
Preparing FP9

Designing the successor to
the Horizon 2020
research and innovation
framework programme



IN-DEPTH ANALYSIS

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This paper aims to provide an overview of the preparatory work conducted by the European Commission for the next framework programme for research and innovation, known, for now, as FP9. The paper includes an analysis of the positions of the EU institutions, the advisory committees, the Member States and the key European stakeholders on FP9, focusing on the key issues for discussion during the adoption of the legislation, following adoption of the Commission's proposal in spring 2018.

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EXECUTIVE SUMMARY

The proposal for a new framework programme (FP) for research and innovation – FP9 – is expected to be adopted by the European Commission before summer 2018. Preparatory work to design this proposal includes aspects such as evaluation of the previous FPs and expert studies to help structure the programme, define its budget and select the priorities it should address.

Evaluation of FP7 and the interim evaluation of Horizon 2020 (the current, eighth, FP) revealed that the FPs, although successful, can be improved in some aspects, such as: investing more ambitiously; continued simplification of implementation; streamlining the funding landscape; bringing science closer to citizens; and increasing synergies with other EU funds. The expert groups appointed by the Commission to reflect on how to improve in preparation for FP9 concluded that: the economic impacts of public research and innovation funding are large and significant; it is imperative for the EU to act immediately and decisively on research and innovation; and that research and innovation are essential to prepare for the future and to create options to address the challenges facing society.

Two new measures are expected to be implemented under FP9. First, the European Innovation Council (EIC) can be described as a strategic initiative in support of breakthrough innovation, reframing existing instruments to address gaps in support for research and innovation. Second, a mission-oriented approach will be implemented, merging top-down definition of bold objectives and bottom-up solutions design, to achieve greater impact in tackling societal challenges.

In the preparation of FP9, EU institutions, Member States and stakeholders also contributed their opinion of the current limitations of the framework programme and their expectations for the future. The analysis of these positions reveal 10 key discussion points for FP9, on which views either converge or conflict:

- the budget for the programme, with proposals ranging between €120 and €160 billion;
- the required balance between two conflicting dimensions: excellence and cohesion;
- the objective of achieving increased EU added value from the programme, and the required balance between collaborative and mono-beneficiary instruments;
- the streamlining of the EU research and innovation funding landscape and the simplification of the implementation processes to make FP9 more user-friendly;
- the role of the Member States in the governance and implementation of FP9;
- expectations regarding the implementation of the EIC and missions;
- the role of citizens in co-designing FP9 and the co-creation of its results;
- interactions between higher education and research and innovation;
- the modalities of international cooperation to increase participation; and
- the link between FP9 and the research programme in defence.

Beyond FP9, EU programmes supporting research and innovation should work in synergy to address both the external innovation gap between the EU and its global competitors and the EU internal innovation gap between regions and countries that do not display an equivalent capacity in research and innovation. Member State and stakeholder positions also stress the need for greater flexibility in FP implementation, to adapt to new challenges and new framework conditions. Introducing such flexibility to FP9, however, will require a higher level of trust between the Commission, the Parliament, the Council and the Member States.

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List of main acronyms used

CESAER	Conference of European Schools for Advanced Engineering Education and Research
EARTO	European Association of Research and Technology Organisations
ECIU	European Consortium of Innovative Universities
EIC	European Innovation Council
EIT	European Institute of Innovation and Technology
ERA	European Research Area
ESIF	European Structural and Investment Funds
EUA	European University Association
FP	Framework Programme
HLG	High-level group
HLGI	High-level Group of Innovators
LERU	League of European Research Universities
MFF	Multiannual Financial Framework
SDG	Sustainable Development Goals
The Guild	Guild of European Research-Intensive Universities
YERUN	Young European Research Universities

1. Evaluation of the previous framework programmes

Since 2006, adoption of a new EU framework programme on research and innovation (FP) follows a seven-year lifecycle.¹ An FP undergoes an interim evaluation in the first three years of the programme and a final evaluation to be concluded three years after the end of the programme. The preparation of the next FP, to start in 2021 – referred to as FP9 – benefits from the final evaluation of FP7 and the interim evaluation of Horizon 2020, the eighth EU framework programme for research and innovation.

1.1. Final evaluation of the seventh framework programme (FP7)

The high-level expert group report on the ex-post evaluation of FP7 (2007-2013) was published in November 2015.² The experts underlined achievements including: FP7's encouragement of scientific excellence in Europe; promotion of ground-breaking research with the creation of the European Research Council; engagement with both large corporations and small and medium-sized enterprises (SME); and reinforcement of an open innovation framework. They also adopted five recommendations regarding future programmes:

- **Focus on critical challenges.** The next FP should focus on a number of key strategic areas where the EU can play a leading role and ensure lean and swift implementation procedures that include private and public actors and civil society.
- **Align research and innovation instruments and agendas in Europe.** The catalytic impacts of the FP should be stronger, aligning not only EU, national and regional programmes but also EU policies between the Commission directorates.
- **Integrate the key components of the FP more effectively.** The different sub-programmes and instruments under the FP created fragmentation and threatened the efficiency and coherence of the programme.
- **Bring science closer to Europeans.** Future FPs should involve stakeholders, civil society and citizens in the preparation and implementation of the FP in a more substantial way.
- **Establish strategic programme monitoring and evaluation.** The monitoring and evaluation procedures need to be improved for better evidence-based decision-making in future programmes.

In its communication regarding this ex-post evaluation,³ the Commission noted that Horizon 2020 already addresses some of the limitations underlined by the experts: its third pillar focuses on seven grand societal challenges; partnership instruments were improved and the policy support facility was created to better align agendas;⁴ a single set of rules was defined for participation and dissemination; communication of research results was improved; and indicators were defined for better monitoring and evaluation.

