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ERAC

WORKING PAPER

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WORKING DOCUMENT

From:	ERAC Secretariat
To:	ERAC (European Research Area and Innovation Committee)
Subject:	Final draft ERAC Opinion on the Interim Evaluation of Horizon 2020 and preparations for the next Framework Programme

Delegations will find attached the final draft ERAC Opinion on the Interim Evaluation of Horizon 2020 and preparations for the next Framework Programme for adoption by written procedure.

Delegations are kindly invited to inform the ERAC Secretariat (erac@consilium.europa.eu) by Wednesday 28 June 2017 COB of any objections they may have to this text, in the absence of which the ERAC Opinion on the Interim Evaluation of Horizon 2020 and preparations for the next Framework Programme will be deemed approved.

Executive Summary

Research and Innovation are the roots of our European democratic values. Today, the framework programmes for research and innovation (FPs) represent the main drivers for competitiveness, wellbeing, as well as environmental and social resilience, particularly in pointing out social challenges in addition with excellence. At EU level, FPs generate an outstanding EU added value, notably by teaming up and by driving collaborations of R&I ecosystems through all Europe.

With Horizon 2020, FPs have achieved a significant leap toward simplification and predictability both by framing a coherent architecture based on 3 main pillars, and by implementing 2-year work programmes. This breakthrough at programme level has been reinforced by relevant simplifications at project level, widely supported by the stakeholders.

These improvements have been successful at supporting excellence and collaborative research as corner stones on all the R&I chain. They must be preserved as such, together with impact.

Today, FPs rely on outstanding initiatives that optimize the European added value of the programme. For instance, ERC activities, the infrastructure programme, the Marie Skłodowska Curie Actions and the collaborative projects under Future Emerging Technologies, the Societal challenges, Partnerships (Public-Public and Public-Private) and the Key Enabling Technologies, have already contributed to the impact H2020. The current balance between collaborative projects and mono-beneficiaries activities should be preserved to further boost transnational collaborations.

FPs are also enabling the achievement of the European Research Area, consistently with all its priorities, which is a common goal as well as a shared competence of the Member States/Associated Countries and the European Union.

Beyond the FP7 and H2020 significant successes, ERAC nevertheless identified further improvements to be delivered:

- 1) ***The next FP should reaffirm the achievement of ERA as a top priority.*** In particular, FPs should continue supporting all activities related to the so called ERA priorities such as the common efforts by MS/AC and the EC in jointly at addressing grand challenges. Researchers and innovators are a common asset of the ERA and their creativity deserves appropriate support.
- 2) ***FPs must incentive involvement of new participants, whatever is their location, status, gender, as far as they met excellence.*** This calls for different actions. On the one hand, it is necessary to keep simplification high on the agenda, so as to squeeze transaction costs related to proposal preparation. Excellence can be found everywhere within the ERA and must be evaluated and supported without any bias, so that equal excellence can have equal opportunity of competing and getting funded.

- 3) ***FPs must reinforce the international cooperation with Europe's global partners as soon as possible.*** The current global context calls for a longstanding cooperation between research and innovation actors from all over the world. FPs can boost EU attractiveness and EU positions in decisive multilateral endeavors such as the Sustainable Development Goals and the Paris Agreement.
- 4) ***Innovation has to deserve a good policy mix and the involvement of all R&I actors.*** The wellbeing of Europeans relies on the capacity to incentive R&I ecosystems to push forward the knowledge frontiers, while disseminating knowledge and solutions to society at large. There is a need for technological innovation support as well as non-technological innovation, notably with the active involvement of Social Science and Humanities. All existing schemes should aim at maximizing complementarities among existing national and EU initiatives.
- 5) ***FPs should feed EU sectoral policies.*** R&I policies can provide significant impact to EU policies, notably by providing data for evidence based policies. The other way round, R&I policies should be liaising with pertinent public policies. In particular, strong linkages with Higher Education are necessary to harness the full potential of the knowledge triangle.
- 6) ***FPs should deliver better and continued dialogue with the European citizens.*** Exchanges between science and society have to be continued and renewed. In a context of political questioning in Europe, it is necessary to show that FPs are a great success in terms of scientific and socio-economic achievements, dissemination of the European values of freedom and inclusion.

**ERAC OPINION
PAPER**

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European construction is facing doubts from various parts of our societies. More than ever do we need facts based on undisputed scientific evidence, to bolster the European project by designing bold public policies geared to building bridges between Europeans.

Science, research and innovation are rooted in European democratic values, especially since the ages of Humanism and Enlightenment when scientists, thinkers and entrepreneurs travelled the continent to dialogue with their peers, shared their ideals and spread their inventions. This peaceful exchange of ideas has been continuing in spite of nationalism, with its disastrous and painful consequences.

