

Consultation on Long Term sustainability of Research Infrastructures

Fields marked with * are mandatory.

1. Introduction

The political guidelines[1] of the European Commission present an ambitious agenda for jobs, growth, fairness and democratic change, adapting EU's economy and society to the digital age, establishing an Energy Union and developing a forward looking climate change policy. While recalling the EU strong research base and the role that it can play in implementing this agenda, President Juncker stressed the need for improving Research Infrastructures (RI) and making better use of research results as “essential to strengthen innovation further, develop new activities and boost the productivity and competitiveness of our economy”[2].

The term 'research infrastructures' refers to facilities, resources or services of a unique nature that have been identified by European research communities to conduct top-level activities in all fields of science. This definition of research infrastructures, including the associated human resources, covers major equipment or sets of instruments, in addition to knowledge-containing resources such as collections, archives and data banks. RI may be located in a single site (for example, large telescopes, Synchrotrons, High Performance Computing) or can be distributed across a number of sites working jointly (for example, biobanks, archives, marine stations).

Taking into account that RI require long-term investment for their construction and operation, the Informal Competitiveness Council of July 2014 highlighted the importance of long-term sustainability of RI, stressing that open access to RI and data, better links with industry and prioritisation based on a multi-level approach (national, European and international level) were key to ensure sustainability.

Building on the achievements of the European Research Area[3] and the Innovation Union flagship initiative[4], there is now a need to identify the next steps for a more comprehensive approach and vision on the long-term sustainability of RI, fully using their potential to deliver on the Commission priorities on open innovation, open science and open to the world[5].

The objective of the questionnaire is to gather stakeholders' views on the aspects which need to be addressed to ensure the long-term sustainability of RI, such as, scientific excellence, training and access, innovation potential, interaction with industry, socio-economic impact, data management, upgrading, decommissioning, governance and funding models as well as international cooperation.

This consultation will help identify the pre-conditions for sustainability and the corresponding actions that should be implemented at regional, national and European levels.

Taking advantage of the momentum that will be created by the update of the ESFRI Roadmap in the first half of 2016, the outcome of this consultation will contribute to an open policy debate among policy-makers and RI managers on the long-term sustainability of RI.

* *A synthesis of the contributions received via this online questionnaire, as well as any individual contribution, may be made public, safeguarding the identity of the respondents.*

- I accept*
- I do not accept*

2. Information on the respondent

* 2.1. I am replying as/on behalf of:

- National government
- Regional/local government
- Research funding organisation
- Public research organisation
- RI operator – public
- RI operator – private
- RI user
- Private organisation - Industry (less than 250 employees)
- Private organisation - Industry (250 or more employees)
- International organisation
- Other

If 'Other', please specify.

50 character(s) maximum

* 2. 2. Please indicate your field of work:

- Biological and Medical Science
- Energy
- Engineering
- Environmental and Earth science
- Mathematics and ICT
- Material Sciences
- Analytical facilities
- Physical Sciences and Astronomy
- Social Sciences and Humanities
- Policy making/management
- Regional development
- Other

If 'Other', please specify:

50 character(s) maximum

*2.3. Please provide your name/organisation's name.

100 character(s) maximum

*2.4. Please provide your country of residence/establishment:

- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania
- Luxembourg
- Malta
- The Netherlands
- Poland
- Portugal
- Romania
- Slovakia
- Slovenia
- Spain
- Sweden
- United Kingdom
- International Organisations
- Other

If 'Other', please specify:

50 character(s) maximum

3. Stakeholders Consultation

3.1. Ensuring scientific excellence

The role of RI in the advancement of knowledge and technology and the importance of their full exploitation is recognised as essential. By offering state of the art instruments and high quality services to users from different countries, by attracting new users and by preparing the next generation of users, RI have enabled the EU to obtain and maintain the intended level of excellence of the scientific output. Ensuring scientific excellence will in turn facilitate sustainable funding of RI thereby enabling Europe to stay at the forefront of science and remain competitive worldwide.

Measures to support the scientific excellence of RI can include for instance the setting-up of international external peer reviews, technical evaluation review and management committees as well as open international recruitment supported by external experts.

* Do you have an international Scientific Advisory Committee with representatives of the main scientific research fields addressed by the RI?