1.2. Mid-term evaluation of Horizon 2020

As stipulated in the regulation, the interim evaluation of the eighth framework programme, Horizon 2020, began with a public consultation to gather feedback from

¹ For more information, see V. Reillon, [EU framework programme processes](#), EPRS, European Parliament, January 2018.

² [Commitment and coherence - Ex-post evaluation of the 7th EU framework programme](#), November 2015.

³ Response to the Report of the High Level Expert Group on the Ex Post Evaluation of the Seventh Framework Programme, European Commission, [COM\(2016\) 5](#), 19 January 2016.

⁴ For more information, see the [website](#) of the policy support facility.

stakeholders, opened in October 2016. The Commission, European Parliament, Council of the EU and the two advisory committees conducted their own, separate evaluations of the programme.⁵

The Commission adopted its conclusions on the interim evaluation of Horizon 2020 in January 2018. It confirmed that the programme was relevant and presented clear EU added value. The implementation of Horizon 2020 was considered to be efficient and the first results tend to demonstrate that the programme was also effective in reaching its objectives. The integration of research and innovation and Horizon 2020 pillar structure provided greater internal coherence compared to previous FPs.

The Commission also underlined eight aspects as **lessons learned from the evaluation** that can improve the preparation and implementation of FP9:

- **Invest more ambitiously** in research and innovation programmes to address the current situation described as an underfunding of the programme.
- **Continue simplification** in the implementation of the programme.
- **Strengthen support to breakthrough, market-creating, innovation** with the creation of the European Innovation Council and more flexibility in the programme.
- **Create greater impact and more outreach** with increased citizen involvement for the co-design and co-creation of the programme and by introducing research and innovation missions.
- **Increase synergies with other EU programmes and policies** from the programme design stage by making co-funding schemes more flexible and improving the compatibility of rules between EU programmes.
- **Strengthen international cooperation** in order to reverse the negative trend observed with Horizon 2020.
- **Reinforce programme openness**, making all publications openly accessible and all data findable, accessible, interoperable and reusable.
- **Rationalise the EU funding landscape** by redefining instruments and funding schemes.

Beyond the issue of the overall funding of the programme, three additional key issues emerging from the different evaluations of Horizon 2020 and linked to the Commission 'lessons learned' should be **addressed by the next FP**:

- **The balance between excellence and cohesion in EU support for research and innovation.** The unbalanced distribution of FP funding across the EU raises concerns regarding the impact of the use of the excellence criterion and calls for an evolution of the possibility for different EU funds to work better in synergy, to both maintain EU competitiveness and promote EU cohesion in research and innovation.
- **The multi-level governance of the FP, shared between the EU, Member States and regions.** To improve the coherence of the EU research and innovation ecosystem, the need to clarify the role of each level in supporting the research and innovation ecosystem and to align research and innovation priorities and programmes across all levels are underlined.

⁵ The results of these evaluations – the Commission interim [evaluation](#), European Parliament [resolution](#), Council [conclusions](#), European Economic and Social Committee [opinion](#) and Committee of Regions [opinion](#) – are analysed and summarised in V. Reillon, [Interim evaluation of Horizon 2020](#), EPRS, European Parliament, March 2018.

- **The issue of the EU added value of the FP and its instruments.** The main EU added value of the FP comes from the transnational, trans-sectoral and/or multidisciplinary dimension of collaborative instruments. This is expected to be taken into account in the process of streamlining the EU research and innovation funding landscape, and in order to strike a balance for funding between mono-beneficiary instruments and cooperation instruments.

2. Expert studies to prepare FP9

To prepare its proposal for the next framework programme, the Commission relied on experts and advisory groups to reflect on some of the issues that emerged from the midterm evaluation of Horizon 2020.

2.1. Economic rationale for public support for research and innovation

The main issue in Horizon 2020 is the low success rate, attributed to underfunding of the programme when considering funding was not available to support all the proposals evaluated as excellent. To prepare the debate on the share of the EU budget to be attributed to research and innovation activities in the next multiannual financial framework (MFF), the Commission produced an in-house study on the economic rationale for public research and innovation funding in March 2017, with support and guidance from external experts.⁶ The study considered only the economic impact of public research and innovation, even though it is noted that research and innovation investments also have important social impacts that contribute to higher levels of wellbeing.

The study concludes that the economic impacts of public research and innovation funding are large and significant and that research and innovation is a key driver of productivity and economic growth. In Europe, two thirds of the economic growth from 1995 to 2007 derives from research and innovation, and research and innovation accounted for 15 % of all productivity gains between 2000 and 2013.⁷ Even if it seems that research and innovation support the creation of better, higher-quality jobs, the empirical evidence of the impact of research and innovation on jobs creation remains inconclusive.⁸

The Commission notes that public investment in research and innovation is needed to maximise the spillovers generated by the creation and diffusion of knowledge. This investment must cover the full innovation ecosystem, including fundamental research and market-creating innovation, and should balance support for cooperation and for competition. Improved framework conditions for innovation, such as well-functioning markets, smart regulations that avoid market fragmentation, and promoting skilled human capital, as well as appropriate access to funding, help increase the impact of investment in research and innovation.

The study notes that as the nature of innovation evolves, barriers to the creation and diffusion of research and innovation tend to be more pronounced, making the role of

⁶ European Commission, [The economic rationale for public R&I funding and its impact](#), 2017.

⁷ On this last aspect, the authors point out the large disparities between Member States, from less than 10 % to up to 50 %.

