

## ERIC Forum 2

### **Policy recommendations to improve the sustainability of ERIC operations and the development & deployment of commercial services**

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## Executive summary

ERICs are a unique and vital asset to Europe: they contribute to the implementation of key EU policies by providing access to world-class research infrastructures and drive innovation and competitiveness *via* the Open Science paradigm.

It is widely acknowledged that ERICs are facing challenges to sustain their operations. To enhance the financial sustainability of ERIC operations, bundling various European and national funding sources – the so-called *funding synergies* – is often promoted. Developing commercial services is also advocated, both to enhance the ERIC services to innovation and competitiveness and to contribute to their financial sustainability.

A survey across ERICs examined how they define their services, the challenges they face in sustaining, upgrading, or developing new ones, and their capacity – or otherwise - to deploy commercial services to industry. The primary findings are:

1. ERICs predominantly focus on pre-competitive research and provide FAIR data accessible to all, including the private sector, creating a foundation for innovation despite serving primarily academic users.
2. ERICs play a vital role in training and upskilling researchers from both the public and private sectors, but operate with limited budgets for such activities.
3. Not all ERICs are research performing organizations that can deliver the R&D services expected by industry. Furthermore, the market determines the scientific areas where the demand for ERIC services is meaningful.
4. Even for ERICs with strong potential, financial and human resources – both at ERIC Headquarters and local nodes – are usually not sufficient or even unavailable to significantly develop commercial services.
5. Specific challenges and barriers need to be addressed to stimulate ERIC-industry partnerships, including service visibility and awareness, access schemes that facilitate industry engagement, and expertise in business development, innovation, legal matters and intellectual property management.
6. ERICs primarily rely on membership fees, in-kind contributions and EU grants for operation, and on EU grants and (to a lesser extent) membership fees for the development of new services.
7. ERICs face severe operational challenges to balance the development of new services with the sustainability of existing ones. The financial sustainability of ERICs is further compromised by the strong reliance on external short-term funding and limited core funding for long-term planning.
8. Structural funds, resilience funds, or other EU schemes other than the Framework Programme play a minor role in the financing of ERICs, hinting to the fact that such funding sources may not be appropriate for most ERICs.
9. Commercial services to industry are unlikely to make a significant contribution to the sustainability of ERIC operations as distributed networks given the legal and financial independence of their nodes, which provide most of the services.
10. An increasing number of Research Infrastructures, Technology Infrastructures and Digital Infrastructures are competing for funding. Better coordination is needed at European and national levels to ensure synergies in this infrastructure environment.

The report outlines policy recommendations to address these challenges. Ensuring ERICs' long-term financial sustainability requires a coordinated effort among ERICs, the European Commission, ESFRI, and national funders. Establishing a structured dialogue among these stakeholders is essential to aligning funding mechanisms with ERICs' realities, which vary across clusters and structures, and maximizing their impact within Europe's research and innovation ecosystem.

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## 1. Introduction

European Research Infrastructure Consortia (ERICs) operate research infrastructures (RIs) of European importance on a non-economic basis. Organized around the Open Science paradigm, they provide a comprehensive catalogue of user-oriented services to scientific communities in Europe and worldwide. Furthermore, they contribute to fostering major European policies, such as the green transition and the digital transition, and are cornerstones of a more resilient, competitive, inclusive, and democratic Europe.

Like most research endeavours, ERICs often face financial challenges potentially restraining their capacity to operate and/or upgrade their services and to create new ones. This is highlighted in the ESFRI Position Paper on the Framework Program 10 of November 2024 (p. 3): *“The challenge of ensuring long-term sustainability of Research Infrastructures (RI) is very complex in nature. In addition to scientific excellence as an indisputable key element, long-term sustainability requires an adequate legal and financial framework, an environmental strategy and must be embedded in a supportive, policy-driven environment to be successful”*. In its draft Orientation Paper ‘Horizon Europe Research Infrastructures Work Programme 2025-2027’, the European Commission identifies as one of the main challenges the necessity to improve the sustainability of the RI ecosystem and synergies amongst RI funding sources, as funding an increasing number and pan-European RIs weighs on national research budgets. The latter refers to *“potential synergies between EU/EIB funding sources, such as structural and investment funds, Recovery and Resilience Facility, Neighbourhood, Development and International Cooperation Instrument (NDICI) for the external dimension of RI, and national funding instruments”*. With more than 60 RIs on the ESFRI Roadmap 2021, competition between an increasing number of RIs is further exacerbated by the emergence of Technology Infrastructures (TIs) and Digital Infrastructures (DIs). Analogous to ERICs, a bespoke legal framework for DIs – the European digital infrastructure consortium (EDIC) - has been established [Decision (EU) [2022/2481](#)].

To contribute to improving the resilience of the RIs, Task 1 of WP5 therefore aimed to identify how ERICs define the services they provide, and the challenges they face to sustain and upgrade them and/or develop new ones. The task focused more specifically on the funding schemes sustaining the operations and their limitations. The present report provides conclusions and policy recommendations on how to improve the sustainability of ERIC operations.

To promote innovation and knowledge and technology transfer, ERICs are entitled to carrying out some limited economic activities closely related to their scope of activity provided that it does not jeopardize their primary mission. Nowadays, ERICs are encouraged – and expected – to provide access for industry to a comprehensive catalogue of commercial services helping to address societal challenges related to the twin transition and/or fostering the European innovation ecosystems. Furthermore, in a context of constrained public budgets, commercial services to industry are often seen by national and European funders as a way to contribute to the financial sustainability of ERICs.

However, several barriers such as conflicts between the primary mission of the ERIC and the capacity to offer commercial services, the area of activity, the structure and level of integration of the infrastructure, and/or legal, financial, political or other barriers may hamper or prevent the development and provision of commercial services by ERICs. One objective of this deliverable is therefore to assess the ERICs’ capacities and identify potential barriers preventing the provision of commercial services, as well as to analyse conditions facilitating the development and deployment of such commercial services. Based on these findings, this report contains policy

recommendations to support the long-term (financial) sustainability of ERICs and to foster the development and deployment of commercial services.

## 2. Methodology

Information on the services, including commercial services, and their sustainability challenges were collected through a structured survey, which is available in Annex 1. The survey was disseminated to all ERICs, and one response per ERIC was recorded. The response rate was 92.6% (n=25), highlighting the importance of this topic among ERICs. None of the questions were mandatory; therefore, the data presented in this deliverable consistently includes information about the number of respondents. To reach the objectives of WP5 Task 1, it was essential to consider the diversity of the ERIC landscape, including the legal structure, the mode of operation, the area of activity (clusters) and the operational level. These elements were considered while drafting the survey.

**Table 1.** List of ERICs which responded to the survey

ERIC	Type	Cluster	Year of establishment
CESSDA ERIC	Distributed	Social and Cultural Innovation	2017
CLARIN ERIC	Distributed	Social and Cultural Innovation	2012
DARIAH ERIC	Distributed	Social and Cultural Innovation	2014
European Social Survey ERIC	Distributed	Social and Cultural Innovation	2013
ECCSEL ERIC	Distributed	Energy	2024
EU-SOLARIS ERIC	Distributed	Energy	2023
CERIC ERIC	Distributed	Physical sciences & Engineering	2014
ELI ERIC	Single (multiple)-sited	Physical sciences & Engineering	2021
European Spallation Source ERIC	Single (multiple)-sited	Physical sciences & Engineering	2015 Operational as of 2027
Joint Institute for VLBI ERIC (JIVE)	Distributed	Physical sciences & Engineering	2014
ACTRIS ERIC	Distributed	Environment	2023
EMSO ERIC	Distributed	Environment	2016
EPOS ERIC	Distributed	Environment	2018
Euro-Argo ERIC	Distributed	Environment	2014
ICOS ERIC	Distributed	Environment	2015
AnaEE ERIC	Distributed	Environment, Health & Food	2022
EMBRC ERIC	Distributed	Environment, Health & Food	2018
BBMRI ERIC	Distributed	Health & Food	2013
EATRIS ERIC	Distributed	Health & Food	2013
ECRIN ERIC	Distributed	Health & Food	2013
Euro-BioImaging ERIC	Distributed	Health & Food	2019
EU-OPENSOURCE ERIC	Distributed	Health & Food	2018
INFRAFRONTIER ERIC	Distributed	Health & Food	2023
Instruct ERIC	Distributed	Health & Food	2017
MIRRI ERIC	Distributed	Health & Food	2022

25 out of the 27 ERICs established at the time of the survey responded to the survey (see Table 1). It should be noted that one ERIC (European Spallation Source ERIC) is not yet operational, while several others were established less than three years ago.

The survey was divided in two parts: Part 1. Operational sustainability and Part 2. Commercial Services.

In Part 1, ERICs were asked to identify up to three major services from the categories of services listed in the survey:

- Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data storage and sharing (or accessibility) services, data management (referred to as Data and digital services in the document)
- Material (chemical compounds, samples, microorganisms, etc.) (referred to as Material resources in the document)
- Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access) (referred to as Experimental facilities and equipment)
- Support for experimental design, analysis of results and outcomes, research implementation/operations, etc. (referred to as support for research)
- Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- Training and education
- Organisation of congresses and scientific meetings
- Stakeholder forum or industry exchange platform

For each service, ERICs specified the main users, the service access financial model, and the primary funding sources for service *provision*. Additionally, ERICs identified the main funding sources for *developing* new services and outlined the key challenges they face in sustaining operations or developing new services.

Many ERICs apply fee-for-services to all users. A distinct class of users, however, is industry. In Part 2, ERICs were asked if they provide services to industry, and, if not, to explain the reasons. For distributed ERICs, it is important to discriminate between services provided by the ERIC as a legal entity (i.e., generating an income for the ERICs as such) and services provided by the nodes in their own capacity (i.e., no income for the ERIC) and, in the latter case, determine the role of the ERIC headquarters. Furthermore, ERICs were asked to estimate the share of industry users, and the income generated from these fee-based services as a proportion of their total income. Finally, ERICs were also asked to describe the role of the ERIC Headquarter in the context of providing commercial services to industry and to describe favourable factors, main difficulties and barriers.

Findings of the survey were used to draw conclusions and provide policy recommendations to improve the sustainability of ERIC operations and the development and deployment of commercial services. These were reviewed by all other participants in the work package (JIVE, CESSDA, EURO-BIOIMAGING, ECCSEL) and the Project Management Team, and presented to the Executive Board of the ERIC Forum.

