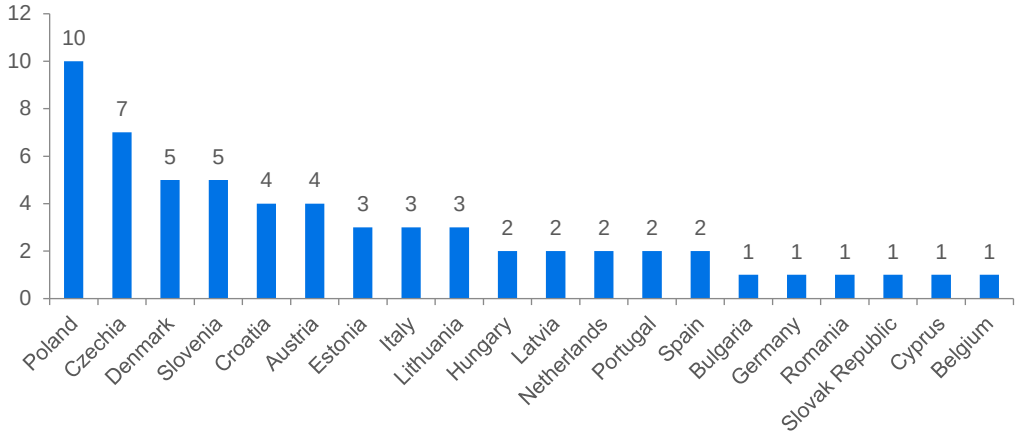
Respondents were affiliated with a range of national institutions. The largest group came from RRF coordinating bodies (38%, 23 out of 60), followed by representatives from Ministries of Research, Innovation, Education, or Science (22%, 13 out of 60), national innovation agencies (12%, 7 out of 60), and other ministries overseeing RRF implementation—such as those responsible for social affairs, industry and trade, or tourism (18%, 11 out of 60). Other public agencies involved in R&I, EU funding implementation and audit authorities accounted for 10% (6 out of 60).

In terms of indicated roles under the RRF, monitoring activities were reported by 62% (37 out of 60), followed by performance management and preparation of the plan, each at 58% (35 out of 60). Implementation of investments was cited by 48% (29 out of 60), and implementation of reforms by 43% (26 out of 60). Payment requests and control and audit were noted by 37% (22 out of 60) and 23% (14 out of 60), respectively. A further 7% (4 out of 60) reported other roles, including research promotion, synergetic programme coordination, and milestone reporting.

Regarding participation in other EU programmes, over half of the respondents (53%, 32 out of 60) indicated involvement in the Cohesion Policy Funds. Horizon Europe and other EU programmes were mentioned by 30% (18 out of 60) and 37% (22 out of 60), respectively. Only 3% (2 respondents) reported involvement in InvestEU, while 30% (18 out of 60) stated they were not engaged in any other EU-level initiatives.

The figure overleaf presents an overview of Member State participation.

*Figure 41: Country representation across the Member State authorities consulted ([204])*

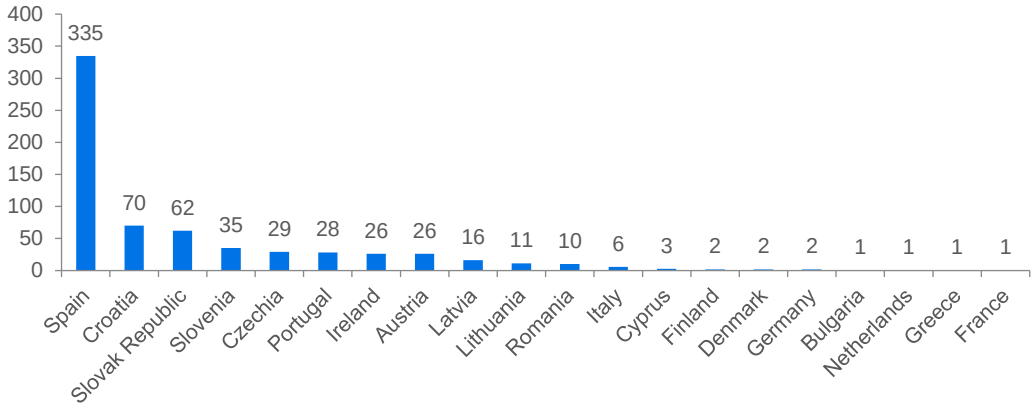



## Targeted groups

A total of 667 responses were received from targeted groups with direct knowledge of what the measures have achieved on the ground. The largest shares of respondents were affiliated with Research Institutes (37%, or 250 out of 667 respondents) and Higher Education Institutions (37%, 249 out of 677). Business representatives accounted for 20% (133 out of 677), while 1% (5 out of 677) were intermediaries. The remaining 4% (30 out of 677) represented other beneficiaries, including public services, national organisations, technological centres or agencies related to economics and development.

In terms of geographic distribution, responses were dominated by participants from Spain, which accounted for half of all submissions (50%, or 335 out of 677). The figure below presents an overview of Member State participation and Table 25 provides a more detailed breakdown of responses by Member States and category.

*Figure 42: Country representation across the Targeted groups consulted ([205]) ([206])*




([204]) No R&I measures identified for Luxembourg.
([205]) No R&I measures identified for Luxembourg.
([206]) No R&I investments in Malta

*Table 25: Breakdown of responses by Member State and category*

| | Research Institute | Higher Education Institution | Business | Intermediary | Other |
|---|---|---|---|---|---|
| Spain | 167 | 141 | 17 | 1 | 9 |
| Croatia | 7 | 17 | 46 | | |
| Slovak Republic | 23 | 21 | 16 | 1 | 1 |
| Slovenia | 6 | 3 | 24 | | 2 |
| Czechia | 14 | 7 | 8 | | |
| Portugal | 14 | | 1 | 1 | 12 |
| Ireland | 2 | 24 | | | |
| Austria | 5 | 14 | 7 | | |
| Latvia | 6 | 4 | 3 | 1 | 2 |
| Lithuania | | 4 | 5 | | 2 |
| Romania | 1 | 9 | | | |
| Italy | | 1 | 3 | 1 | 1 |
| Cyprus | 2 | | | | 1 |
| Finland | | 2 | | | |
| Denmark | | 1 | 1 | | |
| Germany | | 1 | 1 | | |
| Bulgaria | 1 | | | | |
| Netherlands | 1 | | | | |
| Greece | 1 | | | | |
| France | | | 1 | | |
| Total | 250 | 249 | 133 | 5 | 30 |

***Inputs received***

### Effectiveness

The RRF has played a significant role in supporting the implementation of R&I reforms and investments across EU Member States. A large majority of authorities considered the RRF effective in enabling both the rollout of key R&I-related reforms and the launch of substantial investment initiatives within their national RRPs. This view was echoed by most beneficiaries, who reported that the RRF had supported their research and innovation activities to a large or moderate extent, particularly by increasing research capacity and facilitating new investments. In addition, Member State authorities underlined the added value of combining reforms with investments, noting that in many cases these two components were mutually reinforcing. More than half of them confirmed the existence of clear synergies between R&I reforms and investments under the RRF.

Regarding impacts, over half of the Member State authorities indicated that tangible impacts from R&I measures were already visible in their countries. These included significant

investments in research infrastructure, expanded digital and green innovation capacities, and the establishment of collaborative R&I ecosystems. Beneficiaries shared a similar perspective, with many providing concrete examples of early outcomes. Reported achievements included the hiring of researchers, the acquisition of advanced scientific equipment, increased scientific output, and the creation of innovation hubs, technology transfer mechanisms, and public-private partnerships. These developments were particularly prominent in areas such as health, digital technologies, and environmental research.

Nonetheless, a few respondents also noted that impacts remained limited or not yet visible. Among Member State authorities, this was frequently attributed to administrative delays, the complexity of implementation, or the time required for reforms to yield measurable effects. Similarly, a few beneficiaries who had not yet observed a significant impact pointed to the early stage of their projects, delays in infrastructure deployment, or ongoing procurement processes.

Regarding the strategic effects of the RRF, most Member State authorities judged it to be effective in strengthening science-business collaboration, enhancing scientific excellence, and supporting improvements in business innovation performance. Among these dimensions, strengthening links between the scientific and business communities was most frequently cited as an area of notable progress. Beneficiaries largely confirmed this perspective. Many considered their projects effective in fostering cooperation between academia and industry, improving research quality, and enabling SMEs to pursue innovation activities that would not have been feasible without RRF support.

Moreover, both stakeholder groups acknowledged the importance of flexibility in the context of a rapidly changing global environment. Many beneficiaries reported that RRF funding enabled them to adapt to evolving circumstances, including shifting research priorities, economic pressures, and geopolitical developments. Member State authorities also recognised that the RRF's design provided a degree of agility in responding to such challenges, although some stated that this support was only effective to a limited extent

In terms of financial sustainability, a significant share of beneficiaries indicated that the continuation of their research activities after the end of RRF funding would be supported by other financial sources. The most frequently cited fund was Horizon Europe, followed by national funding programmes and other EU funding instruments. These results suggest that many beneficiaries anticipate a degree of continuity in their work, supported by the broader European R&I funding landscape. In addition, most beneficiaries reported adopting proactive strategies to ensure the financial sustainability of their project outcomes. Over half of the beneficiaries mentioned securing alternative public funding sources as the most common approach. Other frequently cited strategies included developing commercialisation paths, building public-private partnerships, and integrating the project outcomes into the core institutional budgets or longer-term national strategies.

### Efficiency

A majority of Member State authorities reported that combining R&I reforms and investments under a single instrument had generated efficiency gains in their national contexts, to some extent. Respondents noted that integrating reforms and investments helped accelerate implementation timelines and fostered better coordination across public institutions. In several cases, the design of the RRF allowed for smoother alignment between strategic objectives and operational delivery. However, some respondents reported only modest efficiency gains, particularly where reforms and investments were managed by separate departments or constrained by rigid procedures. Issues such as fragmented responsibilities, short planning timelines, and complex rules (e.g. procurement and state aid) were frequently cited as obstacles.

The combination of reforms and investments was also seen as contributing to increased efficiency in national administrations, particularly by streamlining internal processes and improving decision-making structures. However, some authorities reported barriers to efficient

implementation, citing factors such as administrative complexity, coordination challenges between different bodies, and a lack of human resources or technical capacity.

Member State authorities expressed mixed views regarding the administrative burden of implementing R&I measures under the RRF compared to other EU instruments. Several respondents noted that, in some areas, RRF procedures allowed for quicker execution and a more streamlined approach than Cohesion Policy funding. However, others highlighted the complexity of RRF implementation, particularly in relation to evolving rules, overlapping requirements, and the need to build new administrative systems. Compared to Horizon Europe, many found the RRF more demanding, citing inflexible procedures, burdensome reporting obligations, and a lack of established guidance. While some appreciated the performance-based structure of the RRF, others felt that unclear expectations and excessive compliance checks increased the workload significantly.

Beneficiaries' general perception of RRF administrative processes was mixed. While a significant portion of respondents found the application process for RRF calls fairly simple or manageable, others highlighted elements that added complexity. Commonly cited challenges included tight deadlines, complex eligibility rules, and limited technical guidance during proposal submission.

When directly comparing the RRF to Horizon Europe or Horizon 2020, most beneficiaries did not find the RRF clearly simpler. A majority agreed that the proposal preparation and submission process in RRF was either comparable or more demanding. Similarly, project management and implementation under the RRF were not consistently viewed as easier than under Horizon programmes. In terms of financial rules and reporting, beneficiaries generally found Horizon Europe to be more predictable and mature, whereas the RRF involved national-level variability and stricter compliance mechanisms. Additional comments pointed to the need for more transparent procedures, user-friendly guidance, and capacity-building support, especially for smaller institutions or first-time applicants.

### Coherence

Member State authorities generally reported that coherence and complementarity between the RRF and other EU funding instruments—particularly Cohesion Policy and Horizon Europe—have been actively pursued. Mechanisms such as coordinated planning processes, shared strategic frameworks, and inter-ministerial cooperation were frequently cited as means to align funding streams and avoid overlaps.

Synergies with Horizon Europe were often observed in the thematic alignment of priorities, especially in digitalisation, health, and green technologies, and in the adoption of tools such as the Seal of Excellence or Horizon-style evaluation criteria to guide RRF-funded projects. In several countries, RRF measures complemented Horizon activities by supporting national research infrastructure or capacity-building efforts that fed into EU-wide objectives. With the Cohesion Policy, complementarities typically involve sequencing or layering of investments. The RRF was used to initiate or pilot projects, such as infrastructure upgrades or institutional reforms, while Cohesion Funds supported subsequent scaling or regional deployment. In some Member States, joint governance structures facilitated this coordination, although administrative differences and timing mismatches occasionally posed challenges.

While most Member State authorities did not observe significant overlap or duplication, a few noted potential issues where similar types of R&I activities were funded under multiple instruments, creating confusion or inefficiencies. Nevertheless, substitution effects caused by the RRF were generally limited. Most authorities either did not observe any such effects or were not aware of them. Where substitution was noted, it tended to be minor and mostly involved the reallocation of projects initially intended for other funding instruments—such as the Cohesion Policy—into the RRF pipeline, often for reasons of timing, urgency, or administrative expediency.

This general trend was echoed by beneficiaries. Most reported that their organisations had not shifted planned R&I activities from other EU programmes to the RRF. Around one-third applied for RRF funding to support entirely new initiatives, while a notable share indicated limited reallocation from other EU programmes. Only a minority reported substantial reorganisation of their funding strategies. Overall, these findings suggest that the RRF has mostly functioned as a complementary source of funding, enabling the launch of new or expanded activities rather than displacing existing EU programme plans.

### EU added value

Member State authorities broadly recognised the RRF's added value in the R&I domain, not only by accelerating existing plans but also by enabling reforms and investments that may not have materialised otherwise. While many R&I-related reforms and investments supported through the RRF were already on national agendas before the RFF was introduced, authorities highlighted that the RRF acted as a powerful catalyst. It provided both the financial impetus and political momentum to move forward with initiatives that had long faced delays.

In the area of reforms, more than half of the authorities indicated that the RRF helped initiate measures that might not have been implemented otherwise, accelerated reforms that were already foreseen, and improved their overall quality. The RRF's structure, particularly its emphasis on clear milestones, targets, and monitoring, was seen as instrumental in enhancing the strategic focus and execution of R&I reforms.

