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Funding the Future: R&D Strategies in the Balkans' Recovery Plans

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Research Objectives & Methodology

Objectives:

- Primary Goal:
  - To analyze and compare the structure, funding, and implementation of the Research & Innovation (R&I) components within the National Recovery and Resilience Plans (NRRPs) of Romania, Bulgaria, Croatia, and Greece.
- Key Research Questions:
  - How much funding is allocated to R&I in each plan and how does this relate to their national R&D intensity?
  - What institutional models are used to manage and implement R&I within the NRRPs?
  - What are the thematic priorities (e.g., fundamental research vs innovation)?
  - How are capacity and coordination challenges addressed?

Methodology:

- Approach:
  - Qualitative comparative policy analysis across four countries.
- Data Sources:
  - Official NRRP texts (country-level)
  - European Commission evaluations (RRF Scoreboard Recovery and Resilience Reports)
  - Eurostat statistics
  - National agencies and ministries
- Analytical Dimensions:
  - Institutional design & governance
  - Budgetary allocations
  - Thematic orientation of measures
  - Administrative capacity
  - Inter-ministerial coordination
  - Digital infrastructure
  - External expertise and evaluation use
  - Implementation bottlenecks and progress

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Literature Review Highlights

Key Insights from the Literature

- *Underrepresentation of R&I in NRRPs:* Despite their strategic role in Europe's green and digital transitions, R&I investments were relatively under-prioritized in most NRRPs. This is particularly evident in Southern and Eastern Europe (Marino et al., 2022; Dotti & Fratesi, 2023).
- *Misalignment with Horizon Europe:* National plans frequently failed to align with Horizon Europe's priorities and the European Research Area agenda, limiting long-term integration potential (Casasnovas & Brunner, 2023).
- *Administrative and Capacity Constraints:* R&I governance systems in SEE countries are characterized by fragmentation, underdeveloped coordination mechanisms, and limited use of evidence-based policy tools (Rodrigues, 2023; Caravella & Crescenzi, 2022).
- *Need for Structural Reform in R&D Policy:* Several studies highlight the necessity of reforming public R&D institutions and improving the design of performance-based funding models (Schubert & Seitz, 2022; Horváth, 2021).

Relevance to This Study

- This paper responds to repeated calls in the literature for country-specific and comparative analyses of NRRP R&I strategies in Eastern and Southern Europe. It contributes insights into the governance, funding logic, and implementation challenges, offering a form of empirical support to the claim that funding without structural reform is insufficient.

Sources (Selected)

- Marino, S. et al. (2022). Research in Recovery Plans: A Missing Engine? Research Policy, 51(4).
- Dotti, N.F. & Fratesi, U. (2023). NextGenerationEU and Cohesion in Europe: Investment or Missed Opportunity? Regional Studies, 57(2).
- Casasnovas, G. & Brunner, E. (2023). R&D Systems in Crisis? National Responses in the Wake of the Pandemic. Science and Public Policy, 50(1).
- Caravella, S. & Crescenzi, R. (2022). Governance and R&D Policy in the EU: Lessons from Recovery Instruments. Journal of Common Market Studies, 60(6).
- Rodrigues, M. (2023). Peripheral Sciene in Europe: Structural Challenges in the Balkans. European Planning Studies, 31(8).

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Funding Allocation & R&D Intensity

Key Findings

- **Croatia** demonstrates the highest relative commitment (6.11%) to R&I in its NRRP, with alignment between funding and national R&D intensity (1.44%). This reflects a strong policy emphasis on reforming public research institutions and linking funding to performance.
- **Greece** allocates the highest **absolute** amount (€1.2B) and maintains the **highest national R&D intensity (1.57%)**, indicative of a systemic approach across the full R&D pipeline — from basic research to smart specialization.
- **Romania** and **Bulgaria** reflect structural underinvestment: low national R&D intensities (0.52% and 0.79%) are mirrored by weak NRRP commitments (1.06% and 1.70%). This could highlight some limited policy coherence and institutional readiness to absorb transformative R&I investment.

