Association of
European Research Establishments in Aeronautics

EREA position on the past, present & future of the European Framework Programmes for Research and Innovation 2014-2027

February 2023

Executive Summary and Key Messages

Research organizations are key players in the European Research and Innovation (R&I) ecosystem, as they contribute to the creation and dissemination of excellent knowledge and technologies. Their efforts and the results of their activities enable Europe to develop cutting-edge solutions to existing challenges.

Regarding the European R&I landscape, EREA, the *Association of European Research Establishments in Aeronautics*, considers the European Framework Programme (FP) for R&I (Horizon 2020 and its successor, Horizon Europe) as the key European instrument to implement European visions and strategies. Especially in times of economic pressure and budget cuts (e.g. due to external factors), EREA calls for increased investment in R&I for a better future, where success depends more and more on the generation and conversion of knowledge into innovations. In this context, EREA takes the opportunity to emphasize that the funds dedicated to the European Framework Programme for Research and Innovation must benefit R&I activities (through the entire value chain), but must not be diverted to other European instruments such as the Energy Breakthrough Programme and others.

In a nutshell, EREA wishes to highlight the following Key Messages:

In order to prepare tomorrow's technologies and innovations that will address societal and market needs of the 21st century and to allow disruptive science to emerge:

- ***It is of utmost importance that the Framework Programme (FP) for Research and Innovation funds and supports the entire R&I chain, from basic research, application-oriented research, technology demonstration and validation up to innovation, to ensure European leadership and European competitiveness in the world***
  - ***with a budget - via grants - dedicated to research and innovation in aviation up to TRL 6,***
  - ***with financial instruments only for TRL > 6 .***
- ***Increasing R&I investment is crucial for Europe's future at a time of high global competitiveness, when success increasingly depends on the generation and conversion of knowledge into innovation. Especially in times of economic pressure (e.g. due to external factors), it remains essential to continue to allocate sufficient funds to R&I.***
- ***To ensure EU added value, the FP should be the key European instrument to implement European R&I visions and strategies and to support cross-border cooperation to foster the realisation of the European Research Area.***
- ***Collaborative research and partnerships, in particular between industry, research organisations and universities, are the key instrument to ensure a rapid transfer of knowledge to applications and thus innovation. This is the main added value of EU-wide cooperation.***
- ***The European Innovation Council (EIC) brings added value to the European R&I landscape, as it addresses the scaling up of technologies and enables impact to a greater extent. However, the EIC shall be in addition to a well-funded Framework Programme and should not compete financially with funding for research.***
- ***The golden rule is that the funding dedicated to the European FP for R&I should benefit R&I activities (through the entire value chain), but shall not be diverted to other European instruments or used to subsidize private companies outside their R&I activities.***
- ***Regarding the development of technologies and the need for Technology Infrastructures (TIs) in Europe, EREA emphasizes the need to consider and support TIs in an appropriate way. Indeed, for any technological breakthrough, TIs are key to prove an idea, test it, validate the technology and highlight its effectiveness and***

AIT Austrian Institute of Technology (AT)
CEIIA Centro para a Excelência e Inovação na Indústria Automóvel (PT)
CIRA Centro Italiano Ricerche Aerospaziali (IT)
DLR Deutsches Zentrum für Luft- und Raumfahrt (DE)
FOI Totalförsvarets Forskningsinstitut (SE)
ILOT Institute of Aviation (PL)
INCAS National Institute for Aerospace Research "Elie Carafoli" (RO)
INTA Instituto Nacional de Técnica Aeroespacial (ES)
NLR Nationaal Lucht- en Ruimtevaartlaboratorium (NL)
ONERA Office National d'Études et de Recherches Aérospatiales (FR)
VKI The von Karman Institute for Fluid Dynamics (BE)
VZLU Výzkumný a Zkušební Letecký Ústav, a.s. (CZ)

impact (instrumental for scaling up). Europe needs a landscape of large-scale, high-quality TIs covering the entire TRL ladder as well as a network of smaller facilities serving local innovative ecosystems. In order to take technologies beyond the laboratory environment, applied test facilities or TIs are critical in the innovation process; without them, research cannot be translated into products and services. And finally, there is traditionally a significant spill-over effect from the highly innovative aerospace to other sectors. This is why EREA calls for high-level European support actions for aviation Technology Infrastructures in the second part of Horizon Europe and the following Framework Programmes (FPs).

