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ERA Country Report 2024
Ukraine

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Report

Research and Innovation

ERA Country Report 2024: Ukraine

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ERA Country Report 2024

Ukraine

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Key takeaways

- The Russian aggression poses many challenges for making progress in Ukraine's R&I ecosystem – with, for instance, many Research Infrastructures (RIs) damaged by this war.

- Ukraine has not committed to any ERA Actions. Nevertheless, many of its recent initiatives are synergetic with ERA priorities. The recently published National Open Science Action Plan and the Strategic Action Plan 2027 of the Ministry of Education and Science are main drivers for ERA alignment. This is exemplified by the latter plan having an operational objective dedicated to integrating Ukraine's RI in the ERA.

- Stimulated by the recent establishment of a Ukraine Horizon Europe Office and the National Contact Points network, the participation of Ukraine in this programme has significantly increased in the Horizon Europe Programme last 18 months.

- While many laws for R&I policy reforms have been proposed, most are still to be adopted and implemented. The time lag related of effects from ongoing reforms and the Russian aggression largely explain why ERA Dashboard Indicators show that Ukraine is stagnating or declining in various areas.

1. National context

Ukraine is a country with a large population (41 million), compared to other EU Associated Countries. Ukraine employs 581 researchers per million inhabitants, which is considerably lower than the European average (Table 1). According to the European Innovation Scoreboard 2024[1], Ukraine is an *Emerging Innovator* performing at 32.5 percent of the EU-27 average. Its performance is below the average of other Emerging Innovators (48 percent), despite an increase in recent years. According to the European Innovation Scoreboard, one of Ukraine's strengths is the share of employment in knowledge-intensive activities and its progress in digitalisation. Also, in the last year it has a strong increase in the number of scientific publications that are in the top 10 percent most cited internationally. Relative weaknesses of Ukraine include the number of Small and Medium-sized Enterprises (SMEs) that introduce either business process innovations or product innovations.

Because of the disruptive effects and direct destructions of the Russian aggression, it is c for Ukraine to implement national policies and strategies or deliver progress on a number of ERA priorities. Many Research Infrastructure's (Ris) are severely damaged, for instance. In the introduction of its Strategic Action Plan 2027, Ukraine's Ministry of Education and Science underlines that "Transforming in times of war is a great challenge for all of us and at the same time a critical and basic necessity for the future."[2] In this Strategic Action Plan, the ministry emphasises the central need to create optimal synergies between science, innovation and technologies, with the aim to attract funds and establish strong international partnerships.[3] It has also dedicated two operational objectives to the further integration into the ERA (Operational Objectives 6.2.3. and Objective 7.2.3).

Table 1 Structural Key Indicators

Indicator	EU27	Ukraine		
	2023	2023	Average 2018-2020	Average 2021-2023
GDP per capita in current prices (EUR)	35 790.00	/	/	/
Gross Domestic Expenditure on R&D (GERD) as a share of GDP	2.27	0.33	0.44	0.34
Size of the population (million)	448.80	41.00	41.98	/
Researchers (in FTE) per million inhabitants	4 681.34	580.81	1 809.92	638.14

Note: All averages are for 2023, except for Ukraine's Size of the population (million) (2022)

Source: see Annex 1

2. Status of the Implementation of the ERA Policy Agenda

Chapter 2 briefly summarises **new developments in the period 2023** towards the overarching ERA Priorities. The findings are based on qualitative desk research and interviews. Ukraine is an Associated Country to the Horizon Europe (HE) Programme and has refrained from commitments to actions from the ERA Policy Agenda 2022-2024.

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

The most significant development regarding **ERA Action 1:** *Enable Open Science, including through the European Open Science Cloud (EOSC)* is the implementation of the National

[1] European Innovation Scoreboard, Ukraine Country Report 2024.

[2] https://mon.gov.ua/strategichniy-plan-diyalnosti-mon-do-2027-roku, accessed 31-12-2024.

[3] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.