### 3. Results and Policy Recommendations

The policy recommendations outlined in this chapter are derived from survey results focused on the primary services offered by ERICs, the development of new services, and commercial services provided to industry. The major results of the survey can be found in the Annex 2.

#### 3.1 Funding Sources of ERICs

Both the European Commission and ESFRI identify the necessity to improve the sustainability of the RI ecosystem as one of the main challenges. Synergies among RI funding sources are seen as a possible way forward to alleviate the burden on national research budgets. Synergies could encompass EU/EIB funding sources, such as structural and investment funds, Recovery and Resilience Facility, Neighbourhood, Development and International Cooperation Instrument (NDICI) for the external dimension of RI, and national funding instruments.

Like the ESFRI Report ‘Funding of Research Infrastructures’ (doi: [10.5281/zenodo.14770890](https://doi.org/10.5281/zenodo.14770890)), the WP5 survey confirms that most of the funding for the ERICs comes from membership fees, host country contributions (including in-kind contributions) and EC funding. Similarly, our work indicates that the use of Regional Funds, Structural/Cohesion Funds, or the Recovery and Resilience Facility for ERICs is, overall, modest. The existence of these funding instruments may not translate into existing opportunities: EU Member States may lack incentives to make the political decision to dedicate part of these funds to RIs. The little use of these instruments may also indicate that this kind of funding is not always adapted to the needs of distributed infrastructures: most distributed ERICs do not require major investments upfront (nodes are usually not created *de novo*), but regular and recurrent investments of relatively smaller size and, above all, sustained operational budgets. Furthermore, the nodes of distributed ERICs are usually small entities of a much larger legal entity (e.g., research institute or university), which complicates investments and the allocation of dedicated funding for a node using the instruments mentioned above. Finally, the use of such funding instruments, given their national dimension, are not coordinated at the ERIC level and, hence, do not contribute to the sustainability of the RI as a whole. It is therefore pertinent to question the extent to which these instruments—Regional Funds, Structural/Cohesion Funds or the Recovery and Resilience Facility—could contribute to the operational sustainability of distributed ERICs.

The authors of the ESFRI Report argue that there is “*a pervasive lack of detailed knowledge concerning funding sources*” and recommend that RIs “*develop a better understanding and overview of national funding sources.*” A roundtable discussion at the 2<sup>nd</sup> ERIC Forum 2 meeting in January 2025 also stressed the need to consider funding synergies within the portfolio of Horizon Europe Pillars as well as other types of funders such as foundations. While this remains an important goal, numerous examples highlight that ERICs do already actively explore alternative funding sources for different parts and various activities of their RIs:

Beyond the INFRA scheme of Pillar 1, many ERICs are involved in public-private partnership co-funded by the EU under Pillar 2, as well as projects funded by the European Innovation Council (EIC) under Pillar 3. For instance, EU-OPENSREEN ERIC coordinates the FASS Project (<https://fass-solubility.eu/>), funded by the EIC Transition Programme, in collaboration with startups and other partners. Additionally, ERICs and their local nodes participate in public-private partnerships. For example, the Innovative Health Initiative (IHI), with a budget of €2.4 billion, is a public-private partnership funded jointly by the EU and by industry associations representing Europe’s



life science industries. Based on the success of the Innovative Medicines Initiative (IMI), the scope of the IHI has been extended beyond drug development and medicines and now also covers medical technologies, digital health, data solutions, and healthcare system improvements. ERIC involvement is exemplified by EATRIS ERIC's participation in the UMBRELLA project (<https://umbrella-ihp.eu/>), as well as the contribution of IMTP Fraunhofer, as EU-OPENSREEN ERIC node, to the FAIRplus project (<https://fairplus-project.eu/>).

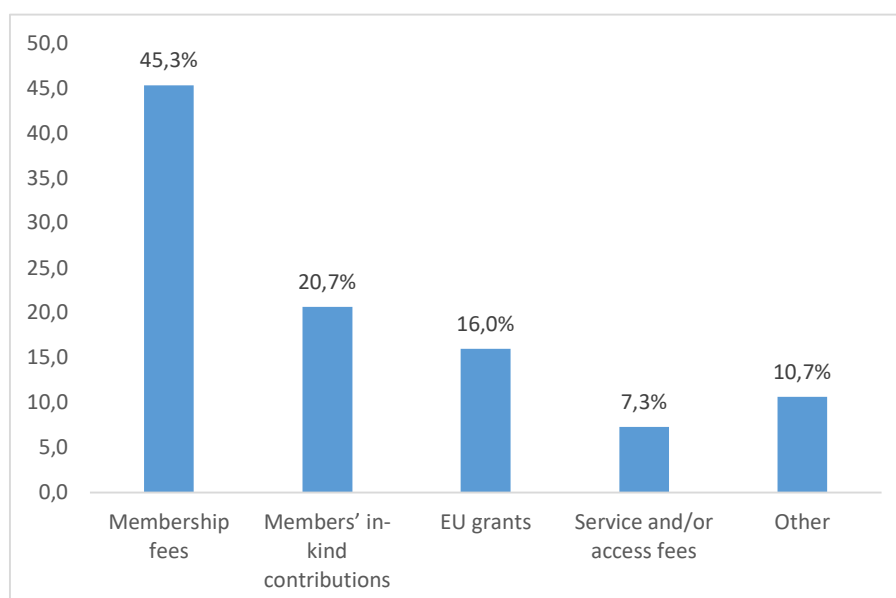
Beyond EU programmes, there are also examples of funding via European foundations. One example is Euro-BioImaging ERIC's "Global BioImaging" initiative (<https://globalbioimaging.org/>), which involves international network of imaging infrastructures and communities, was initially received Horizon 2020 funding but now benefits from funding by the Chan Zuckerberg Initiative. Similarly, EU-OPENSREEN ERIC obtained support from the Volkswagen Stiftung to organize a sub-Saharan Drug Discovery training workshop.

Despite these examples, it should be noted, however, that the potential of such funding diversification to contribute to the financial sustainability of RIs varies considerably across ERICs and their nodes across the different clusters.

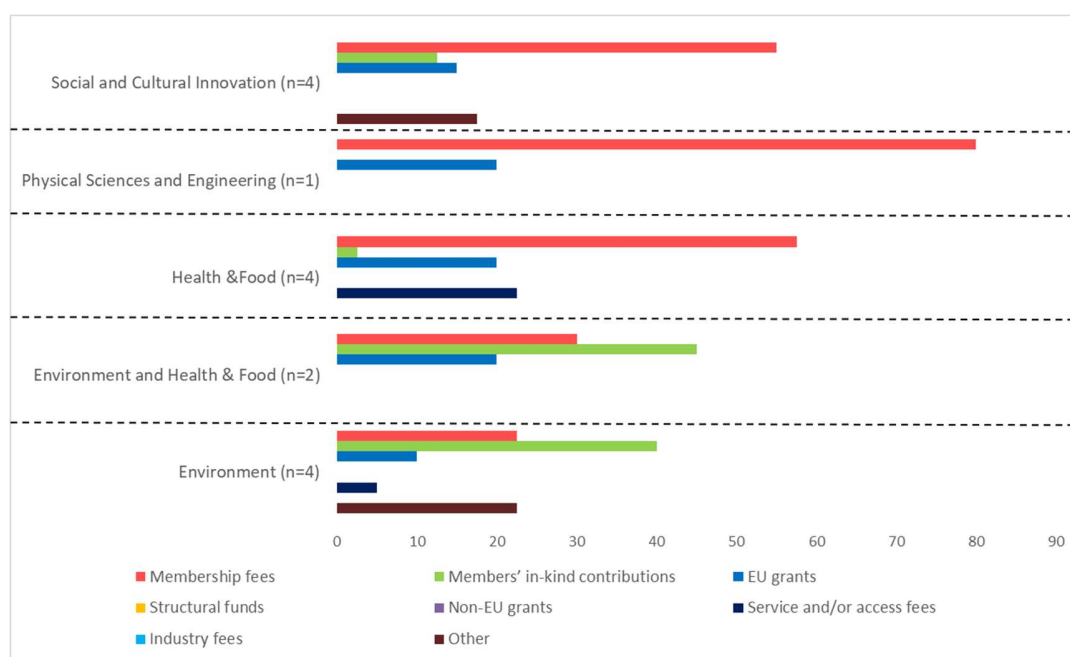
### 3.2 Main RI Services and Related Funding Challenges

The most common primary services offered by ERICs are Data and Digital Services, accounting for 48% of the responses, and access to Experimental Facilities and Equipment, which represent 40% of the responses.

Regarding Data and Digital Services, among the 15 responding ERICs, membership fees were the primary funding source, followed by their members' in-kind contributions and EU grants (Figures 1 and 2). While some local nodes may utilize non-EU grants or structural funds for the provision of Data and Digital Services, the survey did not specifically capture this information, and these are likely to represent a relatively minor source of funding.



**Figure 1.** Distribution of major funding sources (percentages) for Data and Digital Services. Data represents ERICs that responded to this question (n=15). "Other" as a funding source reflects a collaborative funding and resource-sharing model between ERICs in the Social Sciences and Humanities. Similarly, in the Environment cluster, "Other" represents contributions from both ERIC members and non-members who support the integration plan.