Similarly, in terms of investment, the RRF enabled the launch of major R&I initiatives that had previously been stalled due to funding constraints. It also expedited the delivery of infrastructure, capacity-building, and innovation programmes already in the pipeline. Several Member States highlighted that RRF support improved the alignment of national investments with broader EU priorities and helped accelerate delivery in underserved regions or sectors.

From the beneficiaries' perspective, the added value of the RRF was also stressed. A significant share reported that their projects would not have gone ahead without RRF funding. Over one-third considered RRF support essential, while others stated that, in its absence, their projects would have been implemented only partially, with delays, or at a reduced scale. Only a few beneficiaries indicated they could have secured alternative or equivalent funding through other means.

However, the contribution of the RRF to multi-country R&I projects was more limited. Several Member State authorities noted no involvement in such initiatives, while only a few reported alignments with cross-border efforts, such as IPCEIs or EU partnerships. Among beneficiaries, around one-third acknowledged that the RRF supported multi-country projects to some or a large extent. Nonetheless, many were either not engaged in such projects or uncertain about the RRF's role, reflecting the primarily national focus of most RRF implementation. Barriers to deeper cross-border collaboration included administrative complexity, lack of long-term financing, divergent national priorities, and weak incentives for transnational cooperation.

Finally, when asked about broader spill-over effects, beneficiaries had mixed views. Many believed that the RRF had generated positive spillovers across countries—such as shared knowledge, integrated value chains, or cross-border innovation benefits—at least to some extent. However, only a few considered these effects to be significant, while a large number were unsure or unaware of any such impacts.

### Relevance

A large majority of Member State authorities' respondents confirmed that R&I-related measures included in the RRPs remain relevant and well-aligned with both national and EU strategic priorities, particularly in relation to the green and digital transitions and the ERA Policy Agenda. While evolving strategic priorities posed some challenges, these were generally managed without undermining the overall feasibility of implementation.

Additionally, nearly half of the authorities viewed it as feasible to complete RRF-funded R&I measures by 2026, though concerns were noted around administrative burdens, procurement processes, and limited implementation capacity. Looking beyond 2026, most authorities expected the effects of RRF investments and reforms in the R&I domain to be sustained over time, especially where these were structurally embedded in national policy frameworks. Nonetheless, several highlighted that the long-term impact would depend on continued political will and complementary funding post-2026.

## Interviews

### *Respondents' profile*

In total, 66 national-level interviews with national authorities and target group representatives were conducted between March and July 2025. On average, two interviews were conducted per Member State, while 4 for case study countries.

Stakeholders groups interviewed are RRF coordinating bodies, typically Ministries of Finance or dedicated national taskforces (17 out 66, 26%); Ministries of Education/Science/ Research, often involved in the design and implementation of reforms and investments(17 out 66, 26%); additional relevant Ministries for more sector-specific R&I measure (12 out 66, 18%); National Research and Innovation Agencies (15, 23%) and Cohesion Fund coordinating bodies (4 out of 64, 6%). Last, one interview was carried out with a target group representative (a University, 2%).

In each Member State, the team initiated contact with the designated RRF coordinating authority and the ministry considered most relevant for overseeing R&I measures. In many countries, responsibilities for R&I implementation were shared across several ministries or departments. In such cases, the team sought to identify and engage with those actors most centrally involved in the process. While the response rate has been generally positive, several RRF coordinating bodies declined to participate, citing capacity constraints or limited familiarity with R&I-specific matters. These authorities frequently redirected the team to line ministries with greater technical oversight of the relevant measures. Efforts were made to secure participation from countries that had not responded or had declined to take part. In addition, some perspectives for specific evaluation questions remained limited; thus, non-governmental organisations and other civil society actors were contacted, aiming at broadening the range of viewpoints captured in the consultation process

*Table 26: Overview of interviews.*

| Country | RRF Coordinating Body | Relevant Ministry of Education/Science/Research | Additional relevant Ministry | National Innovation/Research Agency | Target group representative | Cohesion Fund coordinating body | No. of interviews conducted |
|---|---|---|---|---|---|---|---|
| Austria | Conducted | Conducted | Written replies | | | | 3 |
| Belgium | Written replies | Not relevant | Conducted | Conducted ([207]) | | | 3 |
| Bulgaria | No response | Conducted | Conducted | | | | 2 |
| Croatia | Declined | Conducted ([208]) | Conducted | No response | | Conducted | 4 |
| Cyprus | Declined | Declined | Declined | Conducted | | | 1 |
| Czechia | Declined | Declined | Conducted ([209]) | Conducted | | | 3 |
| Denmark | Conducted | Conducted | | Conducted | | Conducted | 4 |
| Estonia | Declined | Not relevant | Declined | Conducted ([210]) | | | 2 |
| Finland | Conducted | Conducted | Not relevant | Not relevant | | | 2 |
| France | Conducted | No response | Conducted | No response | | Conducted | 3 |
| Germany | Written replies | Written replies | No response | Declined | Declined | Declined | 2 |
| Greece | No response | Written replies ([211]) | Not relevant | Conducted | | | 3 |
| Hungary | Conducted | Written replies | Not relevant | Not relevant | | | 2 |
| Ireland | No response | Conducted | | Conducted | | | 2 |
| Italy | Conducted | Conducted | Conducted | Conducted ([212]) | | | 4 |

([207]) With the Flemish Agency.
([208]) Two interviews with different departments of the Ministry of Education on two different measures.
([209]) Two interviews with the Ministry of Health and Ministry of Industry and Trade.
([210]) With Estonian Business and Innovation Agency and the Subsidiary of the Estonian Business and Innovation Agency (SmartCap)
([211]) From two different departments on two different measures.
([212]) Not a National Innovation Agency, but an organisation promoting the development and internationalisation of the Italian R&I system and acting as Coordinator of the network of Horizon Europe's National Contact Points.

| Country | RRF Coordinating Body | Relevant Ministry of Education/Science/Research | Additional relevant Ministry | National Innovation/Research Agency | Target group representative | Cohesion Fund coordinating body | No. of interviews conducted |
|---|---|---|---|---|---|---|---|
| Latvia | Conducted | No response | Not relevant | Conducted | | | 2 |
| Lithuania | Conducted | Conducted | Conducted | Conducted | | | 4 |
| Luxembourg | Declined | Not relevant | Not relevant | Not relevant | Not relevant | Not relevant | 0 |
| Malta | Conducted | Not relevant | | | | Conducted | 2 |
| Netherlands | Conducted | No response | Declined | Not relevant | | | 1 |
| Poland | Conducted | No response | No response | Written replies | No response | No response | 2 |
| Portugal | Conducted | No response | No response | Conducted | Conducted | No response | 4 |
| Romania | Conducted | Conducted | Not relevant | Not relevant | | | 2 |
| Slovakia | Conducted | Conducted | Conducted | Conducted | | | 4 |
| Slovenia | Declined | Conducted | Conducted | Not relevant | | | 2 |
| Spain | Declined | Conducted | No response | Conducted | No response | Declined | 2 |
| Sweden | Conducted | No response | No response | Conducted | | | 2 |
| Total | 17 | 17 | 12 | 15 | 1 | 4 | 66 |

***Inputs received***

### Effectiveness

Stakeholders across all groups generally agreed that the RRF has been effective in enabling the implementation of R&I-related reforms and investments. National authorities and coordinating bodies emphasised that the RRF has provided the financial and political momentum to launch long-standing priorities that had previously lacked funding. Ministries of education and research highlighted that the RRF allowed them to implement structural reforms in research governance, support new research infrastructures, and expand programmes for young researchers. Agencies and implementing bodies also noted that the RRF helped accelerate the rollout of innovation support schemes and digitalisation efforts. Stakeholders pointed to outputs and first results, but many noted that the full impact of reforms and investments would only become visible after 2026, given the long-term nature of R&I. On strengthening R&I capacities, stakeholders reported improvements in infrastructure, innovation performance, and collaboration between academia and industry. Ministries and agencies highlighted that the RRF enabled investments in high-performance computing, AI, and quantum technologies. However, challenges remained in areas such as researcher career development and SME participation.

As for country-specific recommendations, the RRF is seen as moderately effective, particularly where reforms were already aligned with national strategies. In some cases, the RRF helped bring forward reforms that had been politically sensitive or delayed. However, the extent to which reforms and investments were complementary varied. Some ministries reported strong synergies, especially where reforms created enabling conditions for investments. Others noted that reforms and investments were implemented in parallel, with limited strategic integration.

As for other programmes, Horizon Europe was often seen as more accessible and predictable, particularly for experienced research institutions. The RRF was valued for its flexibility in funding reforms and infrastructure, but its administrative complexity and performance-based model were seen as burdensome. Cohesion Policy funds were viewed as complementary, though procedural differences limited coordination.

Barriers identified include limited absorption capacity, vague or changing guidance, and the high administrative workload. These issues were particularly challenging for smaller institutions and those with less experience in EU funding.

On leveraging other sources of funding, some stakeholders reported increased private investment and better alignment with national funds. However, synergies with Horizon Europe or other EU programmes were limited, often due to a lack of coordination mechanisms. Finally, sustainability beyond 2026 was a concern for many. While some countries had plans to continue RRF-funded initiatives through national budgets or ERDF, others lacked clear strategies. Stakeholders emphasised the need for long-term planning to ensure that the gains made under the RRF are not lost once the funding ends.

### Efficiency

Across stakeholder groups, there was a shared recognition that the RRF's integrated design, linking R&I reforms and investments under a single, performance-based instrument, brought about certain efficiency gains.

National coordinating authorities often viewed the performance-based model as a catalyst for more strategic planning and tighter coordination across government. The requirement to define clear milestones and link reforms to investments was seen as a driver of internal alignment and faster implementation. These stakeholders appreciated the discipline the RRF imposed, particularly in systems where R&I governance had previously been fragmented. Ministries of Education also acknowledged the benefits of this integrated approach. They noted that the RRF helped align funding with structural reforms and encouraged a more coherent policy framework. However, they were more likely to highlight the limitations of the RRF's rigid structure, especially

the tight timelines, which they felt constrained the flexibility needed for long-term research initiatives. Innovation and research agencies had more mixed experiences. Some found that the performance-based approach improved internal coordination and helped align national programmes with EU priorities. Others, particularly those managing multiple funding streams, struggled with the administrative complexity of the RRF. They pointed to difficulties in harmonising procedures with Horizon Europe or Cohesion Policy funds, which limited the potential for synergies. Beneficiaries were the most critical, as many described the administrative workload as excessive. In particular, unclear guidance, inconsistent implementation, and a high volume of documentation were seen as barriers to efficient participation. For some, these burdens discouraged engagement or limited the ambition of their projects.

Moreover, the RRF was seen to have encouraged more results-oriented thinking in national R&I funding in some contexts, but this was not universal. The RRF's national-level implementation and milestone logic, while effective in some respects, was perceived as more rigid and administratively demanding. Cohesion Policy funds were generally seen as complementary, particularly where the RRF filled gaps between programming periods. However, procedural differences with Cohesion Policy funds, especially in reporting and eligibility, limited full coordination.

### Coherence

There was a strong consensus that the RRF is broadly coherent with national R&I strategies and existing funding mechanisms. Many ministries and agencies reported that RRF measures complemented existing programmes at the national level, often scaling up or accelerating pre-existing plans. In several cases, the RRF filled funding gaps or enabled reforms that had been delayed. Substitution effects were rare, though a few noted that RRF funding temporarily displaced national budgets in some areas.

Thematic alignment with Horizon Europe, ERDF, and InvestEU was widely acknowledged. However, practical coordination was often limited. Agencies managing multiple EU funds cited difficulties aligning procedures and timelines, which hindered synergies. Some good practices were noted where the same body managed both RRF and other EU funds, allowing smoother integration. On contribution to EU R&I priorities, such as the ERA Policy Agenda and the New European Innovation Agenda, alignment was often indirect. While many measures supported relevant themes, like research careers or green innovation, few were explicitly designed with these agendas in mind.

Synergies with other R&I programmes, especially Horizon Europe, were seen as underexploited. While some stakeholders used RRF to support Seal of Excellence projects or complement Horizon-funded work, most reported limited coordination. Differences in rules and lack of interoperability were common hurdles.

### EU added value

Stakeholders broadly agreed that the RRF provided clear EU added value in the domain of R&I. Most interviewees, regardless of their institutional role, stated that the R&I investments and reforms included in their national plans would not have been implemented, or would have been significantly delayed, without the RRF. This was particularly evident in countries with limited national R&I budgets, where the RRF served as a financial buffer and enabled the launch of strategic initiatives that had long been on the political agenda. The RRF's performance-based funding model is seen as a driver of reform momentum, helping to maintain political commitment and focus. In some cases, the RRF also enabled the piloting of new funding instruments, such as challenge-based calls or mission-driven research programmes, which were previously absent from national funding landscapes.

The simultaneous implementation of reforms and investments within countries (was seen as a major strength of the RRF. Stakeholders noted that this integrated approach helped align policy and funding, improved coordination between ministries and agencies, and created a more

coherent framework for delivering systemic change. In many cases, the performance-based structure of the RRF encouraged tighter planning and accountability, which in turn enhanced the effectiveness of both reforms and investments. This was particularly valued in countries where R&I governance had previously been fragmented or slow-moving. However, the added value of cross-border coordination and spillover effects is considered more limited. While some countries participated in multi-country projects, such as IPCEIs, these were the exception rather than the norm. Most RRF-funded R&I measures were nationally focused, and the instrument itself did not actively promote or facilitate cross-border collaboration, limiting the potential for broader EU-wide impact.

### Relevance

Across stakeholder groups, there was broad consensus that the RRF's support for R&I remains highly relevant in light of its objectives. The RRF was widely seen as a timely and strategic instrument that enabled Member States to pursue long-standing national priorities, particularly in green and digital innovation, which had previously lacked sufficient funding. Ministries of education and science, innovation agencies, and Member State authorities alike emphasised that the RRF allowed for the launch or acceleration of initiatives that were already part of national agendas but had been stalled due to budgetary constraints. The relevance of the RRF was also reinforced by its alignment with broader EU goals, such as the European Research Area and the New European Innovation Agenda. Stakeholders noted that the RRF helped bridge gaps in national R&I ecosystems, supported infrastructure upgrades, and enabled the recruitment of young researchers and the development of new research centres. In several cases, the RRF was credited with catalysing reforms in governance and funding models, particularly in countries like Croatia, Austria, and Bulgaria.