Comparative NRRP Allocations and R&D Intensity (2023)

Country	R&I Allocation (€ million)	Total NRRP Allocation (€ million)	% of NRRP for R&I	R&D Intensity (% of GDP, 2023)
Romania	314	29,600	1.06%	0.52
Croatia	309	5,060	6.11%	1.44
Bulgaria	211.2	12,444.4	1.70%	0.79
Greece	1,217	30,600	3.98%	1.57

Sources: Countries own NRRP's, European Commission (2022); Eurostat R&D Expenditure (2024).

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Institutional Design & Governance

Common Features (Across All 4 Countries)

- **Centralized NRRP coordination**, usually by the **Ministry of Finance** or an agency under it.
- **Cross-ministerial involvement** in R&I governance: Education, Economy, Digitalization, Finance Ministries are typically engaged.
- **Strategic aim** across the board: to address structural weaknesses in national R&I systems (e.g., underfunding, weak academia-business links).

Insights

- **Romania**: Most detailed and layered governance structure, with institutional specialization and clear division of labor.
- **Croatia**: Transparent governance and international institutional support (World Bank).
- **Greece**: Multiple actors involved, but coordination appears fragmented; policy integration weaker than in Croatia.
- **Bulgaria**: Highly centralized approach, but limited stakeholder involvement and flexibility.

Comparative NRRP Allocations and R&D Intensity (2023)

Country	R&I Coordinating Bodies	Key Observations
Romania	The former Ministry of Research, Innovation and Digitalization (**MCID**) (from 2025 the Ministry of Education and Research), Ministry of Investments and European Projects (**MIPE**), Executive Agency for Higher Education, Research, Development and Innovation Funding (**UEFISCDI**)	Most granular detail: dedicated directorates, inter-ministerial coordination bodies, specialized digital platforms.
Croatia	Ministry of Science, Education and Youth (**MZOM**), Ministry of Finance, Central Finance and Contracting Agency (**CFCA**)	Clear distribution: strong coordination + CFCA as implementation body; institutional support via World Bank.
Greece	General Secretariat for Research and Innovation (**GSRI**), Ministry of Education, Religious Affairs and Sports (**YPAITHA**), Recovery and Resilience Facility Agency (**RRF Agency**)	Fragmented landscape; GSRI leads on RTDI, but broader governance involves multiple ministries.
Bulgaria	Ministry of Education and Science (**MES**), Ministry of Innovation and Growth	Centralized with vague distribution of roles; Innovation Council proposed for advisory.

Sources: Official Government websites (2025)

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Thematic Focus of R&I Investments

Common Strategic Priorities

- Modernization of R&D infrastructure
- Human capital development (STEM, researcher careers, talent attraction)
- Academia–business linkages
- Support for digital and green transitions

Key Findings

- **Croatia & Greece**: clear national strategies that connect funding to measurable institutional transformation.
- **Romania**: focuses on integration with ERA, but institutional fragmentation persists until reforms are implemented.
- **Bulgaria**: prioritizes business-oriented innovation and STEM infrastructure, but underfunds core scientific research.

While all four countries aim to modernize their R&I systems, only Croatia and Greece achieve a thematic balance between foundational science and innovation. Bulgaria skews toward professional innovation, and Romania mixes digital objectives with scientific reforms.

National Specificities

Country	R&I Focus Areas	Highlights
Romania	Integration into Horizon Europe, digital innovation, diaspora engagement	Support for Horizon Europe & Marie Skłodowska-Curie holders; reforms for "brain circulation" and researcher careers
Croatia	Public research capacity, STEM skills, program-based university funding	Emphasis on performance-based contracts; alignment with digital and green transition; scholarships in STEM/ICT
Bulgaria	STEM infrastructure, vocational excellence, private-sector innovation	National and regional STEM centers; business innovation prioritized over fundamental research; low budget share for basic science
Greece	Balanced pipeline: basic research → applied innovation → commercialization	Explicit funding for basic research; smart specialization (e.g. patenting, smart farming); integration with green and digital goals

Sources: Official NRRPs, European Commission (2022).