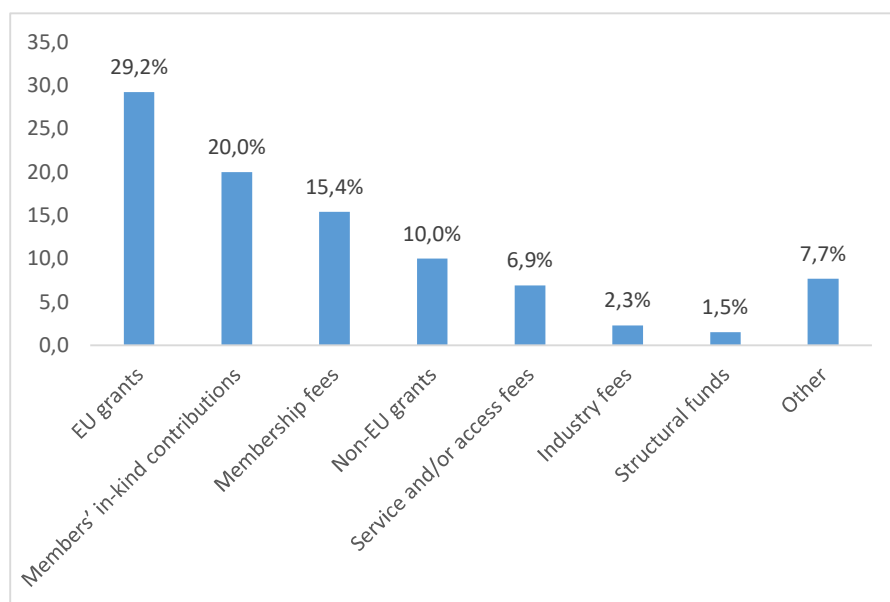


**Figure 2:** Distribution of major funding sources (percentages) for Data and Digital Services across clusters (n=15). The number of ERIC in each cluster is indicated in the figure. “Other” as a funding source reflects a collaborative funding and resource-sharing model between ERICs in the Social Sciences and Humanities. Similarly, in the Environment cluster, “Other” represents contributions from both ERIC members and non-members who support the integration plan.

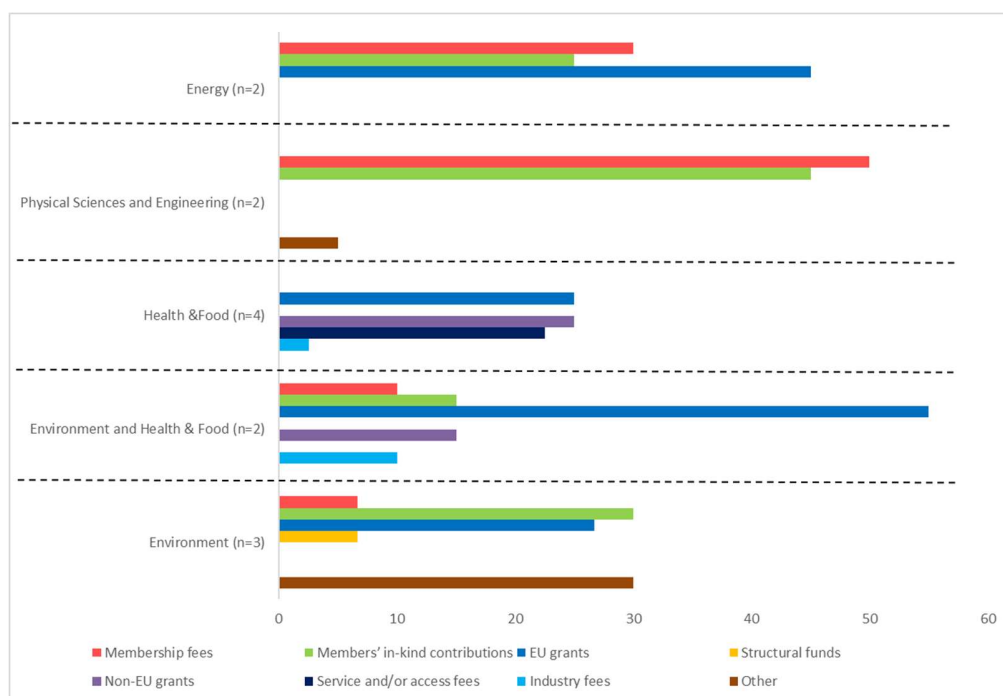
Often, access to data is considered as being the service provided by RIs. This, however, amounts to putting the cart before the horse: before being made accessible, data must be generated. In the social sciences, collecting data across many countries to provide the relevant cultural, political, and economic context is the prerequisite for comparative analysis. Similarly, in the ENVRI cluster, the fundamental service is the generation of observations and measurements. Furthermore, the value of environmental data relies on long time series and specific spatial coverages. Long-term measurements over years or even decades are crucial for monitoring changes in the Earth's climate patterns. This implies continuous operation of scientific instruments and their replacement when they are no longer functional – which may necessitate recurrent and frequent investments – as well as data quality control, management and storage, and dedicated access portals. Furthermore, technological developments allow for significant improvements of the quality of the data, the numbers of essential environmental variables that can be observed and/or the functional observation conditions. These improvements lead to upgraded or new services; however, they usually come at a significant cost, notably for new instruments.

Constant observation of the environment is hardly reconcilable with the traditional funding schemes of a RI, notably the competitive ones. RIs of the ENVRI cluster should therefore be recognized as having a dual mission, (1) as infrastructure fostering excellent research and (2) as infrastructure for operational monitoring. These monitoring activities must be funded appropriately, notably in view of the operational users' needs. A key element for consideration, in this respect, is that the primary users of monitoring data are the EU Copernicus services and that the quality of their services relies on the availability of the *in-situ* data provided by RIs, thereby justifying direct EU funding for monitoring activities.

The second key service, access to Experimental Facilities and Equipment, reveals variations in major funding sources across the 13 responding ERICs. While EU grants represent the primary funding source, other sources also contribute to service provision to varying degrees (Figures 3 and 4).



**Figure 3.** Distribution of major funding sources (percentages) for Experimental Facilities and Equipment. Data represents ERICs that responded to this question (n=13).



**Figure 4.** Distribution of major funding sources (percentages) for Experimental Facilities and Equipment across clusters. The number of ERIC in each cluster is indicated in the figure.

Ensuring long-term sustainability of these services is crucial. Some ERICs developed concepts for the long-term sustainability of some of their services based on fee-based services for their users. One example is EU-OPENSOURCE ERIC. Its compound collection and central compound management facility is a central and jointly used asset of the ERIC, which was initially funded by a significant host country contribution. However, as the compound collection and instrumentation have a limited lifespan (10-20 years) and require ongoing replenishment, repair and replacement, a long-term financial sustainability model is necessary. To address this, EU-OPENSOURCE ERIC charges a fee for the usage of the collection, with revenue reinvested into maintaining and expanding the collection. The service includes not only the provision of physical compound samples but also quality control, reformatting (including cherry-picking of individual compounds), and shipment, along with other support services.

ERICs face several challenges in maintaining and upgrading their services to remain at the forefront of scientific innovation. Indeed, it is crucial to adapt services to meet the evolving needs and expectations of users. Adequate and sustainable funding models are essential throughout the entire RI lifecycle to meet diverse needs and address funding gaps. A coordinated approach that integrates European, national, and other funding sources is critical for fostering a robust pan-European RI ecosystem. Though ESFRI, in its whitepaper (under 2.2 Long-Term Sustainability of RIs), argues that stable long-term funding from both public and private sources are equally vital for ensuring the enduring sustainability of RIs at all stages, it can be disputed— similar to universities and public research institutes, which require continuous institutional funding from public sources – that private funding sources (e.g., industry or foundations) can realistically make a meaningful contribution to the financial sustainability of infrastructures in general (see also section 3.8 on commercial services to industry).

Another major challenge faced by ERICs in their operations is strategic and community engagement in order to attract new members to expand their funding base. Finally, aiming to ensure alignment between ERICs' operations and services with EU strategies can in some cases be complex given the socioeconomic realities of member countries, which impact their funding capacities to support these evolutions.

### **Findings**

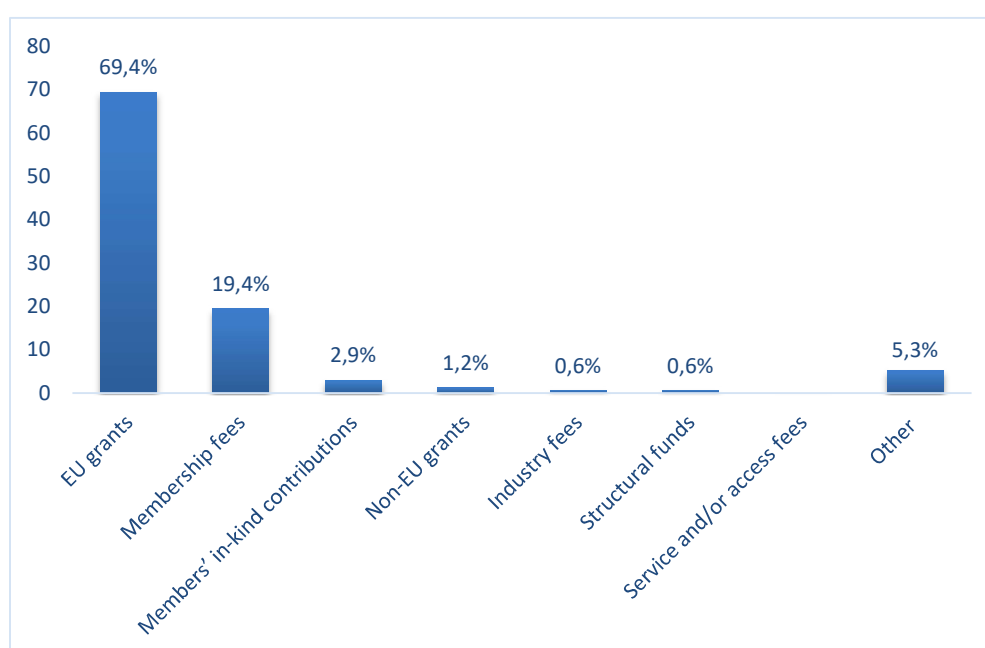
- *RIs primarily rely on membership fees, in-kind contributions and EU grants for operation.*
- *Structural funds, resilience funds, or other funding synergies play a minor role.*
- *ERICs of the ENVRI cluster have a dual mission, (a) environment monitoring in support of Copernicus Services and EU policies and (b) support for scientific excellence, which necessitate different funding mechanisms.*

### **Recommendations**

- *Ensure continued access to EU and national grants to keep RIs at the forefront of technological advancements.*
- *Encourage RIs to explore funding synergies to diversify the financial base and strengthen their long-term sustainability.*
- *Recognise the dual mission of ERICs of the ENVRI cluster and provide appropriate EU funding for their contribution to the Copernicus Services and the monitoring of EU policies.*

### 3.3 Funding Sources for Developing New Services

RIs, and ERICs in particular, need to continually invest in refining their service portfolio in response to changing user needs, including those due to technological developments, to remain relevant for users and ensure that they can provide state-of-the-art services. As shown in Figure 5, EU funding and (to a lesser extent) membership fees are the primary funding sources for ERICs to develop new services. Based on the survey responses, we estimate that EU grants provide ca. 70% of the funding and membership fees ca. 20%. Other funding sources such as non-EU grants, service fees and structural funds play a marginal role. These findings highlight the importance of EU-project-based funding for the development of new services and ensure that the ERICs stay up-to-date and continue to provide relevant services to the scientific community.