- *Since "Missions" are largely about deployment and implementation and only to a very small extent about actual R&I, the Framework Programme can contribute somewhat to Missions defined and implemented at the overall EU level, such as the current joint calls between Horizon Europe partnerships and Missions (involving all Mission-related DGs). On the other hand, Missions are obviously not applicable as a model for research and innovation activities integrated in a Framework Programme. As Missions are part of Horizon Europe, it is essential to keep a balanced approach between the different TRL levels and topics. EREA strongly discourages the use of a dedicated R&I programme budget to fund the implementation of Missions, as there are other dedicated tools at the EU level for this purpose, e.g., European Fund for Strategic Investments (EFSI), Structural and Investment Funds (ESIF), Connecting Europe Facility (CEF), Digital Europe and others.*
- *Regarding the type and structure of the calls in Horizon Europe, there is a shift from joint research projects to individual funding measures (ERC; EIC). EREA is in favour of a fair balance between these two types and emphasizes once again the immense added value of cross-border cooperation and collaboration between researchers from industry, research organizations and universities in joint European projects.*
- *Simplification efforts (such as the "Lump Sum" approach) are welcomed if (and only if) researchers (and their institutions) can benefit from them. Shifting the administrative burden from the accounting phase to the project preparation phase goes against the objective of simplification. Furthermore, if measures such as lump sums lead to less European cooperation within an EU project, due to higher uncertainties, the approach is even counterproductive.*
- *EREA welcomes any initiative by the European Commission to better align the programming and funding rules of the different EU funds to allow for greater coherence and synergies. However, experience has shown that synergies can work between initiatives dealing with similar topics. Synergies between programmes without common content can hardly be achieved.*

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Setting the scene

Europe is making great efforts to improve and sustain the continent's strong growth and development, while creating a better quality of life. Europe's key funding programme for research and innovation, Horizon Europe, has succeeded Horizon 2020 and is, with 95.5 billion Euros, the most ambitious programme ever implemented. EREA congratulates the European Commission and the European Parliament for investing substantial resources to address the societal challenges facing citizens: human resources, industrial modernization, smart, sustainable and inclusive growth, and in particular the twin transitions to digitalization and the EU Green Deal.

A key aspect for achieving these goals is the **continued investment in research and innovation activities** covering the **entire value chain**, from TRL levels 1 to 8-9. This starts with the support of new ideas from basic research, continues through applied research with technology development, technology validation and system demonstration, up to the final development of innovative products, which can then be successfully deployed.

EREA members are and have been ones of the main participants in the European Framework Programmes. In particular, its portfolio covers activities in all Framework Programme (FP) parts and pillars, but a more particular focus of EREA's work is on the following activities:

- Cluster 5 "Climate, Energy and Mobility" of Pillar 2,
- Cluster 4 "Digital, Industry and Space" of Pillar 2,
- Cluster 3 "Civil Security for Society" of Pillar 2,
- Research Infrastructures.

The main motivation for EREA members to participate in the European FP is to **collaborate** with European and international partners in order to broaden and deepen EREA's research activities over the full range of Technology Readiness Levels (TRL). In addition, the international cooperation dimension of the programme is considered essential to achieve **critical mass** to address major societal challenges, ensure Europe's global competitiveness, and foster multicultural education. Supporting only national or even regional programmes will not provide sufficient added value to address the challenges of overarching importance. **Cross-border collaboration in research in Europe** is essential to access and combine knowledge from European partners to improve results (and their exploitation) and to avoid harmful fragmentation and duplication.

Investing in research and innovation is essential if Europe is to move forward, achieve its goal of becoming a truly knowledge-based economy and be ahead of global developments. The EU needs to continue to set a good example by devoting a considerable part of its **budget and efforts** to the European Framework Programme for Research and Innovation.

On the Intervention Modes and Types of Action

Past and current Framework Programmes have successfully created the **technological basis** for a competitive and sustainable European industry by providing continuous support along the entire research and innovation value chain. As the world is facing enormous global **challenges**, from climate change and epidemics to, most recently, threats to our European security and values, Europe needs to team up to address them appropriately. According to EREA, **collaborative research** and **European partnerships** are the **key instruments** for making a significant contribution to global challenges and EU priorities. In addition, partnerships such as Clean Aviation, Clean Hydrogen and others create a valuable ecosystem of trust and collaboration where a long-term vision, accepted and committed by the respective private sectors, can be implemented. Furthermore, European partnerships enable a quick transfer of knowledge to application and thus innovation and impact. It is crucial to visibly increase the impact generated by European R&I investments and to showcase it directly to European citizens. Partnerships are one of the main instruments to highlight and demonstrate this impact and the resulting solutions to achieve the ambitious goals.

Recommendation: EREA emphasizes the importance of collaborative research and partnerships, in particular between industry, research organizations and universities, as these are the key instruments to ensure a quick transfer of knowledge to application, to enable innovation and create European added value.

Regarding the development of technologies and the need for Technology Infrastructures (TIs) in Europe, EREA emphasizes the need to consider and support TIs in an appropriate way. Indeed, for any technological breakthrough, TIs are key to prove an idea, test it, validate the technology and highlight its effectiveness and impact (which is instrumental for scaling up). Europe needs a landscape of large-scale, high-quality TIs covering the entire TRL ladder as well as a network of smaller facilities serving local innovative ecosystems. In order to take technologies beyond the laboratory environment, applied test facilities or TIs are critical in the innovation process; without them, research cannot be translated into products and services. And finally, there is traditionally a significant spill-over effect from the highly innovative aerospace to other sectors. This is why EREA is advocating for high-level European support actions for aviation Technology Infrastructures in the second part of Horizon Europe and the following Framework Programmes (FPs).