However, concerns were consistently raised about the feasibility of implementing all R&I-related measures by the 2026 deadline. This was particularly pronounced among organisations and ministries managing complex infrastructure projects. The rigid timeline was seen as a constraint on the full realisation of long-term research outcomes, with some stakeholders warning that the pressure to meet milestones could lead to premature project conclusions or limit the ambition of initiatives. While some countries managed to adapt their plans and milestones, others struggled with administrative bottlenecks and procurement delays. Despite these differences, there was a strong shared perception that the RRF was not only timely in the context of post-pandemic recovery but also well-structured to meet the specific needs of national R&I systems.

## Focus groups

#### *Inputs received – focus group emerging innovators*

The focus group involved 9 participants (three from each country) from Croatia, Poland, and Slovakia.

### RRP for R&I and the national context

**Croatia**

- Croatia's RRF is deeply integrated with its national development strategy and the newly adopted smart specialisation strategy. Investments are also strategically designed to be synergistic with planned investments under the European Regional Development Fund (ERDF), indicating a holistic approach to boosting the innovation ecosystem.
- RRF design in Croatia leveraged a comprehensive RDI portfolio analysis conducted by the World Bank in 2018-2019. This analysis, initially intended to inform the next cycle of Cohesion Policy funding, proved fortuitous when the RRF was introduced during the pandemic. Its freshness allowed for rapid translation into a comprehensive and synergistic package of reforms and investments.

- Croatia's RRF support broadly covered most Technology Readiness Level (TRL) stages, but with a differentiated and tailored approach for each. Direct grant support for basic research was not a primary focus. Instead, reforms like performance-based funding aimed to elevate overall research excellence, and significant investments in research infrastructure were made to support very early-stage research. A substantial effort was also directed towards investing in human resources for R&D, which doesn't directly fit into a TRL scale but is crucial for the ecosystem. This included STEM scholarships, mobility grants, and support for researchers to establish their own research groups.
- The RRF's flexibility, more so than Cohesion Policy Funds, allowed Croatia to pilot novel instruments that had shown good results in the past but hadn't been sustained. A key targeted area was industry-science collaboration and technology transfer, particularly addressing a clear gap in existing instruments for this specific stage of the innovation chain (Reform 3).

**Poland**

- The R&I measures supported by the RRF are particularly aligned with critical needs such as:
  - Strengthening national innovation capacity by supporting inventors, researchers, and technology transfer programs.
  - Closing the research-to-market gap, especially for SMEs and early-stage innovations lacking access to commercial infrastructure.
  - Enhancing resilience and green transition through targeted support for sustainable technologies, digital innovation, and eco-design.
  - Improving talent retention and research excellence by funding infrastructure, training, and collaborative international networks
- R&I measures are coherent with many countries' existing National Innovation Strategies, Smart Specialisation Strategies, and Higher Education and Research Development Programs. However, the importance of the following was stressed:
  - Better inter-ministerial coordination, especially between education, science, and economic development sectors.
  - Ensuring regional balance and equitable access for less developed innovation regions.
  - Aligning with international frameworks, such as WIPO innovation indices and UN Sustainable Development Goals, to maximise global collaboration and policy consistency.
- RRF is strategically designed to be complementary with other funding sources, such as the ERDF. The primary focus is on strengthening the commercialisation of R&D activities and enhancing research infrastructure. However, due to the tight implementation deadlines, Poland strategically prioritised projects at higher TRLs. Funding basic research was less feasible, as such long-term projects are difficult to implement quickly. The emphasis was on applied research projects that could be implemented rapidly, aligning with the goal of strengthening business-academia collaboration despite the time constraints.

**Slovakia**

- Slovakian participants highlighted a significant departure from previous policies in Slovakia. Slovakia had operated without a national R&I strategy for approximately seven years. The RRF provided the impetus to collaboratively develop a new strategy

with the broader ecosystem. So RRF projects are perceived as new initiatives, with limited continuation from pre-existing frameworks. The new approach effectively addressed the long-standing issue of underfunding in Slovakian research. While the strategic direction is generally correct, the existence of slightly different rules between two ministries complicates project implementation for researchers.

- As part of the reforms, the Slovak Academy of Sciences, the largest scientific institution in the country, was empowered to engage more actively in entrepreneurial activities. Additionally, reforms were introduced to the project evaluation system, adopting international evaluation practices and experts, drawing inspiration from Horizon Europe and Horizon 2020.
- Through RRF, Slovakia developed a comprehensive approach to R&I funding. Given the severe underfunding of the R&I sector, policymakers aimed to address all identified market gaps. This resulted in a high volume of calls for proposals (26 in total), ranging from small projects (EUR600k) to very large ones (EUR90M). Funding was structured to support individual researchers and foster cooperation between academia and industry. Specifically, calls were divided into two categories: TRL 1-3 (focused on academia with industry partners) and TRL 4-9 (focused on industry with academia partners). Beyond grants, financial instruments like support for startups in seed and later phases, and loans, were also made available. While this comprehensive approach addressed many gaps, it also led to a large number of initiatives, which could be a challenge in terms of management.

### Implementation challenges and advantages

**Short Timeline/Time Constraints:**

**Slovakia:**

- The compressed RRF timeframe meant that there was insufficient time for thorough project implementation, leading to significant pressure on all stakeholders. The severely limited project duration is the primary implementation challenge. While European research projects typically span three to four years, RRF projects were planned for a maximum of three, and often even shorter due to delays in contract signings. This short horizon makes it difficult to attract and retain skilled personnel, as researchers are hesitant to commit to contracts lasting only a year.
- From the perspective of an organisation applying for funding, the experience was similar: a long time from call closure until result announcement, a slow contracting phase, and postponed starting dates of projects.

**Poland**

- Concurred that the short implementation timeline is a major hurdle, especially for Poland, whose RRP was approved relatively late. This constraint significantly complicated implementation, necessitating a strategic shift towards projects with higher TRLs that could yield quicker results. It was noted that the extreme difficulty in implementing research infrastructure projects within such a tight schedule.
- Identified the main implementation bottlenecks from the final recipient's perspective as: complex and rigid administrative procedures, lack of clarity and communication from managing authorities, delayed call publications and contract signings, insufficient technical assistance, and fragmentation across sectors.

**Croatia**

- Advocated for longer and more predictable timelines for research funding. It was argued that continuity is essential for the research system, and longer periods for fund utilisation would ease implementation.

**Flexibility of Rules vs. Rigidity:**

**Croatia**

- Praised the RRF delivery model for its reduced rigidity compared to Cohesion Policy funding. This flexibility is highly valued by beneficiaries and intermediate bodies alike, as it streamlines monitoring and verification processes, making them considerably easier to manage.
- Attributed the smooth RRF implementation in Croatia to the autonomy granted to sectoral authorities. They were able to design their own calls and set priorities in alignment with the RRF framework, unburdened by the extensive rules and procedures typically associated with ERDF. This allowed for precise targeting of investments.

**Slovakia**

- Characterised RRP rules as "much more friendly", less administratively demanding, than those of Cohesion Policy funds, but noted they are "not a game changer" when compared to the more streamlined Horizon Europe rules. Slovakia attempted to simplify processes by introducing more lump sums for salaries and other costs, but acknowledged that controls, both from European and national audits, remain in place.
- A contrasting view, from the perspective of final recipients, especially enterprises, was provided. The RRF implementation, paradoxically, felt almost as complex as that of 2021-2027 Cohesion Policy funds due to Slovakia's deeply ingrained "cost-oriented" approach. While some new approaches were piloted, the fundamental focus on cost-oriented implementation at the ground level persisted, despite a more results-oriented approach at the national and European Commission level. The perceived similarity in complexity might stem from the fact that support for enterprises often involves additional regulatory burdens, such as state aid schemes and semi-controls, which are less prevalent for public organisations.

**Poland**

- The RRF delivery model offered advantages such as front-loaded funding (allowing faster mobilisation), flexibility in design and national adaptation, and a focus on reforms (encouraging systemic improvements). However, disadvantages included tight timeframes and a "use-it-or-lose-it" logic that prioritised "shovel-ready, low-risk projects" over more ambitious ventures, limited stakeholder consultation during plan drafting (leading to a mismatch between strategic needs and funded actions), and a lack of synergy mechanisms with ongoing national or EU innovation instruments, which created duplication or confusion.

**Crowding Out/In Effects:**

**Croatia**

- Confirmed that Croatia is experiencing a "crowding out" effect, particularly concerning the utilisation of Cohesion Policy funds. The current strategic focus is on maximising the absorption of RRF funds (2021-2026), which means that cohesion funding will become a primary focus only from mid-2025 onwards, and especially in 2026.
- The crowding-out effect is also driven by the fact that ERDF rules are more rigid and entail a higher administrative burden. To avoid double funding, they meticulously ensure no overlapping calls between RRF and ERDF. A "temporal complementarity" strategy has been employed, where RRF investments were launched earlier, helping to manage this crowding out.

**Slovakia**

- Optimism was expressed that there is no risk that new national funding displaces existing initiatives or creates inefficiencies in Slovakia. This is attributed to the historically low levels of research funding in the country.
- Noted a positive "crowding in" effect where reforms led to an increase in national budget investment in R&D, supplementing existing EU funds. It was highlighted that an important contribution of the RRF was the creation of research that would not have existed otherwise, helping public organisations in Slovakia overcome underfinancing.
- While lacking definitive data, some degree of crowding out is anticipated in relation to Horizon Europe funds, as RRP funding is generally perceived as easier to access. This could potentially divert researchers from applying for the more competitive Horizon Europe grants. However, it should also be acknowledged that the RRP includes measures specifically designed to support access to Horizon Europe.
- Some degree of "crowding out" effect with Cohesion Policy funding occurred. In fact, a substantial portion of structural funds previously allocated to R&D was reduced, with the justification that these amounts were now covered by the RRF. This effectively shifted R&D funding from cohesion policy to the RRF.

**Poland**

- Both crowding-in and crowding-out effects were observed. Crowding-in effects included RRF projects catalysing additional public and private co-investments (especially in digital and green transformation) and encouraging actors (particularly in newer member states) to apply for other EU funds like Horizon Europe for follow-up phases. Crowding-out effects were seen where RRF funds displaced Cohesion Fund allocations or discouraged Horizon Europe applications due to perceived complexity or slower timelines. Some stakeholders shifted focus to RRF calls because they were simpler or more immediate, leading to underutilisation of complementary instruments.
- The short implementation timeframe of RRF projects, which translates into a greater focus on higher TRLs, was pointed out as a potential crowding out of more fundamental or long-term research, due to the emphasis on quick results.

**Bottlenecks:**

**Croatia**

- The only significant bottleneck in Croatia's RRF implementation relates to technical issues with their IT management platform. This was exacerbated by the country's adoption of the Eurozone in 2023, which necessitated extensive adaptations to the existing system and caused functionality problems. Beyond this, RRF implementation in Croatia was largely "smooth."

**Slovakia**

- A major challenge stemmed from the complex combination of reforms and investments, coupled with the sheer volume of calls for proposals. The introduction of international evaluation, a new pilot initiative, proved particularly time-consuming. This involved extensive negotiations with the European Commission to access their expert database and the laborious process of preparing all documentation in English.
- Argued that the European Commission might have underestimated the technical capacity at the national level to implement the massive RRF program. The rapid influx of funds necessitated a doubling of implementation staff in a short period, leading to a "brain drain" as personnel moved between ministries and implementing agencies. This had a detrimental effect on the smooth implementation of both structural funds and the

RRF, as the high-quality staff needed for efficient rollout could not be scaled up quickly enough.

**Poland**

- The influence of Poland's centralised governance and bureaucratic complexity on decision-making and fund distribution was noted. There was no analysis of equitable R&I funding distribution across regions, especially those with weaker innovation capacity. It also remained unclear whether research and industry stakeholders were consulted or actively involved in shaping R&I priorities.

### Achievements and sustainability

**Croatia**

- Strongly emphasised that it is "too early" to conduct a truly robust analysis of RRF outcomes and impacts. It was explained that key indicators, such as published papers in peer-reviewed journals and citations, require a significant amount of time (years) to accumulate, and projects are still actively in implementation. It was also pointed out that the practical difficulties for public institutions in conducting rigorous evaluations, such as randomised controlled trials, which require random assignment of grants and interventions, and were not embedded in Croatia's RRF design. While Croatia's Ministry of Science proactively included outcome indicators and targets, this was not a widespread practice across all sectors or countries.
- RRP in Croatia has incorporated valuable lessons from previous monitoring and evaluation (M&E) exercises conducted in the context of Cohesion Policy. This included the introduction of baseline surveys for every call, with the foresight that these could be used for future impact evaluations. Additionally, information was included in calls for proposals to inform applicants that their data might be used for evaluation purposes, and they would agree to be contacted even if not funded. This proactive approach aims to set a good foundation for future assessments, though patience is still required for results to emerge.

**Poland**

- Acknowledged that it is currently too early to assess the long-term legacy of R&I measures in Poland. The main financial instrument involves establishing new laboratories, with most projects slated for completion by 2026. While these new infrastructures are expected to enhance R&I potential, a comprehensive understanding of their impact will require several more years post-project completion. However, there is confidence that a significant legacy is assured due to the projects' direct connection with important national research infrastructures and institutes.

**Slovakia**

- It is premature to observe tangible outcomes from the RRP investments. While some outputs like scientific articles and patents are expected by project end, they do not anticipate "breakthrough results" immediately after project completion.
- The RRP has significantly contributed to stabilising Slovakia's R&I system through increased financial resources and implemented reforms.
- A key component, "excellent science," directly supported over 500 individual researchers, boosting human capital. Also, the support of 118 Ukrainian researchers (predominantly females) through a dedicated EUR50M call launched in May 2022, enabling them to work in Slovakia. The RRP also facilitated support for "Seal of Excellence" projects, including EIC, ERC, and Marie Skłodowska-Curie initiatives, demonstrating its role in attracting and retaining high-quality research.