- Yes
 No

If so, how often it is convened and how are their recommendations taken into account in the decision-making process of the RI?

1000 character(s) maximum

* Do you have an international peer-review system for selecting user projects and attributing access?

- Yes
 No

* What are the three main measures that could be taken to support the scientific excellence of European RI? And at what level these measures should be taken (regional, national, European, international)?

1000 character(s) maximum

3.2. Managing tomorrow's RI

3.2.1. Developing RI managers' skills

The availability of competent managers and technical staff running the RI is a critical need, which has been widely acknowledged and is directly connected to the existence of dedicated training programmes able to provide the staff with the necessary knowledge and skills, and to the attractiveness of the RI as a prospective employer.

The availability of skilled staff can be facilitated by fostering the mobility of managers and technical staff as well as the exchange of managers between Industry and Research Infrastructures.

* Do you have any programme in place for your RI managers' skills development?

- Yes
- No

If not, please explain why.

1000 character(s) maximum

* What are the three main measures that could be taken to support skills development of European RI managers?

1500 character(s) maximum

* Is there a need for a harmonised accredited curriculum?

- Yes
- No

If so, please describe the five main subjects that should be covered.

1000 character(s) maximum

* Is there a need for a staff exchange programme targeting managers and operators of RI?

- Yes
- No

If so, please specify the scope of such a programme.

1000 character(s) maximum

- * Please list the main measures (up to three) which, in your opinion, would increase the attractiveness of RI as employers? Please specify.

1500 character(s) maximum

3.2.2. Developing RI user skills & outreach

The ability of the users to effectively use and fully exploit the instrumentation available at the RI heavily depends on the appropriate training and development strategies, which determines their overall excellence.

Sustainable RIs encourage international mobility and attract talent from all over the globe to their sites.

Measures to support users' skills development include for instance dedicated training programmes for users and coordinated training programmes with academia.

- * Do you offer specific training to your RI users?

- Yes
- No

If so, what is the scope of such training?

1000 character(s) maximum

- * Is there a need for a dedicated training programme for industry users?

- Yes
- No

If so, what should be the scope of such a programme?

1000 character(s) maximum

- * When applicable, should there be specific measures for promoting the use of RI for citizen science?

- Yes
- No

* Please specify

1000 character(s) maximum

* Please list the three main measures (up to three) which, in your opinion, would broaden the range of RI users?

1500 character(s) maximum

3.3. Unlocking the innovation potential of RI

RI main focus is to achieve excellence in science. Nevertheless, the RI potential to foster innovation is clearly recognised and should be fully exploited.

Innovation can be generated directly by the RI (e.g. leading to new products and spin-off companies) or through the provision of innovative services which can be used by industry.

The development of components/ instruments, services and knowledge for the implementation and upgrade of RI can also provide an opportunity for pushing the limits of existing technology.

The design and co-design of instrumentation and equipment is one of the possible RI-industry interactions which can create innovation and new economic opportunities by inspiring new technological solutions and creating new markets.

A more efficient integrated ecosystem between academic laboratories, focused on technological R&D needs of RI, large companies as well as SMEs would help European industry maintain or take a leading role in the development of the technologies required for the RI of tomorrow.

International Innovation advisory committees could be also advertised for those facilities addressing directly the impact of their methods and data on society and economy.

* Do you have in place a programme that enables short term exchanges of young researchers from other RI, within or outside Europe?

Yes

No

* What is the percentage of your annual budget spent on procurement for the supply of high-tech components? (0-100)

* What is the percentage of Industry users of your RI? (0-100)

* Do you have a business model that includes the development of commercial applications of RI services and tools?

- Yes
 No

If so, please briefly describe it.

1000 character(s) maximum

If not, please explain why this would not be applicable?

1000 character(s) maximum

* Do you have an Innovation Advisory Committee with representatives from industry and public sector?

- Yes
 No

* Which are the three main barriers preventing effective cooperation between RI and industry?

1500 character(s) maximum

* Which are the three main initiatives that should be taken to encourage the cooperation of RI, academia and industry in the context of open innovation?

1500 character(s) maximum

* How can joint procurement mechanisms be encouraged between RI for the supply of high tech components?

1000 character(s) maximum

* What is the main measure that should be taken to ensure that Europe preserves a competitive advantage for the development of the key technologies required for the RI of tomorrow?

