



European
Commission

ERA Country Report 2024

Czechia

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Report

Research and
Innovation

ERA Country Report 2024: Czechia

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ERA Country Report 2024

Czechia

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

- Czechia has made significant progress in aligning national policies with ERA priorities, focusing on open science, gender equality, and research security.
- Substantial funding has been directed towards research infrastructures, early-career researchers, and talent mobility through programmes like European Open Science Cloud CZ (EOSC-CZ), the Czech Science Foundation (GACR), and the Technology Agency of the Czech Republic (TACR).
- Efforts to support sustainability and digitalisation, including the Hydrogen Strategy and smart technologies adoption, highlight Czechia's focus on green and digital transitions, though gaps remain in patents and funding for environmental technologies.
- Despite improvements in collaboration, knowledge valorisation, and participation in Horizon Europe, Czechia still faces hurdles in boosting research excellence, and innovation performance, such as patenting performance, and public-private partnerships.

1. National context

Czechia is among the *medium-sized* EU Member States. Its researcher base is concentrated in the public sector, in particular in universities and the Academy of Sciences. Czechia is categorised as a *moderate innovator* in the latest 2024 European Innovation Scoreboard.¹

Table 1 shows that gross domestic expenditure on research and development in Czechia (2023: 1.89 percent) still lack behind the EU27 average (2023: 2.27 percent), whilst the number of researchers per million inhabitants (measured in full-time equivalents) in Czechia (2023: 4,698) is very similar to the EU27 average (2023: 4,681). Czechia's share of female researchers remains below the EU27 average, with 27.11 percent.

Table 1 Structural Key Indicators

Indicator	EU27	Czechia		
	2023	2023	Average 2018-2020	Average 2021-2023
GDP in euro per capita, current prices	35 790.00	26 670.00	20 236.67	23 693.33
Gross Domestic Expenditure on R&D (GERD) as a share of GDP	2.27	1.89	1.91	1.90
Government Budget Allocations for R&D (GBARD) as share of GDP	0.73	0.52	0.64	0.57
Business Enterprise expenditure on R&D (BERD) as a share of GDP	1.52	1.21	1.17	1.21
Expenditure on R&D procurement as a percentage of GDP	0.06	0.05	/	0.05
Size of the population (million)	448.80	10.83	10.65	10.61
Researchers (in FTE) per million inhabitants	4 681.34	4 697.51	4 002.46	4 658.77
Share of female researchers, all sectors of performance (%)	33.71	/	27.11	/

Source: Annex 1

2. Status of the Implementation of the ERA Policy Agenda

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

Czechia has committed to 17 ERA Actions, covering all the four Priority Areas (see Table 2). The national implementation of ERA Actions is coordinated by the Council for International Cooperation in Research, Development and Innovation of Czechia,³ particularly by its Working Group for the ERA Policy Agenda.

¹ European Innovation Scoreboard, available online at: <https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis-2024#/eis>

² Documents consulted during the desk research include European Semester reports, the European Innovation Scoreboard, and documents from the Ministry of Education, Youth and Sports.

³ <https://msmt.gov.cz/rada-pro-mezinarodni-spolupraci-cr-ve-vvaji>

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)

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)

Guided by the National Research, Development, and Innovation Policy 2021+ (NRDIP 2021+),⁴ efforts focused on open access, digital infrastructure, and integration with the European Open Science Cloud (EOSC). The EOSC-CZ project,⁵ launched in September 2023 and coordinated by Masaryk University, CESNET, and the IT4Innovations National Supercomputing Centre, established a national EOSC node with funding from the Ministry of Education, Youth and Sports. Complementary initiatives, such as the Czech Academic and Research Discovery Services (CARDS), support unified data access, while Open Science Support Centres, operational since 2020, and the 2023 Data Stewards Community promote data-sharing practices and data management competencies. Events like the EOSC Roadshow further raised awareness of FAIR data principles. Despite significant investments in EOSC and Open Science, with 50.99 percent in 2024, Czechia remains below the EU27 average (74.49 percent) in the share of publications available in open access.

ERA Action 2) Propose an EU copyright and data legislative and regulatory framework fit for research

Czechia made progress under ERA Action 2 by improving copyright and data frameworks to support research. Amendments to the Czech Copyright Act aligned with the EU Directive on Copyright in the Digital Single Market (DSM Directive), enabling text and data mining (TDM) for research purposes. The National Research, Development, and Innovation Policy 2021+ (NRDIP 2021+) reinforced intellectual property rights while promoting research expansion. Czechia also actively participated in EU-level dialogues related to the Artificial Intelligence Act and Digital Services Act, focusing on data governance, addressing emerging issues such as AI-generated content and copyright protection, ensuring alignment with European standards and fostering a supportive regulatory environment for innovation.

⁴ Available online at: <https://vyzkum.gov.cz/FrontClanek.aspx?idsekce=932081>

⁵ Official website at: <https://www.eosc.cz/en>

ERA Action 3) Advance towards the reform of the Assessment System for research, researchers and institutions to improve their quality, performance and impact

Czechia's participation in the Coalition for Advancing Research Assessment (CoARA)⁶ marks an important commitment to modernising research evaluation. In 2024, fifteen Czech research organisations committed to implementing the Agreement on Reforming Research Assessment by 2027, supported by an Action Plan outlining evaluation strategies for 54 institutes and over 400 research teams for the 2020-2024 period. Masaryk University demonstrated leadership by becoming the first Czech institution and the sixth globally to publish a comprehensive reform plan, aligning its research evaluation practices with European standards and promoting excellence in assessment frameworks.