⁸ New technologies entail the automation of existing jobs, leading to job destruction while simultaneously creating new job opportunities. The overall balance of the number of jobs is hard to measure.

public funding in research and innovation ever more important. This implies designing responsive public research and innovation policies with appropriate research and innovation instruments that take into account local conditions to increase their effectiveness.

2.2. Lamy report: Investing in the future we want

In September 2016, the Commission set up a high-level group (HLG) to provide advice on how to maximise the impact of FP9, as part of the interim evaluation of Horizon 2020.⁹ The group, chaired by Pascal Lamy, former Director-General of the World Trade Organization and European Commissioner for Trade, presented its 'LAB-FAB-APP: Investing in the European future we want' report, known as the Lamy report,¹⁰ in July 2017.¹¹ The HLG concluded that the EU needs research (Labs), innovation (fabrication or Fans) and applications (Apps).

The HLG stressed that it is imperative for the EU to act immediately and decisively to address the fact that Europe does not sufficiently capitalise on the knowledge it both has and produces. With this objective, the group formulated 11 recommendations:

1. Prioritise research and innovation in EU and national budgets, with a doubling of the FP budget;
2. Build a true EU innovation policy that creates future markets, with the creation of a European Innovation Council;
3. Educate for the future and invest in people who will make the change;
4. Design the EU research and innovation programme for greater impact;
5. Adopt a mission-oriented, impact-focused approach to address global challenges;
6. Rationalise the EU funding landscape and achieve synergy with structural funds;
7. Simplify further, creating the most attractive research and innovation programme in the world;
8. Mobilise and involve citizens, by stimulating co-design and co-creation;
9. Better align EU and national research and innovation investment;
10. Make international research and innovation cooperation a trademark of EU research and innovation;
11. Capture and better communicate impact.

The European Commission took some of these recommendations into account in its conclusions on the midterm evaluation of Horizon 2020.¹² By recommending doubling the budget for the FP under the next MFF, the HLG confirmed the importance of increasing EU investment in research and innovation.¹³ The main innovation introduced by the HLG is the idea of creating a mission-oriented research and innovation policy at EU level. This proposition raised strong interest amongst the stakeholders and pushed

⁹ For more information, see the [website](#) presenting the activities of the HLG.

¹⁰ European Commission, Report of the independent High Level Group on maximising the impact of EU Research & Innovation Programmes, [LAB – FAB – APP – Investing in the European future we want](#), 2017.

¹¹ The Commission prepared a [series of papers](#) presenting the context and the key issues around the preparation of the framework programme to support the work of the high-level group in February 2017.

¹² The Commission has published a [fact sheet](#) presenting the conclusions on the interim evaluation of Horizon 2020 and the recommendations of the HLG.

¹³ This would mean a budget of around €160 billion for FP9, with the HLG stating that the minimum budget for FP9 to maintain the current annual growth rate should be €120 billion.

the Commission to order additional studies to define more precisely what it would mean and how it would be implemented (see section 3).

2.3. The Bohemia foresight study

The 'Beyond the Horizon: foresight in support of future EU research and innovation policy' project – known as the Bohemia project – was set up in 2016 to support the Commission in the preparation of FP9.¹⁴ The aim of the project was to develop scenarios for the future and provide recommendations not only on the priorities for the thematic areas and topics that should be included in FP9 but also on the evolution of the European research and innovation policy and on the structure and implementation of the FP.

The first phase of the project aimed at providing meta-scenarios sketching the possible contexts in which future European research and innovation policy and funding would be developed. The 'New Horizons' study published in April 2017 stresses that one of the primary roles of research and innovation is to create and enable solutions, opportunities and options for society to address its challenges and crisis effectively.¹⁵ For the authors, the preparation of a new FP is not about how money should be spent, but rather 'a process of agreeing on a common vision of the problems we may face, the opportunities we could seize, and the tools we will need for either eventually'. The study presents two types of meta-scenarios for the future, based either on the achievement or non-achievement of the United Nations Sustainable Development Goals (SDG):¹⁶

- 'Turbulent tomorrow', the perseverance scenario, in which the basic principles and structures of our economies and societies remain largely unchanged, and the SDG are not met: an ageing EU population creates a generation gap; health problems multiply; cities are polluted; technology rushes ahead, increasing social inequalities; climate change leads to conflicts and critical shortages in resources. In this negative scenario, Europe is no longer a leader but simply one among many unhappy voices.
- 'Transition to a better age', the change scenario, in which the EU consistently acts on its values, working towards achieving the SDG: Society switches to low-carbon energy and a circular economy, lowering the risk of climate change; productivity gains from technology finance a basic income for all; improved healthcare leads to longer and healthier lives; and cities are laboratories of good governance. In this positive scenario, Europe becomes a moral, social and technological leader.

The experts stress that research and innovation is essential for preparing the future and they differentiate three types of research and innovation: solutions-oriented research and innovation to find novel solutions to critical challenges; understanding-oriented research to better understand the challenges; and frontier research to explore scientific frontiers and render society more resilient in the long term. Finally, the report lists basic principles regarding the role and implementation of research and innovation that emerge from the scenarios: building resilience by developing options before crisis

¹⁴ The [project](#) was funded by Horizon 2020 under the challenge 'Europe in a changing world – inclusive, innovative and reflective societies' in the 2014-2015 [work programme](#). The project was conducted by a consortium of research institutions led by the Austrian Institute of Technology. The implementation of the project led to the establishment of a foresight platform involving different Commission directorate generals and external experts.

¹⁵ European Commission, [New horizons – Future scenarios for research & innovation policies in Europe](#) (project Bohemia), 2017.

