ERA ACTION FOR THE ERA POLICY AGENDA 2025-2027

This template follows up on the debate in the ERA Forum on 25 May, in which Forum representatives agreed on a coordinated approach towards the definition of new actions for the ERA Policy Agenda 2025-2027. It builds on a gap analysis exercise in which the ERA Forum assessed, which parts of the Pact for Research and Innovation are already covered by the Policy Agenda 2022-2024 and where there should be additions.

Action title: *(Please use as a maximum two lines.)*	**Action 8. Strengthen sustainability, accessibility and resilience of research infrastructures in the ERA**
Description of the action *(Please explain the proposed action in a simple, clear and communicable narrative).*	**Rationale:** Over the past more than twenty years, the European Union has developed a unique landscape of European research infrastructures (RI), whose relevance for deepening a truly functioning internal market for knowledge is underlined in the 'Pact for Research & Innovation in Europe', and whose central role in Europe's ability to provide knowledge-based solutions to grand societal challenges has been acknowledged, most recently in the 2022 Council Conclusions on Research Infrastructures. The **overall objective** of the action is to ensure the openness and accessibility of world-class sustainable RI for researchers in Europe, and to develop further and consolidate RI, their integrative function in the R&I ecosystem and their potential in providing solutions to societal challenges. Building on the progress and achievements of Action 8 of the ERA policy agenda 2022-2024 and the additional activities, the further integration and strengthening of the European RI landscape is an incessant effort that requires **continuous** activities in devising a **strategic approach for EU support to RI**, **analysing the landscape**, **monitoring RI performance**, and **updating the ESFRI roadmap**, all with reinforced co-creation through **stakeholder engagement**. Firstly, there is a need for a clear monitoring of the performance of the different RI. Secondly, a clear analysis of the financial support to the RI is essential. Thirdly, a new strategic landscape analysis for RI in Europe is necessary for the further development of the RI in the ERA. On this basis, with corresponding reports and analysis from the research community, a new Roadmap of RIs in the EU will be launched in a bottom-up approach. With the aim of ensuring continued relevance at EU as well as national level, complementary **short-term** activities help respond to specific issues such as **resilience** and **greening** of research infrastructures, **financing** and synergies of funding, **impact assessment, international cooperation** and **strengthening of ERICs**. **Activities:** **RECURRENT ACTIVITIES** **1. Strategic approach for EU support to research infrastructures**

	Over the past three decades, dedicated EU support to research infrastructures has expanded and evolved, with significant activities to facilitate the development of new or major upgrades of infrastructures, as well as the integration and opening of existing ones. With the renewal of the ERA, the more mature European landscape of research infrastructures and new or more critical challenges to address, a more strategic approach for EU support to research infrastructures should be developed. It should build notably on the assessment and lessons learnt from Horizon 2020, Horizon Europe and contributions from other EU funding instruments, on the work of ESFRI on funding and on engagement with relevant stakeholders. Outcomes will feed into the last work programme under Horizon Europe and into the discussions on the next EU R&I Framework Programme. **2. ESFRI Roadmap and Landscape Analysis** **a. ESFRI Roadmap 2026** **b. Key elements for Landscape Analysis 2028** The ESFRI Roadmap and the Landscape Analysis are two interlinked activities which are supposed to be continuous, having already started in 2016 and to be continued after 2027. The next (7th) ESFRI Roadmap will be published in 2026. It will be prepared with the contribution of the thematic ESFRI Strategy Working Groups, the ESFRI Implementation Group and external experts. It will be based on the Landscape Analysis 2024, the monitoring process of the RI, and the financial report of the RI. It will include the complete list of existing and new ESFRI projects and Landmarks. The activity for the ESFRI Roadmap 2026 includes the evaluation of the new projects, the monitoring of the 2018 and 2021 ESFRI projects and the identification of the new Landmarks from the monitoring of the ESFRI 2016 projects. For the next Landscape Analysis (2028), which will again be decoupled from the Roadmap, the methodology will be reviewed taking into account the lessons learnt from the 2024 Landscape Analysis. The revised methodology will be released in early 2027. **3. Monitoring of ESFRI Landmarks** **(outcome: monitoring results, periodically updated)** As a growing number of European RI become operational, including European Research Infrastructure Consortia (ERICs), the importance and value of their ongoing monitoring is increasing both at European and at national level. Building on the ESFRI report on 'Monitoring of Research Infrastructure Performance' and on the subsequent ESFRI report 'Proposal for the Implementation of the ESFRI Monitoring Approach', a performance monitoring system for European research infrastructures has been established, in close collaboration with relevant stakeholders. 30 operational ESFRI Landmarks are being monitored until the end of