ERA Action 4) Promote attractive and sustainable research careers, balanced talent circulation and international, trans-disciplinary and inter-sectoral mobility across the ERA

In November 2024, Czechia hosted the Horizon Europe Policy Support Facility (PSF) Mutual Learning Exercise (MLE) on Research Careers. The meeting focused on 'Enabling conditions for attractive R&I systems and balanced circulation of talents'⁷, with discussions addressing systemic reforms and opportunities for researchers. The Czech Science Foundation (GACR) allocated CZK 4.5 billion (EUR 180 million) to support early-career researchers, while the Technology Agency of the Czech Republic (TACR) provided CZK 6.5 billion (EUR 260 million) to promote applied research and industry collaboration. In 2024, Czech organisations coordinated 2.3 percent of the total 10,360 proposals submitted for MSCA Postdoctoral Fellowships, positioning the country among the top 15 coordinators. Euraxess Czech Republic offered relocation assistance, and the MERIT Fellowship Programme attracted postdoctoral researchers, reinforcing the country's commitment to fostering research excellence and talent mobility. The Ministry of Education, Youth and Sports will provide CZK 1.3 billion from EU funds to support the return of researchers after a career break. The call published in 2024, under the Operational Programme Jan Amos Comenius ("Returns"), aims to prevent the termination or significant limitation of research careers for talented individuals due to challenges in balancing work and family care.⁸ Czech research organisations also make intensive use of the HR Excellence in Research Award (HRS4R). According to the Euraxess website, Czechia comes fourth behind Spain, Poland and the UK in terms of the number of organisations that received the award.

ERA Action 5) Promote gender equality and foster inclusiveness, taking note of the Ljubljana declaration

In 2024 the CZERA project⁹, funded by the Ministry of Education, Youth and Sports, supported integration into the European Research Area with a focus on gender mainstreaming. Czech representatives played a leading role in the ERA Forum Subgroup on Inclusive Gender Equality, spearheading initiatives such as drafting a Zero Tolerance Code of Conduct on gender-based violence¹⁰, demonstrating the country's commitment to fostering equitable and inclusive research environments. Efforts also included mainstreaming gender equality within ERA Actions for the Policy Agenda 2025-2027.

⁶ <https://coara.eu/>

⁷ More information available online at: <https://projects.research-and-innovation.ec.europa.eu/en/statistics/policy-support-facility/psf-challenge/mutual-learning-exercise-research-careers>

⁸ More information at <https://opjak.cz/aktuality/vyzva-navraty-podpori-vyzkumnice-a-vyzkumniky-po-karierni-prestavce>

⁹ More information available online at: <https://www.ssc.cas.cz/en/Research/co-operative-projects/czera/>

¹⁰ European Commission (2024). Directorate-General for Research and Innovation, *Zero-tolerance code of conduct – Counteracting gender-based violence, including sexual harassment, in the EU research and innovation system*, <https://data.europa.eu/doi/10.2777/044501>

ERA Action 6) Deepening the ERA through protecting academic freedom in Europe In 2024, the Ministry of Education, Youth and Sports in cooperation with the Ministry of Interior, issued guidelines for building institutional resilience against illegitimate interference, establishing risk management strategies, and implementing due diligence frameworks for collaborations.¹¹ These measures reinforce research integrity while addressing challenges such as foreign interference and cybersecurity threats. Czechia's performance in the Academic Freedom Index has remained consistently high, surpassing the EU27 average in recent years, reflecting its commitment to safeguarding academic independence and integrity. In 2024, Czechia scored at the top of the ranking.¹² Additionally, based on its expertise and activities related to enhancing research security, the Ministry of Education, Youth and Sports was invited by the G7 countries to collaborate. Specifically, Czechia was invited to participate in the Virtual Academy activity within the Working Group on Security and Integrity of the Global Research Ecosystem (SIGRE). In 2024, the Ministry of Education, Youth and Sports allocated CZK 1.2 billion from the OP JAK programme to enhance the capacity of research and development staff. The initiative focuses on boosting competencies in research management and addressing emerging topics like AI and cybersecurity. This funding aims to improve international competitiveness and provide a safe environment for excellent research.

ERA Action 7) Upgrade EU guidance for better knowledge valorisation The SIGMA Programme¹³, managed by the Technology Agency of Czechia (TA CR) promotes knowledge valorisation mainly through the Sub-objective one targeting proof-of-concept activities through technology transfer offices. National policies, such as the Innovation Strategy 2019–2030¹⁴, further guide efforts to leverage research for addressing societal challenges and promoting economic growth. However, the share of public R&D expenditure financed by the private sector remains below the EU average (2023: Czechia: 1.21 percent; EU27: 1.52 percent), reflecting persistent challenges in fostering strong public-private partnerships. Similarly, cooperation between enterprises and public research organisations has stagnated, limiting innovation linkages. Czechia's performance in patenting, particularly co-patents with foreign inventors and applications at the European Patent Office (EPO), shows some progress (from 167 applications in 2014 to 241 in 2023).

ERA Action 8) Strengthen sustainability, accessibility and resilience of research infrastructures in the ERA The updated Roadmap of Large Research Infrastructures for 2023–2026 (published in 2024), managed by the Ministry of Education, Youth and Sports, prioritises sustainability and alignment with European Strategy Forum on Research Infrastructures (ESFRI) objectives. It facilitates integration into European networks, supports emerging technologies, and enhances access to advanced research facilities. These efforts promote scientific collaboration and excellence while ensuring compatibility with Horizon Europe initiatives. Czechia's participation in European Research Infrastructures has remained strong, reflecting its commitment to fostering cutting-edge research capabilities and international cooperation.

¹¹ Available online at: https://msmt.gov.cz/uploads/311/METHODOLOGICAL_RECOMMENDATION_FOR_RISK_MANAGEMENT_IN_RESEARCH_SECURITY_AT_THE_INSTITUTIONAL_LEVEL.pdf

¹² More information available at: https://academic-freedom-index.net/research/Academic_Freedom_Index_Update_2024.pdf

¹³ More information available at: <https://tacr.gov.cz/en/sigma-programme/>

¹⁴ More information available at: <https://digital-skills-jobs.europa.eu/en/actions/national-initiatives/national-strategies/czech-republic-innovation-strategy-2019-2030>

ERA Action 9) Promote a positive environment and level playing field for international cooperation based on reciprocity

In 2024, Czechia advanced implementing ERA Action 9 by strengthening international cooperation and promoting equitable global partnerships. Active participation in the Multilateral Dialogue (MLD) on research collaboration and endorsement of the Brussels Statement highlighted its commitment to fostering fair and sustainable partnerships. The Statement promotes continuous collaboration, recognising that diversity fosters trust among global partners, and emphasises the importance of international collaboration in research and innovation in addressing global challenges and advancing knowledge. The Ministry of Education, Youth and Sports continues to coordinate international R&D cooperation through the advisory body "Council for International Cooperation in R&D", which includes key support providers. Established in 2023, this body fosters collaboration and ensures strategic alignment of Czech research efforts on the global stage.

