



European
Commission

ERA Country Report 2024

Romania

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Report

Research and
Innovation

ERA Country Report 2024: Romania

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ERA Country Report 2024

Romania

This report was prepared by

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as part of the project 'Implementation of the ERA Monitoring Mechanism' for the European Commission, Directorate-General for Research and Innovation (RTD/2023/OP/0017)

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Key takeaways

- Romania is committed to eight ERA Actions. These were selected strategically, as they represent areas in which the country is confronted with challenges.
- Romania registers particular advancements in relation to ERA Actions 8 and 10. Additionally, Romania is above the European Union average when it comes to ERA Dashboard indicators connected to the participation of women in science.
- To progress related to the selected ERA Actions, Romania included relevant objectives and actions in the National Strategy for Research, Innovation and Smart Specialisation 2022-2027. This is financed from Cohesion Policy funds, the national budget, and from the National Recovery and Resilience Plan.
- The National Recovery and Resilience Plan also includes reforms linked to the research and innovation system, including legislative changes. Advancement on these reforms is one of the main achievements since the last report in 2023.
- The effects of the reforms implemented and of the undergoing and planned investments are expected to be reflected on the ERA Dashboard in the future. For a more effective integration in the ERA, an increase of both public and private research and innovation investments would be necessary.

1. National context

Romania is among the medium-sized EU-member states. Romania is categorised as an *Emerging Innovator* in the 2024 European Innovation Scoreboard, with the lowest innovation index (37.4) in the EU.¹ The country's expenditure on research and development is lower than the EU average according not just based on the overall expenditure on research and development as a share of GDP (GERD), but also in terms of business and government expenditure. According to the latest data available, the share of female researchers in Romania is higher than the EU average (see Table 1).

Table 1 Structural Key Indicators

Indicator	EU27	Romania		
	2023	2023	Average 2018-2020	Average 2021-2023
GDP in current prices, per capita	35 790.00	14 920.00	10 550.00	12 993.33
Gross Domestic Expenditure on R&D (GERD) as a share of GDP	2.27	0.46	0.48	0.46
Government Budget Allocations for R&D (GBARD) as share of GDP	0.73	0.12	0.18	0.14
Business Enterprise expenditure on R&D (BERD) as a share of GDP	1.52	0.29	0.28	0.29
Expenditure on R&D procurement as a percentage of GDP	0.06	0.01	/	0.01
Size of the population (million)	448.80	19.05	19.43	19.10
Researchers (in FTE) per million inhabitants	4 681.34	1 005.12	907.75	1 001.87
Share of female researchers, all sectors of performance (%)	33.71	/	46.81	/

Note: EU and country averages are for 2023, except share of female researchers (2021)

Source: see Annex 1

The research and innovation (R&I) activity is governed by Ordinance 57/2002. The National Strategy for Research-Innovation and Smart Specialisation (NSRI&SS) 2022-2027² is the main policy document. The general objectives of the NSRI&SS 2022-2027 cover the further development of the R&I system, support for smart specialisation innovation ecosystems and innovation, as well as European and international cooperation. The most important funding sources of the NSRI&SS 2022-2027 are the national and regional Cohesion Policy Programmes, the National Research, Development and Innovation Plan (NRDI Plan) 2022-2027³ and the National Recovery and Resilience Plan (NRRP). The latter also includes a series of reforms relevant for the national ERA commitments (under Component 9).

2. Status of the Implementation of the ERA Policy Agenda

Chapter 2 briefly summarises **new developments in Romania since the publication of the 2023 ERA Country Report**, based on the commitments to ERA Actions (Table 2). The findings are based on qualitative desk research and interviews.

¹ <https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis-2024#/eis/countries/RO>

² Government Decision 933/2022.

³ Government Decision 1188/2022.

Romania has committed to **eight out of 20 ERA Actions**, covering all four Priority Areas (see Table 2). The **NSRI&SS 2022-2027 includes priorities and measures pertaining to ERA commitments**. The most relevant specific objectives refer to: raising the number and competencies of researchers, support for the transition towards open science and for the progress towards scientific excellence, enhancing the competitiveness of research organisations and modernisation of the R&I infrastructure, as well as increasing participation in and exploitation of synergies with the relevant European Union (EU) programmes, such as Horizon Europe⁴. The Roadmap for Research Infrastructures⁵ is in place since 2017 and a White Paper on Transition Towards Open Science 2023-2030⁶ was published at the end of 2022.

The progress towards ERA priorities and actions was monitored in the reporting period by the Ministry of Research, Innovation and Digitalization (MRID) ⁷. An important role in coordination and monitoring lied with the Unit for the Implementation of Policy Support Facility (PSF) Reforms of the MRID⁸. Other ministries, such as the Ministry of Agriculture and Rural Development, also coordinate research organisations. The Ministry of European Investments and Projects is the Managing Authority for national Cohesion Policy programmes, while the regional programmes are managed by the eight Regional Development Agencies. The MRID coordinated the implementation of the NRD Plan 2022-2027. The Executive Unit for Financing Higher Education, Research Development and Innovation (UEFSCDI) is managing certain funding programmes included in this Plan.

Table 2 Commitment to ERA Actions

1: Deepening a truly functioning internal market for knowledge								
1. Enable Open Science, including through EOSC	2. Propose an EU copyright and data legislative framework for research	3. Reform the Assessment System for research, researchers and institutions	4. Promote attractive research careers, talent circulation and mobility	5. Promote gender equality and foster inclusiveness	6. Protect academic freedom in Europe	7. Upgrade EU guidance for a better knowledge valorisation	8. Strengthen research infrastructures	9. Promote international cooperation
2: Taking up together the challenges posed by the twin green and digital transition, and increasing society's participation in the ERA					3: Amplifying access R&I excellence across the Union		4: Advancing concerted research and innovation investments and reforms	
10. Make EU R&I missions and partnerships key contributors to the ERA	11. An ERA for green transformation	12. Accelerate the green & digital transition of Europe's key industrial ecosystems	13. Empower Higher Education Institutions	14. Bring Science closer to citizens	16. Improve EU-wide access to excellence	17. Enhance public research institutions' strategic capacity	19. Establish an ERA monitoring system	

Source: European Commission (Note: Actions 15, 18 and 20 were not implemented)

⁴ Government Decision 933/2022.
⁵ https://www.old.research.gov.ro/uploads/sistemul-de-cercetare/infrastructuri-de-cercetare/cric/romania-national-roadmap_2017.pdf
⁶ <https://www.open-science.ro/resurse/cartea-alba-a-tranzitiei-catre-stiinta-deschisa-2023-2030>
⁷ Ordinance 57/2002.
⁸ The central government was reorganised in December 2024. The tasks of the former Ministry of Research, Innovation and Digitalization are now undertaken by the National Authority for Research established through Government Decision 188/2025 (Official Journal 158/2025), subordinate to the Ministry of Education and Research and the Unit for the Implementation of PSF Reforms in Research and Development is part of its organisational structure.

ERA Priority 1: Deepening a truly functioning internal market for knowledge

ERA Action 1) Enable the open sharing of knowledge and the re-use of research outputs, including through the development of the European Open Science Cloud (EOSC) The Open Science Knowledge Hub (National Open Access Office and member of the OpenAIRE network), within UEFSCDI continued to organise events (such as a national roadshow) and disseminate relevant information to foster transition towards open science (e.g. about the use of European Open Science Cloud (EOSC) EU Node⁹). RO-NOSCI (National Cloud Initiative for Open Science) finalised a mapping of the open science policies and resources of its members at the end of 2023¹⁰. The aim of the mapping is to support the implementation of the actions foreseen in the RO-NOSCI Memorandum of understanding and design of tailored measures.¹¹ The Association of Universities, Research-Development Institutes and of Central Libraries (ANELIS) Plus concluded further agreements to facilitate access to scientific literature and to support open access publishing¹².