To secure a competitive position as a science and innovation global leader for Europe, it is crucial to invest in research and innovation (R&I) to support the creativity and attractiveness of the R&I ecosystems across Europe. These investments are all the more necessary that the scope of societal and technological challenges we face call for transnational actions such as climate change, energy transition or ageing societies.

Today, EU framework programmes for research and innovation (FPs) represent the main drivers for economic competitiveness, wellbeing, as well as environmental and social resilience. By actively supporting the activities of the best European researchers and innovators, FPs precisely provide opportunities for cross-border and transdisciplinary cooperation. With excellence as the cornerstone for all R&I activities, FPs generate a wide range of impacts, from science to society and from business to culture.

In addition to excellence, their success is due to well identified principles, such as cooperation, impact and dissemination. The FPs are key for supporting the scientific and innovative basis of Europe and thereby its economic and industrial competitiveness.

FPs contribute to the competitiveness of the EU by providing the right incentives to help MS/AC make progress towards their national R&D intensity targets and for the MS/AC to reach the objective of increasing the EU's GERD to 3% GDP.

FPs and the European Research Area activities are mutually-reinforcing and complementary: promoting free movement of researchers and circulation of knowledge and technology within the EU and beyond strengthens the EU added value of FPs activities.

By enabling, joint use of knowledge, methods, infrastructures, staff, and data, they will give Europe the assets needed to attain the Sustainable Development Goals, and position Europe as a committed global leader.

FPs also have the potential of creating emblematic successes within the EU, as well as contributing to an ever closer union among the peoples of Europe.

Consequently, FPs must become a keystone of the post 2020 EU political agenda. This calls for better branding with a permanent name for the Programme, allowing it to become a world class landmark for research and innovation communities. In addition, FPs budget should be proportionate to their scientific and innovative ambitions, thus limiting oversubscription.

This ERAC opinion addressed to the Council and to the Commission is to be regarded as a contribution to the ongoing discussions regarding the future of the European Union's funding programmes for R&I. It takes into account the findings of the stakeholder consultations as well as the national positions issued in the context of the Horizon 2020 Interim Evaluation, the Commission Staff Working Document¹ on the Interim Evaluation of Horizon 2020 , the MS/AC's experiences with the pathbreaking preparatory and pilot actions under the last work programmes in Horizon 2020 (in particular the EIC preparatory phase), as well as the first set of national position papers regarding the successor framework programme for research and innovation (hereinafter named as 9th Framework Programme, "FP9").

This document is not intended to give an exhaustive view of the ERAC members on all the sets of policies, programmes and actions covered by the FPs. Rather, it aims to provide a guide for the evolution of Horizon 2020 and the preparation of the FP9, by highlighting the main achievements of Horizon 2020 in the eyes of the community involved in the ERA and the main areas that still need to be further improved.

The paper reflects observations and discussions of numerous stakeholders, trying to identify the topics which obtained a broad agreement between the various partners consulted. It should not be regarded as a commonly agreed view of the Member States/associated countries (MS/AC) or the European Commission. It does not prejudge forthcoming Commission proposals for the next programming period, neither does it represent the Commission's views on these future

¹ European Commission SWD (2017) 220 final In depth Interim evaluation of Horizon 2020

programmes, and will not overrule any later Council position in the official negotiation phase for FP9.

The document is therefore divided into two parts:

- The first chapter which highlights the positive items observed with Horizon 2020 (H2020) and which the R&I community wishes to see maintained in the next stages.
- The second chapter focuses on major areas where improvement is needed.

Chapter 1: Main successes of H2020

A. The main features of the programme are widely appreciated by participants and MS/AC

a) A holistic programming based on a sound architecture, and timeframe

The ERAC welcomes the merging of the main R&I EU programmes into the 3 three pillars of H2020, which has proven beneficial:

- **To the MS/AC:** The funding of the whole chain of R&I can mirror/incentivize efforts to holistic approaches to support R&I national ecosystems.
- **To the Commission:** The integrated approach helps streamlining work processes among the Directorates General (DGs) and agencies of “research family”. It has already been improved the creation of appreciated common services dedicated to R&I projects (e.g. the Common Support Center).
- **To the stakeholders:** The publication of a single work programme favours the selection of the best opportunities. In addition, the 2-year work programme cycle provides the necessary maneuvering room to anticipate the participation, notably for establishing partnerships and for organizing internal efforts of the stakeholders properly. This medium-term approach has been balanced by enough flexibility to address pressing needs (e.g. response to Ebola and Zika outbreaks). Nevertheless, important improvements are necessary to involve the Programme Committees earlier in the process of drafting the strategic programming

b) The current funding mix is consistent with the nature of R&I activities

The ERAC recalls that excellent research and innovation activities are risky endeavors that call for appropriate funding schemes, taking into account for instance the TRL²/closeness to the market. For the frontiers of knowledge to be pushed forward, it is necessary to give the participants a predictable funding model with enough flexibility to mitigate uncertainties and risks linked to the scientific outcomes of their activities.