Open Science Action Plan for the years 2023 and 2024.[4] It enables the integration of open science in national science, research, education, technology, and innovation policies. Over the past year, it created a special working group and introduced a new methodology for open review. The plan stipulated collaborating with the EOSC and in Horizon Europe Partnerships and has guided institutes on how to set up research infrastructures based on Open Science principles. It has also led to initiatives for new legislations related to Open Science (such as a National Research Information System monitoring open science implementation by 2026).[5]

Another important ambition is stimulating open access for research. This seems to be taking effect, as for instance, as of December 2024, there are 461 indexed Ukrainian journals in the Directory of Open Access Journals (DOAJ), of which 65 were added in 2024 and 2023.[6] The new Strategic Action Plan also underlines the importance of open access to science, and has set a goal to increase the share of competitive science funding to 20 percent by 2027.[7]

Several events have been organised in the past period related to open science, including the Ukrainian Open Science Forum in Lviv (November 2024)[8] and the 1st National Consensus on Open Science Workshop (April 2024).[9] Under the Erasmus+ programme, two international projects aimed at the development of open science practices in Ukraine, have been recently launched: Open4UA[10] (running from 2023 to 2026) and Open Practices, Transparency and Integrity for Modern Academia (OPTIMA, running from January 2021 to January 2024)[11].

With regards to **ERA Action 3:** *Reform of the Assessment System for research, researchers and institutions*, in November 2024 the Ministry of Education and Science approved a new methodology for assessment, which involves 300 research institutes and 150 universities. Also, a proposal for a new law for KPI's for research institutes has been submitted. Institutions will be able to choose the indicators and develop plans, which will define in the future the size of the funding for the research institutions. As for now, this funding is not KPI based. This new law has not yet been approved, but it underlines the observation of the Strategic Action Plan 2027 that there is a lack of approaches of the skills and abilities of scientists and institutes.

Initiatives related to **ERA Action 4:** *Promote attractive research career, talent circulation and mobility* include the Natolin Fellowship Programme, introduced in March 2024.[12] This programme, funded by the EU and the Lithuanian Ministry of Foreign Affairs, targets young professionals from Ukraine, Moldova and Georgia with the aim to facilitate the development of professional skills, enhancing employability and sharing knowledge.

Also, under the MSCA4Ukraine Call[13], EUR 35 million for fellowships have been made available for displaced researchers of Ukraine in EU and Associated Countries, focused on strengthening Ukrainian RI and supporting Ukrainian researchers, attracting 550 applications. Furthermore, in December 2023, a European Institute of Innovation and Technology (EIT) Community Hub has been launched in Kyiv.[14] This hub serves as provider for information and opportunities for Ukrainian researchers and innovators. The hub is hosted by the Ukrainian Startup Fund. All these actions are an urgent response to the Russian

[4] https://www.eifl.net/news/ukraine-launches-national-open-science-action-plan; accessed 02-01-2025.
[5] https://www.eifl.net/news/ukraine-launches-national-open-science-action-plan; accessed 02-01-2025.
[6] https://doaj.org/search/journals?ref=homepage-box&source, accessed 02-01-2025.
[7] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.
[8] https://peers.international/uosf-2024, accessed 02-01-2025.
[9] https://lpnu.ua/en/news/1st-national-consensus-open-science-workshop-open4ua-project-took-place, accessed 02-01-2025.
[10] https://lpnu.ua/en/open4ua, accessed 02-01-2025.
[11] https://www.eurodoc.net/proj/optima, accessed 04-06-2025.
[12] https://hs.gov.ua/en/launch-of-a-new-scholarship-program-natolin-fellowship-programme/ ; accessed 02-01-2025.
[13] https://sareurope.eu/msca4ukraine/information-for-applicants/, accessed 02-01-2025.
[14] https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6760, accessed 02-01-2025.

aggression, as up to 10 percent of scientific human capital, by the end of 2023, has "either left professional activities, changed their country of residence, or remained but changed their professional field".[15]

Ukraine has integrated a gender indicator in the methodology for accreditation of scientific and research institutions, contributing to **ERA Action 5:** *Promote gender equality and foster inclusiveness.* While gender representation is viewed as well-balanced by Ukrainian stakeholders, they do recognize that the more senior researchers tend to show less acceptance of, or interest for, the new aforementioned methodology.

Due to the Russian aggression, much of the Research Infrastructure (RI), including scientific institutions, research laboratories, scientific and technical information, data, collections and archives are damaged and/or destroyed. By the end of 2023, it was estimated that 15–20 percent of RI was damaged or destroyed.[16] Given this context, it was highly difficult to book progress on **ERA Action 8:** *Strengthen Research Infrastructure*.