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

In 2024, Czechia advanced implementing ERA Action 10 through the Czech Smart Specialisation Strategy 2021+¹⁵, which aligned national priorities with EU missions and the UN's Sustainable Development Goals, focusing on digitalisation, green transformation, and health innovation. The Technology Agency of the Czech Republic (TA CR) has been participating in DUT, CET, Water4all and Biodiversa co-funded partnerships. Moreover, the country committed to participating in all five co-funded European Partnerships that were included in the Horizon Europe Strategic plan 2025-2027 namely Brain Health; Forests and Forestry for a Sustainable Future; Raw Materials for the Green and Digital Transition; Pandemic Preparedness and Resilient Cultural Heritage.. Among these, the Czech Republic has a strong focus on health research, particularly through partnerships such as the European Partnership for Personalised Medicine and ERA for Health Research (ERA4Health), with support by the Czech Health Research Agency. Additionally, the National Reform Programme 2024¹⁶ reinforced reforms and strategic investments, supporting the integration of Czech priorities into the future R&I Framework Programme.

ERA Action 11) An ERA for green transformation

In 2024, Czechia updated the Hydrogen Strategy, demonstrating a commitment to green energy transitions by investing in hydrogen technologies and renewable energy research. Funded initiatives focused on solar, wind, and energy efficiency, with pilot projects showcasing integration into industrial processes and energy storage systems. Participation in Horizon Europe provided access to European expertise, strengthening contributions to EU sustainability objectives.

ERA Action 12) Accelerate the green/digital

In 2024, Czechia advanced ERA Action 12 by supporting green transitions in industrial ecosystems through investments in energy-efficient manufacturing, circular economy practices, clean mobility, and SME

¹⁵ Available online at: <https://www.ris3.cz/en/about-ris3/national-dimension/national-research-and-innovation-strategy-for-smart-specialisation-of-the-czech-republic-2021-2027>

¹⁶ Available online at: <https://vlada.gov.cz/en/evropske-zalezitosti/aktualne/the-government-approved-the-national-reform-programme-2024-213144>

transition of Europe's key industrial ecosystems

digitalisation, aligning closely with Horizon Europe partnerships to enhance competitiveness and sustainability. Czechia has invested in digital infrastructure through initiatives connected to large research infrastructures, such as LINDAT/CLARIAH.¹⁷ This infrastructure supports the development and application of digital tools for both research and industrial use, enhancing the country's capacity to adapt to and lead in the digital transition. Additionally, Czechia has become a member of two European Language Data Spaces (EDICs): ALT-EDIC, in connection with LINDAT, and another EDIC involving the city of Plzeň and the Ministry of Regional Development (MMR), known as CitiVerse.¹⁸ Furthermore, the new law on the support of R&D, currently under consideration in the Parliament, designates "testing and experimental infrastructures" (also known as Technology Infrastructures) as part of the Ministry of Industry and Trade's (MPO) responsibilities. This legal development will significantly enhance the country's innovation capacity and foster technological advancement, supporting both research and industrial applications.

ERA Action 13) Empower Higher Education Institutions to develop in line with the ERA, and in synergy with the European Education Area

In 2024, 12 Czech higher education institutions (HEIs) were active participants in the European Universities Alliances, engaging in various alliances aimed at fostering deeper integration and collaboration across European universities. This marks an increase from previous years.

ERA Action 14) Bring Science closer to citizens

In 2024, Czechia advanced implementing ERA Action 14 by enhancing science communication and public engagement through festivals, open days, and public lectures, making scientific advancements more accessible, while policy strategies prioritised citizen science projects to promote transparency and inclusivity. Examples include the annual Citizen Science Day and the Academia Film Olomouc, an annual international science documentary film festival.

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

In 2024, Czechia advanced implementing ERA Action 16 by promoting synergies between Horizon Europe, cohesion policy funds and national/regional funds to ensure equitable opportunities in research and innovation. Czechia co-chaired the Research & Innovation and Cohesion Managing Authorities Network (RIMA) group¹⁹. Czechia also participated in the Informal Synergies Group, which includes universities, research organisations, as well as agencies and ministries responsible for research and innovation to exchange best practices and improve funding synergies. Moreover, Czechia created a synergy platform. Besides this, the Czech Ministry of Regional Development hosted a

¹⁷ Official website at: <https://lindat.cz>

¹⁸ More information at <https://digital-strategy.ec.europa.eu/cs/factpages/citiverse>.

¹⁹ More information at: <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=103692>

webinar on integrating synergies with Union programmes, while the Czech Association of Research Managers and Administrators (CZARMA)²⁰ organised a seminar on aligning knowledge-sharing strategies and financing mechanisms.

ERA Action 17)
Enhance the strategic capacity of Europe's public research-performing organisations

In 2024, Czechia implemented strengthened governance frameworks, improved funding mechanisms, and international collaboration aligned with European priorities. The Czech government increased the national budget for science and research in 2024 by nearly 8 percent, reaching EUR 1.72 billion. This marks the largest boost since 2017 and underscores a commitment to advancing research in areas such as artificial intelligence and space technologies. The innovation capacity mapping project (INKA)²¹ provides data on the level of innovation capacity of the research and innovation actors based on a unique methodology combining statistical data with interviews. STARFOS²² database gathers data on research outputs, funding, and performance to ensure accountability and transparency. Institutional funding, provided through the state budget and supported by ministries including the Ministry of Education and the Ministry of Industry and Trade, further reinforced the national research and innovation ecosystem in line with ERA objectives. In addition, the Czech Association of Research Managers and Administrators (CZARMA) plays a key role in strengthening the strategic capacity of public research-performing organisations by enhancing coordination, improving research administration, and promoting best practices in research management.²³

ERA Priority 4: Advancing concerted research and innovation investments and reforms

ERA Action 19)
Establish an efficient and effective ERA monitoring mechanism

Under ERA Action 19, Czechia developed and integrated INKA into the National Information System for Research, Development, and Innovation, which is the Czech platform for monitoring research outputs, funding allocation, and institutional performance. INKA supports evidence-based decision-making and aligns with ERA objectives.

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 Czechia's performance in achieving the ERA objectives as defined in the Pact for R&I during the period 2022-2024.