ERA Action 3) Advance towards the reform of the Assessment System for research, researchers and institutions to improve their quality, performance and impact The methodological norms for the performance assessment of the research organisations have been adopted through Government Decision 138/2024. These support the application of the provisions of Law 25/2023 regarding the voluntary integration of research organisations in ERA. The Performance Evaluation Committee with 28 members has been set up by the end of the year¹³. Law 183/2024 regarding the status of RDI personnel has been adopted, bringing harmonisation, clarity and equity in the career promotion of employees from research organisations. This law also has relevance for ERA Action 4.

ERA Action 4) Promote attractive and sustainable research careers, balanced talent circulation and international, trans-disciplinary and inter-sectoral mobility across the ERA The Government adopted through Decision 1568/2024 the methodological norms regarding the promotion and recruitment of researchers. These support the implementation of related provisions from Law no. 183/2024. The eight regional career orientation centres for researchers set up in 2023 continued their work to offer support for 450 researchers by the end of 2026. The centres are financed from the NRRP and are part of the ERA Talent Platform¹⁴. 40 additional projects were decided to be contracted with a value of EUR 48 million under the NRRP investment supporting the attraction of highly specialised researchers from abroad through a Memorandum approved by the Government in February 2024¹⁵. Together with the 76 projects selected at the beginning of 2023, the final number of projects exceeds with 16 the initial target¹⁶. The 116 project beneficiaries are expected to obtain the HR Strategy for Researchers' award.¹⁷ UEFISCDI organised relevant workshops and information events¹⁸.

⁹ https://www.open-science.ro/stiri-si-evenimente?40271573_page=1

¹⁰ <https://uefiscdi.gov.ro/news-adunarea-general-a-ro-nosci-5-decembrie-2023>

¹¹ <https://www.open-science.ro/ro-nosci#more>; Trif (2025)

¹² <https://anelis-plus.ro/open-access/acorduri-transformative-2024>

¹³ <https://www.mcid.gov.ro/programe-europene/pnrr/componenta-9-suport-pentru-sectorul-privat-cercetare-dezvoltare-si-inovare> and Interviewee

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Source: Interviewee.

¹⁸ https://www.open-science.ro/stiri-si-evenimente?40271573_page=2

ERA Action 8) Strengthen sustainability, accessibility and resilience of research infrastructures in the ERA The financing contract to support the DANUBIUS-RO, part of the ESFRI infrastructure DANUBIUS-RI, has been signed¹⁹. The call to support the Romanian part of the Advanced Lead-cooled Fast Reactor European Demonstrator (ALFRED), an infrastructure of pan-European interest, was re-launched at the end of 2024²⁰. Financing is secured through the Smart Growth, Digitalisation and Financial Instruments Programme 2021-2027 (above EUR 100 million per project).

ERA Action 9) Promote a positive environment and level playing field for international cooperation based on reciprocity UEFSCDI continued its work as a member of the European Alliance for Science Diplomacy²¹. The role of the Alliance is to foster dialogue, cooperation and voluntary coordination linked to science diplomacy and the development of partnerships to access funding for joint project ideas²².

ERA Priority 2: Taking up together the green transition and digital transformation and other challenges with impact on society and increasing society's participation in the ERA

ERA Action 10) Make EU R&I missions (10.1) and partnerships (10.2) key contributors to the ERA The beneficiaries of the five Competence Centres financed with EUR 25 million from NRRP continued project implementation. These virtual competence centres with complex RDI activities will become fully operational by the end of 2025. Each of them is addressing one of the five Horizon Europe missions²³. With commitment from five ministries Romania launched a mirror mission to "100 Smart and Climate Neutral Cities by 2030". The funding is secured from European Economic Area and Norway grants. Ten already selected cities receive assistance to transition towards climate neutrality²⁴. The advancements are supported by the five national contact points designated in 2022 to support the missions²⁵. They were also involved in the implementation of the TRAMI – Transnational Approach to Missions Implementation²⁶ – project financed by the EU.

¹⁹ <https://www.incdsb.ro/danubius/semnarea-contractului-pentru-proiectul-strategic-danubius-ro-centru-international-de-studii-avansate-pentru-sisteme-fluvii-mari>

²⁰ <https://mfe.gov.ro/pocidif-ghidul-solicitantului-sprijin-pentru-2-proiecte-in-domeniul-tehnologiilor-avansate-si-crearea-de-hub-uri-de-inovare-si-transfer-tehnologic-in-domenii-prioritare>

²¹ <https://uefiscdi.gov.ro/news-uefiscdi-face-parte-din-alianta-europeana-pentru-diplomatie-stiintifica>

²² <https://www.science-diplomacy.eu>

²³ <https://www.mcid.gov.ro/programe-europene/pnrr/componenta-9-suport-pentru-sectorul-privat-cercetare-dezvoltare-si-inovare> and Interviewees.

²⁴ <https://m100.ro> and Interviewees.

²⁵ Source: Interviewees.

²⁶ <https://www.trami5missions.eu>

ERA Priority 3: Enhancing access to research and innovation excellence across the Union and enhancing interconnections between innovation ecosystems across the Union

ERA Action 16) **Improve EU-wide access to excellence** The NRDI Plan 2022-2027 call, leading to the selection of maximum 20 Centre of Excellence projects, was launched by UEFSCDI. The centres will cover one of the five domains pertaining to the National Research Agenda²⁷, as included in the NSRI&SS 2022-2027. The domains are in synergy with the Horizon Europe thematic clusters. The call for Horizon Europe mentoring has been launched under the NRRP with a budget of EUR 5 million, open until the end of 2025²⁸. The 13 Marie Skłodowska-Curie Actions' Seal of Excellence holders continued to receive support under the NRRP. The two-year contracts concluded in 2022 are for Individual and Postdoctoral Fellowships with values above EUR 0.14 million. The call budget was EUR 8 million. Beneficiaries should obtain the HR Strategy for Researchers award²⁹, to also contribute to ERA Action 4. The Horizon Europe National Contact Point continued support for organisations interested to access funds from the Framework Programme³⁰. A national-regional action plan linked to smart specialisation is in place. The continuous entrepreneurial discovery will foster the development of regional innovation systems³¹.

3. Contribution of ERA Actions to national performance in reaching ERA objectives

This chapter provides a qualitative assessment of how the joint ERA Actions contributed to Romania's performance in achieving the ERA objectives as defined in the Pact for R&I during the period 2022-2024.

ERA Priority 1 is addressed through initiatives focusing on **ERA Actions 1, 3, 4, 8 and 9**. Latest efforts have been particularly concentrated on making legislative changes linked to Actions 3 and 4 as described in Chapter 2. These are part of the 30 recommendations stemming from the PSF Country Review³² and the following PSF Open³³ exercise³⁴. 80 percent of these recommendations are addressed through reforms included under Component 9 of the NRRP, while the rest with the support of external experts³⁵. The challenges addressed concern the fragmentation and low performance of the Romanian R&I system³⁶. Part of these problems were also highlighted in the previous ERA Country Report³⁷. To improve the overall governance of R&I, Ordinance 57/2002 has been amended and established a National

²⁷ <https://uefiscdi.gov.ro/centre-de-excelenta-coex> and Interviewee.