As a response to these challenges, one of the strategic objectives under the Strategic Action Plan is dedicated to RI. One operational objective is on 'Integrating Ukraine's research infrastructure into the European Research Area'. It aims to develop systematically "a network of regional centers for shared use of scientific equipment, creating internationally recognized Centers of Excellence."[17] In line with that, support measures have been introduced by the Ministry and the National Research Foundation of Ukraine. Since 2022, this Ministry has been supporting development of a country-wide network of the Centers of Collective Use of Scientific Equipment (CCUSE), including adopting appropriate legislation, financial support and providing them with portable charging power stations.[18] Currently 72 CCUSE has been set up around the country, hosted by academia or research organizations. Also, the National Research Foundation of Ukraine has launched a dedicated call to support Research Infrastructure development with the total budget of up to EUR 65 milllion for the implementation period 2024-2026.[19]

Currently, Ukrainian representatives are awaiting guidance from the EU on RI development. Based on that, they will develop a more extensive strategy and prioritisation for recovery and redevelopment.

Lastly, concerning **ERA Action 9:** *Promote international cooperation,* the Ministry of Education and Science of Ukraine fosters international scientific cooperation through bilateral agreements with numerous countries, including Germany, Austria, Latvia, Lithuania, France, Poland, and others. During 2021 - 2024, the Ministry has implemented research projects with more than 10 countries annually. In 2024 agreements were signed with Croatia and Germany. In total, there are 67 international agreements in the R&D sector, covering Europe, Asia, Africa, North and South America.

The National Research Foundation of Ukraine, being an active member of Science Europe and CoARA, has also widened its cooperation with international partners, including setting up exchange of best practices and even joint calls for researchers with counterparts in the Netherlands, Germany, Poland, UK, Switzerland, Norway and USA. In addition, Ukraine's Horizon Europe Office has actively pursued closer collaboration with EU members such as Austria, Estonia, Slovakia and Poland. For instance, this office went on a study visit to FFG

[15] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.
[16] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.
[17] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.
[18] Decree of the Cabinet of Ministers of Ukraine 703 as of 21 June 2022, Decree of the Ministry of Education and Science of Ukraine №170, as of 10.02.2025.
[19] https://nrfu.org.ua/en/uncategorized/2023-05-infrastructures-for-advanced-research/, accessed 04-06-2025.

(Austria) in December 2024[20], and held meetings with the Slovak National Horizon Office in December 2024[21] and the National Center for Research and Development of Poland in October 2024[22] to discuss funding opportunities and strengthen cooperation.

In May 2024, the 6th Eastern Partnership Informal Working Group Meeting on Research and Innovation[23] was held in Vilnius, Lithuania. The event was used to discuss the state of international cooperation within the European Research Area, values and principles in research and innovation and smart specialisation. During the meeting, a special session was held concerning the challenges generated by the war of aggression against Ukraine.

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

Related to **ERA Action 10**: *Make EU R&I missions and partnerships key contributors to the ERA,* Ukraine has committed to the European Green Deal and aims to achieve climate neutrality by developing a national green agenda and aligning it with the National Economic Strategy 2030.[24] Also, according to the National Recovery Plan, Ukraine perceives "Contributing to the implementation of EU Green Deal" as a long-term goal and one of the main areas of synergy with the EU. [25]

There are many developments in line with **ERA Action 12**: *Accelerate the green/digital transition of Europe's key industrial ecosystems*. First, related to the digital transition, Ukraine has adopted, in its Strategic Action Plan 2027, 'Digital Transformation of Education and Science' as one of its nine key priorities. In here, it presents security technologies, cyber security, green energy, biotechnology, immersive technologies, artificial intelligence and agricultural technologies as 'key research and innovation areas'

Regarding the green transition, the United Nations Industrial Development Organization (UNIDO) launched in 2024 the strategic framework 'Green industrial recovery programme for Ukraine 2024-2028[26], fostering sustainable industrial development. The programme leverages EUR 250 millions of funding. In addition, in June 2024 the UN Environment Programme (UNEP), the UN Economic Commission for Europe (UNECE), and the Organisation for Economic Co-operation and Development (OECD) established the Platform for Action on the Green Recovery of Ukraine. The platform will "support the co-ordination and mobilisation of additional expertise and funding to promote a science-based, systemic, and coordinated green recovery."[27] The scientific community of Ukraine itself has set up a few

[20] https://horizon-europe.org.ua/en/news/events/learning-across-the-borders-visiting-of-horizon-europe-office-in-ukraine-nrfu-to-the-austrian-research-promotion-agency-day-i/, accessed 04-06-2025.