The ERAC considers that grants currently represent the best option to support excellence and impact in the field of R&I. They do not stifle creativity by linking the funding to pre-defined results, as other financial instruments would. They allow the consortia from academia and industry to test out riskier approaches and provide “beyond the state of the art” solutions.

² TRL : Technological Readiness Level

Whereas the ERAC agrees that an appropriate balance between complementary instruments (grants and financial instruments) supporting R&I should be ensured, it must be noted that an important number of stakeholders notably from academia, cannot participate in loan-based schemes.

Overall, the challenge is to ensure that the choice of funding instruments mirrors the specific objectives of the initiatives.

c) Simplification under H2020 represents a key step towards a more user-friendly environment

The ERAC welcomes the wide appreciation of the simplification features in H2020. It represents an important step in the right direction.

- **At programme level**, the quality of the evaluation process is recognized as a key achievement to be preserved and to be enhanced especially regarding the feedback given to the proposals which are not retained for funding. This quality can be substantiated by the very low rate of redress requests sent to the Commission (600 out of more than 152600 proposals³).
- **At project level**, a lot has been done in order to offer a user-friendly environment: single funding rate, reduced time to grant, optimized participant portal, innovative services such as the CSC.

B. H2020 integrates valuable initiatives, instrumental to the achievement of the ERA

a) Examples of high value tools

The ERAC welcomes the successes⁴ achieved so far by several funding schemes of the FPs :

- **ERC**: The programme has become one of the most attractive research funding bodies at global level. Beyond its outstanding scientific impact, ERC has contributed to transnational mobility career opportunities across the ERA and beyond and strengthened the quality and effectiveness of the whole European science system.
- **Infrastructures**: They ensure the access to excellent infrastructures and data to the R&I stakeholders across ERA whilst facilitating the overall coherence of the investments by the MS/AC

³ European Commission *Horizon 2020 Monitoring Report 2015*

⁴ European Commission SWD (2017) 220 final In depth Interim evaluation of Horizon 2020

- **Partnerships:** Public-public partnerships (ERA-NETs, EJPs, Art 185 initiatives and JPIs) are a cornerstone for a more coordinated implementation of national and European research programmes, aligning resources and policies on common challenges. Public-Private Partnerships (JTIs and cPPPs) trigger togetherness and additional investments to develop new technologies, products and services which will give European industry a leading position on world markets.
- **Marie Skłodowska-Curie actions:** MSCA have actively supported training and career development of over 100.000 internationally mobile researchers that have led to significant impact in terms of excellent research results and innovations. The renown of the programme should be an example for the improvement of FPs communication efforts.
- **Collaborative R&I projects in the areas of Future and Emerging Technologies, “Leadership in enabling and industrial technologies” (in particular Key Enabling Technologies) and “Societal challenges”:** The collaborative approach has been pivotal in establishing enduring networks of cooperation of different types of actors across Europe. They have been an important contribution to Europe’s competitiveness and to tackling the grand societal challenges. The involvement of the whole R&I chain and the active involvement of end users support the structuration of EU R&I ecosystems through emulation. This approach needs to further take into consideration the need for an appropriate success rate, so as to ensure that more excellent proposals will get funded.

b) H2020 support for the ERA process

The ERAC stresses that H2020 actively contributes to the achievement of the ERA.

- **Improvements of national systems:** The Policy Support Facility was successfully launched under H2020 to complement the European Semester process. It allows MS/AC to request support, on a voluntary basis, in enhancing the effectiveness of their national research and innovation policies. The PSF has developed a set of activities which are both country-based (Peer Reviews and Specific Support) and topic based (Mutual Learning Exercises). The demand for PSF activities has increased rapidly and they actively contribute to improving the quality of national R&I systems.
- **Optimal transnational cooperation:** H2020 has provided support to MS/AC-driven Joint Programming Initiatives, mainly through a series of CSAs and ERA-NET Cofund actions, as well as further coordination instruments such as art 185. However, there is still a pending issue regarding the sustainability for some of these initiatives. They have been crucial to provide incentives for national RFOs⁵ (and RPOs⁶ to some extent) to progress toward aligning rules and coordinating research agendas. Moreover, the “Infrastructures” programme provides specific funding for implementation and

⁵ Research funding organization

⁶ Research performing organization

development of research infrastructures of pan European interest, in line with the ESFRI roadmap.