**Long-term Sustainability:**

**Slovakia:**

- To address concerns about brain drain and ensure sustainability, Slovakia aims to progressively increase its national R&I budget to EUR1 billion by 2031. Budget increases have already been planned for 2024, 2025, and 2026, marking a shift towards greater national funding responsibility. He also noted that European countries are closely monitoring the implementation and continuation of these reforms.
- One of the representatives expressed doubts about how research can be sustained once RRF projects are finished, despite the RRF helping to overcome underfinancing of public organisations.

**Croatia**

- Detailed Croatia's comprehensive reform aimed at creating a new framework to retain young researchers and combat brain drain. While it's too early to assess its full impact, various schemes have been implemented. These include STEM and ICT scholarships, career development programs, and mobility schemes that encourage young researchers to gain international experience and bring that knowledge back to Croatia. Funding is also provided to institutions for employing young researchers for five to six years. Additionally, schemes support young researchers in undertaking entrepreneurship training within enterprises, allowing them to pursue PhDs based on industry research, fostering entrepreneurial capacity. Programs also target the establishment of startups or spin-offs by young researchers from public institutes. These multifaceted interventions, outlined in program agreements with higher education organisations, aim to create a more supportive environment and provide resources for excellent research, with the ultimate goal of retaining talent.
- Emphasised that a core objective under performance-based funding is to ensure long-term sustainability. Higher education organisations and institutes are required to demonstrate plans that ensure they will not solely depend on RRF funding. This is directly linked to the synergistic planning between RRF, ERDF, and national funding, aiming for a resilient and self-sustaining R&I ecosystem.

***Inputs received – focus group moderate innovators***

The focus group involved 10 participants from Italy (3), Lithuania (3), Portugal (2), and Spain (2).

**RRF R&I measures and national context**

- A participant from Portugal noted that in recent years the country has tried to overcome gaps in R&I policy through a coherent agenda implemented through both European funds (including the RRF) and the national budget. The main gaps concern: a) participation of SMEs in the innovation process; b) the intellectual property system (related not only to SMEs); c) cooperation between academia and businesses; d) the need to reinforce the qualification of human resources. For the first time, there is now a strong support and a coherent policy for the R&D ecosystem in Portugal, with a strong involvement of all relevant actors and a particular emphasis on strengthening the relationship between R&D institutions and firms. The R&D strategy was set up in close cooperation between the Ministry of Science and Technology and the Ministry of Economy. A key role was played by the former Minister Manuel Heitor, who was recently in charge of the independent report on the future of Horizon for the European Commission. The strategy emphasises the link to the market, the combination of different funds (Horizon Europe, RRF, other European funds, national budget), and the involvement of all stakeholders.

- A participant from Spain confirmed that the preliminary findings were well identified. Among the different R&I measures in the Spanish RRP, a critical one is the reform of the Act on Science and Innovation, addressing the need for adaptation of the legislative framework, especially in terms of: governance, human resources, and technology transfer. The reform fits well with the different R&I investments in the RRP, including sectoral ones (e.g. in space, automotive, health, digital and green transition) and more structural investments (e.g. in terms of capacity building of the system along the whole value chain of innovation, from low TRLs to high TRLs; and in terms of careers of researchers). A second participant from Spain added that for the Spanish Agency for Research, the RRF has brought fresh air, with the chance to put in place new reforms and support new goals or reinforce existing goals (e.g. infrastructures).

- A participant from Italy illustrated the strategy of the Italian RRP in the R&I sector, highlighting its coverage from low TRLs to high TRLs. The strategy puts a special emphasis on strengthening the link between the R&I system and companies, which has traditionally been limited by the fact that the economic fabric is largely made up of SMEs. In particular, four investments emerge as key within the Italian RRP, corresponding to a cost of about EUR 6 billion. The four systemic investments envisaged by the RRP are:

  - "Partnerships extended to universities, research centres and companies for the financing of basic research projects" (in short "Extended Partnerships"): 14 partnerships between 130-150 million EUR each, on moderate TRLs (on various topics including artificial intelligence, telecommunications, agriculture, human sciences, bioengineering);

  - "Strengthening of research structures for the creation of national R&D champions on some Key Enabling Technologies" (in short "National Centres"): 5 large projects of about 300 million each, focused on a strong science-business link (covering the topics of: high-performance computing, agri-tech, biodiversity, vaccines, sustainable mobility);

  - "Creation and strengthening of innovation ecosystems, building territorial R&D leaders" (in short "Innovation ecosystems"): 11 large projects on high TRLs, spanning from 80 to 110 million EUR and connected to the regional S3 strategies, covering topics that depend on the regional context (e.g. space, sea protection, humanities);

  - "Fund for the creation of an integrated system of research and innovation infrastructures" (in short "Research infrastructures" and "Technological Innovation Infrastructure"): research infrastructures cover low TRLs, while Technological innovation infrastructures cover high TRLs, connected with industry.

Investments have had to face several constraints, among which are: spending 40% of the budget in the South of the country; ensuring the large involvement of young researchers; and respecting gender equality criteria. A second participant from Italy added that the emphasis on the link between science and business is coherent with reforms put in place in the RRP, such as the reform of intellectual property. Additionally, she underlined that some of the measures in the scope of this study have little to do with research (e.g. this is the case of the large measure related to Transition 4.0); moreover, some measures in scope have to do with universities, which are particularly relevant because of a traditional challenge in Italy in funding academia. However, assessing how coherent measures related to academia are with respect to the wider national framework is rather difficult, because currently, public debate is intense about possible reform proposals recently put forward (outside the RRF framework). On a different note, it must be noted that Italy has pledged to increase public resources on R&I: in the medium-term budget, Italy pledged to increase public expenditure for R&D to 0.6 % of GDP by 2029. There is therefore a clear intention to continue with a strong emphasis on funding this area, also after the RRF is completed.

- A participant from Lithuania noted that what characterises the list of R&I-related reforms put in place by the Lithuanian RRP is the complementarity with cohesion policy and national funding. Reforms have had a big influence on the governance of the R&D system in the country, especially through the creation of one-stop-shop agencies.
- The moderator highlighted that across countries, the RRF has been used across the TRL spectrum, and to ensure coordination among different actors (especially between science and business), with a particular focus on SMEs. In addition, she highlighted the diversity in the set of RRP measures.

### Implementation challenges and advantages

- A participant from Spain confirmed that the preliminary findings were well identified and highlighted timing as a key constraint and bottleneck. Another difficulty was starting the implementation machine. On the level of synergies, rules were difficult to understand, and establishing synergies between RRF and Horizon proved very difficult. Rules have led to uncertainty and to more prudence in implementation than would have been necessary. No crowding-out effects have been observed: regarding the ERDF, there has been an effort at ensuring complementarity; regarding Horizon Europe, it is too soon to know, but according to the latest figures, there has been no decrease in participation. A second participant from Spain added that the RRF has had a positive effect on Spanish participation in the Framework programme, because the RRF supported this participation. Moreover, he noted that the main bottleneck is the set of administrative procedures needed for justification of completed actions, and suggested that the control of DNSH criteria (which has been a significant burden) could have been limited to certain scientific or technological areas and not made a general obligation. He also expressed the opinion that R&I projects should have flexible execution periods, especially for international collaborative projects.
- A participant from Portugal confirmed that timing is a key bottleneck. The amount of money available is on a very different scale compared to the past, and the short timeline makes implementation challenging, especially when different types of actors need to be involved. Moreover, she highlighted that the new level of resources available has led to a high competition for the best human resources (e.g. to create structures within the universities to support the implementation of RRF funds). A second participant from Portugal added that the report issued by ECA at the end of 2023 led to the addition of a new layer of complexity, distracting authorities from implementation. In his view, from the start of a programme, all EU institutions would need to align on rules; otherwise, beneficiaries would have to deal with evolving rules as implementation goes on. Public procurement in Portugal has also represented a bottleneck, because precious time is lost on public procurement procedures. As regards participation in Horizon Europe, Portugal's participation and success rate have increased over the last years (and it is the same institutions that are applying for RRF funds): this is the result of continuity in support for R&I over the last two decades. Furthermore, he stressed that RRP reforms have been crucial and that the link to the European Semester has made reforms easier to implement. Finally, he noted that a recent revision to the Portuguese RRP led to an increase in budget for the R&I measures (especially for new equipment in R&D centres).
- A participant from Lithuania confirmed that timing and long administrative procedures have proved challenging. She noted that Lithuania does have an example of synergy with Horizon Europe, thanks to the Horizon Europe Acceleration Plan and the fact that efforts were made to finance Seal of Excellence holders. Moreover, she noted that in Lithuania, often the same staff work on cohesion policy and RRF, which leads to

organisational challenges. Another bottleneck is the lack of flexibility and the difficulty of introducing changes in the plan. A second participant from Lithuania added that the great hopes for result-based implementation were deceived. All sorts of verifications had to be increased, so that today the RRF cannot be deemed a result-based instrument anymore.

- A participant from Italy identified two missed opportunities of the RRF in the research area:
  - One aspect has to do with evaluation. Since it is very difficult to have results rapidly in the R&I field, most of the milestones and targets have to do with physical outputs (in Italy, although not solely): for example, amounts invested, or some project characteristics. While it is difficult to imagine result indicators in the lifespan of RRF, this could have led to a stronger focus on evaluation. In a strategic area such as research, which is also a difficult area to analyse in terms of success and failure, there should be more focus on ex-post evaluation of these policies. This is especially true for the legislative reforms, but not only. Ex-post evaluation is necessary to understand whether policies should be readjusted in the future, and it is a pity that the RRF does not have a requirement on this. Concerns remain that the RRF has not adequately emphasised the role of evaluation as a critical component of performance-based spending. While the RRF framework prioritises the achievement of milestones and targets, it lacks a systematic approach to assessing the effectiveness and long-term impact of interventions. A comprehensive evaluation is necessary not only to verify expenditures and outputs, but also to determine whether interventions are generating the intended policy effects. This requires structured, ongoing evaluation efforts, which are currently not mandated within the RRF framework: leaving this responsibility to the European Commission without binding requirements for Member States weakens the overall performance logic underpinning the instrument. Italy does not have a systematic evaluation initiative for the RRP.
  - Another aspect is related to the need to bring together European countries with a stronger interaction on the research scene. In particular, in IPCEIs, there could have been some kind of horizontal line, so as to ensure more cross communication on research among European countries on the same kind of topics or sectors. For a kind of programme such as the RRF (where all Member States contribute to improve their own structural conditions, but there is also a common European objective), research and innovation was a terrain where there could have been a few more cross-country projects or investments. The international evolution from a geopolitical point of view also shows how this could have been a good move if it had been undertaken (i.e., if RRF had put more leverage on cooperation research projects among European countries).
- A participant from Portugal agreed that transnational projects should have been more strongly promoted.

### Achievements and sustainability

- A participant from Portugal noted that thanks to the RRF, the level of quality of the R&D ecosystem in Portugal increased, especially through the recruitment of expertise and researchers, and the funds for R&D equipment, as supported by the RRF. Sustaining the increased capacities in universities is, nevertheless, a huge challenge. A second participant from Portugal added that cooperation between science and business had increased. There are concrete examples for this, for instance, in the space sector. As regards territorial cohesion, the RRF is supporting several institutions and agendas broadly increasing cohesion in Portugal, but there are still lessons to be learned. For instance, the notion of ecosystem (i.e., the relationship between different stakeholder types, and in turn how they relate to S3 strategies) needs to be further worked on. In

terms of benefits, SMEs launching internal R&D departments were also observed. Yet, the main challenge is sustainability, because Portugal is building a critical mass of capacity, but after 2026, there is a risk of not having the chance to rely strongly on EU R&I funds. Currently, the Portuguese R&I system is attracting highly qualified professionals, but without sustainability, there is a concrete risk of losing this added capacity.

- A participant from Spain noted that in terms of legacy, the RRF has made a difference in how research and innovation are included in the Spanish public agenda, not only because of the investments in research and innovation per se, but also because of the inclusion of research and innovation components in other policies. Also, the combination of investments with reforms (in particular, the reform of the Spanish law on Science and Innovation) has led to more effectiveness in the implementation. In addition, the delivery mechanism based on the fulfilment of milestones and targets has been helpful to steer the direction of the R&I sector. A good practice in the Spanish case consists of complementary plans, i.e., 8 programmes on 8 R&I areas, co-created and co-funded by the state and regions. The funding from the state comes from the RRF, and the budget from the regions comes from their own resources. With ERDF funds, Spain is also going to launch a national programme on technology transfer (again in cooperation with regions), aiming to scale up these 8 programmes: this represents an effort to strengthen the sustainability of some of the actions. Nevertheless, sustainability remains an issue.
- A participant from Lithuania expressed the opinion that the R&I-related reforms put in place will certainly have a significant legacy for the future of the Lithuanian R&I ecosystem, and that it is in the country's interest to continue on the path of these reforms, to seize their full benefits over time.
- A participant from Italy confirmed that it is still early to draw conclusions on achievements and legacy of the RRP and added that while there are signs of a strengthened science-business link, a crucial test will be to see whether this type of cooperation will be able to sustain itself over time. In terms of sustainability, the increase of PhDs supported by the RRF may face significant challenges: in fact, on one hand it is difficult to imagine that all highly-qualified PhD researchers will eventually become university researchers or professors, but on the other hand a question arises as to whether the RRP's strategy is strong enough in terms of ensuring the placement of these professionals in other settings (i.e. non-academic public sector, or private enterprises.