[21] https://horizon-europe.org.ua/en/news/events/horizon-europe-office-in-ukraine-nrfu-expands-the-boundaries-of-cooperation-bilateral-meeting-with-the-slovak-national-horizon-office/, accessed on 02-01-2025

[22] https://horizon-europe.org.ua/en/news/events/horizon-europe-office-in-ukraine-nrfu-continues-to-expand-the-boundaries-of-cooperation-meeting-with-ncp-widera-of-poland/, accessed 02-01-2025.

[23] https://neighbourhood-enlargement.ec.europa.eu/document/download/1087d347-fde6-4cc9-9732-4d95b473b148_en?filename=C_2023_5812_F1_ANNEX_EN_V1_P1_2889029_Annex%20VII.PDF&prefLang=lv, accessed 02-01-2025.

[24] https://mon.gov.ua/storage/app/media/nauka/2020/European%20Green%20Deal/Informatsiyni%20materialy/ukraines-participation-in-the-european-green-dealcompressed.pdf, accessed 02-01-2025.

[25] Ukraine Recovery Plan, 2022.

[26] https://www.unido.org/sites/default/files/unido-publications/2024-05/Green%20industrial%20recovery%20programme%20for%20Ukraine%202024-2028_external_online.pdf, accessed 23-01-2025.

[27] https://www.unep.org/news-and-stories/press-release/unece-unep-and-oecd-announce-platform-action-green-recovery-ukraine, accessed 23-01-2025.

projects on green transition together with Germany and Poland (also boosting **ERA Action 11**: *An ERA for green transformation)*.

Lastly, on **ERA Action 13:** *Empower Higher Education Institutes.* There is a shrinking trend of the R&I sector in Ukraine, both in terms of number of institutions and R&D personnel, and R&I expenditure as a share of GDP. The Ukraine Recovery Plan of the Education and Science sector[28] envisions an increase of Gross domestic expenditure on research and experimental development (GERD) to 1 percent of GDP by the end of 2025, and to 3 percent of GDP by the end of 2032, with public spending on science amounting to 0.6 percent and 1 percent respectively.

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

Regarding ERA Priority 3, and in particular ERA Action 16: *Improve EU-wide access to excellence,* one of the most significant developments in the last 19 months was the establishment of the Horizon Europe (HE) Office in Ukraine (December 2023). [29] This office, hosted by the National Research Foundation of Ukraine (NRFU), is actively promoting funding opportunities, assisting in drafting proposals, and finding R&I partners, while promoting and facilitating integration of Ukraine within the Horizon Europe programme. Part of its website is dedicated to a frequent update of relevant calls and grants. As a response to the low level of participation in the European Research Council (ERC) programme, the HE office's website also regularly posts information on available ERC calls[30] and disseminates information through webinars, such as on "First steps in Horizon Europe"[31], on "Developing Transnational Access to European Research Infrastructures in the Social Sciences and Humanities" (co-organised with the European Strategy Forum on Research Infrastructures)[32], and on "Horizon Implementation Day: Finding opportunities and submitting a proposal in Horizon Europe"[33].

To support those activities, in 2024, the ERC has developed in collaboration with the Horizon Europe Office in Ukraine and the National Research Foundation of Ukraine (NRFU) a mentoring initiative to strengthen research capabilities, foster international collaboration, and help Ukrainian scientists secure vital funding for their projects.[34]

One of the primary challenges for the Ukraine participation in HE is the scarcity of qualified project managers who can effectively prepare, submit, and execute projects. Nevertheless, at this moment, Ukraine has 316 participations in HE and has received EUR 60.89 million total EU net contribution so far. With that, Ukraine ranks 6th of the 19 EU Associated Countries, and even 4th based on contribution per inhabitant. In total, Ukraine has signed grants with 81 countries under the HE Programme (as opposed to merely 52 countries in H2020).[35]

[28] Ukraine Recovery Plan, 2022.

[29] https://horizon-europe.org.ua/en/home/, accessed 02-01-2025.

[30] https://horizon-europe.org.ua/en/news/calls/information-about-calls-open-for-submission-within-the-european-research-council-2/, accessed 02-01-2025.