- **Mobility and Human Resources:** Several programmes within H2020 are dedicated to the mobility of researchers, in particular Marie Skłodowska Curie Actions, Euraxess, but also the ERA-Chair instrument. Moreover, H2020 also promotes the modernization of Human Resources policies, notably by referring to specific recommendations in the Model Grant Agreement relating to the Charter and the Code. Research careers still remain an important issue to be tackled at national and EU levels, as well as the monitoring of the circulation of researchers inside the ERA.
- **Gender:** Gender is a cross-cutting issue in H2020 and gender balance is used as a ranking factor for H2020 proposals with the same score. Moreover, several topics in all programmes include a gender dimension, in addition to the Science with and for Society (SWAFS) programme, which includes calls specifically dedicated to gender. Monitoring in this area should be continued.
- **Knowledge Circulation:** The 100% Open Access policy in H2020 is a clear measure in favor of knowledge circulation, along with the Open Data pilot. In principle, FPs should maintain their open access schemes to foster a wide dissemination of the project outcomes (albeit offering opt-out schemes notably when commercially relevant and/or sensitive data is involved), and take further steps to promote the Open Science agenda.
- **International cooperation** International cooperation is also an ERA priority, and H2020 has targeted a broad international outreach; however, international cooperation needs to be intensified. See next chapter for improvements on this priority.

Chapter 2: Major improvements expected in FPs

A. The further achievement of ERA must be reaffirmed as a top priority of the FPs

FPs are instruments that should, inter alia, underpin the achievement of the ERA. The FPs should represent a strategic approach involving the multilevel dimension.

The ERAC considers that next FPs should strive to fully embrace this political ambition. By doing so, they will enhance their European Added Value, complementing R&I activities of MS/AC and their regions in a coherent and strategic approach. However, it should always be the prerogative of national authorities to select, and decide on, national R&I activities that contribute to matching their national R&I ecosystems with the broader ERA objectives.

The ERAC observes that when it comes to the grand societal challenges, MS/AC and the Commission have strategic, structural, and financial means at their disposal that they should use more coherently to promote the impact of such R&I activities.

The ERAC notes that many countries struggle with engaging sectoral policies, end-users and citizens, which would be crucial for leveraging the impact of R&I on end-of-pipe products, services and regulations. The coupling of resources and knowledge and a joint strategic effort offers important European added value.

The ERA aims at creating a competitive single area for research and innovation in Europe by strengthening the competitiveness of national research systems. This objective requires a level playing field for all MS/AC. To date, for a variety of reasons, the components of national R&I systems are far too dispersed, which leads, amongst other effects, to a worrying participation divide in the FPs. Excellence can be found everywhere within the ERA and must be evaluated and supported without any bias, so that equal excellence can have equal opportunity for competing and getting funded at EU level, regardless of its origin or of its legal status.

The ERAC calls on the MS/AC and the Commission to launch a discussion on the improvement of the overall governance of the ERA initiatives. On the one hand, there should be more co-construction between MS/AC and the Commission as regards priority setting, particularly when it comes to joint programming. On the other hand, MS/AC and the Commission should better involve all the programming actors to build a well-functioning multi-level governance of R&I activities.

The ERAC raises the following proposals to strengthen the FPs support for the achievement of the ERA:

- FPs should continue to address all ERA priorities through a variety of actions. From that perspective, the ERA-related groups have a major role and the dialogue between these groups and the DG RTD should be deepened. Monitoring should be continued in order to ensure that all ERA priorities are addressed throughout the whole FP. The ERAC therefore welcomes all inputs from ERA-related groups on each priority in the context of

the preparation of the next FP.

- For a selected number of grand societal challenges, the strategic design, governance and implementation of EU and national R&I activities should be aligned, on a voluntary basis, in the form of a strategic approach that promote interdisciplinary, trans-border research and innovation communities in all MS/AC. FPs should support these efforts in a flexible manner, conditional to the existence of high EU added value.
- In governance and priority making, the FPs should also draw inspiration from existing partnership platforms such as JPIs to promote the involvement of MS/AC and stakeholders, whilst keeping the FP programme committee remit. In that context, the ERAC welcomes the GPC opinion on the future of Joint Programming.
- The FPs should celebrate successful ERA reforms in MS/AC by calling on national authorities to propose major achievements under their national ERA Roadmaps as candidates for a prestigious ERA award. In addition, the existing Policy Support Facility could be expanded in order to become a Knowledge Hub for each ERA Priority for all MS/AC if and when they ask for help.
- If in a certain ERA Priority, a group of MS/AC wishes to integrate its R&I policies beyond the current level of “soft” coordination, the FPs should provide financial incentives (“ERA of variable speed and geometry”).