²⁸ <https://www.mcid.gov.ro/programe-europene/pnrr/componenta-9-suport-pentru-sectorul-privat-cercetare-dezvoltare-si-inovare> and Interviewee.

²⁹ Ibid.

³⁰ <https://www.ncp.uefiscdi.ro/assistance-support>.

³¹ Order 20486/2024.

³² European Commission, 2022.

³³ <https://projects.research-and-innovation.ec.europa.eu/en/statistics/policy-support-facility/psf-open>

³⁴ Source: Interviewee.

³⁵ Source: Interviewee.

³⁶ European Commission, 2022

³⁷ Sandu, 2024.

Committee for Science, Technology and Innovation, presided by the Prime Minister. The fourth reform, under implementation has the goal to attract public and private financing in R&I³⁸.

These reforms are recent, and their effects are not visible yet. This is also reflected in the data on research outputs and performance (ERA Dashboard Indicators 21, 25-26, 29) or private investments in research and public-private cooperation (ERA Dashboard Indicators 19-20, 22-24). Romania has stagnated over the last years or registered a slight decline, continuing to fall below the EU average in other areas (e.g., ERA Dashboard Indicator 19). The lack of performance is also due to the low level of GERD (Table 1) and the lack of base financing³⁹. Nonetheless, government allocations for R&D (GBARD) according to NABS as percentage of total GBARD have increased between 2022 and 2023 (ERA Dashboard Indicator 33). The overall weak performance is negatively influencing the value of ERA Dashboard Indicators 29.

To make progress in these areas the NSRI&SS 2022-2027 includes objectives linked to the skill development of researchers and attraction of talents, raising the competitiveness of research organisations, and support for the valorisation of research results and for the cooperation between public research organisations and companies, as well as for technology transfer (specific objectives 1.1, 1.3, 2.1, 3.1, 3.2)⁴⁰. These objectives should also lead to raising the number of PhD graduates (ERA Dashboard Indicator 18) and a better ranking of the universities (ERA Dashboard Indicator 28). The dedicated funding sources from NRRP, from the Smart Growth, Digitalisation and Financial Instruments Programme 2021-2027, from the eight Regional Programmes 2021-2027, as well as from the NRD Plan 2022-2027 should support reaching these objectives and overcoming the challenges also mentioned in the previous ERA Country Report⁴¹.

Nonetheless, the low funding for the operational costs of research institutes, the unpredictability linked to existing funding instruments, delays in launching calls or in evaluation of proposals may hinder these objectives, as well as misalignment between the rules governing the different funding instruments and the lack of financing to further develop results at TRL 3 or 4⁴². These affect advancement in **ERA Actions 3, 4, 8 and 9** as it becomes harder for research organisations to attract young talents due to low salary levels, to maintain and modernise existing infrastructures and to reach relevant research results⁴³. This leads to low performance reflected in ERA Dashboard Indicators 21, 25, and 26.

The NSRI&SS includes further objectives linked to fostering transition to open science and excellence and the modernisation and effective use of RDI infrastructures (specific objectives 1.2 and 1.4). The work of the ANELIS Plus consortium⁴⁴ contributed to improving

³⁸ Interviewee and National Recovery and Resilience Plan.

³⁹ European Commission, 2022 and Interviewee. The NUCLEU (CORE) Programme under the National RDI Plan is dedicated to research institutes. These can receive a financing similar with base financing, however, based on competition. The received amounts do not cover yearly operational costs.

⁴⁰ Some of the relevant targets to be achieved by 2030: raising the number of public-private co-publications per 1 mil inhabitants from 24.5 to 50, raising the share of innovative SMEs cooperating with research organisations to 7%, raising the share of PhD graduates from all graduates with 10% and of the share of researchers from Romania to 20%; raising the number of patents with 50% and that of the most cited articles from 7% to 10%.

⁴¹ Sandu, 2024.

⁴² Source: Interviewees.

⁴³ Source: Interviewees.

⁴⁴ The consortium received financing under the Competitiveness Operational Programme 2024-2020 and set up a platform through which researchers have access to scientific publications (<https://www.e-nformation.ro/>). Through agreements with publishing houses it supports open access publication.

performance linked to ERA Dashboard Indicator 6. Romania continues to lag linked to all other open science indicators (ERA Dashboard Indicators 7, 8, 9). Compared to the value included in the previous report⁴⁵ the number of European Research Infrastructures (RIs) has increased by three (ERA Dashboard Indicator 11). This is due to the continued support for RIs and for Romania investing more in this direction than the EU average (ERA Dashboard Indicator 10).

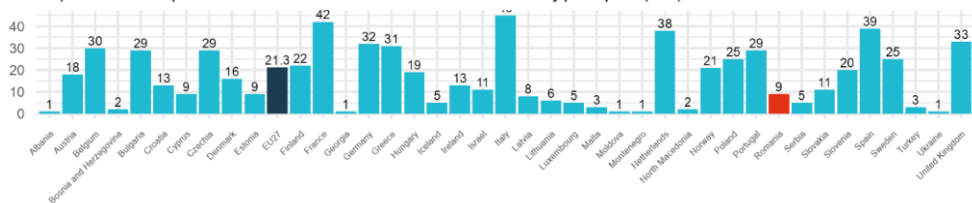
Romania continues to outperform the EU average linked to the indicators measuring the involvement of women in research (ERA Dashboard Indicators 12, 13, 14). The exception is ERA Dashboard Indicator 15. Fostering the adoption of the Bonn Declaration on Academic Freedom is closely related to the legislative reforms and could lead to improving once more the performance linked to ERA Dashboard Indicator 27. As the indicators on to the internationalisation of R&D are concerned, Romania is close to or above the EU average (ERA Dashboard Indicators 30 and 31). This is not the case with ERA Dashboard Indicator 32. The NSRI&SS foresees support in this sense but only expects a raise in the number of triadic patents filed by Romanian researchers.

Figure 3-1 Indicators for ERA Priority 1

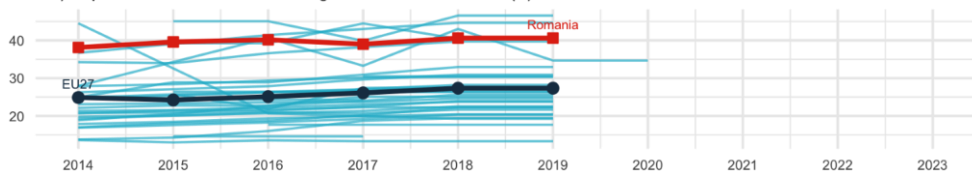


⁴⁵ Sandu, 2024.