[31] https://horizon-europe.org.ua/en/news/events/first-steps-in-horizon-europe-from-start-to-success-horizon-europe-office-in-ukraine-nrfu-starts-training-for-nsp-network/, accessed 02-01-2025.

[32] https://horizon-europe.org.ua/en/news/events/development-of-ukraines-transnational-access-to-european-research-infrastructures-in-the-social-sciences-and-humanities-discussed-at-a-webinar/, accessed 02-01-2025.

[33] https://horizon-europe.org.ua/en/news/events/horizon-implementation-days-all-you-need-to-know-from-proposal-submission-to-grant-management-in-horizon-europe/ ; accessed 02-01-2025.

[34] https://erc.europa.eu/apply-grant/erc-ukraine, accessed 04-06-2025.

[35] Horizon Europe Dashboard, accessed 02-01-2025.

Furthermore, in September 2024, 35 proposals submitted with participation of 22 Ukrainian higher education institutes were awarded funding through the 2024 Jean Monnet Call for Proposals, operating under the Erasmus+ Programme.[36] The Marie Skłodowska-Curie Actions (MSCA) also saw strong participation, as was already mentioned under ERA Priority 1 (Action 4).

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

According to interviews with government officials, two R&I-related laws related were drafted in 2024 and are awaiting approval at the time of writing. One was already mentioned under ERA Priority 2, and concerns changing the KPI systems for research institutes. The other law concerns changes about scientific and technical development, related to the European integration, setting new definitions for RI, open science and young researchers. These laws would strengthen transformative R&I policy, and are therefore in line with ERA Priority 4, or more specifically, **ERA Action 20:** *Support research and innovation investments and reforms.* Much of the content of the law is already included in the Strategic Action Plan 2027, which implements the task of "reforming the remuneration system based on granting higher education institutions more personnel and financial autonomy." In addition, currently the research ecosystem is revised, which includes less bureaucratic constraints, increased digitalisation, and creating "conditions for the effective use of international opportunities."[37]

In the last 18 months, there have also been reforms of the National Research Foundation of Ukraine (NRFU)[38], related to reporting of scientific projects and new calls of the ministry.

Changes are not out of place, as the current management and funding systems fall short of addressing the diverse needs of various research domains, including defence-related, commercial, applied, and basic research. Existing budgetary legislation and implementation processes, combined with the conventional framework of national science academies, are insufficient to tackle this challenge. A significant portion of public research funding is directed towards salaries and utilities, leaving limited resources for essential research requirements like equipment and materials. Furthermore, the priorities guiding research funding allocations are outdated, having been established more than 20 years ago.

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

Although Ukraine has not committed to ERA Actions, there are multiple initiatives in line with ERA Actions. This chapter provides a qualitative assessment of the effect of implementing these initiatives on Ukraine's performance in reaching the ERA objectives. The objective is to identify the contribution of these initiatives on the achievement of the ERA objectives as defined in the Pact for R&I during the period 2022-2024.