**Figure 5.** The average distribution of funding sources in percentages across 17 ERICs for the development of new services. The category “Other” includes contributions such as host country funding or contributions from ERIC members or non-members to specific ERIC-related initiatives.

The first challenge related to the development of new services is the strong reliance of ERICs on short-term external funding such as Horizon Europe INFRA-DEV or INFRA-TECH grants. The second challenge is related to the financial sustainability for the provision of these new services while continuing to offer existing services. The development of new services usually extends the service portfolio of the ERICs and broadens their user community, but the additional services need to be provided and maintained by using the limited core funding, putting an increasing strain on the financial sustainability of the ERICs.

ERICs also face other challenges related to the development of new services: Operational challenges include the difficulty of training and retaining current staff and recruiting new experts with specialized know-how to ensure a skilled workforce, particularly in specialized areas like IT, which is crucial for long-term service development. For experimental facilities, there may also be a lack of coordinated user access funding and central facility

support, impeding efficient operations. Furthermore, balancing the development of new services while continuing the provision of existing services presents also operational challenges for the ERIC.

#### **Findings**

- *For the development of new services, ERICs primarily rely on EU grants and (to a lesser extent) membership fees.*
- *ERICs face operational challenges, such as balancing the development of new services with the sustainability of existing ones. The financial sustainability of RIs is compromised by the strong reliance on external short-term funding and limited core funding for long-term planning.*

#### **Recommendations**

- *Long-term funding frameworks should be developed to support the development and operation of new services in response to changing user needs, global challenges and EU priorities.*
- *Members should recognize that the development of new services extends the service portfolio and broadens the user base of the ERICs, and thus increases the need for more core funding for the continued implementation, maintenance and provision of these new services.*
- *Further develop, not restrict or limit (given the increasing number of RIs), INFRA-DEV, INFRA-TECH and similar funding schemes, which are irreplaceable.*

### 3.4 Role of RIs in the ERA and Related Challenges

The European Research Area (ERA, [https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/our-digital-future/european-research-area\\_en](https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/our-digital-future/european-research-area_en)) creates a single, borderless market for research, innovation and technology across all 27 EU member states and associated countries. The European Research Area Policy Agenda – Overview of actions for the period 2022-2024 recognizes that *"ERICs are now a key component of the European research infrastructure landscape."* *"European research infrastructures are a key pillar of the ERA and one of its most successful achievements to date."* (Third report on the Application of Council Regulation (EC) No 723/2009). The 30 ERICs established since 2011 have 14 members on average, with their cumulative membership increasing by 70% during the first five years after their inauguration (Third Report on the Application of Council Regulation (EC) No 723/2009). Half of the EU countries are members of ERICs, and several ERICs are hosted by associated countries, e.g., UK, Switzerland and Norway.

The ERA Policy Agenda describes voluntary ERA actions, of which ERA Action 8 focusses on RIs (*European Research Area policy agenda – Overview of actions for the period 2022-2024*, <https://data.europa.eu/doi/10.2777/52110>). One recommendation under ERA Action 8 highlights the need for *"Broader and more sustainable access for all countries to European research infrastructures and their services [...]"*. Under Horizon Europe and previous framework programmes, bespoke calls that provide funding for ERICs for the provision of transnational access (TNA). These funding schemes are widely used by ERICs and represent an important funding source to provide services among a broad scientific community. ERICs offer access to their services also to users from countries that are not members of the respective ERIC. As ERICs have on average 14 members, ensuring the provision of equitable access to ERICs beyond their member countries is a political priority. From the perspective of the member countries, their priority is to ensure access to ERICs for their *own* users in order to ensure that their own financial contributions in the establishment and operation of the respective ERICs are worthwhile for their own national scientific communities. Therefore, transnational access needs to be funded at the European level.

But also on the national level, additional measures to facilitate access to ERICs are advisable. Member states often do not accompany their investment in ERICs (e.g., membership fees, host country contributions) with additional project funding schemes for independent scientists to support enable their local/national user community to make better use of ERICs. ERIC member countries could leverage their initiate investment into ERICs by providing project funding for their scientists so that they make more use of the ERICs. This increases the number of users from the respective member country and thus the return on its membership fee contributions. Furthermore, for member countries, there are also other “cost-neutral” (i.e., without additional funding) opportunities to increase the number of their users, for example, by mentioning ERICs in other funding schemes in order to raise awareness among potential applicants of the opportunities offered by ERICs.

The recently published ESFRI Report "Funding of Research Infrastructures" showed that the membership of ERICs is not equally distributed across the ERA and that there is a tendency towards Western Europe with regards to the number of hosted ERICs and membership in ERICs. Membership in ERICs correlates with the overall R&D investment of countries. However, countries that are underrepresented in terms of participation in European research and innovation activities and invest less in R&D should realise that participating in ERICs offers them better access to state-of-the-art technology platforms, expert networks and other opportunities that are the basis for competitive research and innovation. At the European level, bespoke funding opportunities should be provided to help RIs to integrate these countries as members/observers and support more users from these countries. In order to create funding synergies, barriers should be removed; for example, the 'Hop-on Facility' of the Widening Participation and Spreading Excellence actions under Horizon Europe allows research institutions from Widening countries to join already ongoing research and innovation actions under Horizon Europe Pillar 2, but cannot be used for the integration of partners from widening countries in INFRA-DEV projects (Pillar 1). These eligibility criteria should be revisited.

#### **Findings:**

- *ERICs are a key component of the European Research Area (ERA).*
- *With 14 member countries per ERIC on average, only half of EU countries are members in any one ERIC.*
- *Implementation of ERA Action 8 related to broader and more sustainable access for all countries to European ERICs and their services requires additional measures at the national and European level.*
- *Widening Participation and Spreading Excellence actions under Horizon Europe allows research institutions from widening countries to join Horizon Europe Pillar 2 projects but cannot be used for RI calls of Pillar 1.*

#### **Recommendations:**

- *Member states should leverage their investments in ERICs (e.g., membership fees, host country contributions) by providing project funding for scientists from their countries to support usage of the respective ERICs (see also ERIC Forum 2 Deliverable 5.2)*
- *European funding to support transnational access should be available to ensure that users from countries that are not member of an ERIC have equitable access.*
- *Rules for the Widening Participation and Spreading Excellence actions should be revisited so that they can be used to integrate research institutions from widening countries into ongoing RI projects in Pillar 1 (e.g., INFRA-DEV projects).*



### 3.5 Contribution of RIs' FAIR Data to Innovation

ERICs make a significant contribution to fostering innovation by generating and then providing access to FAIR (Findable, Accessible, Interoperable, and Reusable) data. The datasets managed by ERICs are not only stored but are also curated, annotated and made available to the broader scientific community and industry alike, allowing researchers from the public and private sectors across the globe to leverage them for new discoveries. Open access to data contributes to scientific progress and innovation in several ways. It facilitates the development of new research methodologies, the discovery of novel applications for existing technologies, and the cross-pollination of ideas between disciplines. By supporting the FAIR data principles, ERICs ensure that their datasets can be used to generate innovations that have the potential to address societal challenges and enhance industrial competitiveness.

Even for RIs where the number of industry users directly interacting with the RI is low, their data provides the basis for innovation in many areas. As FAIR data can be widely used, the number of industry users is often considerably underestimated and the contribution of RIs with lower numbers of industry users to innovation underappreciated – also, arguably, in comparison with TIs and DIs. It is important to note that the value of R&I extends beyond its contribution to industrial competitiveness and new technologies, and includes social innovation, the scientific bases for designing and monitoring policies, and data to build operational services such as the EU Copernicus services which are, notably, essential for the European economy.

The Draghi report, for instance, recommends that *“the focus should also be on technology infrastructures, which benefit companies in developing and testing new products and services”* (Draghi, M., 2024. The Future of European Competitiveness Part B: In-depth analysis and recommendations, European Commission p. 253, doi: 20.500.12592/9y7v1o8). However, we argue that while technology infrastructures play a critical role, ERICs offer broader opportunities for innovation through open science, data-sharing and collaboration. By making data accessible to the broader scientific community, ERICs support a diverse array of innovations, including those in social and cultural contexts, which may not always be associated with traditional industrial collaboration.

Additionally, the integration of open science and data sharing within the European Open Science Cloud (EOSC) framework further supports this broader understanding of innovation. ERICs contribute to open science by ensuring that research data is accessible, thus fostering new approaches to problem-solving that can impact multiple sectors, including public health, environmental sustainability, and social policy.

#### **Findings**

- *ERICs predominantly focus on pre-competitive research and FAIR data, creating a foundation for innovation despite serving primarily academic users.*

#### **Recommendations**

- *Support RIs in these areas and recognize their crucial (albeit indirect) role in fostering innovation in Europe.*
- *Further support data FAIRization.*



### 3.6 Role of RIs in Training and Upskilling of a Wider Scientific Community

High quality research institutions foster innovation, support Europe's industrial ecosystem, and contribute to economic growth while addressing societal challenges. In this context, RIs provide data, digital tools, advanced instrumentation and facilities essential for scientific research by academic and industrial users. Beyond these services, RIs play a crucial role in the education and training of young scientists, engineers and data professionals who are vital to both academia and industry.

The significance of this is reflected in the survey, where training and education were mentioned as one of their top three services. ERICs deliver training and educational materials through platforms including webinars, workshops, e-learning platforms, internships, practical courses and training schools. Consequently, the role of ERICs in training and upskilling researchers in the public and private sectors should be recognized as a strategic investment in Europe's future.

Regarding the survey findings, 12 ERICs identified Training and Education among their top three services, with the majority (75%) providing free and open access to this service. Notably, most responding ERICs primarily rely on membership fees and EU grants to support their Education & Training activities. However, the survey may not fully capture the breadth of training activities, as some ERICs provide such services without listing them among their primary focus areas. Additionally, national nodes may also offer local training activities, which are not reflected in the survey results. For ERICs whose membership fees only support administration and coordination activities, EU grants are crucial for generating training material and supporting users training activities at European level. Problems arise when there are gaps between grants or when funding schemes are interrupted, leading to the discontinuation of training activities.