¹⁶ The United Nation [resolution](#) on the 17 [Sustainable Development Goals](#) was adopted by the General Assembly on 25 September 2015, with the objective that they are reached in 2030.

strikes; experimenting in real world settings and looking to the cities as laboratories; learning from the best by identifying best-of-class models; getting the governance right with openness, inclusiveness and fairness as policy principles, involving citizens; and connecting and collaborating across sectors.

The second phase of the Bohemia project consisted of a survey to gain new insights into future technologies, societal issues, and research and innovation practices. This survey was composed of 147 statements about future thematic achievements, such as 'More than 80 % of critical rare materials are recycled in the EU'; or future features of the EU research and innovation policy environment, such as 'Data literacy is taught in all primary schools in the EU'.¹⁷ Hundreds of external experts were asked to estimate the timescale for realisation of each statement and to provide and weight arguments to justify these estimates. The results were published in a report in October 2017.¹⁸

Building on this work and conducting new public consultations, the final task of the Bohemia consortium is to provide recommendations regarding the EU research and innovation policy environment and priority thematic areas. The recommendations should be based on targeted scenarios, more focused than the meta-scenarios of the first study. These recommendations are expected to provide a new approach for EU research and innovation policies and activities so that the EU can properly address the expected transitions. The final report of the Bohemia project, initially expected in December 2017 but yet to be published, should provide suggestions for a research and innovation thematic agenda for FP9 and sketch out the framework conditions for the development of EU research and innovation in the future.

3. Expected innovations under FP9

The interim evaluation of Horizon 2020 concluded that the structure of the programme linking research and innovation and organised in three pillars was an improvement compared to previous FPs. It is understood that this structure will be maintained for FP9. Nevertheless, two innovations are expected to be introduced in the next framework programme to address some of the limitations of Horizon 2020: the European Innovation Council, a new instrument to support innovation; and the use of missions, as a new approach to implement research and innovation programmes.

3.1. European Innovation Council

3.1.1. *Launching the idea*

In a speech delivered at the ERA conference on 22 June 2015, Commissioner for Research and Innovation Carlos Moedas suggested that the design of a world class instrument to support the 'very best innovations' at EU level should be discussed in the context of the interim evaluation of Horizon 2020.¹⁹ Making a parallel with the renown of the European Research Council, Commissioner Moedas coined the name 'European Innovation Council'

¹⁷ Additional examples of statements are: 'Quantum computers are available on the European market'; 'All of the vital organs and parts of the human body can be reproduced'; '20 % of the area in EU cities with at least 50 000 inhabitants is used for urban and peri-urban farming'; 'Oceans provide 20 % of the EU's energy supply'; and '80 % of research is performed by autonomous (independent, single, freelance) researchers'.

¹⁸ European Commission, [New horizons – Data from a Delphi survey in support of future European Union policies in research and innovation](#) (project Bohemia), 2017.

¹⁹ C. Moedas, [Open Innovation, Open Science, Open to the World](#), 22 June 2015.

(EIC) for this potential new instrument, without providing any suggestions about the nature and scope of the EIC, and how it would be implemented.²⁰

3.1.2. Public consultations on the European Innovation Council

In February 2016, while Commissioner Moedas provided hints as what form the EIC could take,²¹ the Commission launched an open call for ideas on the EIC. In an overview of the responses received, the Commission noted that over 75 % of the respondents agreed that there are gaps in current EU support for innovation.²² There was no clear emphasis from the respondents on whether the EIC should help fill the gaps, simplify access to support, or provide strategic advice, however. Respondents nevertheless stressed that there was a need to further simplify the implementation of the instruments providing support for innovation under Horizon 2020, requesting a bottom-up approach for the definition of the topics. Stakeholders also called for dedicated calls for proposals on disruptive technologies and improved access to risk financing.

The consultation's conclusions were discussed at a workshop in Brussels in July 2016. In the report on the workshop, the Commission noted that stakeholders' views were 'varied, often converging, sometimes conflicting'.²³ The report mentioned the need to improve the user-interface for EU innovation support. Improvements should also be made to speed up and simplify the implementation of the SME instrument and the Fast Track to Innovation (FTI) instrument and to make them user-friendly and flexible.²⁴ The evaluation process of the proposal for innovation instruments should be improved by accepting more risk. Finally, stakeholders stressed the clear need for soft support: advice, mentoring, and coaching.

3.1.3. Expert opinion on the European Innovation Council

Following the public consultations, the Commission decided to set up an expert group to provide advice on the design of a potential EIC.²⁵ The high-level group of innovators (HLGI) was launched in January 2017.²⁶ With the publication of the Lamy report in July 2017, the HLGI positioned its work in the context of the Lamy group's second recommendation. In the meantime, the Commission adopted a communication on a 'start-up and scale-up initiative' that aimed at addressing the limitations and the regulatory, administrative and financial barriers that EU start-up companies encounter

²⁰ Providing a name for a new instrument without providing a clear concept of what it comprises is not new in EU research policy. The creation of the [European Institute of Innovation and Technology](#) (EIT) followed the same pattern. In the months following the announcement of the EIC, the absence of clarification led to speculation about the EIC's potential form, as can be seen in a January 2016 [article](#) in Science Business.

²¹ Science Business, [Moedas unveils his vision of the European Innovation Council](#), 16 February 2016.

²² European Commission, [Ideas for a European Innovation Council - Overview of responses to the call for ideas](#), 2016.

²³ European Commission, [Ideas for a European Innovation Council - Summary of a validation workshop with stakeholders held on 13 July 2016](#), 2016.