B. Active openness and Simplification

The ERAC considers that the so called “productivity paradox⁷” observed in Europe is partly due to the slow dissemination of innovation from the technology frontier actors to the rest of society. There is a need for increasing R&I performance of less-performing regions and stakeholders, and fully integrating their underexploited potential into the ERA. FPs are a key to offer access to networks and knowledge dissemination and solutions.

The ERAC welcomes the openness of H2020 to all R&I stakeholders of ERA and beyond. This principle, along with the multi-actor approach, is necessary to maximize FPs impact. Though, for the sake of effectiveness, the opportunities of openness should be bolstered by an enhanced attention striving for the inclusion of excellent individual R&I stakeholders. The ERAC stresses that this is a shared responsibility to be addressed both at the MS/AC and EU level.

The ERAC considers that at EU level, it is necessary to build on openness to frame a facilitating strategy for access to FPs activities. For instance, further openness of established networks should be encouraged, notably with an appropriate balance between small and large actions.

⁷ European Commission *The economic rationale for public R&I funding and its impact*, 2017

The ERAC recalls that as regards the FPs, excellence and impact have to remain the overruling criteria for selection. To promote the excellence of the EU R&I ecosystems, national reforms are vital. FPs and other EU programmes must be attentive to inclusiveness and provide tailor made solutions for impediments to participation of individual excellent R&I newcomers in international consortia, as participants as well as coordinators. This can also be ensured by further simplification and by better targeted communication.

a) Active openness

The ERAC considers that capacity building, networking and research infrastructures could play a key role in enhancing openness and inclusiveness. Complementarities between R&I and cohesion policies have to be fully organized, bearing in mind the rationale and targets of the different programmes.

The ERAC stresses that functional synergies between the FPs and European structural and investment funds (ESIF) should be increased

In addition, the following actions might be promoted:

- Co-funding of R&I activities by the ESIF could be simplified in depth and implementation rules streamlined, notably with regards to EU State Aid rules.
- ESIF should include conditions for structural and institutional reforms and should enhance incentives for national funding of research and innovation activities.
- ESIF should increase the opportunities for transnational cooperation and public-public partnerships. For instance, limitations for using ESIF outside the region could be reduced without compromising the rights of the programming authorities.
- The so called participation gap substantiates the need for maintained actions in the FPs as well. The efforts should aim at ensuring the openness of the networks as well as strengthening widening actions.
- The collaborative dimension of the FPs is an asset to bridging the innovation gap. Collaborative R&I projects in the FPs should remain a top priority. Balance between large partnerships and small/medium-sized collaborative research projects should be promoted.
- For the sake of impact, all relevant stakeholders should be involved: this is for instance the case for Social Sciences and Humanities (SSH) which are essential to addressing grand societal challenges, as many, if not all, societal challenges are related to issues which need this specific expertise (from the use of antibiotics to the development of new ICTs or the fight against climate change). This means that topics for funding in societal challenges cannot be seen as mono-disciplinary calls.

- Similarly, citizens and civil society should be more involved. The participation of those actors cannot be restricted to the issue of *a posteriori* technological acceptance but should be based on co-construction and co-creation. Furthermore, inclusiveness also concerns gender equality, including the gender dimension in research content. Gender equality contributes to the excellence, inclusiveness and relevance of research to society.
- Adequate geographic coverage of Europe should be promoted where relevant for impact.

b) Simplification

The ERAC considers that the implementation of EU programmes, including FPs, has created a very complex ecosystem where researchers and entrepreneurs struggle to find the options that best suit their specific interests and needs. Entering into and maintaining a consistent position in the EU system needs a steady effort which could be difficult and costly to achieve, especially for unexperienced researchers and innovators. It is thus necessary to further simplify the EU R&I landscape, to help attract new comers.

The ERAC expresses a clear preference for keeping H2020 and the future FPs as simple as possible, while covering the whole innovation cycle. As a principle, the architecture of the programme should prove understandable to the whole range of stakeholders and policy makers.

To simplify the landscape, a careful screening of all current initiatives is necessary. Their overall number could be reduced, taking into account feedback from the stakeholders.

The ERAC notes that numerous other sectorial initiatives co-exist outside H2020 in fields such as Health, Justice, Defense, Space-ESA, Environment, Regional Policy, etc., managed by their thematic DGs, with their own distinct rules, their own calendars and often with evident thematic duplication with H2020.