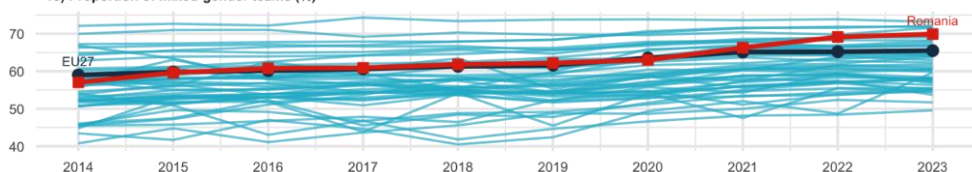
11) Number of European RIs in which a Member State or an Associated Country participates (total) - 2023



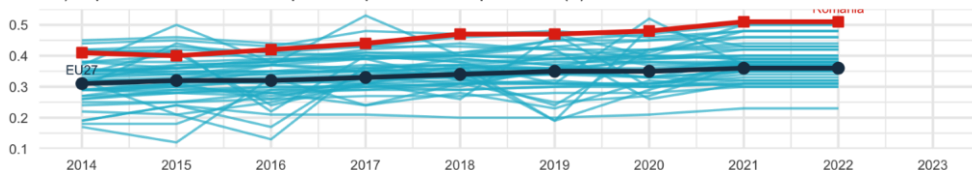
12) Proportion of women of Grade A among academic staff/researchers (%)



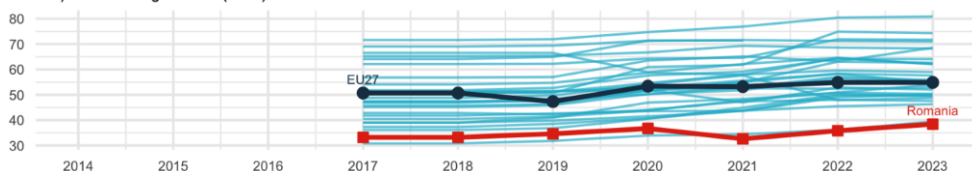
13) Proportion of mixed-gender teams (%)



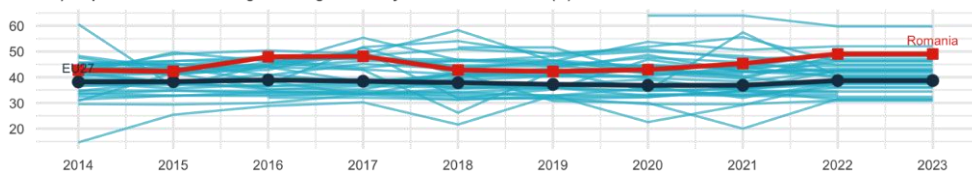
14) Proportion of women in authorships of the top 10% most cited publications (%)



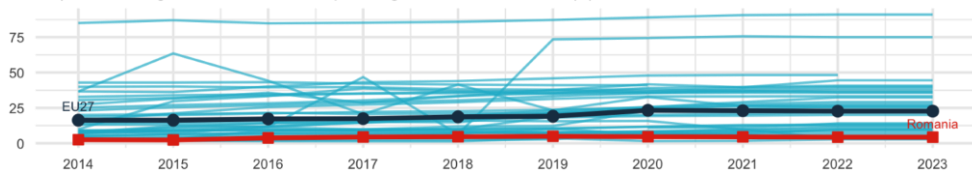
15) Women in Digital index (0-100)



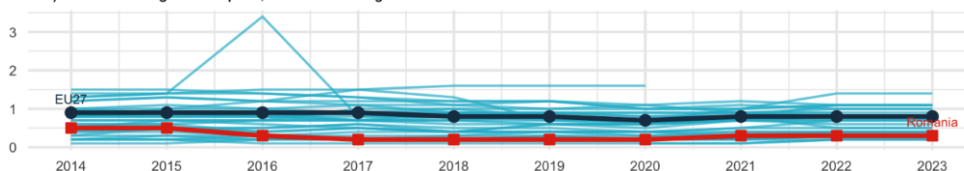
16) Proportion of women among doctoral graduates by narrow fields of STEM (%)



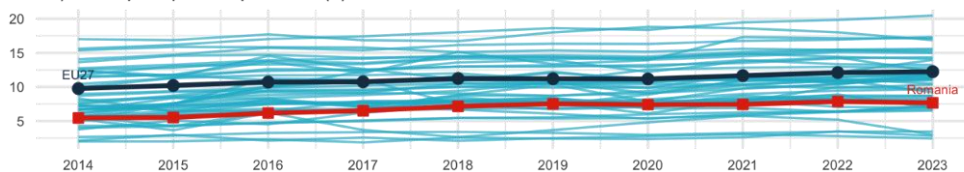
17) Share of foreign doctorate students as a percentage of all doctorate students (%)



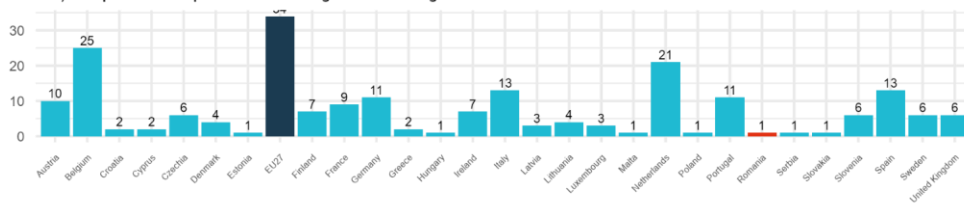
18) New doctorate graduates per 1,000 inhabitants aged 25-34



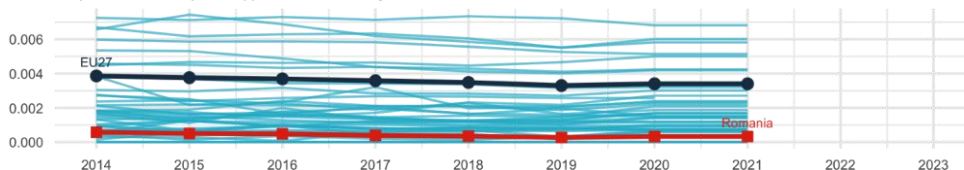
19) Share of public-private co-publications (%)



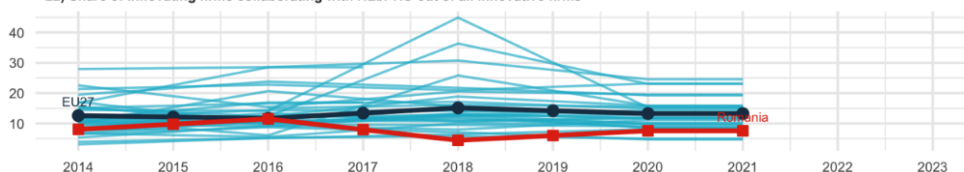
20) Best practice examples and methodologies for knowledge valorisation - 2023



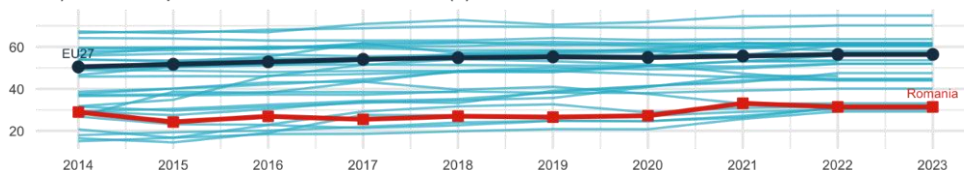
21) Number of PCT patent applications divided by GDP in million Euros/Dollars



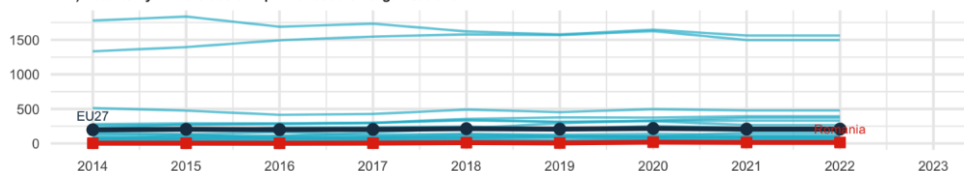
22) Share of innovating firms collaborating with HEI/PRO out of all innovative firms