In relation to **ERA Priority 1**, Czechia has made significant strides in fostering open science and improving research assessment, but persistent gaps remain. The country has promoted open access through initiatives like the EOSC-CZ project and the Czech Academic and Research Discovery Services (CARDS), yet only 50.99 percent of publications in 2024 were available in open access, well below the EU27 average of 74.49 percent (ERA Dashboard Indicator 6). This disparity suggests that while infrastructure development is progressing and

²⁰ More information at: <https://www.czarma.cz/en>

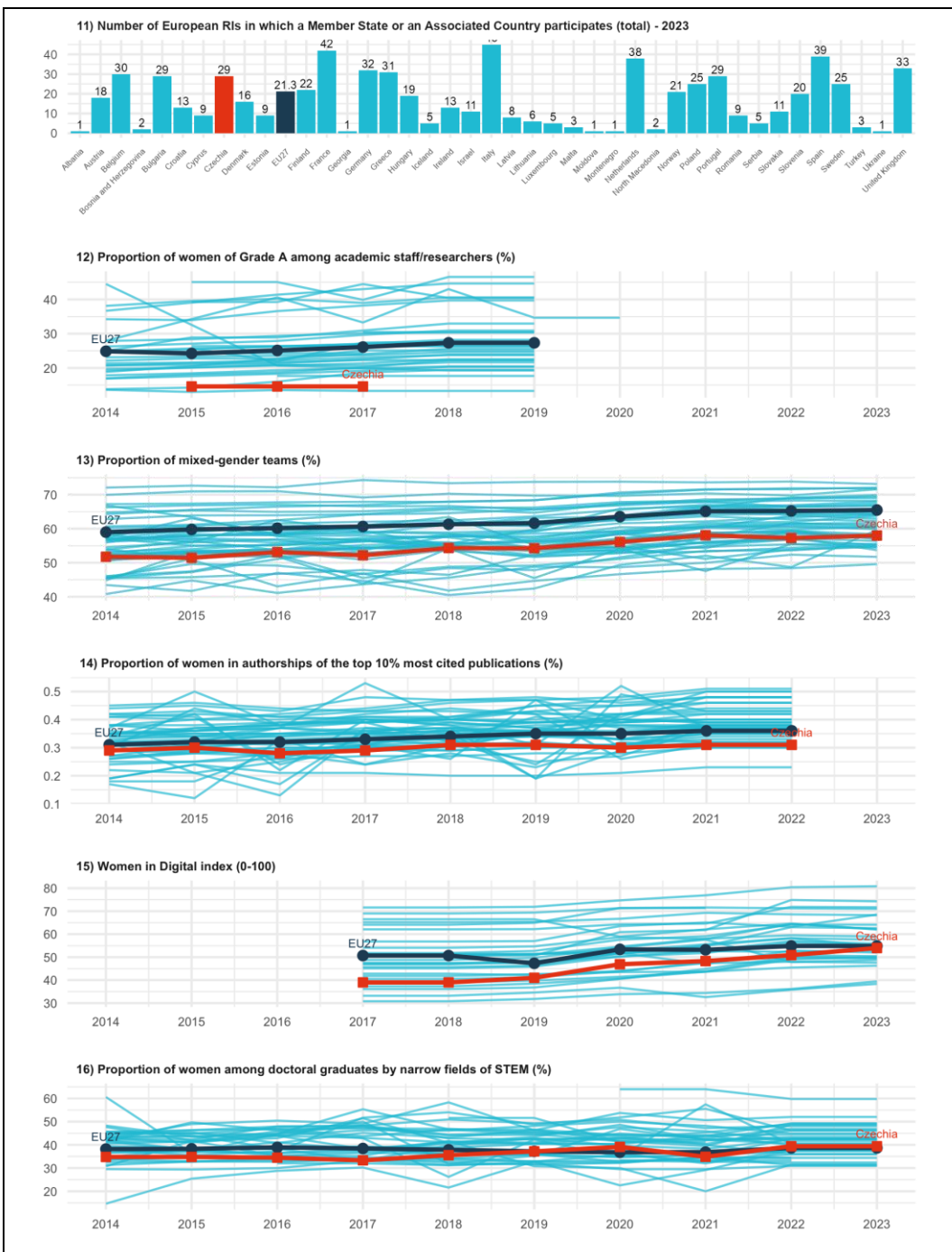
²¹ More information at: <https://inkaviz.tacr.cz/cs>

²² More information at: <https://starfos.tacr.cz>

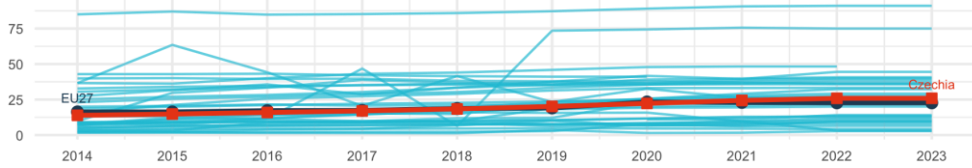
²³ More information at: <https://www.czarma.cz/en>

EOSC investments are among the highest in EU member states (ERA Dashboard Indicator 9), systemic barriers to full adoption of open science principles persist.

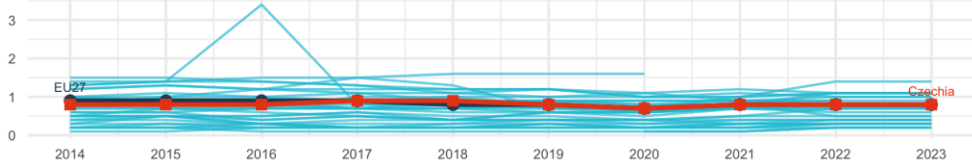
Figure 3-1 ERA Dashboard Indicators for ERA Priority 1



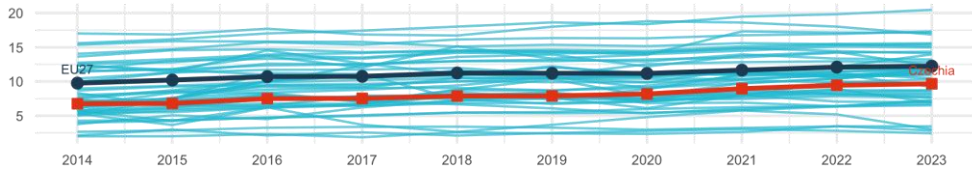
17) Share of foreign doctorate students as a percentage of all doctorate students (%)