The ERAC is convinced that simplification should be further developed in order to design even more user-friendly tools and rules. As regards the latter, the rules for participation to R&I projects funded partially or fully by the EU should be unified as much as possible, however leaving sufficient flexibility for special arrangements. This would enable a relevant decrease in the transaction costs associated with the participation in the EU R&I initiatives.

In this respect, the ERAC recommends:

- The use of unified rules for a truly bottom-up Small and Medium Enterprise (SME) Instrument under the preparatory phase of EIC.
- The implementation of the pilot action on lump sums, with its implicit reduction of the administrative burden for stakeholders, might constitute a promising step towards simplification with examples to be replicated in other parts of H2020 and future FPs provided the positive assessment of the pilot action.

- Next FPs should be implemented with a participant portal encompassing all information related to any initiative funded or co-funded by the FPs.
- There should be a continued dialogue between the Commission, MS/AC and the stakeholders, based on the useful “waves of simplification”.
- The ERAC asks the Commission to promote Rules and procedures which are clear, simple and consistently interpreted by all the relevant Commission services in an unchanged way throughout the implementation of one whole FP.
- The ERAC welcomes the reduction of time to grant in H2020 and asks for a further reduction where appropriate in the next FP.
- The ERAC suggests that existing instruments should be reviewed and any new ones should be launched with a sunset clause in order to avoid the multiplication of the funding schemes.
- The ERAC considers that simplification of funding schemes is especially pressing as regards to the joint programming activities: instead of ERA- NET EJP Co-Funds, the next FPs should consider a single scheme, flexible enough to be adapted to the specific needs, and simple enough to achieve value for money for the funding organisations.

C. **International cooperation has to be relaunched and supported**

The ERAC recalls that International cooperation is a key transversal priority of H2020, which contributes to efficiently promote and strengthen the Union’s attractiveness and competitiveness, to tackle global societal challenges and support EU external policies.

The ERAC notes that the initial objective for the participation level of Third Countries entities, as defined by H2020’s Specific Programme, has not been met. Since its beginning, the participation of third countries (not associated with H2020) in H2020 has dropped to 2.4% compared to 4.9% (collaborative projects) in FP7, despite the fact that the number of topics flagged with international cooperation relevance increased from 12% in FP7 to 27% in WP 2016-17 of H2020.

Some MS/AC-driven initiatives such as JPIs, art 185 TFEU, or COST and Eureka programmes, are successful regarding third country participation. Thus, next FPs should build on these successes.

The ERAC is convinced that close and longstanding cooperation with scientific teams from all over the world is necessary to ensure the competitiveness of European research and attractiveness of the EU as a whole and to demonstrate joint responsibility for tackling the global challenges which can only be achieved through a global effort.

The ERAC highlights several proposals to increase third country participation in FPs:

- The Commission should be supported in its effort to encourage the main international partner countries of the EU to implement a stable dedicated instrument (e.g. matching funds) to enable participation in the FPs.
- Opportunities for international cooperation should be highlighted more clearly through better coordination among DGs in charge of different parts of FP9, *inter alia* by using a central nexus to disseminate all the useful information.
- The strategic coordination between the European Commission and the MS/AC needs to be reinforced, notably via the SFIC, to ensure that international cooperation gains the proper visibility. The existing panorama of MS/AC operating structures (e.g. Research Performing Organisations' representation bureaus, joint labs), instruments (e.g. mobility schemes, bilateral/multilateral funding schemes) and networks should be better taken into account.
- Possibilities for synergies between FPs and R&I national strategies with third countries should be more actively explored so as to foster the idea of a joint ownership.
- Specific actions for international cooperation with mandatory third country participation (in the spirit of the FP7's SICA actions) should be considered in key areas where there is common interest and specific added value for the EU and the third countries, also taking into account the dimension of Science Diplomacy.
- Synergies between FPs and the initiatives of DG DEVCO (EuropeAid) should also be more fully exploited.

D. Measures for boosting innovation

In general, underinvestment in R&I in Europe, the lack of strong leadership and governance, constraining regulatory frameworks and limited access to private capital are hampering the full exploitation of knowledge generated in Europe. Currently, there is a huge variety of financing and funding programmes co-existing at regional, national and European levels. Innovators, especially SMEs, start-ups and scale-ups are overwhelmed by this diverse landscape.

The key challenge is to identify, connect and streamline the most effective measures to boost innovation. Following the objectives of growth and jobs, the different local and national framework conditions have to be taken into account. Particularly, SMEs, start-ups and scale-ups need better orientation and support to successfully bring their innovations to the market. Innovation support systems should work closer together and be tailored to the companies' and entrepreneurial needs.