#### **Findings**

- *RIs play a vital role in training and upskilling researchers but operate with limited budgets for such activities.*

#### **Recommendations**

- *Provide dedicated and sustained funding at EU level to enable RIs to expand their training programmes.*

### 3.7 Competition for Funding

The ESFRI Roadmap 2021 listed more than 60 RIs, and the number is expected to increase with the publication of the next roadmap. In response to the Commission Communication on a New ERA for Research and Innovation in 2022, the first cohort of Technology Infrastructures (TIs) are emerging. Furthermore, the number of Digital Infrastructures that are established under the newly established legal framework of a "European Digital Infrastructure Consortium" (EDIC) is increasing. Similar to ERICs, it is member states which are expected to provide sustainable funding for the establishment and operation of EDICs.

Membership fees and in-kind contributions are the two major sources of operational funding for ERICs; hence, broadening their membership base is often a pre-requisite for the stable development of existing ERICs. However, considering budgetary constraints, EU member states and associated countries prioritize the ERICs in which they participate. The challenge is further exacerbated by the rapidly increasing number of infrastructures (RIs on the ESFRI Roadmap, RI projects, EDICs, TIs) which request financial contributions from member countries. New

funding resources are needed, both at EU and national level. Rationalizing the landscape by incorporating RI projects and/or new communities in existing ERICs is also an option considered (and, in part, supported in Horizon Europe) by the EC and ESFRI. It is important to note, however, that procedures and mechanisms must be devised to allow for enlargement of the scope of existing ERICs and that this will not be possible without the injection of fresh funding in existing ERICs. Finally, our work reveals that EU funding, especially the INFRA-DEV and INFRA-TECH schemes, is indispensable to support service upgrading and the development of new ones. Should, in the future, all types of infrastructures be in the same funding basket, ERICs risk becoming the *parent pauvre* among infrastructures given the political focus on competitiveness, which may favour TIs and DIs. A budget must be ringfenced for ERICs in order not to compromise what has been achieved so far.

#### **Findings:**

- *An increasing number of RIs, Technology Infrastructures and Digital Infrastructures are competing for funding.*
- *Better coordination is needed at European and national levels to ensure synergies in this infrastructure environment.*

#### **Recommendations:**

- *More strategic approach for the inclusion of new RIs on the ESFRI Roadmap.*
- *Ringfence the budget for RIs to avoid detrimental competition with other types of infrastructures in a labile political environment.*
- *Provide funding (e.g., INFRA-DEV calls) and define a procedure for the integration of emerging RI communities into established infrastructures and ERICs.*

### 3.8 Commercial Services to Industry

Almost half of the operational ERICs surveyed (11 out of 24) provide commercial services to industry. However, large variations can be observed between the different clusters:

The ERICs of the **Environment cluster** – except for the two ERICs belonging also to the Health & Food cluster (ANAE & EMBRC) – and of the **Social and Cultural Innovation cluster** do not provide commercial services to industry. All data are provided in Open Access, and digital tools are under open licences. Furthermore, in the Social and Cultural Innovation cluster, when relevant, data are normally collected on the understanding that it is for non-commercial use. In contrast, ERICs of the **Physical Sciences & Engineering, Energy, and Health & Food clusters** predominantly provide commercial services to industry.

One of the reasons why ERICs of the **Environment cluster** do not provide services to industry is that they are research infrastructures but not *research performing organisations*. Conceptually, these ERICs could develop services to industry by creating partnerships where the RI generates the data and scientific user communities analyse them. Funding for the development and proof of concept could be provided via the Framework Programme. However, it remains to be investigated whether a market for such services would exist and to which extent it could be reconciled with the research and monitoring roles of the Environmental RIs.

The potential of commercial services in the **Social and Cultural Innovation cluster** is limited. However, there are a few niches where social sciences data archives and tools can or could provide services: tasks that require

processing of large volumes of running text (unstructured data, e.g. open-end survey questions, opinion mining or transcriptions and post-processing of interviews/focus groups, etc.) or the processing of multilingual documents, opinion research for marketing purposes, consultancy firms for business insights and global indicators (e.g., for workplace and society at large), and polling firms for policy advice on voting behaviour and public opinions. There is also the possibility to provide analyses for the public sectors such as OECD, JRC, European or national agencies providing statistical data for policy making. However, those organisations often already have large teams of data specialists or consultants that produce data analysis inhouse and, often, they are not accustomed to working with ERICs. A yet not explored domain in the social sciences could be the financial sector in the provision of financial services to people and corporations. For instance, there is a potential to onboard real-time data such as accounting data, portfolio data, ownership data on stocks, take-overs, mergers from selected European or national institutions into the CESSDA Data Catalogue (CDC) or to the national Service Provider databases. However, such onboarding exercise goes beyond CESSDA's current structural capabilities. More generally speaking, ERICs of the Social and Cultural Innovation cluster do not have capacity for fast turnaround time as often expected by companies and tailor-made solutions (off-the-shelf products) needed for domain-specific situations.

### 3.8.1 Distributed ERICs: Headquarter *versus* Nodes

In distributed ERICs, the ERIC legal entity only constitutes the Headquarter while the participating entities or nodes remain legally independent. Thus, the nodes do not legally belong to the ERIC. It is also important to note that, usually, the groups directly involved in an ERIC are not legal entities *per se* but parts of a larger organization (university, research centre, public institution, etc.), which is officially the node with legal status. In this case, the signing entity is not practically involved in the ERIC other than via one of its units. As contractual arrangements must be signed between legal entities, services are delivered either by the ERIC Headquarter (HQ) or by one or more nodes independently. In practice, the involvement of the ERIC as legal entity is normally not needed when commercial services are provided by nodes and, hence, the ERIC does not benefit financially. Furthermore, the added value that the ERIC HQ provide is not always obvious, notably because contracts are normally signed between individual nodes and the industry user (see also 3.8.4). It is therefore necessary to differentiate between ERIC commercial services to industry provided by the ERIC HQs and by those provided by their nodes.

### 3.8.2 Commercial services provided by ERIC Headquarters

Six of the ERIC HQ which responded to the survey report that they are providing commercial services to industry. These include material, scientific support, training & education, stakeholder & industry platform, consultancy and support to innovation. As expected, since they do not own the necessary facilities, none of the ERIC HQ provides commercial Data and Digital Services or commercial access to Experimental Facilities and Equipment to industry, the two major types of ERIC services. The CERIC HQ is the only one which formally intervenes when multiple nodes are involved in a contract with industry. However, in this case, CERIC only retains a very small fee that does not cover the costs of the operation of an Industry Liaison Office (ILO). This CERIC activity is loss-making and must be seen as a service to its constituencies.

Offering commercial services does not mean that they are used on a large scale; further efforts should be made to foster their visibility and attractiveness for industry. However, given the type of services offered, commercial services to industry could hardly become a major and sustainable source of income for ERIC HQs. This further

exacerbated by the financial investment and human resources that would be needed to further develop these activities and the unpredictability of the income that could be generated.

### 3.8.3 Commercial services provided by ERIC Nodes

Type of service	ERIC
Data & Digital Tools	ANAE, EMBRC, Euro-Biolmaging, INSTRUCT
Material	EMBRC, INSTRUCT
Experimental Facilities & Equipment	ANAE, CERIC, ECCSEL, EMBRC, Euro-Biolmaging, EU-OPENSREEN, INSTRUCT
Scientific Support	ANAE, CERIC, EATRIS, ECCSEL, EMBRC, Euro-Biolmaging, EU-OPENSREEN, INSTRUCT
Consultancy	EATRIS, EMBRC, INSTRUCT
Training & Education	CERIC, EATRIS, ECCSEL, EMBRC, Euro-Biolmaging, INSTRUCT
Stakeholder & Industry Platform	EU-OPENSREEN
Support for innovation	CERIC, INSTRUCT

The table lists the commercial services to industry provided by nodes of ERICs as indicated in the survey. Nodes usually have no reporting obligations towards ERIC HQs regarding their engagement with industry. Consequently, ERIC HQs are ill-informed about node activities in this area and are not aware of the income generated by the commercial services to industry. Some nodes appear to consider this information as confidential.

### 3.8.4 Role of the ERIC Headquarter in the commercial services provided by ERIC Nodes

ERIC HQs often act as facilitators of the commercial services provided by their nodes. Their involvement includes, for instance, designing harmonized procedures, joint policies, and access rules, and working on the visibility of, and information on the services. However, there are practical and legal difficulties to act as intermediate, ranging from the lack of expertise and resources within the ERIC HQs to internal ERIC policies and priorities (determined by the ERIC Membership) to varying national contexts.

### 3.8.5 Commercial services of single/multiple sited ERICs

There are only two single/multiple sited ERICs, which own their experimental facilities: ELI and the European Spallation Source (ESS). As ESS will become operational in 2027, the information provided below are only preliminary.

Type of service	ERIC
Data & Digital Services	ELI, ESS
Experimental facilities & Equipment	ELI, ESS
Scientific Support	ELI
Training & Education	ELI
Stakeholder & Industry Platform	ESS

For ELI, paid services mostly include feasibility studies and consultancies (development of laser infrastructure, use of laser-driven secondary sources), measurements, and design of new resources. The share of industry users, however, is less than 1% and the income generated by providing paid services to industry compared to your total turnover is less than 0,1%. The main difficulties or barriers related to service provision to industry is that the ELI services address a niche market. Furthermore, the ERIC is still rather young and may still have to work on industry's trust in ELI's capacities. The potential to scale up ELI's commercial services exists. However, it would be necessary to develop real internal capacities, both at the level of the human resources and at technological level.