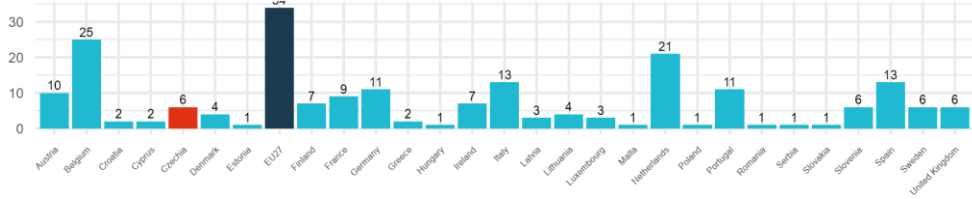
18) New doctorate graduates per 1,000 inhabitants aged 25-34



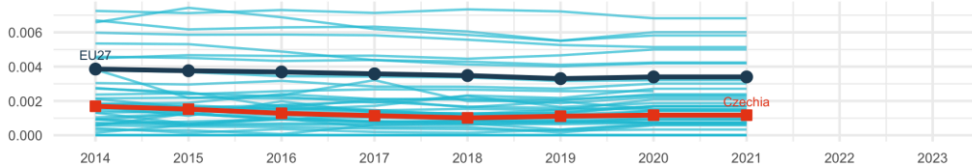
19) Share of public-private co-publications (%)



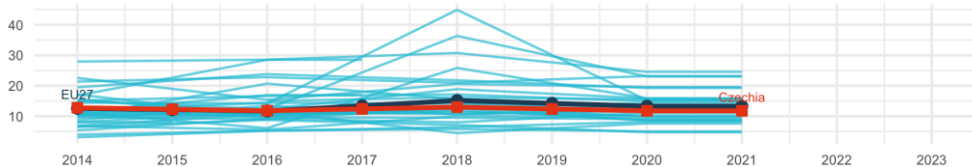
20) Best practice examples and methodologies for knowledge valorisation - 2023



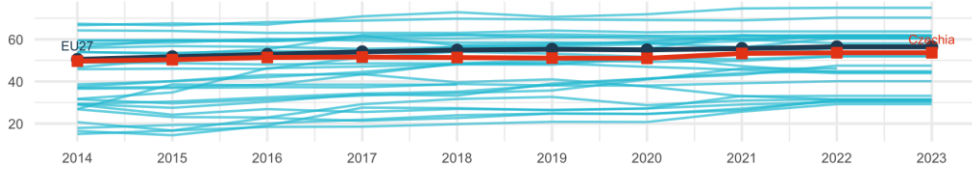
21) Number of PCT patent applications divided by GDP in million Euros/Dollars



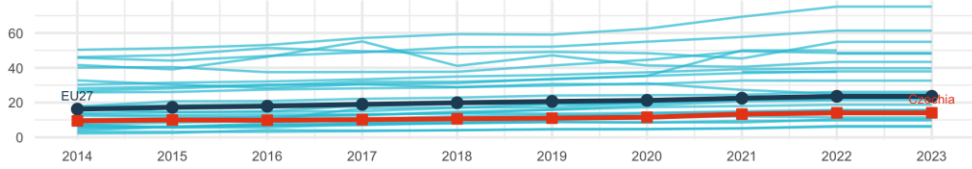
22) Share of innovating firms collaborating with HEI/PRO out of all innovative firms



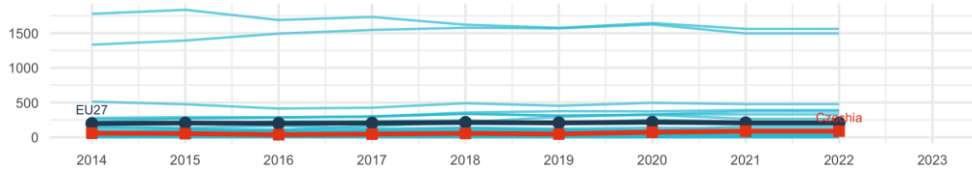
23) Business enterprise researchers as % of total researchers (%)



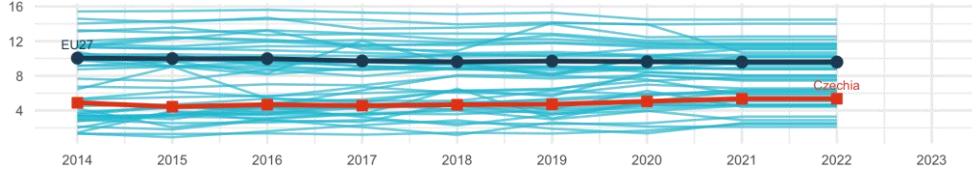
24) Business enterprise researchers in full-time equivalent per thousand employment in industry



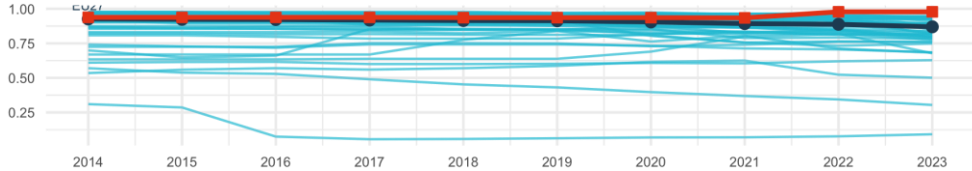
25) Patents by universities and public research organisations



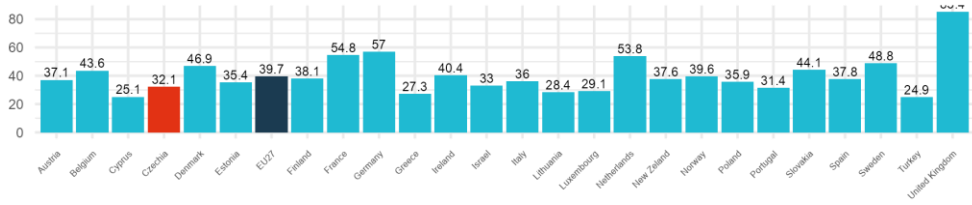
26) Scientific publications among the top-10% most cited publications worldwide (%)