# Annex VIII: List of measures in scope

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Austria | Measure | AT-C[C3]-I[3D1] | IPCEI Microelectronics and Connectivity | Investment | 125.000.000 |
| Austria | Measure | AT-C[C3]-I[3D2] | IPCEI Hydrogen | Investment | 125.000.000 |
| Austria | Measure | AT-C[C3]-I[3A2] | Quantum Austria — Promotion of Quantum Sciences | Investment | 107.000.000 |
| Austria | Sub-Measure | AT-C[C3]-I[3A3.S16] | Austrian Institute of Precision Medicine - digital part | Investment | 13.700.000 |
| Austria | Measure | AT-C[C3]-I[3A4] | (Digital) Research Infrastructures | Investment | 30.000.000 |
| Austria | Measure | AT-C[C3]-R[3A1] | RTI Strategy 2030 | Reform | 0 |
| Belgium | Measure | BE-C[C12]-I[I-115] | An industrial value chain for hydrogen transition of the Federal State | Investment | 50.000.000 |
| Belgium | Sub-Measure | BE-C[C12]-I[I-116.S2] | An industrial value chain for hydrogen transition of the Flemish Region - Project FID and climate actions (art23) - production from renewable energy | Investment | 7.768.000 |
| Belgium | Sub-Measure | BE-C[C13]-I[I-124.S2] | Blue Deal - Research and innovation (LATR subproject B) | Investment | 6.000.000 |
| Belgium | Sub-Measure | BE-C[C23]-I[I-214.S1] | Development of an AI institute - Digital skills | Investment | 1.470.000 |
| Belgium | Sub-Measure | BE-C[C23]-I[I-214.S2] | Development of an AI institute - Smart specialization | Investment | 8.440.000 |
| Belgium | Measure | BE-C[C12]-I[I-118] | Developing the low-carbon industry | Investment | 34.319.537 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-508.S2] | Nuclear medicine - Subproject 1: Establishment of a radioisotope facility at SCK CEN | Investment | 10.000.000 |
| Belgium | Measure | BE-C[C52]-I[I-510] | R&D: Minimization of waste during dismantling | Investment | 25.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S1] | Strenghten R&D - R&D&I-projects | Investment | 23.000.000 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S3] | Strenghten R&D - Care and health | Investment | 8.000.000 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S5] | Strenghten R&D - Strenghten Industrial Research Fund (IOF) | Investment | 14.000.000 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S6] | Strenghten R&D - Scientific and technological infrastructure | Investment | 100.000.000 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S7] | Strenghten R&D - Strenghten R&D businesses | Investment | 80.000.000 |
| Belgium | Sub-Measure | BE-C[C52]-I[I-511.S8] | Strenghten R&D - Impulse programme value chain micro-electronics | Investment | 20.000.000 |
| Belgium | Measure | BE-C[C52]-I[I-518] | SMELD | Investment | 13.400.000 |
| Belgium | Sub-Measure | BE-C[C53]-I[I-515.S1] | Belgium Builds Back Circular - Chemical substitution and ecodesign - Funding Circular Projects | Investment | 27.420.000 |
| Belgium | Sub-Measure | BE-C[C53]-I[I-516.S1] | Deployment of the circular economy - Part 1 - Research and development | Investment | 64.847.463 |
| Belgium | Measure | BE-C[C72]-I[I-711] | Research platform for energy transition | Investment | 23.535.000 |
| Belgium | Sub-Measure | BE-C[C73]-I[I-718.S1] | Innovative renewable energy production initiatives - R&D solar energy | Investment | 9.023.820 |
| Belgium | Measure | BE-C[C42]-I[I-410] | Gender and work | Investment | 2.900.000 |
| Belgium | Measure | BE-C[C52]-I[I-508bis] | Nuclear medicine – the theranostic approach | Investment | 6.600.000 |
| Belgium | Measure | BE-C[C73]-I[I-716] | Floating solar - Federal State | Investment | 12.500.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Bulgaria | Measure | BG-C[C10]-R[R11] | Entrepreneurial Bulgaria | Reform | 0 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I1.a] | Programme to accelerate economic recovery and transformation through research and innovation - digital objectives | Investment | 20.825.353 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I1.b] | Programme to accelerate economic recovery and transformation through research and innovation - Science and innovation | Investment | 122.075.450 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I2.a] | Enhancing the innovation capacity of the Bulgarian Academy of Sciences - digital | Investment | 2.580.000 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I2.b] | Enhancing the innovation capacity of the Bulgarian Academy of Sciences - quantum platform | Investment | 513.490 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I2.c] | Enhancing the innovation capacity of the Bulgarian Academy of Sciences - modernisation and refurbishment of research infrastructure | Investment | 10.960.000 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I2.d] | Enhancing the innovation capacity of the Bulgarian Academy of Sciences- technology transfer | Investment | 8.180.000 |
| Bulgaria | Sub-Measure | BG-C[C2]-I[I2.e] | Enhancing the innovation capacity of the Bulgarian Academy of Sciences- trainings | Investment | 1.670.000 |
| Bulgaria | Measure | BG-C[C1]-R[R2] | Higher education reform | Reform | 0 |
| Bulgaria | Measure | BG-C[C2]-R[R1] | Common policy for the development of research and innovation | Reform | 0 |
| Croatia | Sub-Measure | HR-C[C71]-I[R1-I2a] | Building a hydrogen economy (Hydrogen Valley North Adriatic) – project financing | Investment | 13.500.000 |
| Croatia | Sub-Measure | HR-C[C71]-I[R1-I2b] | Building a hydrogen economy (Hydrogen Valley North Adriatic) – REFIT of locomotives | Investment | 35.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Croatia | Sub-Measure | HR-C[C32]-I[R1-I1.a] | sub-measure: Development of a system of programming agreements to finance universities and research institutes focused on innovation, research and development | Investment | 52.857.238 |
| Croatia | Sub-Measure | HR-C[C32]-I[R1-I1.b] | sub-measure: Development of a system of programming agreements to finance universities and research institutes focused on innovation, research and development – the digtal part | Investment | 5.873.026 |
| Croatia | Sub-Measure | HR-C[C32]-I[R1-I1.c] | sub-measure: Development of a system of programming agreements to finance universities and research institutes focused on innovation, research and development – governance | Investment | 995.000 |
| Croatia | Sub-Measure | HR-C[C71]-I[R1-I1b] | Use of hydrogen and new technologies – hydrogen production and electrolysers | Investment | 10.866.929 |
| Croatia | Sub-Measure | HR-C[C71]-I[R1-I1c] | Use of hydrogen and new technologies – Solar | Investment | 3.140.139 |
| Croatia | Sub-Measure | HR-C[C71]-I[R1-I1d] | Use of hydrogen and new technologies – carbon capture and storage | Investment | 5.300.000 |
| Croatia | Measure | HR-C[C12]-I[R1-I3] | Hydrogen use and new technologies | Investment | 0 |
| Croatia | Measure | HR-C[C112]-R[R1] | Reform of the R&D incentive system | Reform | 0 |
| Croatia | Measure | HR-C[C14]-I[R2-I6] | Use of green technologies in rail passenger transport | Investment | 13.272.281 |
| Croatia | Sub-Measure | HR-C[C32]-I[R1-I2.a] | sub-measure: Strengthening institutional capacity of universities and scientific institutes for innovation – digital investment | Investment | 4.366.580 |
| Croatia | Sub-Measure | HR-C[C32]-I[R1-I2.b] | sub-measure: Strengthening institutional capacity of universities and research institutes for innovation – investment in general | Investment | 58.013.139 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I1.a] | sub-measure: Developing an enabling model for researchers' career progression and conducting cutting-edge scientific research in STEM and ICT fields – Granting of scholarships | Investment | 12.077.776 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I1.b] | sub-measure: Developing an enabling model for researchers' career progression and conducting cutting-edge scientific research in STEM and ICT fields – Governance | Investment | 995.421 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I1.c] | sub-measure: Developing an enabling model for researchers' career progression and conducting cutting-edge scientific research in STEM and ICT fields – Research support | Investment | 27.939.478 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I1.d] | sub-measure: Developing an enabling model for researchers' career progression and conducting cutting-edge scientific research in STEM and ICT fields – Research support – digital | Investment | 3.104.386 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I2.a] | sub-measure: Investing in research – technology infrastructure in STEM and ICT fields | Investment | 15.000.000 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I2.b] | sub-measure: Investing in research – technology infrastructure in STEM and ICT fields | Investment | 15.000.000 |
| Croatia | Sub-Measure | HR-C[C32]-I[R2-I2.c] | sub-measure: Investing in research – technology infrastructure in STEM and ICT fields | Investment | 41.869.401 |
| Croatia | Sub-Measure | HR-C[C32]-I[R3-I1.a] | sub-measure: Introducing a more functional R & D & I project funding programming framework | Investment | 15.999.734 |
| Croatia | Sub-Measure | HR-C[C32]-I[R3-I1.b] | sub-measure: Introducing a more functional R & D & I project funding programming framework | Investment | 1.990.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Croatia | Sub-Measure | HR-C[C32]-I[R3-I1.c] | sub-measure: Introducing a more functional R & D & I project funding programming framework | Investment | 16.668.615 |
| Croatia | Sub-Measure | HR-C[C32]-I[R3-I1.d] | sub-measure: Introducing a more functional R & D & I project funding programming framework | Investment | 19.169.598 |
| Croatia | Sub-Measure | HR-C[C32]-I[R3-I1.e] | sub-measure: Introducing a more functional R & D & I project funding programming framework | Investment | 19.169.598 |
| Croatia | Measure | HR-C[C32]-R[R1] | Reform and strengthening of the research and development capacities of the public research sector | Reform | 0 |
| Croatia | Measure | HR-C[C32]-R[R2] | Creating a framework for attracting students and researchers to STEM and ICT fields | Reform | 0 |
| Croatia | Measure | HR-C[C32]-R[R3] | Improving the efficiency of public investment in research, development and innovation | Reform | 0 |
| Croatia | Measure | HR-C[C112]-I[R1-I1] | Analysis of R & D tax incentives | Investment | 298.626 |
| Croatia | Measure | HR-C[C112]-I[R2-I1] | Preparation and implementation of the Blueprint to boost innovation | Investment | 796.337 |
| Cyprus | Sub-Measure | CY-C[C3.2]-I[I2.1] | Innovation Funding Programs & Funding schemes for the enhancement of growth & competitiveness of start-ups, innovative companies and SMEs - Green transition | Investment | 2.000.000 |
| Cyprus | Sub-Measure | CY-C[C3.2]-I[I2.2] | Innovation Funding Programs & Funding schemes for the enhancement of growth & competitiveness of start-ups, innovative companies and SMEs - Other | Investment | 50.000.000 |
| Cyprus | Measure | CY-C[C2.1]-I[I8] | Monitoring and reduction of GHG emissions in agriculture | Investment | 4.130.000 |
| Cyprus | Measure | CY-C[C3.2]-I[I1] | Set up and operate a central Knowledge Transfer Office (KTO) | Investment | 3.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Cyprus | Measure | CY-C[C3.2]-I[I3] | R&I funding program on green transition | Investment | 6.000.000 |
| Cyprus | Measure | CY-C[C3.2]-I[I4] | Funding to organisations performing R&D activities on dual technologies | Investment | 3.000.000 |
| Cyprus | Measure | CY-C[C3.2]-R[R1] | National R&I Policy and policy tools | Reform | 0 |
| Cyprus | Measure | CY-C[C3.2]-R[R3] | Policies to foster access to publicly funded research infrastructure and laboratories | Reform | 0 |
| Cyprus | Measure | CY-C[C3.3]-I[I6] | State funded equity fund | Investment | 20.000.000 |
| Cyprus | Measure | CY-C[C6.1]-I[I7] | Thematic research in enterprises for energy production, storage, transmission and distribution solutions | Investment | 4.000.000 |
| Cyprus | Measure | CY-C[C3.2]-R[R2] | Incentives for investments and human capital in R&I | Reform | 0 |
| Cyprus | Measure | CY-C[C3.3]-I[I2] | Creation of a Regulatory Sandbox to enable FinTech | Investment | 400.000 |
| Cyprus | Measure | CY-C[C6.1]-I[I6] | Scaled-up measure: Thematic research and innovation funding program on green transition | Investment | 6.000.000 |
| Czechia | Measure | CZ-C[C5.1]-I[I1] | Public Research & Development support for priority areas of medical sciences and related social sciences | Investment | 196.371.063 |
| Czechia | Measure | CZ-C[C1.3]-I[I4] | Scientific research activities related to the development of 5G networks and services | Investment | 13.646.702 |
| Czechia | Measure | CZ-C[C1.4]-R[R2] | Joint Strategic Technologies Support and Certification Group with the Strategic Technologies Board | Reform | 4.320.163 |
| Czechia | Measure | CZ-C[C1.5]-I[I4] | IPCEI Microelectronics and Communication Technologies | Investment | 46.508.298 |
| Czechia | Measure | CZ-C[C5.2]-I[I2] | Support for research and development cooperation (in line with the National RIS3 Strategy) | Investment | 58.911.319 |
| Czechia | Measure | CZ-C[C5.2]-I[I3] | Aid for research and development in the field of the environment | Investment | 8.423.890 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Czechia | Measure | CZ-C[C5.2]-I[I5] | Aid for research and development in enterprises in line with the national RIS3 strategy | Investment | 59.978.097 |
| Czechia | Measure | CZ-C[C5.2]-I[I6] | Aid for research and development in the field of transport | Investment | 8.002.696 |
| Czechia | Measure | CZ-C[C5.2]-I[I7] | Aid for research and development in the environmental field | Investment | 17.900.767 |
| Czechia | Measure | CZ-C[C6.2]-I[I1] | Building and establishment of the Czech Oncological Institute | Investment | 222.331.317 |
| Czechia | Measure | CZ-C[C5.2]-I[I1] | Supporting for the introduction of innovation into business practice | Investment | 39.274.213 |
| Czechia | Measure | CZ-C[C5.2]-I[I4] | Support for research and development in synergy effects with the Framework Programme for Research and Innovation | Investment | 13.981.620 |
| Czechia | Measure | CZ-C[C5.2]-R[R1] | Creation of National Coordination Group for Support for Industrial Research | Reform | 0 |
| Czechia | Measure | CZ-C[C5.3]-R[R1] | A strategically managed and internationally competitive R & D & I ecosystem | Reform | 0 |
| Czechia | Measure | CZ-C[C6.2]-R[R1] | National Oncological Programme of the Czech Republic - NOP CZ 2030 | Reform | 0 |
| Denmark | Sub-Measure | DK-C[C7]-I[I1.1] | Research in green solutions - Carbon capture and storage or use of CO2 | Investment | 23.534.159 |
| Denmark | Sub-Measure | DK-C[C7]-I[I1.2] | Research in green solutions - Green fuels for transport and industry | Investment | 23.534.159 |
| Denmark | Sub-Measure | DK-C[C7]-I[I1.3] | Research in green solutions - Climate- and environment friendly agriculture and food production | Investment | 23.534.158 |
| Denmark | Sub-Measure | DK-C[C7]-I[I1.4] | Research in green solutions - Circular economy focusing on reuse and reduction of plastic and textile waste | Investment | 23.534.158 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Denmark | Measure | DK-C[C2]-I[I5] | Climate technologies in agriculture | Investment | 26.896.181 |
| Denmark | Measure | DK-C[C3]-I[I5] | CCS-storage potential | Investment | 26.896.181 |
| Denmark | Measure | DK-C[C5]-I[I2] | Development test of road-pricing | Investment | 2.689.618 |
| Denmark | Sub-Measure | DK-C[C7]-I[I5.1] | Incentives to boost R&D in companies - green share | Investment | 15.196.342 |
| Denmark | Sub-Measure | DK-C[C7]-I[I5.2] | Incentives to boost R&D in companies - digital share | Investment | 59.171.598 |
| Denmark | Sub-Measure | DK-C[C7]-I[I5.3] | Incentives to boost R&D in companies - remaining share | Investment | 73.561.054 |
| Denmark | Measure | DK-C[C2]-I[I3] | Organic innovation centres | Investment | 5.379.236 |
| Denmark | Measure | DK-C[C5]-I[I4] | Analysis of test scheme with double trailers | Investment | 134.481 |
| Denmark | Measure | DK-C[C5]-I[I5] | Analysis of the regulation on weight and dimensions to optimise heavy haulage | Investment | 134.481 |
| Estonia | Measure | EE-C[B]-I[2-5-.2-5-] | Deployment of resource-efficient green technologies | Investment | 52.800.000 |
| Estonia | Measure | EE-C[D]-I[4-7-.4-7-] | Pilot Energy Storage Programme | Investment | 9.600.000 |
| Estonia | Measure | EE-C[B]-I[2-4-.2-4-] | Modernisation of the business models in manufacturing companies | Investment | 9.000.000 |
| Finland | Sub-Measure | FI-C[P2C2]-I[I3.a] | Accelerating key technologies - Microelectronics value chain | Investment | 15.000.000 |
| Finland | Sub-Measure | FI-C[P2C2]-I[I3.b] | Accelerating key technologies - 6G, artificial intelligence and quantum computing | Investment | 10.000.000 |
| Finland | Measure | FI-C[P5C1]-I[I2] | R&D for the green transition | Investment | 39.920.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Finland | Measure | FI-C[P1C3]-I[I2] | Low-carbon built environment programme | Investment | 40.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I1] | RDI funding package promoting the green transition – Leading companies | Investment | 100.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I2] | RDI funding package supporting the green transition – Accelerating key sectors and strengthening competence (Academy of Finland) | Investment | 45.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I3] | RDI funding package supporting the green transition – Accelerating key sectors and strengthening competence (Business Finland) | Investment | 25.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I4] | RDI funding package supporting the green transition – Supporting innovative growth companies | Investment | 18.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I5] | Promoting innovation and research infrastructure – Local research infrastructures | Investment | 25.250.000 |
| Finland | Sub-Measure | FI-C[P3C3]-I[I6.a] | Promoting innovation and research infrastructure – National research infrastructures – Digital activities | Investment | 8.000.000 |
| Finland | Sub-Measure | FI-C[P3C3]-I[I6.b] | Promoting innovation and research infrastructure – National research infrastructures – Other activities | Investment | 12.000.000 |
| Finland | Measure | FI-C[P3C3]-I[I7] | Promoting innovation and research infrastructure – Competitive funding for innovation infrastructures | Investment | 20.750.000 |