### 3.8.6 Challenges for, and barriers to the development of ERICs' commercial services

The survey reveals several categories of challenges/barriers to the development of commercial services to industry:

1. ERICs are largely organized and funded to support precompetitive research following the Open Science paradigm, which makes it challenging to reconcile with delivering paid services to industry.
2. Several ERICs are active in scientific areas for which there is no or only niche markets. In other cases, there are for-profit commercial service providers (e.g., contract research organisations, CROs) available and publicly funded ERICs must comply with the Framework for State aid for research and development and innovation.
3. In distributed ERICs, nodes do not legally belong to the ERIC; they operate legally and financially independent from the ERIC itself. Consequently, it is up to the nodes, host institutions and/or member countries to make the decision to provide the resources and capacities that are needed. Even for ERICs that are allowed and/or able to provide paid services to industry, it may not be a strategic priority.
4. Commercial contracts with industry are often constrained by timelines and deadlines as well as the prioritization of resources expected by industry, which are often conflicting with the long-term planning of a research infrastructure and its primary mission to support research. Abrupt change in a company priorities and interests potentially leading to the interruption of a contract is also cited as hurdle.
5. Tackling the issue of intellectual property (IP) seems to be a major challenge in contracts with industry.
6. Raising awareness among potential industry users and build trusted partnerships requires significant efforts over years in terms of funding and time. The establishment of an industry liaison office (ILO) in ERIC HQs to support their nodes would be welcome. Such investments, however, are usually not prioritized given the limited resources of ERICs.
7. Varying legal and regulatory frameworks between EU Member States may hamper the capacity to provide services to industry, notably in the Health & Food cluster. Similarly, the different national regulatory frameworks for data sharing of sensitive data, ethical considerations (e.g., lack of control of the secondary use of data) and the lack of common data standards between research, firms and statistical offices such as Eurostat (e.g., the FAIR principles are not widely used in industries and highly competitive environments) are cited as challenges in the Social and Cultural Innovation cluster.

### **Findings**

- *Not all ERICs are research performing organizations that can deliver the R&D services expected by industry. Furthermore, the market determines the scientific areas where the demand for ERIC services is meaningful.*
- *Even for ERICs with strong potential, financial and human resources – both at ERIC HQs and local nodes – are usually not sufficient or even unavailable to significantly develop commercial services.*
- *Specific challenges and barriers need to be addressed to stimulate ERIC-industry partnership, including service visibility and awareness, access schemes that facilitate industry engagement, and expertise in business development, innovation, legal matters and intellectual property management.*
- *Commercial services to industry are unlikely to make a significant contribution to the sustainability of ERIC operations as distributed networks.*

### **Policy recommendations**

- *Identify and focus efforts on ERICs with a strong potential to develop meaningful commercial services to industry.*
- *Foster a dialogue and collaboration between ERICs, ministries, hosts institutions, nodes and funding agencies to develop the framework conditions necessary for the development and deployment of commercial services, including the creation of industry liaison offices (ILO).*
- *Consider centralized and/or mutualized mechanisms to support ERICs and their nodes in industry interactions, particularly for legal and IP issues.*
- *Develop and promote clear and accessible industry access schemes to encourage industry engagement with ERICs.*

## 4. Conclusions

Our work highlights that ERICs are a huge and unique asset for Europe for they are:

- Creating the foundations for European innovation and competitiveness through the Open Science paradigm (access to FAIR data) and providing access to top-notch infrastructures for cohorts of scientific communities,
- Supporting social innovation,
- Providing the scientific bases for designing EU policies and for their monitoring,
- Generating quality-controlled data and metadata that are indispensable for operational services such as the Copernicus services.

Our report presents findings and provides policy recommendations regarding issues such as the upgrading and/or development of new services, data and innovation, training and education, commercial services to industry, or access. The overarching scope of our work, however, is the issue of financial sustainability of the operations of ERICs.

That ERICs are facing dramatic challenges to sustain their operations is widely acknowledged. Our findings indicate that ERICs primarily rely on three major funding sources for their operations and the development of new services: membership fees, in-kind contributions and EU grants. Diversification and synergies of funding sources are often presented as a magic recipe to mitigate the funding challenges. This can legitimately be questioned. Though the funding landscape across Europe is certainly difficult to navigate, numerous examples indicate that ERICs can secure funding from the INFRA scheme but also the two other pillars of the EU Framework Programme as well as from various national funding schemes. Fact is that R&D&I project funding, beyond the development of new services, is probably not the appropriate type of funding to support ERICs for what they are: service providers. Similarly, the fact that instruments like structural/investments funds or the Recovery and Resilience Facility are used in a very limited way may indicate, on the one hand, that opportunities may not be as frequent as anticipated by some and, on the other hand, that they may not be adapted for the kind of investments needed by distributed ERICs. Likewise, our findings show that industrial funding will not be able to alleviate the sustainability issue of ERICs as networks given that nodes are independent, legally and financially. Quite the opposite: ERICs and their nodes would often require massive investments to be able to develop commercial services to industry. How to match the potential of the funding synergies and the realities of ERICs should therefore be the topic of a sustained dialogue in a forum including ERICs as a community and the EC, ESFRI and the national funders.



## Annexes

### Annex 1: Survey

#### WP5. Sustainability of ERIC services & transnational and virtual access

#### This survey is intended only for established ERICs.

The survey includes the following parts:

- **Definitions and General Information**
- Survey Part 1: **Operational Sustainability**
- Survey Part 2: **Commercial Services**

Please provide as much information as you can, but feel free to skip any questions, as not all need to be answered.

You will be able to receive a copy of your responses via email after submission of the survey.

In case of any questions, technical problems or should you require any additional information, please don't hesitate to contact Luc van Dyck ([luc.van.dyck@euro-argo.eu](mailto:luc.van.dyck@euro-argo.eu)) and/or Yasemin Ucal ([yasemin.ucal@eu-openscreen.eu](mailto:yasemin.ucal@eu-openscreen.eu))

#### 0. Definitions for the purpose of the survey

- **ERIC** refers to single-site, multiple-site or distributed infrastructures established as European Research Infrastructure Consortium.
- The **Node** covers all entities contributing to the research-support services provided via a distributed infrastructure. Nodes can have different names such as partner site or centre and can be further distributed.
- The **Headquarter** (HQ) is the central administration, sometimes entitled the Central Hub, of an ERIC.
- **Commercial services**, in the context of this survey, are understood as paid services to industry and/or public bodies (e.g. national, regional or local administration and agencies, Copernicus services and other EU agencies/services, etc.).
- **Access** According to the [European Charter for Access to Research Infrastructures](#), access refers to “the legitimate and authorised physical, remote and virtual admission to, interactions with and use of Research Infrastructures (RIs) and to services offered by RIs to Users. Such Access can be granted, amongst others, to machine time, computing resources, software, data, data-communication services, trust and authentication services, sample preparation, archives, collections, the set-up, execution and dismantling of experiments, education and training, expert support and analytical services.”
- **Physical access**: According to [ESFRI's 2020 White Paper](#) physical access is “hands-on” access when Users physically visit an infrastructure, /facility/ or equipment. The available services or resources are



not unlimited and a competitive process is required following a defined procedure and criteria for selection of Users.

- **Remote access:** According to [ESFRI's 2020 White Paper](#) is access to resources and services offered by the RI without Users physically visiting the infrastructure/facility. Similar to Physical access, the services or resources are not unlimited and a competitive selection is required.
- **Virtual access:** According to [ESFRI's 2020 White Paper](#) virtual access refers to free access to Users provided through communication networks; the available services or resources can be simultaneously used by an unlimited number of Users and the Users are not selected. Virtual access typically concerns access to data and digital tools. [**NB.** For the purpose of this survey we consider also modalities of **alternative virtual access**, beyond the definition above, as/if applicable, e.g. virtual access for a fee.]
- **Transnational access:** Transnational access refers to “physical access” and “remote access”. Users can either work in a country other than the country(ies) where the installation/facility/service is located or -in the case of access provision through an ERIC - work in the same country as the country(ies) where the ERIC installation/facility/service is located.

\* 1. Name of your ERIC

\* 2. ERIC Forum [Landscape by Cluster](#)

- ☐ Energy
- ☐ Environment
- ☐ Health & Food
- ☐ Physical sciences & Engineering
- ☐ Social and Cultural Innovation

\*3. Year of establishment as an ERIC

\* 4. Is your ERIC fully operational? Please comment on how to interpret your responses to the survey if not fully operational (e.g. operational status in terms of capacity for offering services and access)

\* 5. Name of responding person (for possible further contacts)

\* 6. Email address of responding person (for possible further contacts)

\* 7. Phone number of responding person (for possible further contacts)

\* 8. Position of the responding person

## Part 1. Operational sustainability

The first objective of Task 5.1 is to identify how ERICs define the services they provide and the challenges they face to sustain them and/or develop new ones. The next step is to analyse the challenges of operational sustainability of the ERICs and provide policy recommendations on how to address them.

*You will be asked to select your three major service types one after another. After each selection, a series of questions related to that specific service will follow. Once the questions regarding your first choice are completed, you will proceed to answer questions about your second and third choices.*

1. What is the major service (**number 1**) that you provide? (You can only choose one option)

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data storage and sharing (or accessibility) services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)
- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Support for experimental design, analysis of results and outcomes, research implementation/operations, etc.
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education
- ☐ Organisation of congresses and scientific meetings
- ☐ Stakeholder forum or industry exchange platform
- ☐ Other (Please specify) (Small comment box is available, 500chr)

2. Regarding the previous question, please comment if appropriate. (2000 char. max.)

3. Who are the main direct users of this service? (Multiple selection)

- ☐ National research communities
- ☐ EU and associated countries research communities
- ☐ Non-European research communities
- ☐ Funding agencies and organisations
- ☐ Other RIs with legal status (ERIC, non-ERIC, etc.)
- ☐ Research networks (e.g. RI projects without legal status, INFRASERV projects, others)
- ☐ Monitoring networks and operational users (e.g., Copernicus services, meteorological centres, etc.)
- ☐ Regulatory agencies (e.g., EMA, FDA)
- ☐ Business and industry: start-ups
- ☐ Business and industry: SMEs
- ☐ Business and industry: large enterprises
- ☐ Higher education institutions
- ☐ Public authorities and decision makers (EU, national)
- ☐ Regional and local authorities

- ☐ Public
- ☐ Citizen scientists
- ☐ NGOs (e.g., patients' organisations, advocacy groups)
- ☐ Other (Please specify) (Small comment box is available, 500chr)

4. Regarding the previous question, please comment if appropriate. (2000 char. max.)

5. What is your service access financial model for this service? (Multiple selection)

- ☐ Free and open
- ☐ Preferential access
- ☐ Free on application
- ☐ Application + fee
- ☐ Service fee
- ☐ Other (Please specify) (Small comment box is available, 500chr)

6. Regarding the previous question, please comment if appropriate. (2000 char. max.)

7. In 2023, ESFRI requested budget tables covering the whole ERIC. Referring to this, can you provide an estimate of the main funding sources for **provision of the service** described in the previous questions? Please provide a break-down of your main funding sources in %.