A renewed innovation strategy for the next programming period (“Beyond Europe 2020”) must aim to gather industry (including SMEs and MidCaps), academia, policy makers, regulatory bodies, public procurers, civil society organisations and other relevant actors around common visions and objectives. This forthcoming strategy should also take into account the contribution to innovation given by the Excellent science and the Societal challenges pillars.

The ERAC stresses several proposals to improve the effectiveness in innovation in FPs:

- Transnational innovation pipelines have to be accompanied by an elaborated support ecosystem for open innovation (i.e. public innovation services, innovation agencies, clusters, innovation hubs, private consultants, smart regulation, and venture capitalists).
- On the implementation level, the European Innovation Council (EIC) should be designed as an innovators’ guide and a single entry point via the participant portal.
- The EIC should be one important element of the Union’s measures to support closer-to-market innovations within an industry-driven pillar. It should complement the existing innovation instruments such as the EIT/KICs, the JTIs and EUREKA/Eurostars.
- An extensive, systematic overview of existing European innovation policy instruments (i.e. financing, funding, tax incentives) must be ensured so as to adjust or phase out ineffective and overlapping measures.
- SME participation should be supported in all FPs activities.
- Major instruments under the EIC might be inducement prizes (e.g. a prestigious annual competition for novel approaches to stimulate innovation culture and mind- set), risk finance facilities for “ready-to-market” single-company support, grant-based cooperation schemes (cf. FTI), FET Open (to target bottom-up early stage collaborative research actors at low TRL levels) and a renewed single-company instruments complementary to national efforts. The latter needs to be refocused on SMEs with a high potential for disruptive innovations and scale-up. Moreover, the SME instrument should be flexible to account for different product cycles (for instance drug development compared to software development).
- As especially disruptive innovations cannot be planned by policy makers, bottom-up approaches should be pursued. However the MS/AC should be closely involved in the set up and implementation of the EIC.
- Last but not least, to fully explore the innovative potential, gendered innovation methods should be employed where needed, in order to increase the uptake and relevance of innovation by all society.

E. Organize a better coherence between R&I and higher education as well as other EU sectoral policies

The ERAC notes that the ambition of maximizing the impacts of EU sectoral policies leads to setting the FPs in light of the overall strategic objectives of the EU. Indeed, stronger coherence between research and innovation and other sectoral policies, including higher education, is crucial in order to progress towards the overall objectives of enhancing competitiveness and solving societal challenges.

As the outcome of the most recent European Semester cycle shows, R&I is increasingly seen as key drivers of growth and prosperity and as being crucial to tackling the EU's productivity gap. The growing importance of research and innovation in the EU's overall socio-economic strategy now needs to be translated into concrete policy action, which will in turn require relentless efforts to “make the case for R&I”, in terms of demonstrating performance improvements and their impact.

EU R&I policy should feed other policies as different as cohesion, agriculture, environment, climate, health, consumer rights, transport, tourism, energy, industry, jobs, migration and integration, or culture, education and sport. In order to promote evidence-based policies, there is a need for better integrating scientific outputs from FPs to sectoral policies. The integration of SSH expertise within projects will be key to integrate innovations into the relevant policy frameworks.

A particularly important aspect in order to create stronger coherence with all the appropriated EU sectoral policies is the strengthening of synergies between the ERA and the European Higher Education Area (EHEA).

The ERAC supports the following proposals:

A more streamlined and coordinated cross-cutting approach between DGs:

- The cross-cutting approach to sectoral policies, which was introduced with H2020, should be further strengthened. Better coordination and streamlining between the approaches of the various DGs could create better synergies and contribute to simplifying the research and innovation landscape. This also implies that all instruments funded by the FPs, to the furthest extent possible, be subject to a unique set of rules.
- To complement the bottom-up and curiosity-driven programmes, a mission-oriented approach under each societal challenge could strengthen the focus of the FPs and create a common thread from programme level to proposal level, thereby increasing impact. These missions could underpin the policy objectives of the EU. FPs could also benefit from a strong narrative and thereby increase their visibility and relevance with regard to the other sectoral policies. For instance, the migration and integration challenges represent a policy issue where synergies between FPs and DG DEVCO should be promoted.