	2024, following the agreed methodology, with the use of qualitative information and key performance indicators. Subsequently, ESFRI will explore further refinement of the system and decide on the application to further Landmarks, including revisiting monitored Landmarks in regular cycles. Synergies will also be explored with the envisaged ERIC Observatory and the general ERA monitoring framework. **4. Stakeholder engagement (outcome: event/activity reports)** **a. Stakeholder Forum and Meetup** **b. EOSC-ESFRI collaboration** **c. Industrial cooperation and collaboration with TIs** A very broad collaboration is necessary not only of the MS and AC, together with the EC, but also in a very broad sense with the different ERA stakeholders: RIs and their partners, including in the context of EOSC, and related to industrial collaboration or the development of TIs. A holistic approach on the different pillars of the ERA around the common players of the RI (in a broad sense) is necessary, in particular to strengthen common views and to generate a genuine confidence between the different players. A possible activity dedicated to cutting-edge instrumentation, technology development and innovation of a specific European Research Infrastructure community will be explored. **SHORT-TERM ACTIVITIES** **5. Financing, including synergies with national and regional funding, EU and others (outcome: report with recommendations)** Based on the work of the ESFRI drafting group on RI funding (analyses of surveys, outcomes of workshops, interactions with governments and with research infrastructures), particular attention will be given to articulating the work done within the ESFRI Landscape Analysis activity and the drafting group on access to RI. The identification of gaps and needs in the Landscape Analysis, as well as the issues raised in connection to access provision to RI, will contribute to the report of this line of activity which will provide insights into the funding needs of RIs. A close work with governments will be conducted in order to elaborate the indicator(s) reflecting the share of investment in European research infrastructures as a percentage of GDP, necessary for ERA monitoring. **6. International cooperation (outcome: report with recommendations)** This activity line will highlight the importance of RI for European R&I, show how the European RIs connect at global scale and foster their role to drive international cooperation and science diplomacy.

	RIs are organisational structures dedicated to deliver data or services for basic or applied science. They have become indispensable in almost all scientific domains and represent an increasingly large share of research investment. RIs provide an effective mechanism to promote international scientific collaboration - both to advance basic scientific understanding and to address global challenges. RIs can be very complex and expensive undertakings, sometimes in the billion or even tens of billion € range, that require international co-funding, and/or they need to be distributed over multiple locations around the globe to collect the necessary data or observations. Those requirements have expanded the international dimension of individual RIs and fostered the establishment of international collaborative research infrastructure networks. **7. Impact assessment of ESFRI (outcome: report with recommendations)** Impact analysis is the cornerstone of effective, responsible, and beneficial policymaking. ESFRI was established in 2002. The experience of two decades provides a timeframe during which the impacts can be manifested, collected, and analysed. Results are planned to be presented at the 25th anniversary of ESFRI in 2027. **8. Further strengthening of ERICs as part of the RI ecosystem** Today, there are 26 ERICs established, and the ERIC legal framework has shown to be instrumental in integrating and structuring the European RI landscape. However, ERICs as every tool should change to adapt to the new needs of the changing paradigm of RIs. In August 2023, the EC adopted the Third Report on the Application of the ERIC Regulation. The report notably recommended that further effort is needed to strengthen the access programmes of the ERICs and the availability of their services, to increase synergies among the different potential funding sources, to facilitate the engagement with international partners, and to address a number of operational challenges. This line of activity will follow up on these recommendations to see how best to further evolve the ERIC framework addressing areas requiring further optimisation or harmonisation, thereby improving the performance of the RI, and by consequence of the ERA. **9. Resilience and greening of European research infrastructures (Outcome: report with recommendations)** Research Infrastructures are entering a new phase: on one hand, emerging global challenges require the strengthening of collaboration and synergies between research communities to address complex scientific and societal issues. This was exemplified