	Percentage in tens (10%, 20%...)
<b>Membership fees</b>	
<b>Members' in-kind contributions</b>	
<b>EU grants</b>	
<b>Structural funds</b>	
<b>Non-EU grants</b>	
<b>Service and/or access fees</b>	
<b>Industry fees</b>	
<b>Others? (Please specify in the comment box below)</b>	

- **Provide additional explanations or any reason why you cannot provide answers. (2000 char. max.)**

8. What is the second major service (**number 2**) that you provide? (You can only choose one option)

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data storage and sharing (or accessibility) services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)

- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Support for experimental design, analysis of results and outcomes, research implementation/operations, etc.
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education
- ☐ Organisation of congresses and scientific meetings
- ☐ Stakeholder forum or industry exchange platform
- ☐ Other (Please specify) (Small comment box is available, 500chr)

9. Regarding the previous question, please comment if appropriate. (2000 char. max.)

10. Who are the main direct users of this service? (Multiple selection)

- ☐ National research communities
- ☐ EU and associated countries research communities
- ☐ Non-European research communities
- ☐ Funding agencies and organisations
- ☐ Other RIs with legal status (ERIC, non-ERIC, etc.)
- ☐ Research networks (e.g. RI projects without legal status, INFRASERV projects, others)
- ☐ Monitoring networks and operational users (e.g., Copernicus services, meteorological centres, etc.)
- ☐ Regulatory agencies (e.g., EMA, FDA)
- ☐ Business and industry: start-ups
- ☐ Business and industry: SMEs
- ☐ Business and industry: large enterprises
- ☐ Higher education institutions
- ☐ Public authorities and decision makers (EU, national)
- ☐ Regional and local authorities
- ☐ Public
- ☐ Citizen scientists
- ☐ NGOs (e.g., patients' organisations, advocacy groups)
- ☐ Other (Please specify) (Small comment box is available, 500chr)

11. Regarding the previous question, please comment if appropriate. (2000 char. max.)

12. What is your service access financial model for this service? (Multiple selection)

- ☐ Free and open
- ☐ Preferential access
- ☐ Free on application
- ☐ Application + fee
- ☐ Service fee
- ☐ Other (Please specify) (Small comment box is available, 500chr)

13. Regarding the previous question, please comment if appropriate. (2000 char. max.)

14. In 2023, ESFRI requested budget tables covering the whole ERIC. Referring to this, can you provide an estimate of the main funding sources for **provision of the service** described in the previous questions? Please provide a break-down of your main funding sources in %.

	Percentage in tens (10%, 20%...)
<b>Membership fees</b>	
<b>Members' in-kind contributions</b>	
<b>EU grants</b>	
<b>Structural funds</b>	
<b>Non-EU grants</b>	
<b>Service and/or access fees</b>	
<b>Industry fees</b>	
<b>Other (Please specify in the comment box below)</b>	

- **Provide additional explanations or any reason why you cannot provide answers. (2000 char. max.)**

15. What is the third major service (**number 3**) that you provide? (You can only choose one option)

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data storage and sharing (or accessibility) services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)
- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Support for experimental design, analysis of results and outcomes, research implementation/operations, etc.
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education
- ☐ Organisation of congresses and scientific meetings
- ☐ Stakeholder forum or industry exchange platform
- ☐ Other (Please specify) (Small comment box is available, 500chr)

16. Regarding the previous question, please comment if appropriate. (2000 char. max.)

17. Who are the main direct users of this service? (Multiple selection)

- ☐ National research communities
- ☐ EU and associated countries research communities
- ☐ Non-European research communities

- ☐ Funding agencies and organisations
- ☐ Other RIs with legal status (ERIC, non-ERIC, etc.)
- ☐ Research networks (e.g. RI projects without legal status, INFRASERV projects, others)
- ☐ Monitoring networks and operational users (e.g., Copernicus services, meteorological centres, etc.)
- ☐ Regulatory agencies (e.g., EMA, FDA)
- ☐ Business and industry: start-ups
- ☐ Business and industry: SMEs
- ☐ Business and industry: large enterprises
- ☐ Higher education institutions
- ☐ Public authorities and decision makers (EU, national)
- ☐ Regional and local authorities
- ☐ Public
- ☐ Citizen scientists
- ☐ NGOs (e.g., patients' organisations, advocacy groups)
- ☐ Other (Please specify) (Small comment box is available, 500chr)

18. Regarding the previous question, please comment if appropriate. (2000 char. max.)

19. What is your service access financial model for this service? (Multiple selection)

- ☐ Free and open
- ☐ Preferential access
- ☐ Free on application
- ☐ Application + fee
- ☐ Service fee
- ☐ Other (Please specify) (Small comment box is available, 500chr)

20. Regarding the previous question, please comment if appropriate. (2000 char. max.)

21. In 2023, ESFRI requested budget tables covering the whole ERIC. Referring to this, can you provide an estimate of the main funding sources for **provision of the service** described in the previous questions? Please provide a break-down of your main funding sources in %.

	Percentage in tens (10%, 20%...)
<b>Membership fees</b>	
<b>Members' in-kind contributions</b>	
<b>EU grants</b>	
<b>Structural funds</b>	
<b>Non-EU grants</b>	
<b>Service and/or access fees</b>	
<b>Industry fees</b>	
<b>Other (Please specify in the comment box below)</b>	

- **Provide additional explanations or any reason why you cannot provide answers. (2000 char. max.)**

22. In 2023, ESFRI requested budget tables covering the whole ERIC. Referring to this, can you provide an estimate of the main funding sources for the **development of new services**? Please provide a break-down of your main funding sources in %.

	Percentage in tens (10%, 20%...)
<b>Membership fees</b>	
<b>Members' in-kind contributions</b>	
<b>EU grants</b>	
<b>Structural funds</b>	
<b>Non-EU grants</b>	
<b>Service and/or access fees</b>	
<b>Industry fees</b>	
<b>Other (Please specify in the comment box below)</b>	

- **Provide additional explanations or any reason why you cannot provide answers. (2000 char. max.)**

23. What are the main challenges of your ERIC to sustain its operations and/or develop new services?

24. Is there anything else that you would like to share related to operational sustainability such as best practices, success stories?

## Part 2. Commercial Services

ERICs are Increasingly expected to contribute to European socio-economic well-being by providing commercial services. As evidenced during the joint EC-ERIC Committee ERIC Forum meeting in June 2024, many policy makers, both at the national and European level, are considering commercial services as a way to ensure the financial sustainability of ERIC operations in a context of constrained public budgets. Several barriers can prevent the development of commercial services, such as the area of activity, the structure of the infrastructure (e.g., services provided by (members of the) Nodes and not the ERIC itself), and legal, financial, political or other barriers.

The second objective of Task 5.1 is to document the capacities – or otherwise – of ERICs to offer commercial services as well as the potential barriers, analyse the conditions for the development and deployment of commercial services and provide policy recommendations.

1. Does your ERIC provide paid services to industry and/or public bodies (e.g. national, regional or local administration; Copernicus services and other EU agencies/services, etc.)?

- ☐ Yes
- ☐ No

*If no, please move to question 20. If yes, please answer the following questions:*

2. Please specify the type of industry and/or public bodies.

3. **For single-sited/multiple-sited ERICs**, please specify the types of paid services provided (Multiple selection):

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)
- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Scientific support (experimental design, analysis)
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education, congresses
- ☐ Industry platform
- ☐ Support for innovation
- ☐ Other (Please specify) (Small comment box is available, 500chr)

4. Regarding the previous question, please comment if appropriate. (2000 char. max.)



5. **For distributed ERICs**, please specify the types of paid services provided by the **ERIC HQ** as the legal entity signing the contract. (Multiple selection)

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)
- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Scientific support (experimental design, analysis)
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education, congresses
- ☐ Stakeholder & Industry platform
- ☐ Support for innovation
- ☐ Other (Please specify) (Small comment box is available, 500chr)

6. Regarding the previous question, please comment if appropriate. (2000 char. max.)

7. **For distributed ERICs**, please specify the types of paid services provided by the **Node(s)** as the legal entity signing the contract. (Multiple selection)

- ☐ Data & data products, directory, digital tools, modelling platform service, analytical services, interoperability services, computing services, data management
- ☐ Material (chemical compounds, samples, microorganisms, etc.)
- ☐ Experimental facilities, field facilities, equipment, technological platforms and computing facilities (physical or remote access)
- ☐ Scientific support (experimental design, analysis)
- ☐ Consultancy (policy and regulatory monitoring, legal, biosafety/biosecurity, auditing & certification, ethics, etc.)
- ☐ Training and education, congresses
- ☐ Industry platform
- ☐ Support for innovation
- ☐ Other (Please specify) (Small comment box is available, 500chr)

8. Regarding the previous question, please comment if appropriate. (2000 char. max.)

9. If paid services are provided by **Nodes** in their legal capacity, what is the role of the HQ (oversight, facilitation, information desk, joint policies (e.g., pricing, access rules, etc.), service to nodes (advice), etc.)?

**Questions 10-14 are for **single-sited/multiple-sited ERICs** and for distributed ERICs for which paid services are provided by the **ERIC HQ** as the legal entity signing the contract:**

10. How do you set the fees? (select one):

- ☐ Same fee as for any other user
- ☐ Higher fee for industry users
- ☐ Other (Please specify) (Small comment box is available, 500chr)

11. Regarding the previous question, please comment if appropriate. (2000 char. max.)

12. How much income do you generate by providing paid services to industry and/or public bodies compared to your total turnover?