²⁴ For the description of the SME instrument and FTI, see V. Reillon, [Horizon 2020 budget and implementation](#), EPRS, European Parliament, 2015.

²⁵ European Commission, [Commission invites top innovators to help shape a new European Innovation Council](#), 29 September 2016.

²⁶ European Commission, [Commission brings in top innovators to advise on a potential European Innovation Council](#), 20 January 2017.

when they try to expand their activities.²⁷ In this initiative, the EIC is mentioned as one of the instruments that could be developed to improve EU support for start-ups.

Following a first set of recommendations adopted in November 2017,²⁸ the HLG presented its conclusions for a future EIC under FP9 in January 2018.²⁹ The group considered that an opportunity currently exists for Europe to regain innovation leadership because it has the talent, motivation and resources needed for the next generation of transformational technologies. The HLG stated that the EIC should: focus on the support of breakthrough innovations, in particular deep-tech innovations;³⁰ facilitate and accelerate the sharing of ideas and best practices in the EU; and provide a bottom-up approach where supported innovations are not predetermined.

Based on this analysis, the experts identified four limiting factors that the EIC should address, on which they proposed **recommendations**:

- **Funding: the EIC should rationalise and simplify the multitude of existing schemes** into a small set of flexible 'EIT Awards' that could blend grant-based and loan-based support. The evaluation processes should enable risk taking and allow for an Award to be halted or refocused. An EIC strategic advisory board should be set up to provide guidance and advice.
- **Awareness: the EIC should be highly active in identifying and communicating success**, with a comprehensive monitoring and evaluation system. The EIC should be able to collect, analyse and make data available on new technologies, breakthrough innovations and value-chains generated and communicate success-stories.
- **Scale: national and local initiatives are not enough to compete at the global level.** The EIC need to create more and deeper connections across regional, national and EU levels between venture capital, universities, large corporates, local agencies and regulators. Beyond providing funding, the EIC should help EIC awardees to access partners across value-chains and overcome regulatory barriers.
- **Talent: the EIC should highlight European role models and innovation champions**, introducing an 'EIC Fellowship' scheme to pair EIC awardees with experienced peers.

3.1.4. Testing the recommendations: the 'European Innovation Council pilot'

Given the limited flexibility offered by the Horizon 2020 regulation, the Commission was unable to attempt implementation of new instruments supporting innovation in the course of Horizon 2020. The Commission therefore grouped a few existing instruments, such as the SME instrument and the Fast Track to Innovation under the name 'EIC pilot',³¹ in the preparation of the last work programme implementing Horizon 2020 for the years 2018-2020. These instruments were modified taking the feedback received from stakeholders in the preparation of the EIC into account. This allowed the Commission to test some of the stakeholders' recommendations, such as: refocusing the instruments on

²⁷ Europe's next leaders: the Start-up and Scale-up Initiative, European Commission, [COM\(2016\) 733](#), 22 November 2016.

²⁸ European Commission, [Europe is open for innovation](#), High level group of innovators, 2017.

²⁹ European Commission, [Europe is back: accelerating breakthrough innovation](#), High level group of innovators, 2018.

³⁰ Experts define deep-tech innovations as innovations that draw heavily on new science, technology or engineering and require large amounts of patient capital with highly uncertain returns. On these aspects, they are different from digital innovations.

³¹ The other instruments included in the '[EIC pilot](#)' are the FET Open, Horizon innovation prizes and support and exploratory actions.

breakthrough innovation; making the calls fully bottom-up, with no predefinition of topics for the proposals; and including face-to-face interviews in the selection process. However, this rebranding and modification of existing instruments cannot be considered a real EIC pilot, as it will be implemented under FP9. The 'EIC pilot' is instead an experimentation on existing instruments of some features that will be part of the EIC.

3.1.5. Current situation on the European Innovation Council

In September 2017, the Commissioner's idea to create an EIC collided with the proposal made by French President Emmanuel Macron to create a European agency for breakthrough innovation as an intergovernmental body.³² The HLG report was presented by Commissioner Moedas to President Macron following its release, with the aspiration to ensuring that the two initiatives can merge.³³

Since Commissioner Moedas' proposal to review support for innovation activities in the FP, the vision of the EIC's future form has become clearer. The EIC can be now seen as a strategic initiative to support breakthrough, market-creating innovation at EU level, in synergy with national and regional levels. It would be implemented by a new set of instruments, building upon Horizon 2020 instruments, specifically addressing the stimulation of this kind of innovation and support for scale-up initiatives. These instruments are expected to be more flexible than the current versions, for example by blending grants and loans. The EIC fellowships and EIC prizes would aim at providing more visibility and the EIC board would provide advice to the Commission in making sure that the gaps are properly addressed. After three years of preparation, the Commission proposal for FP9 should fully unveil the answer on what form the EIC will take.

3.2. Mission-oriented research and innovation

The fifth recommendation of the Lamy group invited the Commission to adopt a mission-oriented, impact-focused approach to addressing global challenges. Whereas the third pillar of Horizon 2020 was organised around challenges, a new type of approach – missions – should be introduced in FP9. Being the most innovative proposition from the Lamy group, this recommendation attracted a lot of attention from all stakeholders. To define these missions and how they would be selected and implemented, the Commission requested the advice of different experts.