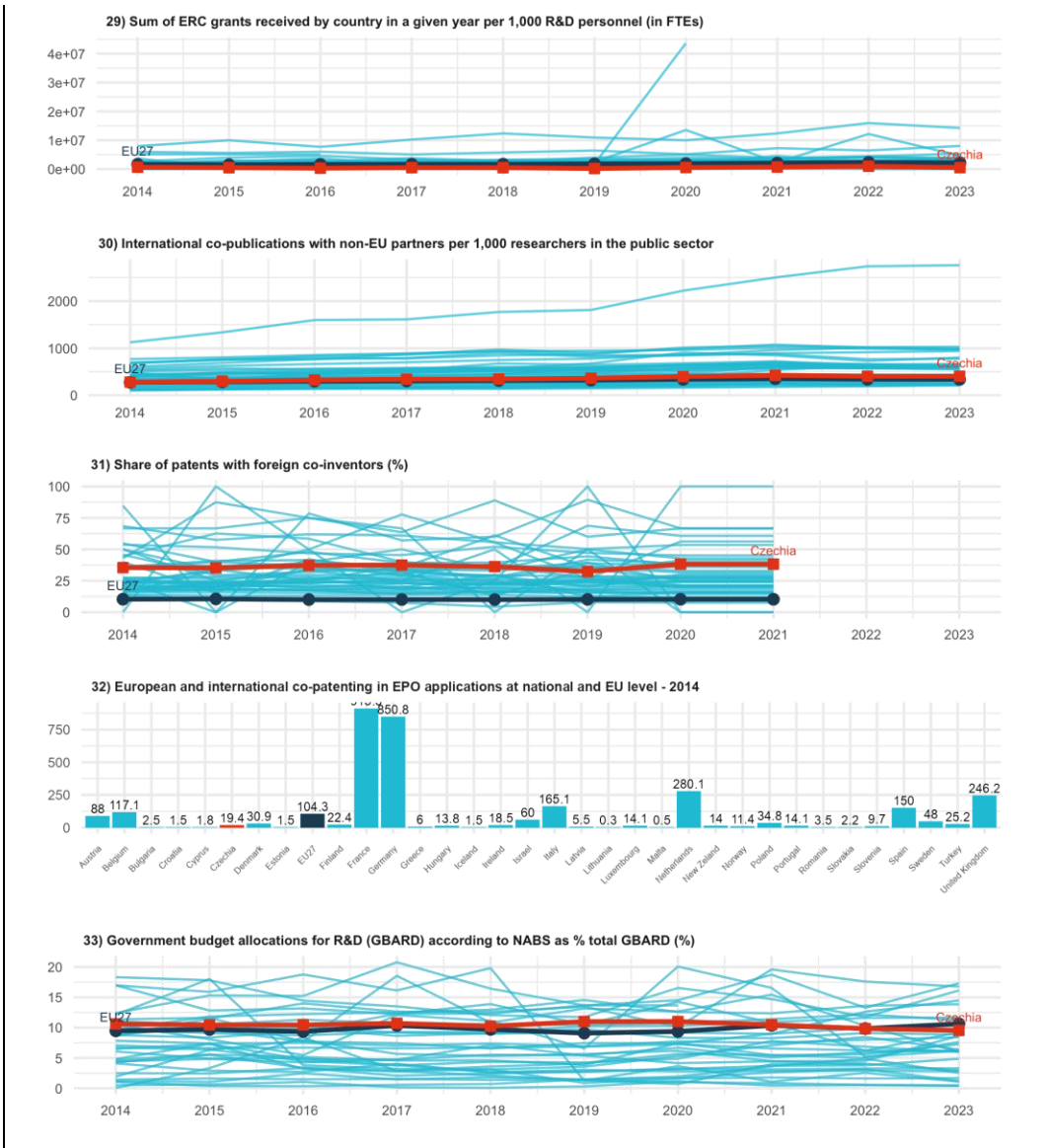


27) Academic Freedom Index (AFI)



28) Average ranking score of top 10 universities by country and year - 2023





Source: Annex 1

Furthermore, Czechia’s commitment to reforming research assessment aligns with European standards, as evidenced by 15 research organisations signing the Agreement on Reforming Research Assessment. Yet, widespread implementation remains a challenge.

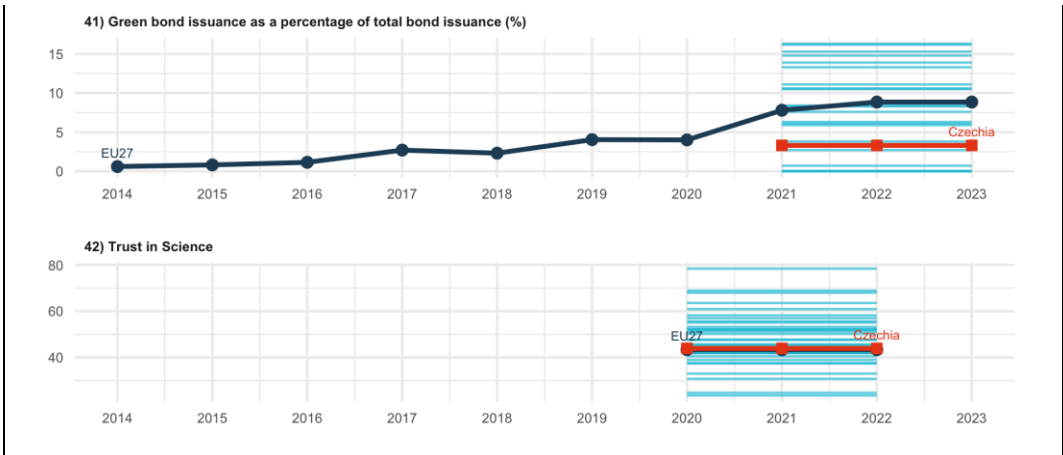
Participation of Czechia in the European Strategy Forum on Research Infrastructures (ES-FRI) plays a very important role in the national research and development policy. The Ministry of Education, Youth and Sports regularly updates the Roadmap of Large Research Infrastructures. ERA Dashboard Indicator 11 shows that the participation of Czechia in European Research Infrastructures is above the EU27 average.

Czechia performs well above the EU27 average when it comes to academic freedom, as illustrated in ERA Dashboard Indicator 27 below and also in the Academic Freedom Index

ranking. The Ministry of Education, Youth and Sports issued guidelines aimed at protecting academic freedom and strengthening research security. These efforts align with broader European initiatives, reinforcing research integrity while addressing challenges such as foreign interference and cybersecurity threats.