	by the recent COVID-19 pandemic[1] but this is also true for many complex socio-technological problems (food security, extreme weather events, biodiversity reduction, energy crisis, disease migration…). On the other hand, there are growing barriers to the development of scientific collaboration: security issues[2] (war in Ukraine, foreign interference in public research…), fierce economic competition (AI, quantum technologies…), and regulatory/legal barriers (that may prevent the circulation of researchers, data, or samples). The long-term sustainability and resilience of RIs is already a key issue, not only from the financial aspect, but for instance to energy related challenges. On that particular issue a greening approach to the sustainability of the energy consumption from RIs is a real challenge for the coming years, that merits a particular study in the way to face the future.
Actors *(Please explain who would take part in the action and who would benefit from it).*	Main actors are the EU Member States and the Commission, notably through ESFRI; the HE Associated Countries; the European research infrastructures notably the ESFRIs/ERICs and EIRO-Forum members; other stakeholders such as umbrella organisations (RIs, universities, RPOs) notably those registered in the ERA Stakeholder Forum and the ESFRI Stakeholder Forum.
Expected impact *(Please describe the expected impact of the action (including outside the scientific community), paying attention to the fact that it needs to focus on concrete results and reachable deliverables).*	Key expected impacts of the action include: - Strengthened research infrastructure services, better adapted to user needs, in the context of contemporary and emerging scientific challenges and EU policy priorities, - Strengthened European RI ecosystem through the identification of new RI projects filling existing gaps, - Enhanced impact on research and society, - Strengthened engagement with industry, - Better understanding of the interface between Research Infrastructures and Technology Infrastructures, - Stronger engagement of stakeholders in research infrastructures activities.
Why do we need this action? *(Please indicate the need for this action in view of implementing the Pact for R&I and achieving the ERA objectives and explain why its objective cannot be reached through existing programmes/ activities. What is the action's added value at national and European level as well as for*	Research Infrastructures are a very successful example of cooperation among MS and at EU level (both policy development and implementation by MS and the Commission). Continuous efforts are needed to address new challenges and ensure awareness and synergies with other ERA actions. Research Infrastructures are a key component in ERA. The ESFRI roadmaps, updated regularly since 2006, revise the strategy on European RIs aimed at strengthening the competitiveness and value, both in excellence and impact of European research. The update of the ESFRI Landscape Analysis provides the most updated

[1] https://www.oecd-ilibrary.org/science-and-technology/covid-19-resilience-and-the-interface-between-science-policy-and-society_9ab1fbb7-en

[2] https://www.oecd.org/science/inno/integrity-and-security-in-the-global-research-ecosystem-1c416f43-en.htm

stakeholders? How does it make a change and how is co-creation ensured?)	framework for the ESFRI roadmap. For instance, impact assessment underpins the successful implementation of the priorities regarding Research Infrastructure policy, as described in the Pact for R&I. It enables evidence-based decision-making, comparative analysis, and long-term planning while actively involving stakeholders in co-creation. Furthermore, it provides evidence of impacts of ERA to the policymakers, stakeholders and citizens. ESFRI has played a key role in the strategic planning of research infrastructures at European level, which was followed by the creation of national roadmaps in the large majority of MS. This process resulted in commitments in excess of 24 bn Euro through national and regional investments, reflected in the ESFRI roadmap 2021, and catalysed by the contributions of the EU, which harmonised the process towards the implementation of new and upgraded RIs through dedicated funding instruments since the 2nd Framework programme. A common, well-coordinated and multi-level European effort should be undertaken in order to be able to guarantee the long-term sustainability and further development of these unique scientific resources of Europe. The Council in its 2022 Conclusions on research infrastructures invited MS and the Commission through ESFRI to perform an analysis of the types of financial support to the European RIs throughout their life-cycle, identify good practices and synergies of various RI funding resources, and explore appropriate RI funding models and corresponding RI funding initiatives. In the framework of ERA monitoring, the question is raised about the European investment into research infrastructures. Therefore, it is necessary to develop the indicator(s) reflecting the share of investment in European research infrastructures as a percentage of GDP.
Additional information *(For example, timing and milestones, which already could be envisaged, can be indicated.)*	ESFRI Roadmap by 2026