| Finland | Sub-Measure | FI-C[P3C4]-I[I2.a] | Key programmes for international growth - Low carbon, circular economy and digital renewal | Investment | 4.000.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S1] | Faurecia/Hy2Tech - RDI | Investment | 35.300.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S2] | Faurecia/Hy2Tech - FID | Investment | 79.061.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| France | Sub-Measure | FR-C[C10]-I[I2.S3] | Arkema - RDI - RDI | Investment | 39.200.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S4] | Arkema - RDI - FID | Investment | 59.833.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S5] | Hyvia - RDI | Investment | 51.000.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S6] | Hyvia - FID | Investment | 198.275.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S7] | Genvia - RDI | Investment | 141.500.000 |
| France | Sub-Measure | FR-C[C10]-I[I2.S8] | Genvia - FID | Investment | 47.104.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S1] | Decarbonised hydrogen | Investment | 500.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S2] | Decarbonisation of industry | Investment | 300.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S4] | Recycling and reincorporation of recycled materials | Investment | 150.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S5] | Sustainable cities and innovative buildings (decarbonisation part) | Investment | 100.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S6] | Digitalisation and decarbonisation of mobility (decarbonisation part) | Investment | 100.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I1.S7] | Biobased Products and Industrial Biotechnologies – Sustainable Fuels | Investment | 200.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| France | Sub-Measure | FR-C[C4]-I[I3.S1] | Support to R&D (part contributing directly to the low-carbon economy – 70%) | Investment | 959.000.000 |
| France | Sub-Measure | FR-C[C4]-I[I3.S2] | Support to R&D (part contributing indirectly to the low-carbon economy – 30%) | Investment | 411.000.000 |
| France | Sub-Measure | FR-C[C6]-I[I4.S2] | Space R&D projects | Investment | 170.000.000 |
| France | Sub-Measure | FR-C[C6]-I[I4.S3] | Space | Investment | 129.000.000 |
| France | Measure | FR-C[C6]-R[R1] | Structural aspects of the Research Programming Law | Reform | 0 |
| France | Sub-Measure | FR-C[C6]-I[I3.S1] | Climate-related part – 30% | Investment | 225.000.000 |
| France | Sub-Measure | FR-C[C6]-I[I3.S2] | Digital-related part – 30% | Investment | 225.000.000 |
| France | Sub-Measure | FR-C[C6]-I[I3.S3] | Supporting innovative businesses | Investment | 300.000.000 |
| France | Sub-Measure | FR-C[C9]-I[I8.S1] | Climate-related part – 25% | Investment | 187.500.000 |
| France | Sub-Measure | FR-C[C9]-I[I8.S2] | Digital-related part – 25% | Investment | 187.500.000 |
| France | Sub-Measure | FR-C[C9]-I[I8.S3] | Support teaching, research, development and innovation ecosystems (PIA4) | Investment | 375.000.000 |
| France | Measure | FR-C[C4]-R[R1] | Governance of the Programme d’investissements d’avenir (PIA) | Reform | 0 |
| France | Sub-Measure | FR-C[C6]-I[I1.S1] | Digital part (40%) | Investment | 72.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| France | Sub-Measure | FR-C[C6]-I[I1.S2] | Preservation of employment in private R&D | Investment | 108.000.000 |
| France | Sub-Measure | FR-C[C9]-I[I7.S1] | Climate part – 40% | Investment | 171.200.000 |
| France | Sub-Measure | FR-C[C9]-I[I7.S2] | Digital part – 40% | Investment | 171.200.000 |
| France | Sub-Measure | FR-C[C9]-I[I7.S3] | R&D recovery strategy (National Research Agency) | Investment | 85.600.000 |
| Germany | Sub-Measure | DE-C[1.1]-I[1.1] | Hydrogen projects within the framework of IPCEIs: part 1 | Investment | 500.000.000 |
| Germany | Sub-Measure | DE-C[1.1]-I[1.3] | Hydrogen projects within the framework of IPCEIs: part 3 | Investment | 500.000.000 |
| Germany | Measure | DE-C[1.1]-I[5] | Flagship projects for research and innovation in the context of the National Hydrogen Strategy | Investment | 588.235.294 |
| Germany | Measure | DE-C[2.2]-I[3] | Digitalisation and Technology Research Centre of the Bundeswehr (dtec.bw) | Investment | 588.235.294 |
| Germany | Measure | DE-C[1.1]-I[2] | Funding programme for decarbonisation in industry | Investment | 449.300.000 |
| Germany | Sub-Measure | DE-C[1.2]-I[2.1] | Funding for the development of electro-mobility: R & D, mobility concepts | Investment | 42.016.806 |
| Germany | Sub-Measure | DE-C[2.1]-I[3.2] | IPCEI Next Generation Cloud Infrastructure and Services (IPCEI CIS) | Investment | 375.000.000 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.1] | Innovative data policy for Germany: overall strategy high-performance computing | Reform | 21.008.403 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.2] | Innovative data policy for Germany: ideas competition and piloting of data fiduciaries | Reform | 45.378.151 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Germany | Sub-Measure | DE-C[2.1]-R[1.3] | Innovative data policy for Germany: research network depersonalisation | Reform | 37.815.126 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.4] | Innovative data policy for Germany: support programme anonymisation | Reform | 25.210.084 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.5] | Innovative data policy for Germany: National Research Data Infrastructure (Nationale Forschungsdateninfrastruktur) and data literacy | Reform | 50.420.168 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.6] | Innovative data policy for Germany: PhD programme in data sciences | Reform | 5.462.184 |
| Germany | Sub-Measure | DE-C[2.1]-R[1.7] | Innovative data policy for Germany: incentives for the after-use of data | Reform | 4.201.680 |
| Germany | Measure | DE-C[1.1]-I[4] | Project-related climate protection research | Investment | 50.420.168 |
| Germany | Sub-Measure | DE-C[1.2]-I[7.1] | Promotion of the industries involved in hydrogen and fuel cell applications in transport: part 1 | Investment | 229.369.747 |
| Germany | Sub-Measure | DE-C[1.2]-I[7.2] | Promotion of the industries involved in hydrogen and fuel cell applications in transport: part 2 | Investment | 229.369.747 |
| Germany | Sub-Measure | DE-C[2.2]-I[1.3] | Vehicle manufacturer/supply industry investment programme: new innovative products as the key to vehicles and mobility of the future - automated driving | Investment | 392.670.000 |
| Germany | Sub-Measure | DE-C[2.2]-I[1.4] | Vehicle manufacturer/supply industry investment programme: other (system technologies and innovative vehicles) | Investment | 196.330.000 |
| Germany | Measure | DE-C[5.1]-I[3] | Special programme to accelerate research and development of urgently needed vaccines against SARS-CoV-2 | Investment | 591.000.000 |
| Germany | Measure | DE-C[2.1]-I[2] | IPCEI Microelectronics and Communication Technologies | Investment | 1.500.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Greece | Sub-Measure | EL-C[4,7]-I[16980.i] | RRP Loan Facility - Research and innovation processes, technology transfer and cooperation between enterprises focusing on the low carbon economy, resilience and adaptation to climate change | Investment | 102.000.000 |
| Greece | Sub-Measure | EL-C[4,7]-I[16980.i1] | RRP Loan Facility - Research and innovation processes, technology transfer and cooperation between enterprises focusing on the low carbon economy, resilience and adaptation to climate change-additional EUR 5bn | Investment | 26.640.000 |
| Greece | Measure | EL-C[3,3]-R[16816] | Reforms and acceleration of investments in the Healthcare Sector - Clawback reduction and rationalization of healthcare expenditure | Reform | 250.000.000 |
| Greece | Measure | EL-C[4,5]-I[16624] | Creation-Expansion–Upgrade of Infrastructures of Research Centers supervised by the General Secretariat for Research and Innovation (GSRI) | Investment | 180.449.035 |
| Greece | Measure | EL-C[3,2]-R[16289] | Strategy for Excellence in Universities & Innovation | Reform | 375.927.401 |
| Greece | Measure | EL-C[4,5]-I[16618] | Basic & Applied Research | Investment | 140.370.879 |
| Greece | Measure | EL-C[4,5]-I[16622] | HORIZON 2020 “Seal of Excellence”: financing topinnovative companies | Investment | 18.215.653 |
| Greece | Measure | EL-C[4,5]-I[16971] | Research - Create - Innovate | Investment | 24.718.649 |
| Greece | Measure | EL-C[4,5]-R[16621] | Extroversion of the Research and Innovation Ecosystem of Greece | Reform | 2.849.999 |
| Hungary | Measure | HU-C[C10]-I[I3] | Building green economy production capacities | Investment | 526.135.796 |
| Hungary | Sub-Measure | HU-C[C10]-I[I4.2] | Application of green technologies for the decarbonisation of industry – improvements enabling the deployment of alternative gases such as hydrogen and electrification | Investment | 55.800.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Hungary | Sub-Measure | HU-C[C10]-I[I4.3] | Application of green technologies for the decarbonisation of industry - biomethane | Investment | 33.440.789 |
| Hungary | Measure | HU-C[C2]-I[I6] | Establishment of national research and development laboratories | Investment | 183.732.171 |
| Ireland | Sub-Measure | IE-C[C1]-I[I5.1] | National Grand Challenge Programme (i) - green | Investment | 50.179.500 |
| Ireland | Sub-Measure | IE-C[C1]-I[I5.2] | National Grand Challenge Programme (ii) - digital | Investment | 21.433.500 |
| Italy | Sub-Measure | IT-C[M1C2]-I[I4.1] | SatCom Initiative | Investment | 385.000.000 |
| Italy | Sub-Measure | IT-C[M1C2]-I[I4.2] | Earth Observation | Investment | 417.000.000 |
| Italy | Sub-Measure | IT-C[M1C2]-I[I4.3] | Space Factory | Investment | 235.000.000 |
| Italy | Sub-Measure | IT-C[M1C2]-I[I4.4] | In-Orbit Economy | Investment | 450.000.000 |
| Italy | Sub-Measure | IT-C[M2C1]-I[I3.4.e] | Fondo Rotativo Contratti di Filiera (FCF) to support supply-chains contracts for the agri-food, fishing and aquaculture, forestry, floriculture and plant nursery sectors_R&D climate change | Investment | 200.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I2.1.b] | IPCEI_green | Investment | 600.000.000 |
| Italy | Measure | IT-C[M7]-I[I8] | Sustainable, circular and secure supply of Critical Raw Materials | Investment | 50.000.000 |
| Italy | Sub-Measure | IT-C[M1C2]-I[I1.4] | Tax credit for R&D | Investment | 2.008.340.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Italy | Measure | IT-C[M4C2]-I[I1.1] | Research Projects of Significant National Interest (PRIN) | Investment | 1.800.000.000 |
| Italy | Measure | IT-C[M7]-I[I12] | Financial Instrument for the development of an international, industrial and R&D leadership in zero-emission buses | Investment | 100.000.000 |
| Italy | Sub-Measure | IT-C[M2C1]-I[I2.3.a] | Innovation and mechanization in the agricultural and food sectors_precision farming | Investment | 200.000.000 |
| Italy | Sub-Measure | IT-C[M2C1]-I[I2.3.b] | Innovation and mechanization in the agricultural and food sectors_oil sector | Investment | 100.000.000 |
| Italy | Sub-Measure | IT-C[M2C1]-I[I2.3.c] | Innovation and mechanization in the agricultural and food sectors_untagged | Investment | 200.000.000 |
| Italy | Sub-Measure | IT-C[M2C2]-I[I3.1.b] | Production of Hydrogen in brownfield sites (Hydrogen Valleys)_R&D | Investment | 150.000.000 |
| Italy | Measure | IT-C[M2C2]-I[I3.3] | Hydrogen testing for road transport | Investment | 230.000.000 |
| Italy | Measure | IT-C[M2C2]-I[I3.4] | Hydrogen testing for railway mobility | Investment | 300.000.000 |
| Italy | Sub-Measure | IT-C[M2C2]-I[I3.5.a] | Hydrogen Research and Development_loans | Investment | 160.000.000 |
| Italy | Sub-Measure | IT-C[M2C2]-I[I3.5.b] | Hydrogen Research and Development_grants | Investment | 140.000.000 |
| Italy | Measure | IT-C[M2C2]-I[I5.2] | Hydrogen | Investment | 450.000.000 |
| Italy | Measure | IT-C[M4C2]-I[I1.2] | Funding projects presented by young researchers | Investment | 210.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.4.a] | Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies_R&D climate change | Investment | 480.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.4.b] | Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies_R&D circular economy | Investment | 240.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.4.c] | Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies_R&D digital | Investment | 240.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.4.d] | Strengthening research structures and supporting the creation of “national R&D leaders” on some Key Enabling Technologies_untagged | Investment | 640.000.000 |
| Italy | Measure | IT-C[M4C2]-I[I1.5] | Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D | Investment | 1.242.800.752 |
| Italy | Measure | IT-C[M6C2]-I[I2.1] | Strengthening and enhancement of the NHS biomedical research | Investment | 524.140.000 |
| Italy | Measure | IT-C[M1C2]-I[I6] | Investment in the Industrial Property System | Investment | 30.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.3.a] | Partnerships extended to universities, research centers, companies and funding of basic research projects_R&D climate change | Investment | 483.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.3.b] | Partnerships extended to universities, research centers, companies and funding of basic research projects_R&D circular economy | Investment | 483.000.000 |
| Italy | Sub-Measure | IT-C[M4C2]-I[I1.3.c] | Partnerships extended to universities, research centers, companies and funding of basic research projects_untagged | Investment | 644.000.000 |
| Italy | Measure | IT-C[M4C2]-I[I2.2bis] | Innovation Agreements | Investment | 164.000.000 |
| Italy | Measure | IT-C[M4C2]-R[R1.1] | Implementation of R&D support measures to foster simplification and mobility | Reform | 0 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Italy | Measure | IT-C[M6C2]-R[R1] | Revise and update the current legal framework of the Scientific Institutes for Hospitalisation and Care (IRCCS) and research policies of the Ministry of Health to strengthen the link between research, innovation and healthcare | Reform | 0 |
| Italy | Measure | IT-C[M4C1]-R[R4.1] | Ph.D. Programmes Reform | Reform | 0 |
| Latvia | Measure | LV-C[C5]-R[5-2-1-r-] | Reform of Higher Education and Scientific Excellence and Governance | Reform | 0 |
| Latvia | Measure | LV-C[C4]-I[4-1-1-1-i-] | Support for public health research | Investment | 715.000 |
| Latvia | Measure | LV-C[C5]-I[5-2-1-1-i-] | Research, development and consolidation grants | Investment | 82.500.000 |
| Latvia | Measure | LV-C[C5]-I[5-1-1-1-i-] | Operationalisation of a fully-fledged innovation system governance model | Investment | 4.587.918 |
| Latvia | Measure | LV-C[C5]-I[5-1-1-2-i-] | Support for research and internationalization | Investment | 108.912.082 |
| Latvia | Measure | LV-C[C6]-I[6-3-1-3-i-] | Development of the innovation ecosystem of public administration | Investment | 900.000 |
| Latvia | Measure | LV-C[C5]-R[5-1-r-] | Innovation management and private R&D investment motivation | Reform | 0 |
| Lithuania | Sub-Measure | LT-C[C1]-R[A-1-1-.A-1-1-7-a-] | Creation of Centre for Advanced Therapies - Construction | Reform | 8.100.000 |
| Lithuania | Sub-Measure | LT-C[C1]-R[A-1-1-.A-1-1-7-b-] | Creation of Centre for Advanced Therapies - Equipment | Reform | 5.100.000 |
| Lithuania | Sub-Measure | LT-C[C1]-R[A-1-1-.A-1-1-8-] | Creation a representative collection of reference genome data within the health project “Genome Europe” | Reform | 6.300.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Lithuania | Sub-Measure | LT-C[C3]-I[C-1-4-.C-1-4-4-a-] | Financial instruments for business creation and digital innovation - Developing and deploying digital innovation | Investment | 15.000.000 |
| Lithuania | Sub-Measure | LT-C[C3]-I[C-1-4-.C-1-4-5-] | ICT Centre of excellence | Investment | 14.000.000 |
| Lithuania | Sub-Measure | LT-C[C2]-R[B-1-3-.B-1-3-3-] | Promoting the supply of construction products and services that speed up the renovation of buildings | Reform | 50.000.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-1-.E-1-1-3-] | Strengthening the international competitiveness of higher education institutions | Reform | 10.644.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-1-.E-1-1-4-] | Systematic R&D promotion in higher education institutions and research analysis | Reform | 1.500.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-3-.E-1-3-1-] | Defining smart specialisation priorities | Reform | 0 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-3-.E-1-3-2-] | Supporting the implementation of mission-based science and innovation programmes in smart specialisation | Reform | 63.700.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-3-.E-1-3-3-] | Encouraging science and business to participate in the EU research and innovation programme Horizon Europe and other international funding programmes | Reform | 40.000.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-2-.E-1-2-1-a-] | Effective implementation of innovation policy through the creation of a single innovation promotion agency and the optimisation of the network of existing agencies - Consolidating the role of promoting innovative activities | Reform | 5.000.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-2-.E-1-2-1-b-] | Effective implementation of innovation policy through the creation of a single innovation promotion agency and the optimisation of the network of existing agencies - Carrying out a study on existing incentives for business to invest in R & D systems | Reform | 70.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-2-.E-1-2-2-] | Increasing demand for innovation in Lithuania by exploiting the potential of public procurement | Reform | 8.499.000 |
| Lithuania | Sub-Measure | LT-C[C5]-R[E-1-2-.E-1-2-4-] | Promoting the development of green innovation | Reform | 5.000.000 |
| Lithuania | Sub-Measure | LT-C[C8]-I[H-1-3-1.H-1-3-1-a-] | Improving the investment environment for RES developers – Preparation of Lithuanian energy system modelling study | Investment | 2.400.000 |
| Lithuania | Sub-Measure | LT-C[C2]-I[B-3-1-.B-3-1a-] | Establishment of The Green Finance Competence and Knowledge Center | Investment | 2.541.621 |
| Malta | Measure | MT-C[C3]-R[R2] | Finalise and implement Malta's smart specialisation strategy, with a particular focus on fostering business R&I and strengthening public-private cooperation | Reform | 0 |
| Netherlands | Sub-Measure | NL-C[C2]-I[1.I2.A] | AI Ned and applied AI learning communities - AI Ned | Investment | 44.000.000 |
| Netherlands | Sub-Measure | NL-C[C2]-I[1.I2.B] | AI Ned and applied AI learning communities - applied learning communities | Investment | 15.850.000 |
| Netherlands | Sub-Measure | NL-C[C1]-I[1.I2.A] | Green power of Hydrogen - Demonstration projects | Investment | 30.000.000 |
| Netherlands | Sub-Measure | NL-C[C1]-I[1.I2.B] | Green power of Hydrogen — Programme lines R &D | Investment | 33.700.000 |
| Netherlands | Measure | NL-C[C1]-I[1.I3] | Inland waterway energy transition, project ZES | Investment | 56.000.000 |