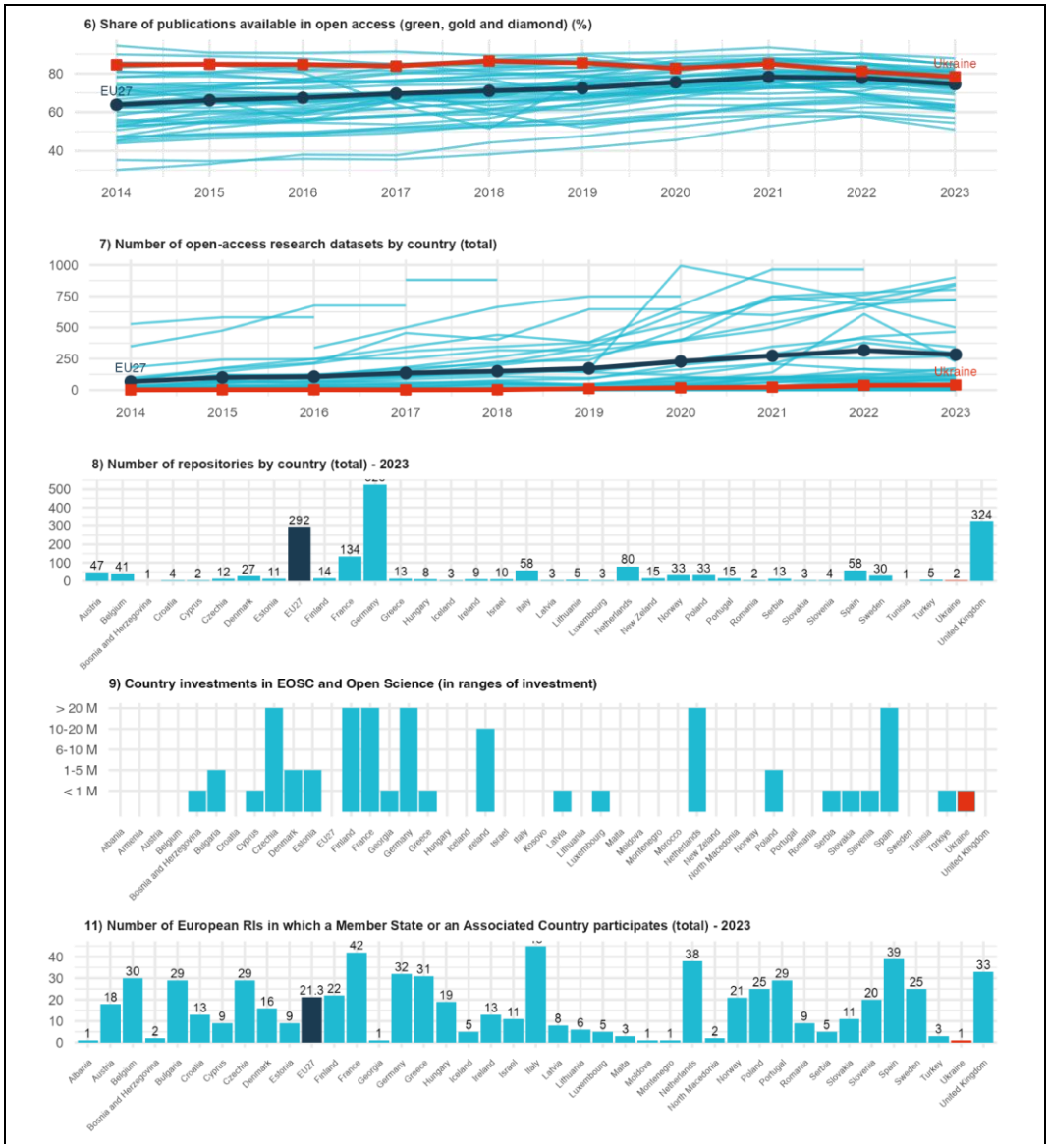
ERA Priority 1 is addressed through a range of initiatives focussing on ERA Actions 1, 3, 4, 8 and 9 which aim to, among others, stimulate open science, increase research access and talent mobility and the reorientation and development of high-quality RI (in terms of equipment, research excellence, etc). Although the Russian aggression causes many barriers for progress, advancements are made, and the implementation of multiple activities is on track. The advancements are also supported by dedicated investments, both from national and European funds. Important drivers towards the ERA objectives of ERA priority 1 include the National Open Science Action Plan, the new methodology for assessment of