Figure 3-2 ERA Dashboard Indicators for ERA Priority 2





Source: Annex 1

Concerning **ERA Priority 2**, Czechia has actively engaged in green and digital transitions but faces structural challenges in fully aligning with EU ambitions. The updated Hydrogen Strategy and investments in renewable energy research signal a commitment to sustainability, yet environmentally related R&D funding remains modest compared to EU leaders. The country's patenting activity in environmental technologies is weak, averaging only one or two patents annually, which limits innovation diffusion in this critical area.

On the digital front, Czechia's progress is evident in research infrastructure development, particularly through LINDAT/CLARIAH, supporting digitalisation in research and industry. The National Reform Programme 2024 reinforces digital transformation, but innovation performance remains constrained by low private-sector R&D investment (1.21 percent of GDP in 2023 vs. the EU27 average of 1.52 percent). This underinvestment suggests that stronger public-private cooperation mechanisms are needed to drive technological advancements.

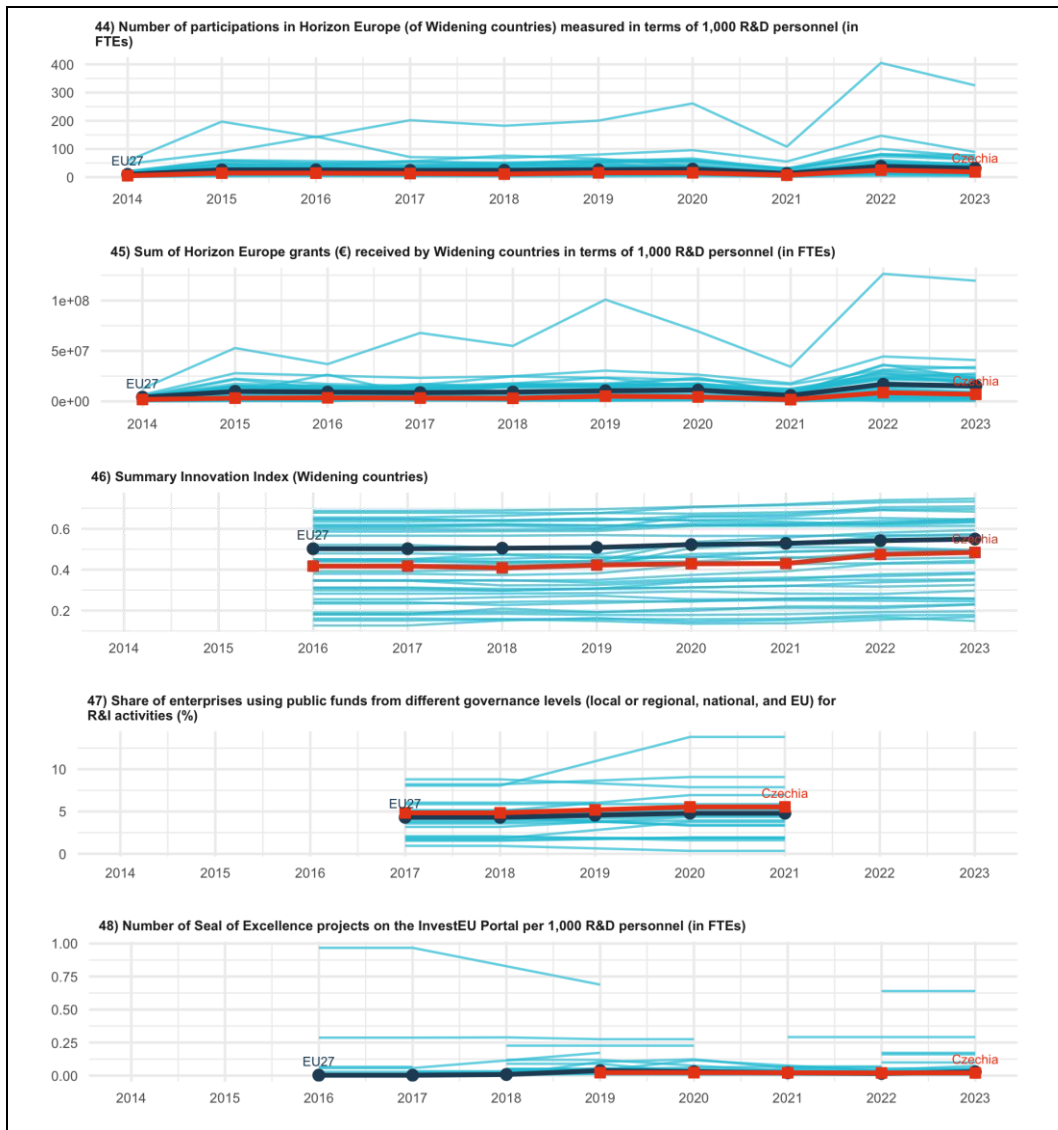
Public engagement in science has improved, with citizen science initiatives and outreach efforts such as the Academia Film Olomouc festival. However, broader societal participation in research policy design is still underdeveloped, requiring more structured mechanisms to integrate citizen input into R&I strategies. ERA Dashboard Indicator 43 illustrates that the trust of Czech public in science is at a level similar level to the EU27.

On **ERA Priority 3**, while Czechia has strengthened its research infrastructure and international cooperation, disparities in research excellence persist. Participation in Horizon Europe projects is stable but lacks the competitiveness needed to position Czech institutions among leading European research hubs. In 2023, the share of highly cited publications stood at 5.4 percent, below the EU27 average of 9.6 percent (ERA Dashboard Indicator 26), indicating the need for further investment in high-impact research.

Persistent gaps in private-sector collaboration with academia limit innovation ecosystem development. The share of firms engaging in joint research with higher education institutions (11.75 percent in 2023) remains close to the EU average (13.27 percent), as illustrated in ERA Dashboard Indicator 36, but is insufficient to drive strong industry-academic linkages. One of the missions of the Technology Agency of the Czech Republic is to encourage the cooperation. Currently 60 percent of all projects are in cooperation between enterprises and

research organisations.²⁴ The country's innovation output, particularly in patenting and knowledge transfer, remains below expectations. Public-private cooperation and cross-border partnerships must be further incentivised to enhance research excellence and economic impact.