1000 character(s) maximum

3.4. Measuring the socio-economic impact of RI

RI have a direct impact on the economy through, in particular, the employment of work force during their life cycle and the creation of new jobs and services for their operation and maintenance but also through their scientific missions, which can lead to economic returns.

RI have a socio-economic impact, which can also go beyond the direct impact on the local economy and which is not necessarily related to the scientific objectives of the RI itself.

* Did you assess the socio-economic impact of your RI?

- Yes
- No

* Is this process carried out on a regular basis?

- Yes
- No

If so, how do you take into account the socio-economic return in the business model of your RI?

1000 character(s) maximum

* In addition to the direct economic value of the scientific output, did you address other indirect dimensions in evaluating the socio-economic impact of your RI?

- Yes
- No

If so, please list them.

1500 character(s) maximum

* How would you rate the need to develop a consolidated model to identify the socio-economic impact of RI that takes properly account of the intangible indirect benefits?

- 1: Don't know/Not applicable
- 2: Irrelevant
- 3: limited relevance
- 4: Moderate extent
- 5: Relevant to a large extent
- 6: Very relevant

- * What main elements should be included in that model?

1500 character(s) maximum

3.5. Exploiting better the data generated by the RI

RI are nowadays research data factories. With the increasing size of the generated data sets, frequently too large to be transferred, and the increasing complexity of data analysis, often not affordable by most of the research labs, RI are acquiring by necessity a more active role in the data management domain.

In line with the Open Science concept, ensuring better availability, access and use of research results and scientific data generated also for non-research purposes will be essential to improve research replicability and efficiency, strengthen innovation, develop new activities and boost the productivity and competitiveness of the European industry.

Measures to better exploit the data generated by RI could include for instance the reinforcement of RI data management policies to facilitate standardisation, interoperability of services and improve research replicability as well as the improvement of the availability, access and use of research results and scientific data, in particular for non-research purposes.

- * How do you provide open access to research data?

1000 character(s) maximum

- * How do you facilitate reuse of research results and scientific data, in particular for non-research purposes?

1000 character(s) maximum

- * What are the three main measures that should be taken to improve data management policies at national, European and international level?

1000 character(s) maximum

- * How do you ensure data storage and for how long do you keep your data?

1000 character(s) maximum

3.6. RI Life cycle - Upgrading

Upgrading is usually part of the life cycle planning, from the early development stages of the projects. Upgrades are necessary to keep the RI at the forefront of science and remain attractive to the user communities.

Measures to better plan RI upgrading could include for instance regular consultations with user communities and an in depth scientific and technological gap analysis.

* Were upgrades included in the life cycle planning of your RI?

- Yes
 No

If so, was it based on a cost-benefit analysis?

* Do decisions on upgrading take into account a scientific landscape analysis? If so, please specify at which level it is conducted.

1500 character(s) maximum

* Is there a need for (international) evaluation standards to support decision makers on upgrading?

- Yes
 No

If so, please describe.

1500 character(s) maximum

3.7. RI Life cycle – Decommissioning

Decommissioning of RI needs to be addressed appropriately in the early development stages of the projects. The decommissioning should ensure the orderly winding up of the RI and include provisions, for example, on data management and technology transfer to preserve RI achievements.

Measures to better address RI decommissioning could comprise for instance the establishment of guidelines on decommissioning including provisions for channelling expertise and know-how towards other or new RI.

* Is decommissioning of your RI integrated in your lifecycle management and business plan?

- Yes
 No

If so, does it include provisions for channelling expertise and know-how towards other or new RI at the end of the life-cycle? If so, please explain.

1500 character(s) maximum

* Which dimensions should decommissioning cover?

1500 character(s) maximum

* Is there a need for international evaluation and accounting standards to support decision makers on decommissioning?

- Yes
 No

If so, please describe.

1500 character(s) maximum

3.8. Ensuring sustainable governance of RI

All Research Infrastructures (national, regional, European, international) should be able to rely on sustainable governance mechanisms and decision-making and planning processes.

The ESFRI roadmaps have led to convergence in the planning and funding decisions of RI at European level and have also triggered road-mapping exercises in Member States and Associated Countries. However, the different budget cycles and national RI policies still make joint investment decisions for construction, operation and phasing out of pan-European RI very difficult.