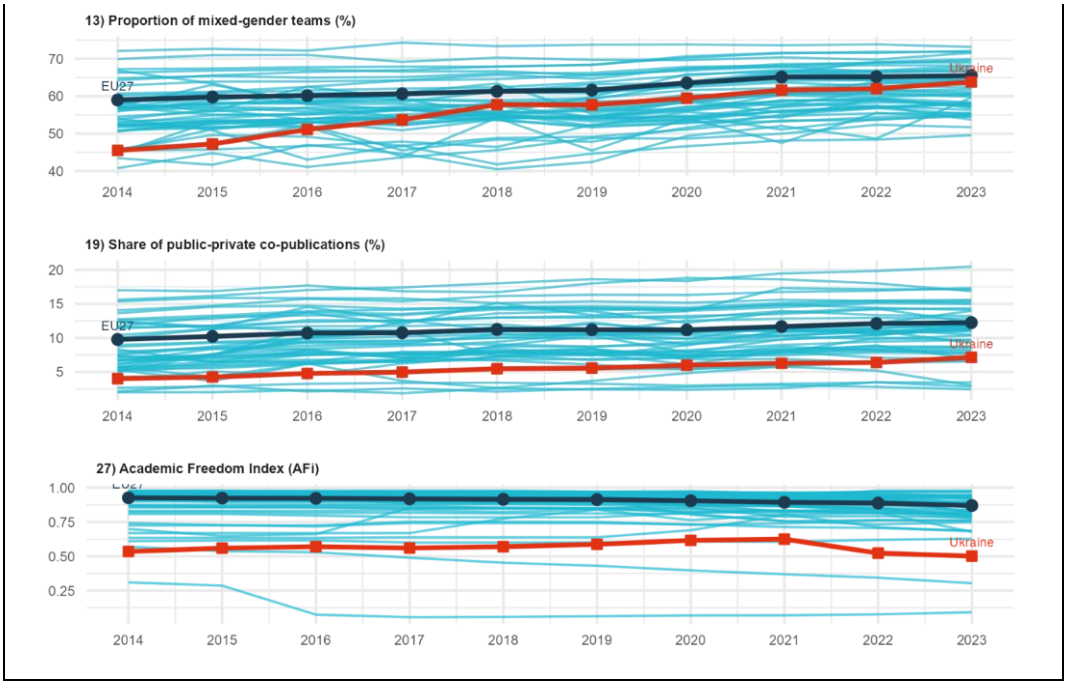
[36] https://eu4ukraine.eu/en/whats-happening-en/news-en/35-new-jean-monnet-european-integration-projects.html, accessed 02-01-2025.
[37] Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.
[38] https://nrfu.org.ua/en/, accessed 23-01-2025.

researchers and research institutes, the integration of a gender indicator, various European programmes and calls that enhance the mobility and capacities of Ukrainian researchers, bilateral international cooperations and, lastly, the Strategic Action Plan 2027, stipulating a plan for integration, restoration and development of RI.

This progress is reflected through ERA Dashboard Indicators 13 and 19. ERA Dashboard Indicators 7, 8, 9 and 11 do not show this progress, and ERA Dashboard Indicators 6 and 27 even suggest a downward trend (see the charts of these indicators below). This emphasises the challenges Ukraine is still facing and reflects that tasks under the Strategic Action Plan 2027 still need to be fully implemented to make an effect.

Figure 3-1 ERA Dashboard Indicators for ERA Priority 1

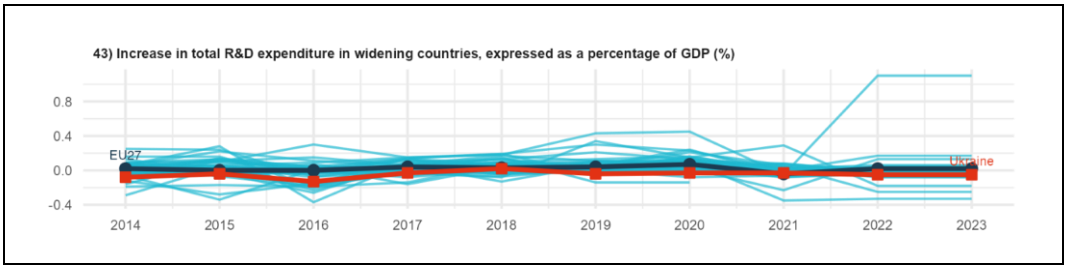




Source: see Annex 1

ERA Priority 2 is addressed through activities related to ERA Action 10, 11, 12 and 13. Most significant developments in the past 18 months include Ukraine's continuing and increasing alignment with the EU Green Deal, its accelerating digital transformation (for example, through its involvement in the DEP), and the Ukraine Recovery Plan, which aims to increase domestic expenditure on research and experimental development. ERA Dashboard Indicator 43 emphasises that the latter ambition is not yet realised.