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Administrative Capacity & Coordination

Shared Challenges

- **Understaffing & low absorption rates**: All four countries face significant delays in implementation due to insufficient human resources and administrative complexity.
- **Fragmentation & weak coordination**: Institutional overlaps and lack of clear mandates often hamper coherent R&I governance.

Romania and Bulgaria both face acute challenges in administrative capacity, but Romania proposes governance reforms and external support mechanisms. Greece and Croatia show better macro-coordination, yet still face structural bottlenecks.

Administrative capacity—not just funding—is a decisive variable for the success of NRRP R&I measures. While digital tools and external assistance help, coherent internal structures and skilled personnel remain critical.

Country-Specific Capacity Insights

Country	Administrative Setup	Key Bottlenecks
Romania	MCID (MER from 2025) & MIPE with support from UEFISCDI	Difficulty attracting/retaining experts; limited strategic planning; governance reform planned
Bulgaria	Highly centralized via MES; fragmented innovation ecosystem	Severe delays, political instability, lowest absorption rate in R&I, talent shortages
Croatia	Coordinated by Ministry of Finance; supported by World Bank's DIGIT project	Fragmentation in R&D landscape; weak public-private spillovers; low research quality
Greece	GSRI, YPAITHA, and RRF Agency	Administrative bottlenecks, fragmented ministerial roles; low digitalization of R&I governance

Sources: Official Government websites (2025).

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Implementation Progress & Bottlenecks

Progress Highlights

- **Romania**:
  Key R&I reforms implemented (governance, researcher careers, ERA integration); multiple funding calls launched.
- **Croatia**:
  Fulfilled milestone of program agreements signed by 65% of public universities; investment in research infrastructure initiated.
- **Bulgaria**:
  Legal R&I framework updated; STEM centers and CoVEs (Centres of Vocational Excellence) launched; AI-related project (BgGPT) initiated.
- **Greece**:
  Substantial commitment to R&D and digital transition; GSRI involved in strategic alignment of infrastructure and innovation.

Major Bottlenecks

- **Romania**:

  Administrative fragmentation, slow fund absorption, weak stakeholder involvement
- **Croatia**:

  Potential substitution of national R&D budgets by EU funds, lack of research dashboards, fragmented research ecosystem
- **Bulgaria**:

  Very low fund disbursement, centralized rigid implementation, lowest priority for basic research
- **Greece**:

  Delays due to complex governance, blurry distinction between research and innovation in budget allocations, lack of specific digital tools

All four countries have made measurable progress in launching NRRP-linked reforms and investments, but their ability to implement systemic change is hampered by persistent structural and administrative barriers.

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Conclusions & Policy Implications

Core Findings

- **Strategic asymmetry**: While all four countries address R&I, actual **funding and structural commitment** vary widely.
- **Croatia** and **Greece** show the strongest alignment between NRRP allocations and national R&D readiness.
- **Romania** proposes the most **detailed governance model**, but suffers from executional fragmentation.
- **Bulgaria** reflects the **greatest gap** between ambition and implementation—especially in fund absorption and research capacity.

Structural Challenges Identified

- Persistent **underinvestment in R&D** (esp. Romania and Bulgaria)
- Weak **inter-ministerial coordination** and stakeholder engagement
- Fragmented or missing **digital infrastructure** for R&I governance
- Insufficient use of **external evaluators** and evidence-based tools

Policy Recommendations

1. **Link funding to reform**: Financial allocations must be matched by structural and governance modernization.
2. **Strengthen capacity**: Invest in administrative human capital, not just infrastructure.
3. **Enhance coordination**: Clear mandates and real-time digital systems improve transparency and impact.
4. **Foster evidence use**: Systematic external evaluations and performance tracking should be standard.

NRRP success in R&I depends not on funding alone, but on the strategic alignment between policy design, governance, and implementation capacity."

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🙏 Thank You!

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