13. How would you describe the financial status of your paid services to industry and/or public bodies? (Select one)

- ☐ Profitable
- ☐ Breaking even
- ☐ Loss-making

14. Would you have the capacity to scale up paid services?

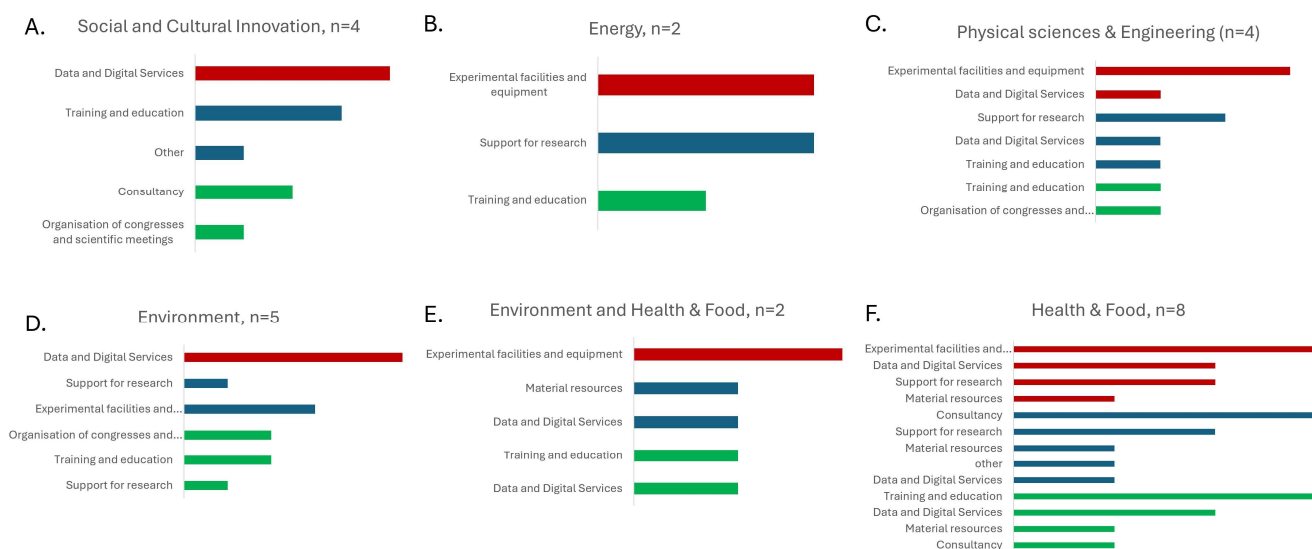
## Annex 2: Results of the survey

**Supplementary Table 1.** Major services of all ERICs

ERIC	Type	Cluster	Major Service 1	Major Service 2	Major Service 3
CESSDA ERIC	Distributed	Social and Cultural Innovation	Data and Digital Services	Training and education	Consultancy
CLARIN ERIC	Distributed	Social and Cultural Innovation	Data and Digital Services	Training and education	Consultancy
DARIAH ERIC	Distributed	Social and Cultural Innovation	Data and Digital Services	Training and education	Organisation of congresses and scientific meetings
European Social Survey ERIC	Distributed	Social and Cultural Innovation	Data and Digital Services	Training and education	
ECCSEL ERIC	Distributed	Energy	Experimental facilities and equipment	Support for research	Training and education
EU-SOLARIS	Distributed	Energy	Experimental facilities and equipment	Support for research	
CERIC-ERIC	Distributed	Physical sciences & Engineering	Experimental facilities and equipment	Support for research	Training and education
Extreme Light Infrastructure ERIC, ELI ERIC	Single-/multi-sited	Physical sciences & Engineering	Experimental facilities and equipment	Other: Training and education via learning resources platform	
European Spallation Source ERIC (ESS)	Single/multi-sited	Physical sciences & Engineering	Experimental facilities and equipment	Data and Digital Services	Organisation of congresses and scientific meetings
Joint Institute for VLBi ERIC (JIVE)	Distributed	Physical sciences & Engineering	Data and Digital Services	Support for research	
ACTRIS ERIC	Distributed	Environment	Data and Digital Services	Experimental facilities and equipment	Support for research
EMSO ERIC	Distributed	Environment	Data and Digital Services	Experimental facilities and equipment	Organisation of congresses and scientific meetings
EPOS ERIC	Distributed	Environment	Data and Digital Services	Experimental facilities and equipment	Training and education
Euro-Argo ERIC	Distributed	Environment	Data and Digital Services	Training and education	
ICOS ERIC	Distributed	Environment	Data and Digital Services	Support for research	Organisation of congresses and scientific meetings
AnaEE-ERIC	Distributed	Environment and Health & Food	Experimental facilities and equipment	Data and Digital Services	Data and Digital Services- Analytical Platforms
EMBRC	Distributed	Environment and Health & Food	Experimental facilities and equipment	Material resources	Training and education
BBMRI-ERIC	Distributed	Health & Food	Data and Digital Services	Consultancy	Consultancy
EATRIS	Distributed	Health & Food	Support for research	Consultancy	Training and education
ECRIN-ERIC	Distributed	Health & Food	Support for research	Consultancy	Data and Digital Services
Euro-Biolmaging	Distributed	Health & Food	Experimental facilities and equipment	Support for research	Data and Digital Services

EU-OPENSREEN	Distributed	Health & Food	Experimental facilities and equipment	Data and Digital Services	Material resources
INFRAFRONTIER ERIC	Distributed	Health & Food	Material resources	Material resources	Experimental facilities and equipment
Instruct-ERIC	Distributed	Health & Food	Experimental facilities and equipment	Support for research	Training and education
MIRRI	Distributed	Health & Food	Data and Digital Services Material resources	Other: TNA programme Platform	Training and education

**Supplementary Figure 1.**



**Supplementary Figure 1.** Distribution of major services across different clusters. Panels A-B and D-F represent clusters involving distributed ERICs, while Panel C (Physical sciences and Engineering) includes two distributed ERICs and two single-/multi- sited ERICs. Service levels are indicated by color: red for primary services, blue for secondary, and green for tertiary.

**Supplementary Table 2. Findings by Cluster for Data and Digital Services**

Cluster	Direct Users	Service access financial model	Major funding source
Social and Cultural Innovation (n=4)	National, EU and associated countries research communities, and non-European research communities, research networks followed by a strong engagement with RIs with legal status and higher educational institutions. Engagement with public authorities (EU, national, regional), citizen scientists, and NGOs.	Free and open	All ERICs use membership fees (contributions range from 30% to 90%) and only one responder uses members' in-kind contributions (50%).  Significant funding source for three ERICs (contributions range from 10% to 30%).
Physical Sciences & Engineering* (n=2)	National, EU and associated countries research communities followed by non-European research communities	Free and open Preferential access	Primarily membership fees (80%) and EU grants (20%)**
Health & Food (n=5)	National, EU and associated countries research communities, non-European research communities, and research networks  Users from business and industry (start-ups, SMEs, and large enterprises)  Engagement with higher education institutions and, in some instances, regulatory agencies and public	Variety of models, with the most prominent being free and open; alongside other models such as free on application, preferential access, and application plus fee	Most prominent funding source is membership fees (contributions range from 30% to 100%)  EU grants and service/access fees are supplementary source, their contributions vary
Environment (n=5)	National, EU and associated countries research communities, non-European research communities, research networks, monitoring networks and operational users  Engagement with higher education institutions, public authorities (EU, national, and regional levels), citizen scientists.	Free and open	Common funding source: membership fees (contributions ranging from 10% to 30%), members' in-kind contributions (contributions ranging from 10% to 80%).  EU-grants and service and/or access fees are used by less ERICs in this cluster
Environment and Health & Food (n=2)	National, EU and associated countries research communities, and non-European research communities	Free and open Application plus fee	Most prominent funding sources are membership fees (contributions of 50% and 10%) and members' in-kind contribution (contributions of 50% and 40%)  EU grants are supplementary funding source, not common across responders

**Supplementary Table 3.** Findings by Cluster for Experimental Facilities and Equipment

Cluster	Direct Users	Service access financial model	Major funding source
Physical Sciences & Engineering* (n=3)	EU and associated countries research communities and National research communities	Primarily Free and open access	Around 90% of membership fees and members' in-kind contributions
Health & Food (n=4)	National, EU and associated countries, and non-European research communities, followed by a strong engagement with Research networks  Engagement with business and industry stakeholders (start-ups, SMEs, large enterprises) is present	Primarily Application plus fee.  Other models also represented: Free and open, Preferential access, Free on application, Application + fee, and Service fee.	Main funding sources differ between ERICs but heavily on EU-grants, non-EU grants and service and/or access fees.
Environment (n=3)	EU and associated countries' research communities.  Engagement with National research communities, non-European research communities, other RIs with legal status, research networks and higher education institutions is present  Engagement with industry users is present	Free and open, free on application	Funding sources vary.  Mix of EU grants and members' in-kind contributions
Environment and Health & Food (n=2)	National research communities, research communities from EU and associated countries, and non-European research communities  Engagement with research networks is present	Application plus fee	Approximately 50% of funding relies on EU-grants
Energy (n=2)	EU and associated countries' research communities, higher education institutions  Engagement with industry users is present	Diverse financial model, which includes Preferential access, Free on application, Application plus fee	Approximately 50% of funding relies on EU-grants, remainder distributed between members' in-kind contributions, and membership fees

\*Involves one distributed and two single-/multi-sited ERIC

**Supplementary Table 4.** ERICs providing commercial services to industry

ERIC	Cluster	Commercial services to industry
Single-sited/multiple-sited ERIC		
ELI ERIC	Physical sciences & Engineering	Yes
European Spallation Source ERIC	Physical sciences & Engineering	Yes (as of 2027)
Distributed ERICs		
CERIC-ERIC	Physical sciences & Engineering	Yes
JIVE	Physical sciences & Engineering	No
ECCSEL ERIC	Energy	Yes
EU-SOLARIS	Energy	No
ACTRIS ERIC	Environment	No
EMSO ERIC	Environment	No
EPOS ERIC	Environment	No
Euro-Argo ERIC	Environment	No
ICOS ERIC	Environment	No
AnaEE-ERIC	Environment, Health & Food	Yes
EMBRC ERIC	Environment, Health & Food	Yes
BBMRI ERIC	Health & Food	Yes
EATRIS	Health & Food	Yes
ECRIN ERIC	Health & Food	No
Euro-Biolmaging ERIC	Health & Food	Yes
EU-OPENSREEN ERIC	Health & Food	Yes
INFRAFRONTIER ERIC	Health & Food	No
Instruct ERIC	Health & Food	Yes
MIRRI ERIC	Health & Food	Yes
CESSDA ERIC	Social & Cultural Innovation	No
CLARIN ERIC	Social & Cultural Innovation	No
DARIAH ERIC	Social & Cultural Innovation	No
European Social Survey ERIC	Social & Cultural Innovation	No