Figure 3-3 ERA Dashboard Indicators for ERA Priority 3



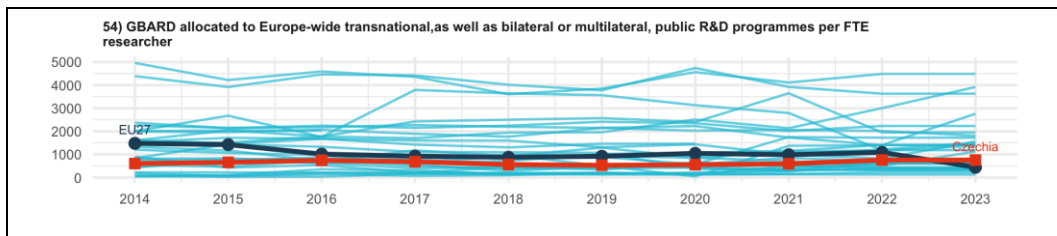
²⁴ More information available at: <https://starfos.tacr.cz/tacr/vdatech/spoluprace?src=aktualizace-spoluprace-1hd12y0vq1kx6km%3Ffive&author=Analy-tick%C3%A9+odd%C4%9Blen%C3%AD+TA+%C4%8CR&description=P%C5%99ehled+o+spolupr%C3%A1ci+jednotliv%C3%BDch+typ%C5%AF+subjekt%C5%AF+v+programech+TA+%C4%8CR&title=Spolupr%C3%A1ce&date=2020-05-05>



Source: Annex 1

In relation to **ERA Priority 4**, Czechia has demonstrated policy commitment to aligning research investments with EU priorities, particularly through the National Reform Programme 2024 and the Czech Smart Specialisation Strategy. While, long-standing funding challenges persist, ERA Dashboard Indicator 54 has seen growth over recent years.

Figure 3-4 ERA Dashboard Indicators for ERA Priority 4



Source: Annex 1

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

This chapter presents a qualitative assessment of the ERA Action commitments of Czechia and their effects on the national R&I system.

Overall, the ERA priorities and actions are highly relevant to Czechia’s national R&I system, as they provide a framework for addressing critical challenges of the R&I system, enhancing collaboration, and driving innovation. By aligning its national strategies with the ERA’s objectives, Czechia is able to leverage European resources, strengthen its research ecosystem, and address both systemic and emerging priorities.

The ERA actions are embedded within key national strategies, such as the Czech Smart Specialisation Strategy 2021+ and the National Research, Development, and Innovation Policy 2021+. These frameworks incorporate ERA objectives, such as fostering open science, promoting inclusiveness, and addressing green and digital transitions, into the core of national policy. ERA priorities emphasise widening access to excellence and fostering inclusivity, both of which are critical to addressing regional disparities within the Czech R&I landscape. By participating in European partnerships and integrating its research infrastructures into broader networks, Czechia helps its researchers and institutions gain access to advanced facilities and collaborative opportunities. This is particularly important for smaller research organisations and regions with limited resources, enabling them to benefit from shared knowledge and infrastructure.

The focus on international cooperation within ERA actions is directly relevant to Czechia’s aim of positioning itself as a key player in the global R&I community. Through its participation in Horizon Europe and European partnerships, Czechia has been able to enhance its international research profile, attract funding, and foster cross-border collaborations. Science diplomacy efforts and guidelines on research security ensure that international partnerships are both productive and secure, safeguarding the integrity of the national R&I system.

ERA priorities addressing green and digital transitions are particularly relevant for Czechia, as the country seeks to modernise its industrial base and transition to a sustainable economy. National initiatives, such as the Hydrogen Strategy and renewable energy projects, align with ERA objectives, enabling Czechia to leverage European expertise and funding to tackle climate change and advance digital transformation.

ERA actions, such as reforming research assessment and promoting gender equality, are instrumental in driving systemic changes within the Czech R&I system. These reforms are essential for creating a more inclusive and dynamic research environment. Czechia’s participation in CoARA and its leadership in gender equality initiatives demonstrate how ERA

actions serve as catalysts for structural improvements, ensuring alignment with international standards.

The emphasis on knowledge valorisation within ERA actions resonates with Czechia's focus on linking research outputs to economic and societal benefits. Programmes like SIGMA and proof-of-concept funding initiatives facilitate the translation of research into innovation, enhancing the impact of the national R&I system on industry and society. These efforts contribute to the broader goals of the ERA by ensuring that research investments deliver tangible value.

5. Conclusions

Czechia has made notable progress towards ERA Priority 1 by strengthening open science initiatives and reforming research assessment, but key challenges remain. Open-access publication rates (50.99 percent) are still well below the EU27 average, highlighting systemic barriers to full adoption. While 15 research organisations have committed to assessment reforms, widespread implementation remains slow. Academic freedom and research security policies have improved, reinforcing institutional resilience against foreign interference and cybersecurity risks. Czechia's active participation in European Research Infrastructures is a positive step, yet ensuring these collaborations translate into tangible research and innovation gains requires better alignment with national priorities and stronger knowledge transfer mechanisms.

Under ERA Priority 2, Czechia's green and digital transitions show promise but remain constrained by weak patenting in environmental technologies and low private-sector R&D investment (1.21 percent of GDP vs. the EU27 average of 1.52 percent). While research infrastructures like LINDAT/CLARIAH support digitalisation, stronger public-private collaboration is needed to accelerate innovation.

ERA Priority 3 highlights further challenges in research excellence and innovation ecosystems—despite stable Horizon Europe participation, Czechia lags in high-impact research (5.4 percent of highly cited publications vs. the EU27 average of 9.6 percent). Industry-academia collaboration remains insufficient to drive competitiveness, and innovation outputs such as patenting and knowledge transfer remain underdeveloped. However, TA CR programmes focus very much on encouraging cooperation.

Finally, under ERA Priority 4, Czechia has aligned research investments with EU priorities, but persistent underfunding – particularly in private-sector engagement – limits impact. The SIGMA Programme fosters knowledge valorisation, yet without stronger business involvement, its effects will be constrained. While governance reforms have improved research resilience, long-term sustainability will depend on full-scale implementation and increased participation in European partnerships, particularly in green and innovation financing.

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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.

Additionally, 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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ERA Monitoring 2024: ERA Country Report Czechia.

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