| Netherlands | Sub-Measure | NL-C[C1]-I[1.I4.A] | Aviation in transition — Programme Line 4 | Investment | 10.000.000 |
| Netherlands | Sub-Measure | NL-C[C1]-I[1.I4.B] | Aviation in transition — Programme line 2A and 2B | Investment | 18.700.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Netherlands | Measure | NL-C[C2]-I[1.I1] | Quantum Delta NL | Investment | 263.900.000 |
| Poland | Sub-Measure | PL-C[B]-I[2.1.1.2] | Research and innovation H2 projects for transport | Investment | 110.000.000 |
| Poland | Sub-Measure | PL-C[C]-I[2.2.1.2] | STEM laboratories - non digital part | Investment | 79.000.000 |
| Poland | Measure | PL-C[D]-I[3.1.1] | Comprehensive development of research in the field of medical sciences and health sciences | Investment | 264.939.144 |
| Poland | Measure | PL-C[A]-I[2.2.1] | Investments in the deployment of environmental technologies and innovation, including those related to circular economy | Investment | 161.963.888 |
| Poland | Measure | PL-C[A]-R[2.4] | Strengthening cooperation mechanisms between science and industry | Reform | 0 |
| Poland | Measure | PL-C[B]-R[2.1] | Improving the conditions for the development of hydrogen technologies and other decarbonised gases | Reform | 0 |
| Poland | Measure | PL-C[D]-R[3.1] | Increasing the efficiency and quality of the healthcare system by supporting Polish research and development potential in the field of medical sciences and health sciences | Reform | 0 |
| Poland | Measure | PL-C[A]-I[2.4.1] | Investment in the development of research capacities | Investment | 489.890.772 |
| Poland | Measure | PL-C[A]-R[2.2] | Creating the conditions for the transition to a circular economy model | Reform | 0 |
| Portugal | Sub-Measure | PT-C[C06]-I[i07.04] | Innovation and pedagogical modernisation in higher education | Investment | 20.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Portugal | Sub-Measure | PT-C[C05]-I[i03.1] | Research and innovation agenda for sustainable agriculture, food and agro-industry [Innovation Agenda for Agriculture 20 30] - Green projects | Investment | 45.000.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i03.2] | Research and innovation agenda for sustainable agriculture, food and agro-industry [Innovation Agenda for Agriculture 20 30] - Digital projects | Investment | 36.000.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i03.3] | Research and innovation agenda for sustainable agriculture, food and agro-industry [Innovation Agenda for Agriculture 20 30] - Renovation of hubs | Investment | 12.000.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i08.01] | More Digital Science - Campus Science XXI | Investment | 3.700.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i08.02] | More Digital Science - Science Desk | Investment | 1.974.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i08.03] | More Digital Science - National Advanced Computing Centre (CNCA) | Investment | 21.710.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i08.04] | More Digital Science - R&D programme in public administration | Investment | 9.416.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i08.06] | More Digital Science - National Open Science and Research Data Programme (PNCADAI) | Investment | 8.616.000 |
| Portugal | Sub-Measure | PT-C[C10]-I[i04-RAA.1] | Development of the ‘Cluster do Mar dos Açores’ — Protection of nature and biodiversity | Investment | 22.737.301 |
| Portugal | Sub-Measure | PT-C[C10]-I[i04-RAA.2] | Development of the ‘Cluster do Mar dos Açores’ — Construction of buildings | Investment | 21.965.385 |
| Portugal | Measure | PT-C[C10]-I[i06-RAM] | Oceanic technologies | Investment | 20.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Portugal | Sub-Measure | PT-C[C12]-I[i01.1] | Bioeconomy - Reasearch and Innovation | Investment | 120.000.000 |
| Portugal | Sub-Measure | PT-C[C10]-I[i03.1] | Atlantic Defence Operations Centre and naval platform — Nature and biodiversity protection | Investment | 147.500.000 |
| Portugal | Sub-Measure | PT-C[C10]-I[i03.2] | Atlantic Defence Operations Centre and naval platform — Skills for the green transition | Investment | 2.000.000 |
| Portugal | Measure | PT-C[C05]-I[i01.01] | Mobilising Agendas/Alliances for Business Innovation | Investment | 558.000.000 |
| Portugal | Measure | PT-C[C05]-I[i01.02] | Green Agendas/Alliances for business innovation | Investment | 372.000.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i02.1] | Interface mission — renewal of the scientific and technological support network and guidance for productive fabric - Green | Investment | 82.000.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i02.2] | Interface mission — renewal of the scientific and technological support network and guidance for productive fabric - Digital | Investment | 104.000.000 |
| Portugal | Measure | PT-C[C05]-I[i09] | Scale-up: Mobilising Agendas/Alliances for Business Innovation | Investment | 319.460.315 |
| Portugal | Measure | PT-C[C05]-I[i10] | Scale-up: Green Agendas/Alliances for business innovation | Investment | 319.875.000 |
| Portugal | Sub-Measure | PT-C[C05]-I[i11.01] | Mobilising Agendas/Alliances for Business Innovation (Loans) - Digital Innovation | Investment | 649.397.539 |
| Portugal | Sub-Measure | PT-C[C05]-I[i11.02] | Mobilising Agendas/Alliances for Business Innovation (Loans) | Investment | 122.142.146 |
| Portugal | Measure | PT-C[C05]-I[i12] | Scale-up: Green Agendas/Alliances for business innovation (Loans) | Investment | 533.125.000 |
| Portugal | Measure | PT-C[C05]-R[r11] | Extension and consolidation of the network of Interface Institutions | Reform | 0 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Portugal | Sub-Measure | PT-C[C06]-I[[C06]-I[i06.01]] | Talent Acquisition and Retention Programmes ERC-Portugal and FCT-Tenure | Investment | 35.000.000 |
| Portugal | Sub-Measure | PT-C[C06]-I[[C06]-I[i06.02]] | Increased funding for International Partnerships in Science, Technology and Innovation | Investment | 10.000.000 |
| Portugal | Sub-Measure | PT-C[C10]-I[i01.1] | Blue Hub, Network of Infrastructure for the Blue Economy — Digital infrastructure and equipment | Investment | 1.657.696 |
| Portugal | Sub-Measure | PT-C[C10]-I[i01.3] | Blue Hub, Network of Infrastructure for the Blue Economy — Protection of nature and biodiversity | Investment | 38.785.545 |
| Portugal | Measure | PT-C[C21]-I[i07] | Technical studies for offshore energy potential | Investment | 50.000.000 |
| Portugal | Measure | PT-C[C05]-R[r09] | Promotion of R&I&D and innovative investment in enterprises | Reform | 0 |
| Portugal | Measure | PT-C[C05]-R[r12] | Research and innovation agenda for sustainable agriculture, food and agro-industry | Reform | 0 |
| Portugal | Measure | PT-C[C10]-I[i02] | Green and Digital Transition and Security in Fisheries | Investment | 21.000.000 |
| Romania | Measure | RO-C[C9]-R[R2.0] | Streamline governance of research, development and innovation - Non-tagged part | Reform | 3.430.000 |
| Romania | Sub-Measure | RO-C[C5]-I[I4.3] | Circular economy and increased energy efficiency of historic buildings | Investment | 5.000.000 |
| Romania | Measure | RO-C[C9]-I[I10.0] | Establishment and financial support of a national network of eight regional career guidance centres as part of the European Research Area Talent Platform - Non-tagged part | Investment | 4.000.000 |
| Romania | Measure | RO-C[C9]-I[I5.0] | Establishment and operationalisation of Competence Centres - Non-tagged part | Investment | 25.000.000 |
| Romania | Measure | RO-C[C9]-R[R3.0] | Reform of research career | Reform | 0 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Romania | Measure | RO-C[C9]-R[R4.0] | Enhanced cooperation between business and research | Reform | 0 |
| Romania | Measure | RO-C[C9]-R[R5.0] | Support to integrate the research, development and innovation organisations in Romania in the European Research Area | Reform | 0 |
| Romania | Measure | RO-C[C2]-I[I2.0] | Development of modern production capacities of forest reproduction material | Investment | 50.000.000 |
| Romania | Measure | RO-C[C9]-I[I6.0] | Development of Horizon Europe mentoring programmes - Non-tagged part | Investment | 5.000.000 |
| Romania | Measure | RO-C[C9]-I[I7.0] | Strengthening excellence and supporting Romania’s participation in partnerships and missions in Horizon Europe - Non-tagged part | Investment | 31.000.000 |
| Romania | Measure | RO-C[C9]-I[I8.0] | Development of a programme to attract the highly specialised human resource from abroad in research, development and innovation activities - Non-tagged part | Investment | 183.000.000 |
| Romania | Measure | RO-C[C9]-I[I9.0] | Support for the holders of certificates of excellence received in the Marie Sklodowska Curie Individual Fellowship Award - Non-tagged part | Investment | 1.600.000 |
| Slovakia | Sub-Measure | SK-C[C17]-I[I3.b] | Engaging in multi-country European projects related to the digital economy - supercomputing, other | Investment | 85.090.000 |
| Slovakia | Sub-Measure | SK-C[C17]-I[I4.a] | Support for projects aiming at the development and application of top digital technologies (a) | Investment | 70.246.047 |
| Slovakia | Sub-Measure | SK-C[C17]-I[I4.b] | Support for projects aiming at the development and application of top digital technologies - administrative capacity | Investment | 1.290.000 |
| Slovakia | Sub-Measure | SK-C[C9]-I[I2.a] | Supporting cooperation between companies, academia and R & D organisations (a) | Investment | 135.117.656 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Slovakia | Sub-Measure | SK-C[C9]-I[I2.b] | Supporting cooperation between companies, academia and R & D organisations – digital | Investment | 14.020.000 |
| Slovakia | Measure | SK-C[C9]-I[I3] | Excellent science | Investment | 146.270.000 |
| Slovakia | Measure | SK-C[C9]-I[I4] | Research and innovation to decarbonise the economy | Investment | 78.660.000 |
| Slovakia | Measure | SK-C[C9]-I[I5] | Research and innovation for the digitalisation of the economy | Investment | 134.050.000 |
| Slovakia | Measure | SK-C[C8]-R[R1] | Change in the funding of universities by introduction of performance contracts | Reform | 0 |
| Slovakia | Sub-Measure | SK-C[C8]-R[R2.b] | Introduction of a system of periodic scientific performance evaluation – the temporary working group | Reform | 2.640.000 |
| Slovakia | Measure | SK-C[C8]-R[R5] | Concentration of excellent educational and research capacities. | Reform | 0 |
| Slovakia | Measure | SK-C[C9]-I[I1] | Promoting international cooperation and participation in Horizon Europe and EIT projects | Investment | 36.215.968 |
| Slovakia | Measure | SK-C[C9]-I[I6] | Financial instruments to support innovation | Investment | 31.905.543 |
| Slovakia | Measure | SK-C[C9]-R[R1] | Reform of governance, evaluation and support in science, research and innovation | Reform | 0 |
| Slovakia | Sub-Measure | SK-C[C17]-I[I5.a] | Fast grants – hackathons (a) | Investment | 2.802.907 |
| Slovakia | Sub-Measure | SK-C[C17]-I[I5.b] | Fast grants – hackathons - administrative capacity | Investment | 630.000 |
| Slovakia | Measure | SK-C[C8]-R[R3] | A new approach to accreditation of higher education | Reform | 0 |
| Slovakia | Measure | SK-C[C8]-R[R4] | Reform of the governance of universities | Reform | 0 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Slovakia | Measure | SK-C[C9]-R[R2] | Reform of the organisation and funding of research institutions, in particular the Slovak Academy of Science | Reform | 0 |
| Slovenia | Sub-Measure | SI-C[C8]-I[IB.a] | Co-financing of research innovation projects in support of green transition and digitalisation (industrial research and experimental development - long-term major cooperation programmes) | Investment | 7.500.000 |
| Slovenia | Sub-Measure | SI-C[C8]-I[IB.b] | Co-financing of research innovation projects in support of green transition and digitalisation (b) | Investment | 7.500.000 |
| Slovenia | Sub-Measure | SI-C[C8]-I[IB.c] | Co-financing of research innovation projects in support of green transition and digitalisation (entrepreneurial RDI investments - higher levels of technological development) | Investment | 36.641.145 |
| Slovenia | Measure | SI-C[C8]-I[ID] | Co-financing of investments in RDI demonstration and pilot projects | Investment | 21.000.000 |
| Slovenia | Measure | SI-C[C11]-R[RA] | Strengthening the sustainable development of tourism | Reform | 1.000.000 |
| Slovenia | Measure | SI-C[C6]-I[ID] | Cross border and multi-country projects - European common data infrastructure and services | Investment | 0 |
| Slovenia | Measure | SI-C[C6]-I[IE] | Cross border and multi-country projects - Low-Power Processors and Semiconductor Chips | Investment | 0 |
| Slovenia | Measure | SI-C[C8]-R[RA] | Operation and management of the RDI system | Reform | 14.700.000 |
| Slovenia | Measure | SI-C[C3]-I[IG] | Centre for seeds, nurseries and forest protection | Investment | 5.100.000 |
| Slovenia | Measure | SI-C[C8]-I[IC] | Co-financing of projects to enhance the international mobility of Slovenian researchers and research organisations and to promote the international involvement of Slovenian applicants | Investment | 12.571.560 |
| Spain | Sub-Measure | ES-C[C13]-I[I6.aiii] | Networks, industrial decarbonisation and climate change mitigation and adaptation Line ICO-Green | Investment | 5.000.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Spain | Sub-Measure | ES-C[C13]-I[I6.bi] | Line ICO Enterprises and Entrepreneurs PERTE NEW ECONOMY OF THE LENGUA | Investment | 150.000.000 |
| Spain | Sub-Measure | ES-C[C16]-R[R1.b] | National AI Strategy. PERTE CHIP | Reform | 40.000.000 |
| Spain | Sub-Measure | ES-C[C16]-R[R1x] | National AI Strategy | Reform | 500.000.000 |
| Spain | Sub-Measure | ES-C[C10]-I[I1.c] | Projects of R & D & I in energy storage and energy efficiency. | Investment | 30.000.000 |
| Spain | Sub-Measure | ES-C[C12]-I[I2.ai] | Processes of research, technology transfer and innovation and for cooperation between companies, with a focus on the low-carbon economy and adaptation to climate change of the Spanish industrial sector | Investment | 456.920.000 |
| Spain | Sub-Measure | ES-C[C12]-I[I2.aii] | Processes of research, technology transfer and innovation and for cooperation between businesses, with a focus on the circular economy in Spain’s industrial sector | Investment | 456.920.000 |
| Spain | Sub-Measure | ES-C[C12]-I[I2.b] | Line 2 supporting process and organisational innovation projects. | Investment | 118.000.000 |
| Spain | Sub-Measure | ES-C[C12]-I[I2.d] | Line 4, modernisation of the Spanish Metrology Centre | Investment | 16.440.000 |
| Spain | Measure | ES-C[C9]-I[I1] | Scheme to support renewable hydrogen, a country project | Investment | 1.555.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I10.a] | PERTE Health Loans in Vanguardia | Investment | 330.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I10.b] | PERTE Aerospace Loans. | Investment | 240.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I9.a] | Aerospace. PERTE Aerospace | Investment | 100.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Spain | Sub-Measure | ES-C[C17]-I[I9x] | Aerospace | Investment | 200.000.000 |
| Spain | Measure | ES-C[C13]-I[I4] | Support for Trade | Investment | 317.719.000 |
| Spain | Measure | ES-C[C17]-I[I5] | Knowledge transfer | Investment | 402.200.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I6.a] | R&D I Health. PERTE Health of Vanguardia | Investment | 270.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I6x] | Health | Investment | 527.156.000 |
| Spain | Sub-Measure | ES-C[C24]-I[I3.b] | Digitalisation and promotion of major cultural services_Museum National Centre of Reine Arts Sofia | Investment | 12.591.000 |
| Spain | Sub-Measure | ES-C[C6]-I[I4.c] | Innovation and development of variable gauge axis in locomotives. | Investment | 15.000.000 |
| Spain | Measure | ES-C[C7]-I[I1] | Development of innovative renewable energies, integrated into buildings and production processes | Investment | 2.365.000.000 |
| Spain | Measure | ES-C[C7]-R[R4] | Framework for innovation and technological development in renewable energy | Reform | 0 |
| Spain | Measure | ES-C[C15]-I[I6] | 5G Deployment: networks, technological change and innovation | Investment | 1.465.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I2.a] | trengthening of the capacities, infrastructure and equipment of SECTI actors. PERTE CHIP | Investment | 264.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I2x] | Strengthening the capacities, infrastructure and equipment of SECTI actors | Investment | 445.193.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I3.a] | Private, interdisciplinary public R&D&I projects, proof of concept and grant of aid following international competitive | Investment | 90.000.000 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| | | | calls. Cutting-edge R&D addressing societal challenges. Public pre-commercial purchase. PERTE CHIP | | |
| Spain | Sub-Measure | ES-C[C17]-I[I3x] | New private, interdisciplinary, public R&D&I projects, concept tests and the award of aid as a result of international competitive calls. Cutting-edge R&D geared to societal challenges. Pre-commercial public procurement | Investment | 1.167.072.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I4.a] | New scientific career. Post-doctoral researcher consolidation programme. PERTE CHIP | Investment | 10.000.000 |
| Spain | Sub-Measure | ES-C[C17]-I[I4x] | New scientific career | Investment | 294.020.000 |
| Spain | Measure | ES-C[C17]-R[R2] | Spanish Strategy for Science, Technology and Innovation 2021-2027 and Advanced Development of the Science, Technology and Innovation Information System | Reform | 0 |
| Spain | Sub-Measure | ES-C[C3]-I[I5.b] | Strategy for the Digitisation of the Agri-Food and Forestry Sector and the Rural Environment. Creat | Investment | 4.000.000 |
| Spain | Sub-Measure | ES-C[C3]-I[I5.d] | Strategy for the Digitisation of the Agri-Food and Forestry Sector and the Rural Environment. Creat | Investment | 3.000.000 |
| Spain | Measure | ES-C[C7]-R[R3] | Development of energy communities | Reform | 100.000.000 |
| Spain | Measure | ES-C[C9]-R[R1] | Hydrogen roadmap: a commitment to renewable hydrogen | Reform | 0 |
| Spain | Measure | ES-C[C13]-I[I5] | Internationalisation | Investment | 201.850.000 |
| Spain | Measure | ES-C[C17]-I[I1] | Supplementary Research and Development plans with Autonomous Communities | Investment | 299.237.000 |
| Spain | Measure | ES-C[C17]-I[I7] | Environment, Climate change and energy | Investment | 81.807.000 |
| Spain | Measure | ES-C[C17]-I[I8] | Sustainable automotive R & D & I (PTAS) | Investment | 40.000.000 |
| Spain | Measure | ES-C[C17]-R[R1] | Reform of the Science, Technology and Innovation Law | Reform | 0 |