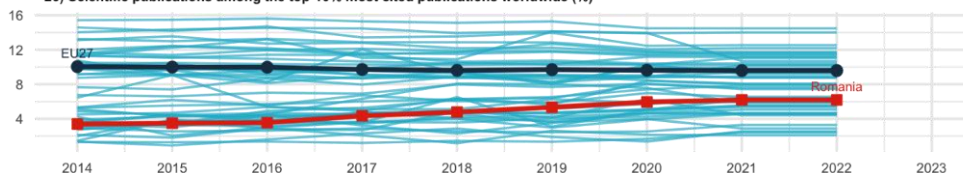
23) Business enterprise researchers as % of total researchers (%)



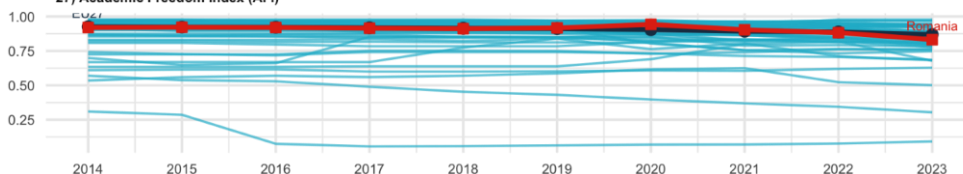
25) Patents by universities and public research organisations



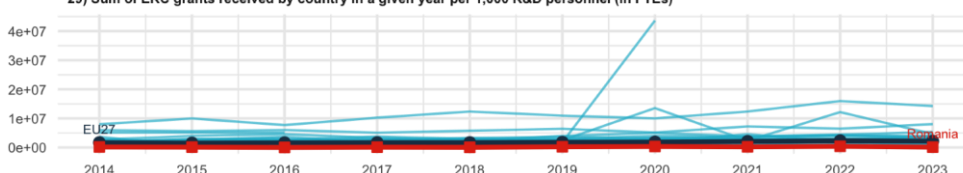
26) Scientific publications among the top-10% most cited publications worldwide (%)



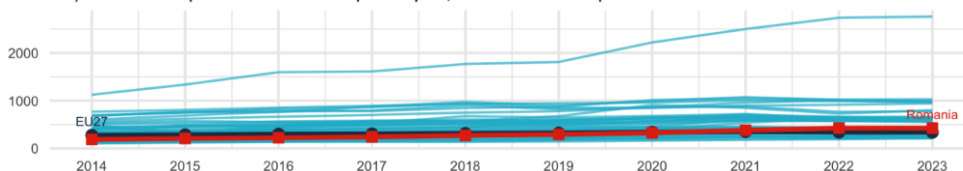
27) Academic Freedom Index (AFi)



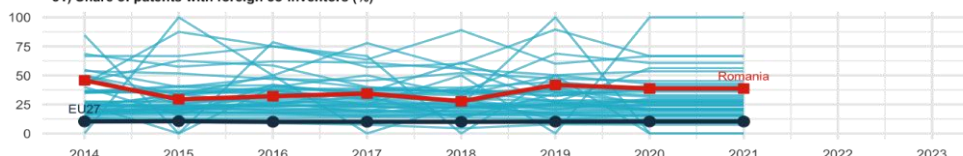
29) Sum of ERC grants received by country in a given year per 1,000 R&D personnel (in FTEs)



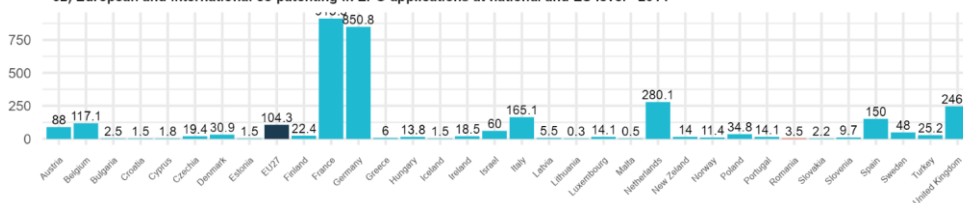
30) International co-publications with non-EU partners per 1,000 researchers in the public sector



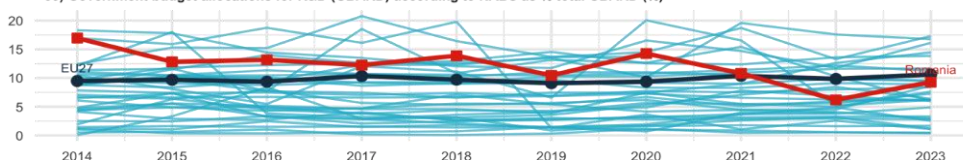
31) Share of patents with foreign co-inventors (%)



32) European and international co-patenting in EPO applications at national and EU level - 2014



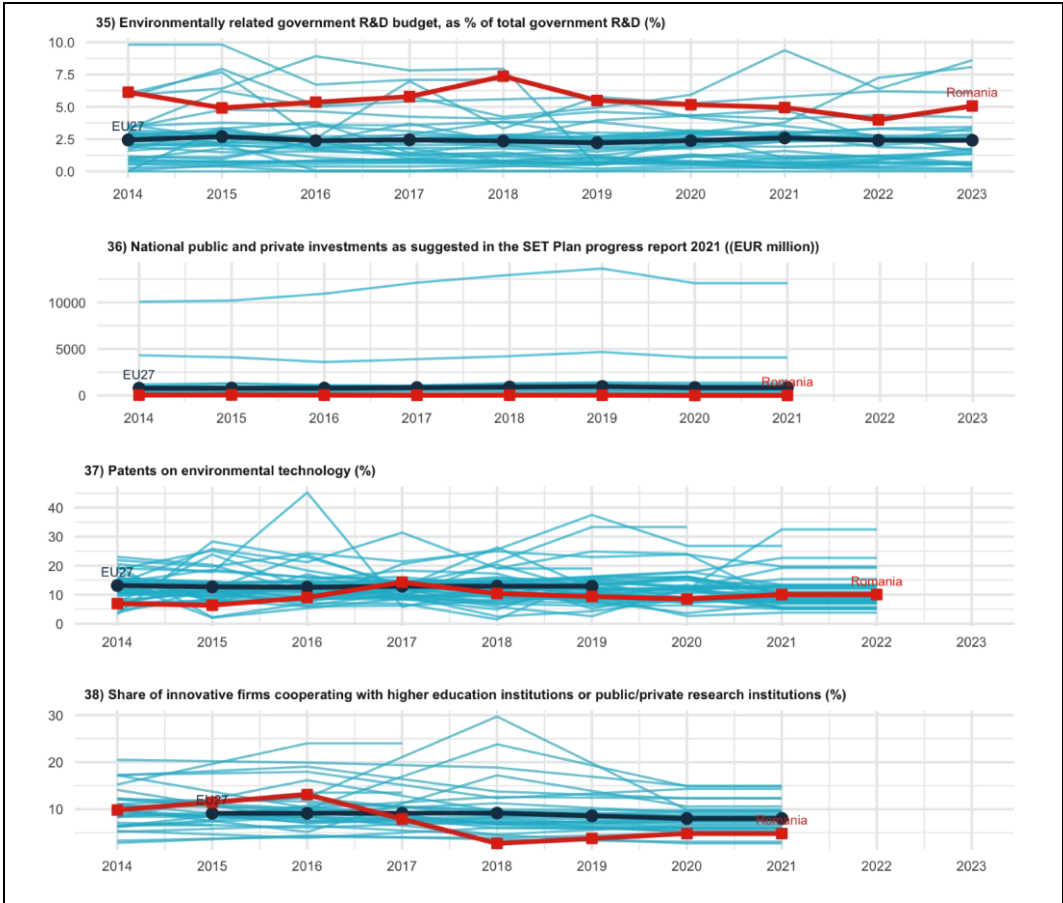
33) Government budget allocations for R&D (GBARD) according to NABS as % total GBARD (%)