Synergies between Research, Innovation and Higher education:

- Stronger links between EHEA and ERA should be pursued. Notably, it is particularly important to explore the synergies between the EIT and the different KICs with other related activities in the FPs, such as the grand societal challenges as well as the innovation activities and the EIC.
- The integration of the knowledge triangle could be more fully extended to the rest of the FPs.
- The concept of the Knowledge and Innovation Communities (KICs) is of great value, especially in terms of fueling the next generation of innovative minds and entrepreneurs and in supporting the scaling up of companies. However, the administrative procedures related to KICs need to be simplified in order to be less resource-demanding and allow for a more inclusive approach, especially in the proposal phase.
- Continuation of Marie Skłodowska-Curie Actions (MSCA) as a strong component of the FPs as they successfully enhance the skills and employability of researchers and promote excellence, mobility and knowledge exchange between academia and business.
- Research consortia could be encouraged to develop and organize education and training activities targeting graduate and post-graduate to raise the impact of research projects funded by the FPs. It should be explored to what extent these knowledge exchange and transfer activities could be integrated into the eligible project costs.
- Mobility activities within higher education as well as curriculum development and teaching activities (knowledge alliances and strategic partnerships) under Erasmus+ could be linked to research projects and/or European societal or industrial challenges addressed by the FPs.
- In line with the Open Science Agenda and the need for training in this area, promote research on advanced and multidisciplinary exploitation of research data and simultaneously promote broad data literacy.

F. The FPs activities deserve a better and continued dialogue with the European citizens.

To justify a significant R&I budget in Europe, it is necessary to communicate its benefits to a larger audience: EU and national policy-makers, national governments and all society at large.

The ERAC is of the opinion that the benefits from the EU research and innovation programmes are tremendous in the medium and long-term. The focus of communication should not be based only on the promotion of short-term successes of the current FP. An effective communication strategy should be put in place and efficiently implemented. It must emphasize that a continued, effective and solid effort of R&I produces economic growth and jobs, and gives tools for

resolving social and environmental issues. The Commission should promote a long-term impact of the previous FPs to provide supporting evidence. The research and innovation cycle is long and all the benefits from R&I activities are not visible overnight.

The ERAC notes that in a context of dwindling trust in EU and its institutions, we need to show that FPs are a great success for Europe, as much as Erasmus is for education and training, both in terms of scientific achievements and propagation of the European values of freedom and inclusion.

Furthermore, in order to successfully address societal challenges, it is absolutely necessary to enhance uptakes of scientific results by policy-makers but also by all citizens, which justifies the importance of communication and dissemination. However, it appears more and more clearly that science uptake by society cannot be optimal if the links between science and society is seen in one way only, meaning top-down communication from scientists to the citizens. On the contrary, there are clear benefits to engage more society at large in science processes (with various means and mechanisms that can be referred to as “citizen science”). This will also have a very positive impact in terms of propagation of the scientific methodology in a context of decreasing trust in science..

The ERAC thus proposes to:

- Elaborate a communication plan devoted to EU R&I.
- Develop a brand for FPs with the goal of reaching the same level of visibility and fame as for Erasmus.
- Continue to promote the participation of non-academic stakeholders (such as Civil Society Organisations or other structures representing citizens) in projects addressing societal challenges.
- Maintain a specific programme dedicated to the relations between science and society while maintaining a transversal approach building on Responsible Research and Innovation.

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Conclusion

As recalled recently in the White paper on the future of Europe⁸, Europeans are facing a changing economy in an evolving world, with new risks and opportunities.

The ERAC considers that R&I represent an outstanding asset in this context. Indeed, on the one hand, the big challenges ahead undoubtedly constitute a source of inspiration for the advancement of knowledge and the creation of innovative solutions. On the other hand, the longstanding cooperation among the European R&I ecosystems provides a clear example of the success of the European integration project. For instance, the support of collaborative research is a key driver of the Europeanization of National job markets in research.

The ERAC thinks that H2020 and the future FPs should be set so as to tap the whole creativity potential of these excellent ecosystems.

The ERAC welcomes the tremendous interest shown by the stakeholders as regards to the interim evaluation of H2020. It considers that this outstanding interest represents a clear political momentum to promote the advancement of knowledge and the realization of the European project

The ERAC invites the Commission to take into account these expectations for the preparation of the next FP and its linkages with the other EU policies. The ERAC considers that the Commission should aim at building on the main successes of H2020 (3 pillars structures, collaborative projects funded by grants, bottom up approach, civilian nature). This evolutionary approach will enable a smooth transition between H2020 and the next FP, which is crucial.

The ERAC stresses that the effectiveness gains in the FPs should be extended to all R&I schemes funded by the EU, with a view to setting one set of rules of participation. This effort will then favor the realization of synergies among the EU and MS/AC policies related to the knowledge triangle. The next FP should take into account the multi-level governance of the European R&I landscape.

The ERAC thinks that this simplified framework will be key to making scientific and innovation excellence a driver of economic, social and environmental progress and inclusiveness across Europe.

⁸ European Commission COM 2017 (2025) final *White paper on the future of Europe, Reflections and scenarios for the EU27 by 2025*