The ERIC Regulation's aim is to facilitate the implementation of Pan-European RI and is a response to the European political ambition of creating the European Research Area to enable tackling current challenges (e.g. internationalisation of research; achievement of critical mass; development of distributed facilities; development of reference models). Recent experience has shown that their sustainability could be further improved.

Research Infrastructure governance and legal frameworks must be able to adapt to the constantly evolving and competitive global research infrastructure ecosystem.

Measures to ensure RI sustainable governance could include for instance the synchronisation of national roadmaps and their corresponding funding commitments for the implementation and operation of RI as well the regular monitoring of the implementation and operation of RI such as the ESFRI projects and the ERICs.

- * How could the lack of national roadmaps synchronisation with corresponding budgetary commitments for the implementation and operation of RI be addressed?

1000 character(s) maximum

- * How could the monitoring of the implementation and operation of ESFRI projects, ERICs or other legal frameworks be reinforced?

1500 character(s) maximum

- * How would you see further developments of the ERIC instrument?

1500 character(s) maximum

3.9. Funding the construction and operation of RI

RI have to rely on a combination of public national (e.g. institutional), European (e.g. Horizon 2020, ESIF - European Structural and Investments Fund), private (e.g. users, donors) funding for their construction and operation.

The InnovFin instrument under Horizon 2020 and the European Funds for Strategic Investments (EFSI) can provide another potential source of funding for the construction and operation of RI, as already tested at a smaller scale in FP7 with the Risk Sharing Financing Facility (RSFF).

Measures to facilitate the funding for the construction and operation of RI could include for instance the promotion of business planning and a bankability approach in RI development stages as well as the encouragement of new sources of funding including private funding for the development of new services and technologies.

- * Did you develop a business plan in support of the life cycle of your RI?

- Yes
- No

If so, please briefly describe what dimensions were addressed.

1500 character(s) maximum

* What are the three main measures that could improve the bankability of RIs?

1500 character(s) maximum

* Would you consider investing in the joint development of commercial technologies and services with other RIs, industry and academia?

- Yes
 No

If so, please specify under which conditions.

1000 character(s) maximum

If so, which funding instruments would you consider?

1000 character(s) maximum

If so, how could investment risks be best mitigated?

1000 character(s) maximum

* How could private funding be encouraged for the development of new services and technologies?
And how could this be combined with public funding instruments?

1500 character(s) maximum

* Could there be additional measures which need to be considered to facilitate access to funding for the construction and operation of RI?

- Yes
 No

If so, please specify.

1000 character(s) maximum

3.10. Structuring the international dimension of RI

The nature and complexity of the societal challenges require a global approach for the design and operation of the RI addressing these challenges. Global cooperation is also the only option when pooling of resources is necessary to match investment needed for construction and operation of RI and where research has to be undertaken at a world wide scale.

Global cooperation on RI can also be used as a tool to support or complement the EU external policy and contribute to Science Diplomacy.

Measures to structure the international dimension of RI could include for instance the support to the international outreach of pan European RI such as the ESFRI projects and ERICs so as to ensure that the EU framework conditions are respected and the EU interest is safeguarded.

- * Please list the main measures (up to three) which, in your opinion, should be taken to support the international outreach and visibility of pan-European RI such as the ESFRI projects and ERICs?

1500 character(s) maximum

- * What additional measures would need to be considered in order to enhance cooperation with strategic partners (such as funding agencies, regional science and technology dialogues, complementary RIs in third countries, etc.) on the development of global research infrastructures?

1500 character(s) maximum

4. Priority order of the pre-conditions

How would you rank the relevance of the pre-conditions identified in the questionnaire for the long-term sustainability of RI? [1 to 10 scale (1-the least relevant to 10-the most relevant)]:

	1	2	3	4	5	6	7	8	9	10
*Ensuring scientific excellence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Managing tomorrow's RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Unlocking the innovation potential of RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Measuring the socio-economic impact of RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Exploiting better the data generated by the RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*RI Life cycle - Upgrading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*RI Life cycle - Decommissioning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Ensuring sustainable governance of RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Funding the construction and operation of RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*Structuring the international dimension of RI	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Thank your for the submission!!