Source: see Annex 1

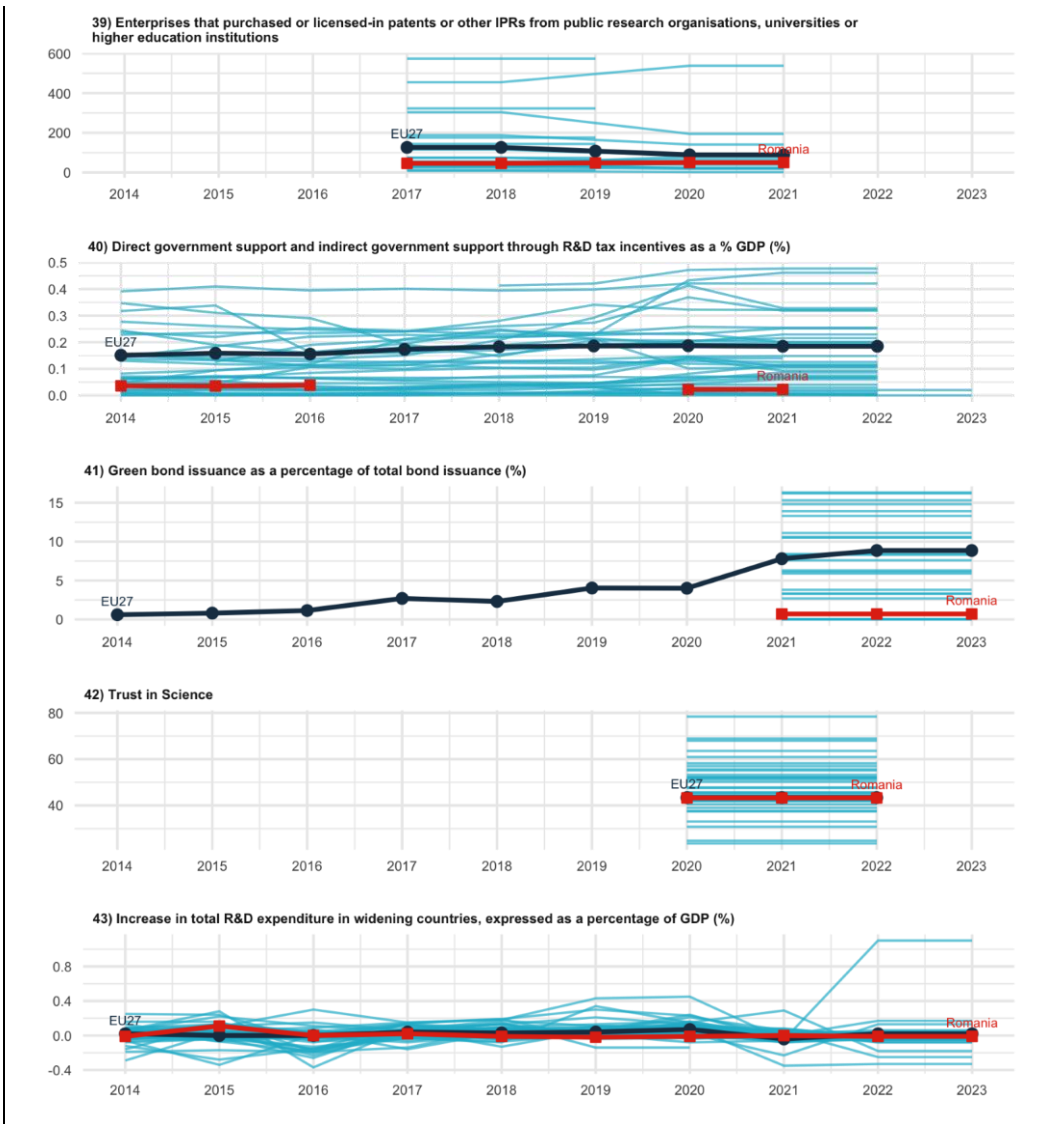
ERA Priority 2 is addressed through Action 10 (see description in Chapter 2). Focus on EU missions can also contribute to Action 11, linked to which Romania is progressing rather well (ERA Dashboard Indicators 36, 35 and 37). The exception is ERA Dashboard Indicator 41. Public-private cooperation in R&I is weak and so are the intermediaries, such as TTOs⁴⁶. The weak science-industry collaboration is also highlighted in the latest report under the European Semester⁴⁷ and reflected in the evolution of ERA Dashboard Indicators 38, 39 and 40. Compared to 2014-2020 there is a shift in both the NSRI&SS and its funding sources, from mainly supporting research and development infrastructures to fostering R&I and cooperation between public research organisations and companies.

Figure 3-2 Indicators for ERA Priority 2



⁴⁶ European Commission, 2022.

⁴⁷ https://economy-finance.ec.europa.eu/document/download/dcac26a0-120e-4233-88b6-8c7b0d919257_en?filename=SWD_2024_623_1_EN_Romania.pdf