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With the aim to better understand the impact of European research and innovation programmes on the daily life of European citizens, the European Commission has introduced the concept of "**Missions**" as a new instrument in Horizon Europe. With bold and inspiring titles, Missions strive to mobilize public and private actors to engage with citizens in order to stimulate society's adoption of new solutions and approaches. In general, EREA considers Missions as an important instrument to increase the impact and visibility of European research and innovation. EREA believes that Missions can capture the public imagination and nurture a spirit of European collaboration amongst different disciplines, stakeholders and sectors. However, having regards to the first years of missions being part of the Horizon Europe Framework Programme, EREA raises important concerns about their set-up and implementation. Since missions are largely about deployment and implementation activities and only a very small part about actual R&I, the Framework Programme and its calls for proposals can only contribute a little to the success of missions. On the other hand, the current set-up of impact-oriented bottom-up calls across clusters and destinations cannot be replaced by bold Missions. Instead of using Missions as a model for research and innovation activities embedded in a Framework Programme, EREA considers that Missions should rather be seen as objectives for European society that R&I results can feed into.

Recommendation: EREA strongly advises against using dedicated budget from the R&I programme to fund the implementation of Missions, as there are other dedicated tools at the EU level for this purpose, e.g., European Fund for Strategic Investments (EFSI), Structural and Investment Funds (ESIF), the Connecting Europe Facility (CEF), Digital Europe and others.

In line with the ambition to create impact and to properly address societal challenges, **synergies** are essential to create more impact and EU added value. Even if the current legislation of the different EU funds, such as the Framework Programme for Research and Innovation, ESIF or CEF, allows for synergistic application, the reality is that the different funds hardly correspond. The different funds need to have their own purpose and objective, but must be perfectly aligned with each other, to allow synergies wherever possible. Successful examples such as the CEF Transport funding for the SESAR Deployment Manager (SDM) complementing the SESAR Joint Undertaking towards higher TRL show that synergies between programs and initiatives addressing similar topics can be achieved. This holds true for the EU Space Programme taking over technologies developed under Horizon Europe Space and for some elements of the ERDF programme benefitting from technologies developed under the aviation and/or space topics in Horizon Europe. On the other hand, synergies between programmes without common content can hardly be achieved.

Recommendation: EREA advises to better align the content of the programme and the funding rules of the different EU-funds to allow for increased coherence and synergies, when demonstrably appropriate.

On the implementation of the programme/projects and procedures

Following the latest annual reports of the European Court of Auditors (ECA), the European Commission considers it necessary, among other things, to reduce the error rate in the Framework Programmes for research and innovation. With this in mind, the concept of "**lump sums**" was introduced as an essential key measure to offer simplification to researchers and their institutions. EREA welcomes any kind of simplification effort if researchers can really benefit from it. However, in view of the first experiences with lump sum projects within Horizon Europe, the idea of simplification has been relegated to the background, with the administrative burden mainly shifted from the accounting phase (during and after the lifetime of the project) towards the proposal preparation phase. In addition, the potential side effects, as they were initially called, such as higher financial risks, fewer new entrants, and others, proved to be major problems. Reducing the number of institutions per work package or increasing planning efforts in advance are just a few examples of how simplification is being defeated. The creation of a system in which financial risk must be covered collectively has prevented the development of trusting relationships between partners and especially the integration of non-established institutions. Furthermore, if such

measures as lump sums lead to a decrease in international cooperation within a European project, the approach is even counterproductive.

Recommendation: EREA urges a thorough review of the lump-sum approach, as the assumed minor effects turn out to be massively in conflict with overarching objectives such as openness to newcomers and cross-border collaboration within EU-projects.

In terms of definition and implementation of the calls, EREA observes a significant decrease in the success rates of eligible full proposals in Horizon 2020. In order to improve the quality of their proposals, researchers spend a lot of time writing them, calculating the project months and optimizing their proposal, especially in the case of lump sum proposals. However, there are increasing cases where projects with an evaluation score of 14 or even higher are rejected. Without a doubt, the interest of researchers in submitting proposals to European programmes is a positive sign. However, the issue of oversubscription can be appropriately addressed by narrowing the scope of the calls and focusing on the relevant expected impacts. If a call includes several topics and pathways, it should be made clear to what extent they are essential, complementary and/or alternative. If partial coverage is to result in a lower rating, the relevant criteria should also be made explicit to reviewers and proposers. This approach would allow researchers to channel their resources effectively and the relevant criteria should also be made explicit to reviewers and proposers.

Recommendation: EREA calls for more focused work programmes to reduce oversubscription. In addition, this will help identify experts with the appropriate education and experience for a high quality and globally accepted evaluation process.

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