| Country | Measure Level | Measure Reference | Measure Name | Measure Type | Cost |
|---|---|---|---|---|---|
| Spain | Measure | ES-C[C17]-R[R3] | Reorganisation of Public Research Organisations and rationalisation of their structure and operation | Reform | 0 |
| Spain | Measure | ES-C[C3]-I[I8] | Plan to boost the sustainability, research, innovation and digitalisation of the fisheries sector (III): Technological development and innovation in fisheries and aquaculture | Investment | 11.000.000 |
| Spain | Measure | ES-C[C6]-R[R2] | Indicative Rail Strategy | Reform | 0 |
| Spain | Measure | ES-C[C8]-R[R4] | Regulatory sandboxes or test-beds | Reform | 0 |
| Sweden | Sub-Measure | SE-C[A]-I[I2.1] | Submeasure: Climate investment in the industrial sector (tag 22) | Investment | 243.456.790 |
| Sweden | Sub-Measure | SE-C[A]-I[I2.2] | Submeasure: Climate investment in the industrial sector (tag 23) | Investment | 42.962.962 |

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This evaluation assesses how the Recovery and Resilience Facility (RRF) supported research and innovation (R&I) across the EU27 by analysing 387 R&I measures in national Recovery and Resilience Plans. It applies five core evaluation criteria—effectiveness, efficiency, relevance, coherence, and EU added value—to assess both the strategic and operational impact of RRF investments. The study also distils key lessons learnt to guide future EU-level policy design, funding instruments, and implementation practices in the R&I domain.

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