Figure 3-2 ERA Dashboard Indicators for ERA Priority 2

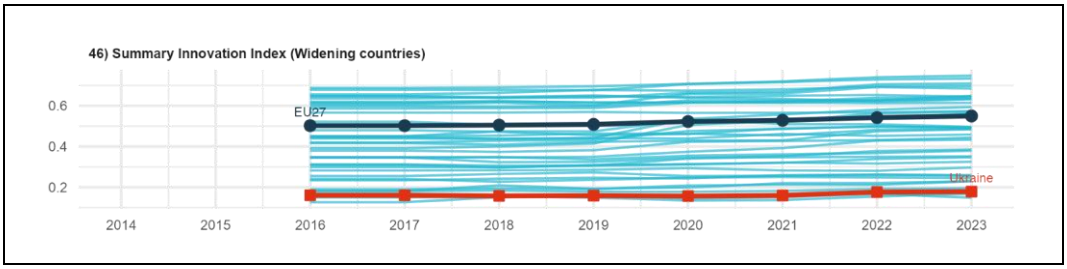


Source: see Annex 1

ERA Priority 3 is primarily targeted through initiatives in line with ERA Action 16. One of the most significant developments is the establishment of and the subsequent actions by the National Horizon Europe Office in Ukraine (December 2023) and 22 National Contact Points (NCPs). This office and the NCPs network have promoted funding opportunities and assisted in writing proposals and collaborating with partners. They also (co-)organised many national and international activities.

In addition, Ukraine's participation in HE has increased significantly in terms of number of projects, received EU net contributions and country collaborations. This all amplifies access to research and innovation excellence across Europe. Positive developments related to ERA Priority 3 are reflected by the slight increase in ERA Indicator 46 over the last years.

Figure 3-3 Indicators for ERA Priority 3



Source: see Annex 1

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

Although Ukraine did not commit to ERA Actions, this chapter presents a qualitative assessment of Ukraine's initiatives that are related to ERA Actions, and their potential effects on the national R&I system.

Corresponding to **ERA Priority 1,** Ukraine has begun implementing an Open Science Action Plan (related to ERA Action 1) and, in addition, Ukraine has the objective to reform its assessment system for researchers and research institutes. This is stimulated by the proposal for a new law on a revised methodology for assessment (in line with ERA Action 3). In addition, Ukraine seeks to strengthen its research and innovation system with the ambition to have 20 percent of science funding allocated through competitive funding by 2027. Nevertheless, ERA Dashboard Indicators 6, 7 and 8 (presented in Chapter 3) do not show progress in this area yet.

Ukraine's commitment to the Green Deal corresponds with the country's ambition to achieve climate neutrality. Following that, it has implemented a national green agenda and the National Economic Strategy 2030. This all relates to **ERA Priority 2,** in particular ERA Action 10, 11 and 12. Also, Ukraine's Key Priority on 'Digital Transformation of Education and Science' is reflected by its active participation in DEP and prioritisation of certain digital research disciplines, which has synergies with ERA Action 12.

Related to **ERA Priority 3,** Ukraine's increasing involvement in HE and other European programmes, and the establishment of the National HE Office and the NCPs network, contribute to Ukraine's ambition to integrate in the European R&I ecosystem. These developments all align with ERA Action 16. ERA Dashboard Indicator 46 shows that benefits for Ukraine are already quantifiable.

ERA Priority 4: Lastly, as was already mentioned under ERA Priority 1, Ukraine's ambition for reform is being implemented and aligns with ERA Action 20. However, proposals for new laws and reforms still need to be approved before full implementation can take place, and in turn, extensive effects can be identified.

5. Conclusions

Ukraine has not committed to ERA Actions of the ERA Policy Agenda 2022-2024, and the Russian aggression poses many challenges for maintaining a functioning R&I ecosystem and making progress in this regard. Nevertheless, there are many developments related to ERA Actions that show promise. National reform plans that are particularly relevant. These include the Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027, which

incorporates an operational objective dedicated to integrating Ukraine's RI in the ERA, and the Science and the National Open Science Action Plan.

Another major development is the establishment and the work of Ukraine's Horizon Europe Office in 2023 and the NCPs network in 2024. The office and the NCPs network are effectively disseminating a lot of information to stakeholders through events and the website and have increased the connections with EU-wide research excellence and funds. This is exemplified by Ukraine's increasing participation in Horizon Europe.

Lastly, laws for promising reforms in Ukraine's R&I ecosystem have been proposed, although most still await implementation. That being said, many challenges are still to be faced. Some ERA Dashboard Indicators show that Ukraine is stagnating or even declining in many areas related to ERA Priorities and Actions. It may be expected that the above-mentioned developments will change these trends in the near future.

6. References

All relevant web links can be found in the footnotes.

European Innovation Scoreboard, Ukraine Country Report 2024.

Strategic Action Plan of the Ministry of Education and Science of Ukraine by 2027.

Decree of the Cabinet of Ministers of Ukraine 703 as of 21 June 2022, Decree of the Ministry of Education and Science of Ukraine №170, as of 10.02.2025.

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

Figure 3.4 Indicators for ERA Priority 4

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

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