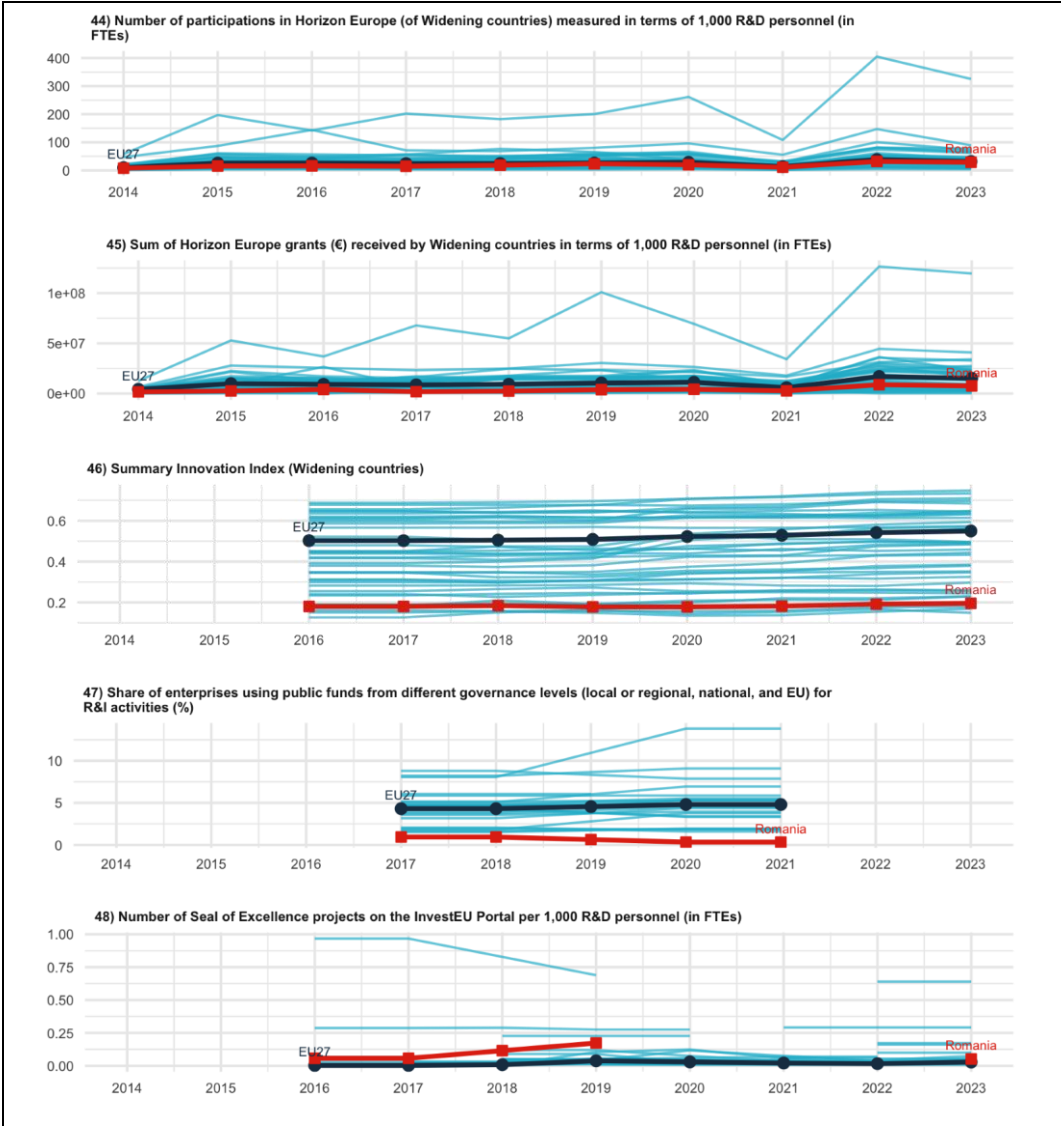


Source: see Annex 1

ERA Priority 3 is addressed through Action 16. The NSRI&SS has the aim to raise the level of Romanian participation in relevant EU programmes, especially Horizon Europe. The target is to double the amounts attracted between 2014 and 2020 during this programming period. All relevant funding sources foresee targeted support to achieve this objective, e.g. for proposal development and project implementation (NRRP), support for co-financing (NRDI Plan), use of Seal of Excellence and support for creating synergies (Smart Growth, Digitalisation and Financial Instruments Programme, as well as Regional Programmes of development regions such as Centre, West, North-East and South-West Oltenia). Progress linked to this action would be indispensable, as Romania underperforms linked to all relevant

indicators (see Figures below). The need to increase participation in EU level R&I activities is also included in the latest report under the European Semester⁴⁸.

Figure 3-3 Indicators for ERA Priority 3 with comparison across MS/AC



⁴⁸ https://economy-finance.ec.europa.eu/document/download/dcac26a0-120e-4233-88b6-8c7b0d919257_en?filename=SWD_2024_623_1_EN_Romania.pdf



Source: see Annex 1

4. Effects of ERA Action implementation on the national R&I system

This chapter presents a qualitative investigation of the way the ERA Action implementation had an effect on the Romanian R&I system, relying especially on the input of interviewees. This also includes reflections regarding the alignment of the identified national R&I priorities with the ERA and the quantitative performance in the ERA Dashboard (see Chapter 3).

The NSRI&SS through its objectives and targets contributes directly to the **ERA Actions** selected by Romania. This is supported by funding instruments financed by the EU and from the national budget. The Cohesion Policy programmes and the NRD Plan are in synergy and complementarity with the EU funding instruments, especially Horizon Europe. The National

Research Agenda from the NSRI&SS is thematically aligned with Pillar II of the Framework Programme. Missions (**ERA Priority 2, Action 10**) are supported by tailored instruments. This alignment is also reflected in the eligibility requirements in calls⁴⁹. Besides investments, Romania is carrying out several reforms connected to ERA commitments. The policy mix has been shaped largely by the recommendations formulated in the PSF Country Review⁵⁰. Overall, Romania benefited a lot from the PSF (**ERA Priority 4**), including the Mutual Learning Exercise⁵¹.

Romanian stakeholders have also gained advantages from implementation of **ERA Priorities 1 and 3**. Collaboration within the ERA, participation in pan-European infrastructures and in quadruple helix partnerships has led to the development of researchers' skills, to a better integration in the EU R&I system, and to the adoption of new internal procedures and practices in public research organisations and universities. The European Charter and Code for Researchers has become a standard. Some organisations perceive that the legislative reforms only catch-up with existing practices.

Interviewees consider that the legislative changes linked to the internal promotion of researchers (**ERA Actions 3 and 4**) will be highly beneficial, but are reluctant as regards the new norms for the assessment of research organisations. They consider that this might lead to the disappearance of some research institutes. Others will need to start a re-accreditation process sooner⁵². Policy makers are aware of the concerns⁵³.

ERA Action 1 is considered overall beneficial. Romanian stakeholders use the resources from Zenodo and there are agreements in place for the open access publication of scientific articles⁵⁴. The positive effects are visible in the value of ERA Dashboard Indicator 6. Nonetheless, interviewees note that the overall number of scientific articles might decrease, due to the lack of funding from the national budget for scientific experiments, as also reflected by ERA Dashboard Indicators 33 and 34.

Interviewees consider that there is still much to be done for Romania to be able to reap the benefits of **ERA Action 16** and are aware of the underperformance linked to ERA Dashboard Indicators 44, 45 or 50. They add that the country did not manage to leverage the opportunities offered by the Widening under Horizon Europe. Some appreciate that there should be greater emphasis on **ERA Action 14**, especially for citizens to accept novelties introduced on the market (e.g., alternative protein sources).

5. Conclusions

Within the ERA Romania is committed to ERA Actions 1, 3, 5, 8, 9, 10, 16 and 20 (see Chapter 1). Through this it aims to tackle the challenges and weaknesses faced within the ERA, which are also visible from the values of the ERA Dashboard Indicators (see Chapter 3). Some of these challenges have been highlighted in the previous ERA Country Report⁵⁵ and are also included in the latest report under the European Semester⁵⁶. The commitment

⁴⁹ Source: Interviewee.

⁵⁰ Source: Interviewee. European Commission, 2022.

⁵¹ Source: Interviewee.

⁵² Source: Interviewee.

⁵³ Source: Interviewee.

⁵⁴ Source: Interviewees.

⁵⁵ Sandu, 2024.

⁵⁶ https://economy-finance.ec.europa.eu/document/download/dcac26a0-120e-4233-88b6-8c7b0d919257_en?filename=SWD_2024_623_1_EN_Romania.pdf

towards these actions is well reflected in main national policy document (NSRI&SS), as well as its main financing sources (Cohesion Policy programmes, the NRRP and the NRD Plan financed from the national budget). These are in synergy and complementarity with each other, as well as with the ERA Priorities and the relevant EU level programmes, such as Horizon Europe. The countries' objective is to raise the performance of researchers, to reduce the fragmentation of the R&D system, to reach a higher absorption rate from the Horizon Europe programme and to create links within the innovation system, especially by supporting collaboration between public research organisations and the industry.

Since mid-2023 Romania also deployed a series of relevant reforms. Part Component 9 of the NRRP was substantiated by the recommendations of the PSF experts and were decided to be addressed due to strong political will.⁵⁷ Overall, Romania benefited a lot from the different PSF exercises and so did several public research organisations from the ERA (see Chapter 4). The effects and impact of these benefits are not yet visible on the system level. Romania still has the lowest innovation performance in the EU according to the European Innovation Scoreboard⁵⁸. However, based on the vision statement of the NSRI&SS Romania would like to become a *Moderate innovator* by 2030.