3.2.1. Expert opinions on mission-oriented research and innovation

In December 2017, the expert group on the Economic and Societal Impact of Research (ESIR)³⁴ published a memorandum on the idea of mission-oriented research and innovation in the EU.³⁵ In the executive summary, ESIR noted that the concept of mission-oriented research derives from the idea that productivity growth has not only a rate but also a direction.³⁶ Rethinking the role of public policy in the economy, government can achieve transformational change by tilting the playing field in the direction of the desired goals and by playing a catalytic role in creating and shaping markets. If challenges are broadly defined areas, missions focus on specific problems and aim to galvanise

³² E. Macron, [Initiative for Europe: A sovereign, united, democratic Europe](#), 26 September 2017.

³³ European Commission, [EU financing for breakthrough innovation should adapt to the needs of the innovator, experts say](#), 26 January 2018.

³⁴ For more information, see the [website](#) presenting the activities of ESIR.

³⁵ European Commission, [Towards a mission-oriented research and innovation policy in the European Union](#), ESIR, March 2018.

³⁶ European Commission, [Towards a mission-oriented research and innovation policy in the European Union - Executive summary](#), ESIR, March 2018.

investment and innovation across multiple sectors and actors. The main challenge of using a mission-oriented approach is to mix a top-down approach to set the goal and provide a direction, and a bottom-up approach allowing the development of an open portfolio of activities to complete the mission. Key issues for missions include defining: the granularity, i.e. the scope of the mission; the targets and objectives to be reached; the criteria and the process on which missions are selected; and the design and implementation modalities.

This expertise was complemented by the Research, Innovation and Science high-level group (RISE)³⁷ perspective of mission-oriented research and innovation policy, in February 2018.³⁸ RISE stressed that missions break with the traditional approach of addressing market failure by proposing a rationale based upon market creation. Whereas challenges refer to the wider problem, and the aim or benefit faced, a mission will describe a specific package of measures and activities that can deliver a verifiable result that makes progress against the challenge. Establishing the right level of granularity allows a move from the macro-level challenge to a workable mission. The experts pointed out that a mission cannot be achieved through research and innovation activities alone, but also requires complementary measures (regulatory, infrastructural and behavioural change).

For RISE, a mission shows an ambition based on underlying values. Such missions focus on societal benefit and are evaluated based on their meaningfulness. The completion of a mission requires the concerted action of a wide array of players. For these reasons, missions must promote the engagement of all levels of society and citizens must be actively involved in their design and implementation. In the co-design process, the public role is one of 'texturing' the mission: the policy-maker sketch out the overall mission and invite citizens' active contribution on providing more details. Finally, the expert group pointed out that the success of missions will be a matter of leadership, teamwork and creativity as much as excellence, lab infrastructure and calls for proposals. They suggest that each mission should be led by a high-level chief executive that would champion the mission as well as drive it. Beyond leadership, such missions will require multi-level governance and a framework for accountability and evaluation.³⁹

3.2.2. *The Mazzucato report*

Commissioner Moedas invited Professor Mariana Mazzucato to draft strategic recommendations on mission-oriented research and innovation in the EU.⁴⁰ Mazzucato's report, published by the Commission in February 2018, built on the recommendations of the expert groups and consultations with various stakeholders.⁴¹

Mission-oriented policies are defined in the report as 'systemic public policies that draw on frontier knowledge to attain specific goals'. They provide a clear direction while enabling bottom-up solutions. They require an attitude of openness and collaboration and allow the orchestration of a rich diversity of talent and expertise, combining different and diverse input into a more creative, ambitious and effective result. Finally, they can

³⁷ For more information, see the [website](#) presenting the activities of RISE.

³⁸ European Commission, [Mission-oriented research and innovation policy](#), RISE, February 2018.

³⁹ The expert suggests that the EIT could provide a model of governance and that the knowledge and innovation communities of the EIT could provide a vehicle for the implementation of missions.

⁴⁰ [Professor Mariana Mazzucato](#) is a renowned expert in innovation economics.

⁴¹ European Commission, [Mission-oriented research & innovation in the European Union](#), 2018.

help steer investment towards tackling challenges in a more focused, problem-solving manner.

Research and innovation missions should have societal relevance and aim to improve the welfare of society. Such missions come in different shapes and sizes. They are expected to interact with the new types of complex problems that societies face and embrace the fact that innovation is serendipitous, non-linear and very high risk. As mentioned in the expert reports, Mazzucato points out that missions are an intermediary step between broad challenges and concrete projects and that missions can only be achieved through a portfolio of research and innovation projects and supportive measures.⁴² A mission only provides direction, so they should stimulate the development of a range of solutions. All these aspects place a specific requirement on how missions are framed and on the flexibility needed for their implementation. To succeed, missions also require a culture of experimentation and risk-taking and new routes for interactions between exploratory and applied research.

From this analysis, Mazzucato derives **five criteria for selecting missions**:

- **Bold, inspirational with wide societal relevance.** Public engagement is essential and each mission needs to be relevant to a large share of the EU population. They must provide exciting opportunities while being connected to the key challenges.
- **A clear direction: targeted, measurable and time-bound.** Missions have to be clearly framed with a specific, measurable target and a clear timeframe.
- **Ambitious but realistic.** Taking risks means that missions have to be ambitious, with objectives that are neither unrealistic nor too timid.
- **Cross-disciplinary, cross-sectoral and cross-actor innovation.** Framing of the mission should lead to new forms of partnerships for co-design and co-creation.
- **Multiple, bottom-up solutions.** Missions must allow for development of different paths to reach the objectives.