According to interviewees, further conditions should be met for Romania to be able to reach national level goals and to contribute to ERA Priorities. Sustained political commitment and support would be necessary, and strongly interconnected with this, a more enhanced activity of the of the National Committee for Science, Technology and Innovation, as its members only met once until now⁵⁹. Additionally, it would be crucial to enhance capacities and capabilities linked to R&I policy in the central public administration, as well as for the effective allocation of 1% of the GDP this domain⁶⁰ as foreseen in Ordinance 57/2002. The European Commission appreciated that it would be critical for the country to set up a multiannual R&I budget and 'to reach its 2% R&I investment target by 2027'⁶¹.

⁵⁷ Interviewee and <https://projects.research-and-innovation.ec.europa.eu/en/statistics/policy-support-facility/psf-open/support-romania-implementation-10-psf-country-recommendations>

⁵⁸ <https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis-2024#/eis>

⁵⁹ Source: Interviewee.

⁶⁰ Source: Interviewee.

⁶¹ European Commission, 2024, p. 13.

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Annex 1 – Full list of ERA Dashboard Indicators

The indicators used in the report are taken from the ERA Dashboard 2024. The full ERA Dashboard Report and the supporting Data Replication Package can be downloaded at <https://european-research-area.ec.europa.eu/era-monitoring-reports>. However, *GDP (in million €)*, *Size of the population (million)*, and *Share of female researchers, all sectors of performance (%)* were added to provide additional context and directly retrieved from the Eurostat website. EU and country averages are for 2023, except *Share of female researchers, all sectors of performance (%)* (2021).

Table 1 Structural Key Indicators:

Indicator number	Indicator	Source
/	GDP in euro per capita, current prices	Eurostat https://doi.org/10.2908/TEC00001
1	Gross Domestic Expenditure on R&D (GERD) as a share of GDP	Eurostat
2	Government Budget Allocations for R&D (GBARD) as share of GDP	Eurostat
4	Business Enterprise Expenditure on R&D (BERD) as a share of GDP	Eurostat
5.2	Expenditure on R&D procurement as a percentage of GDP	EC/European Innovation Procurement Observatory
/	Size of the population (million)	Eurostat, https://doi.org/10.2908/TPS00001
3	Researchers (in FTE) per million inhabitants	Eurostat
/	Share of female researchers, all sectors of performance (%)	Eurostat, https://doi.org/10.2908/TSC00005

Figure 3.1 Indicators for ERA Priority 1

Indicator number	Indicator	Source
6	Share of publications available in open access (green, gold, and diamond)	OpenAIRE
7	Number of open-access research datasets by country	OpenAIRE
8	Number of repositories by country	EOSC - Re3data
9	Country investments in EOSC and Open Science (in ranges of investment)	EOSC Observatory
10	Share of national public R&D expenditure committed to European research infrastructures	ESFRI
11	Number of European RIs in which a Member State or an Associated Country participates	ESFRI
12	Proportion of women of Grade A among academic staff/researchers	Women in Science - She Figures
13	(Corrected) Proportion of mixed-gender teams	EC_Scopus
14	(Corrected) Proportion of women in authorships of the top 10% most cited publications	EC_Scopus
15	Women in Digital index (0-100)	EC-Women in Digital Scoreboard
16	Proportion of women among doctoral graduates by narrow fields of STEM	Eurostat

17	Share of foreign doctorate students as a percentage of all doctorate students	Eurostat
18	New doctorate graduates per 1,000 inhabitants aged 25-34	Eurostat
19	Share of public-private co-publications	EC_Scopus
20	(Cumulative number of) Best practice examples and methodologies for knowledge valorisation	Knowledge Valorisation Platform
21	Number of PCT patent applications divided by GDP in million Euros/Dollars	OECD, Eurostat & World Bank
22	Share of innovating firms collaborating with HEI/PRO out of all innovative firms	Eurostat CIS (own calculations)
23	Business enterprise researchers as % of total researchers	OECD
24	Business enterprise researchers in full-time equivalent per thousand employment in industry	OECD
25	Patents by universities and public research organisations	EPO PATSTAT - Fraunhofer ISI calculations
26	% of scientific publications among the top-10% most cited publications worldwide	EC_Scopus
27	Academic Freedom Index (AFi)	V-Dem Varieties of Democracy
28	Average ranking score of top 10 universities by country and year	QS World University Ranking
29	Sum of ERC grants received by country in a given year per 1,000 R&D personnel (in FTEs)	EC-ERC
30	International co-publications with non-EU partners per 1,000 researchers in the public sector	EC_ScienceMetrix and Eurostat/OECD
31	Share of patents with foreign co-inventors	OECD
32	European and international co-patenting in EPO applications at national and EU level	Eurostat
33	Government budget allocations for R&D (GBARD) according to NABS as % total GBARD	Eurostat

Figure 3.2 Indicators for ERA Priority 2

Indicator number	Indicator	Source
34	Note: The ERA Dashboard Indicator 34 was removed from the Dashboard in January 2025. As a consequence, the indicator has also been omitted from the Country Report, while, however, keeping the original numbering of the indicators.	
35	Environmentally related government R&D budget, as % of total government R&D	Eurostat
36	National public and private investments as suggested in the SET Plan progress report 2021 (EUR million)	SETIS R&I data
37	% Patents on environmental technology	OECD
38	Share of innovative firms cooperating with higher education institutions or public/private research institutions	Eurostat CIS
39	Enterprises that purchased or licensed-in patents or other IPRs from public research organisations, universities or higher education institutions	Eurostat CIS
40	Direct government support and indirect government support through R&D tax incentives as a % GDP	OECD

41	Green bond issuance as a percentage of total bond issuance	Eurostat - EEA
42	Trust in Science	Eurobarometer 95.2
43	Increase in total R&D expenditure in widening countries, expressed as a percentage of GDP	Eurostat, OECD, UNESCO

Figure 3.3 Indicators for ERA Priority 3

Indicator number	Indicator	Source
44	<i>Number of participations in Horizon Europe (of Widening countries) measured in terms of 1,000 R&D personnel (in FTEs)</i>	Cordis - Eurostat
45	<i>Sum of Horizon Europe grants (€) received by Widening countries in terms of 1,000 R&D personnel (in FTEs)</i>	Cordis - Eurostat
46	<i>Summary Innovation Index (Widening countries)</i>	EC_EIS
47	<i>Share of enterprises using public funds from different governance levels (local or regional, national, and EU) for R&I activities</i>	Eurostat CIS
48	<i>Number of Seal of Excellence projects on the InvestEU Portal per 1,000 R&D personnel (in FTEs)</i>	EC - Invest EU
49	<i>Number of collaboration networks of RPOs in Widening countries with other EU countries</i>	Cordis - Horizon Dashboard
50	<i>Average number of partners from non-widening countries per institution from a Widening country participating in the Horizon programme each year</i>	Cordis - Eurostat
51	<i>Share of patents registered by a Widening country together with partners from other EU countries</i>	OECD
52	<i>Share of innovative enterprises that cooperated with RPOs located in other countries</i>	Eurostat CIS
53	<i>Share of public R&D expenditures financed by the private sector</i>	Eurostat

Figure 3.4 Indicators for ERA Priority 4

Indicator number	Indicator	Source
54	<i>GBARD allocated to Europe-wide transnational, as well as bilateral or multilateral, public R&D programmes per FTE researcher</i>	Eurostat

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