Beyond the selection of missions, the report deals with issues regarding the implementation of the concept at EU level. For Mazzucato, a broader political commitment to align policy objectives at both EU and Member State level is critical to successfully implementing missions and the engagement of diverse national and regional stakeholders will be needed. It is also necessary to be able to effectively measure progress with appropriate indicators, monitoring frameworks and intermediate milestones. Moreover, a portfolio approach implies: the use of a diverse set of instruments; a high degree of flexibility and adaptability; and the possibility to increase the budget of a mission or to terminate it. The efficient management of the portfolio requires significant in-house capacities and expertise, implying a major evolution in the way the framework programme is currently managed and implemented. Finally, the report focuses on the importance of public engagement with the missions, including the involvement of the public in the selection process and public inclusion in the implementation.⁴³

⁴² Such additional measures include policy interventions, deployment actions and the involvement of end-users.

⁴³ Mazzucato also proposes three example missions – '100 carbon neutral cities by 2030', 'A plastic-free ocean' and 'Decreasing the burden of dementia' – showing how these examples fulfil the defined criteria.

3.2.3. Key issues for the implementation of missions in FP9

The missions concept can help address some of the shortcomings identified in the midterm evaluation of Horizon 2020, such as the greater involvement of citizens and the streamlining of the funding landscape. Nevertheless, the experts' views also stress that the implementation of the mission concept at EU level raises concerns regarding the need:

- To achieve proper citizen and stakeholder involvement in the co-design of the missions and the co-creation of the solutions;
- To organise multi-level governance for the missions, where EU, national and regional stakeholders are involved.
- To adapt existing framework programme implementing bodies to the specificity of the implementation processes required for missions, such as the expertise to lead the mission and manage the portfolio of activities or the required flexibility in the use of instruments.
- To ensure that the complementary measures needed to reach the objectives of a mission are approved and implemented.

For the Commission to reflect on the concept of missions and the associated issues, a call for feedback on the Mazzucato report was organised, closing on 3 April 2018.

4. Positions on the key discussion points for FP9

This section considers the positions of the EU institutions, EU advisory committees, Member States, Horizon 2020 associated countries, and key European stakeholders on 10 key aspects of the design of FP9. The positions taken into account are: the European Parliament resolution adopted in June 2017;⁴⁴ the Council of the European Union conclusions adopted in December 2017;⁴⁵ the European Economic and Social Committee opinion and information report adopted in October 2016 and January 2017 respectively;⁴⁶ and the Committee of Regions opinion adopted in July 2017.⁴⁷ In March 2018, 18 EU Member States and three Horizon 2020 associated countries had adopted an opinion regarding the future framework programme.⁴⁸ Key European stakeholders had also provided their input for the preparation of FP9.⁴⁹

⁴⁴ European Parliament, Resolution on the assessment of Horizon 2020 implementation in view of its interim evaluation and the Framework Programme 9 proposal, [P8_TA\(2017\)0253](#), 13 June 2017.

⁴⁵ Council of the European Union, From the Interim Evaluation of Horizon 2020 towards the ninth Framework Programme, [15320/17](#), 1 December 2017.

⁴⁶ European Economic and Social Committee, opinion on 'Mid-term evaluation of Horizon 2020', [OJ C 34](#), pp. 66–72, 2 February 2017, and European Economic and Social Committee, Horizon 2020 (evaluation), [INT/807-EESC-2016-5513](#), 2016.

⁴⁷ Committee of Regions, Local and Regional Dimension of Horizon 2020 and the New Framework Programme, [CDR 854/2017](#), 12 July 2017.

⁴⁸ The 18 Member States are: Belgium, Croatia, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, Poland, Portugal, Slovakia, Slovenia, Sweden and United Kingdom. The three associated countries are Iceland, Norway and Switzerland. Positions can be found on the [ERA portal Austria](#).

⁴⁹ The EU stakeholders considered are: [Science Europe](#), representing national research councils and research organisations; the European University Association ([EUA](#)); the European Association of Research and Technology Organisations ([EARTO](#)); the Conference of European Schools for Advanced Engineering Education and Research ([CESAER](#)); and four university groups: the League of European Research Universities ([LERU](#)); the Guild of European Research-Intensive Universities ([The Guild](#)); the

4.1. Budget for research and innovation in the next Multiannual Financial Framework (MFF)

There is a common agreement among EU institutions, Member States and stakeholders that the budget of FP9 should be higher than that for Horizon 2020. The Nordic countries – Sweden, Finland and Denmark – called for a modernised EU budget in which the share for research and innovation should increase, an aspect also supported by Belgium. Portugal and Cyprus are in favour of an enlarged budget. Croatia points out that increasing the budget will help spread excellence. Hungary and Lithuania call for increased EU and national budgets for research and innovation. Slovakia and Slovenia both request at least €100 billion for FP9. Ireland expects a budget that is commensurate with the strategic importance of FP9. Germany and France are more cautious, stating respectively that more needs to be done jointly to ensure EU global competitiveness in the future, and that the Commission should propose strong engagements with the programme.

In their positions, the League of European Research Universities (LERU) requests at least €120 billion, the Conference of European Schools for Advanced Engineering Education and Research (CESAER) and the Guild of European Research-Intensive Universities (the Guild) €130 billion, and the European Consortium of Innovative Universities (ECIU) €160 billion. In March 2018, 13 university associations, including the European University Association (EUA), LERU, the Guild, ECIU and Young European Research Universities (YERUN), jointly advocated the latter figure of €160 billion.⁵⁰ All these propositions fall in the range suggested in the Lamy report. Science Europe requested that the FP9 budget be ring-fenced to avoid cuts after its adoption, a position also supported by Portugal. Almost all countries and stakeholders underline in their positions that the projects under FP9 should mainly be financed through grants, not loans, a position also supported by the Council.

The European Parliament has requested a budget for FP9 of €120 billion. This position is supported by the Committee of Regions, which considers that research and innovation should be a top priority in the debate on the future of Europe. The European Economic and Social Committee stresses that EU funding is not intended to replace national efforts and that ways should be found to achieve reasonable success rates. The Council emphasises the necessity of prioritising research and innovation across all relevant EU policies and programmes, including significant funding for FP9.⁵¹

In January 2018, the college of European Commissioners agreed to avoid making spending cuts to FP9, and to explore ways to increase its budget.⁵² In March 2018, Commission President, Jean-Claude Juncker, confirmed in a speech to the European

European Consortium of Innovative Universities (ECIU); and the Young European Research Universities (YERUN). Positions can be found on the [ERA portal Austria](#).

⁵⁰ [Double investment in research, innovation, and education](#), 2018.

⁵¹ In July 2017, a statement – the [Tallinn Call for action 2017](#) – by the Estonian Presidency of the Council noted that there is a need to reaffirm research and investment as a clear priority, including in the budget.

⁵² Science Business, [Commissioners unanimously agree to protect research from cuts in 2021 – 27 budget](#), 10 January 2018.

Parliament that the Commission was considering the future budget of FP9 in the Lamy report range of €120-160 billion.⁵³

4.2. Excellence and cohesion: the conflicting dimensions

4.2.1. Excellence as the key principle and criterion

The vast majority of Member States, associated countries and stakeholders share the opinion that excellence should remain the key principle of the framework programme, and the key criteria for the evaluation of proposals. Besides excellence, Cyprus, the Czech Republic, France and Poland also point out the importance of transnational and trans-sectoral cooperation and the FP's effective and open participation model. The European Association of Research and Technology Organisations (EARTO) considers that FP9 should focus on excellence and collaboration across a variety of actors. Belgium notes that excellence cannot be narrowed down to scientific excellence alone.

The European Parliament confirms that excellence should remain the essential evaluation criterion across the FP. The Council underlines that cooperation, excellence, impact and openness are the fundamental principles of FP9 and emphasises that excellence is the main evaluation criterion.

The application of the principle of excellence, a requirement to ensuring EU global competitiveness, has led to a concentration of funding in some countries and regions, with the EU-13 countries receiving less than 5 % of the Horizon 2020 budget.⁵⁴ The latest edition of the European innovation scoreboard indicated that the internal innovation gap in the EU between the leading and the modest innovators is widening.⁵⁵

4.2.2. Cohesion to support excellence, and vice versa

For Poland, Portugal, Croatia and Slovakia, greater cohesion is a condition for building an inclusive and unified European Research Area (ERA).⁵⁶ Poland also stresses that securing Europe's global competitiveness requires leveraging of the excellence and full capital of all European countries. Italy stresses the need to tap into the full potential of all the Member States and of all their regions. Lithuania advocates inclusive excellence at the Member State level, to avoid incoherent development of research excellence and the possible loss of innovative potential in the EU. Croatia proposes equity as a guiding principle for the effective application of excellence as the main driving force behind the FP. The Guild considers that closing the gap is essential to safeguard the quality and sustainability of science in the EU.

To address this need, Horizon 2020 included the specific objective of 'Spreading excellence and widening participation', with instruments aiming at supporting capacity-building in research and innovation in lower performing regions and countries. A share of the European structural and investment funds (ESIF) was also earmarked to support capacity-building through synergies with Horizon 2020. Ireland stresses that FP9 should nurture capacity-building for excellence across the EU. However, Lithuania and the United Kingdom point out that the issue of cohesion not only concerns capacity-building, but also using or enhancing existing pockets of excellence throughout the EU. Sweden

⁵³ J.C. Juncker, [Discours du Président Jean-Claude Juncker à la séance plénière du Parlement européen](#), 14 March 2018.

⁵⁴ See the [Commission data](#) on the three first years of Horizon 2020 (p. 28).

⁵⁵ European Commission, [European Innovation Scoreboard](#), 2017.

⁵⁶ V. Reillon, [The European Research Area](#), EPRS, March 2016.

notes that participation should be facilitated through specific support measures, but also depends on national efforts, a position shared by LERU and Science Europe.

The Committee of the Regions considers it important to make the FP work across all the Union's cities and regions. It calls for a new collective ambition, focusing on scientific excellence and the innovation capacity of Europe as a whole.⁵⁷ Nevertheless, the Committee of the Regions opposes transferring part of cohesion policy funding to measures under the FP. The European Economic and Social Committee stated that defining 'excellence' as the only parameter for funding research and innovation does not facilitate convergence between Member States. It suggested that the evaluation of proposals should take into account excellence at both EU and Member State levels.

4.2.3. The call for effective synergies between FP9 and European Structural and Investment Funds

Italy and Slovakia point out that synergies between Horizon 2020 and the structural funds are inadequate and practically non-functioning, due to the scarce compatibility in the programmes. Almost all Member States and stakeholders therefore require a better complementarity between FP9 and ESIF for the next financial period, in order to create effective synergies. This implies that the rules and regulations of the two programmes are compatible, including a modification of the current state aid rules. CESAER, EUA, LERU and the Guild advocate for a greater share of the ESIF budget to be allocated to capacity-building in research and innovation, with part of it ring-fenced for the support of the 'seal of excellence' and synergies with FP9.

The European Parliament encouraged the Commission to enhance synergies between FP9 and other dedicated European funds for research and innovation and to establish harmonised instruments and aligned rules for those funds, at both European and national level. It also calls for closer linkage between country-specific recommendations for structural reform and investment in research and innovation. The Council notes that coherence with other EU funding programmes is impeded by different non-complementary intervention logics and the complexity of the various funding and other regulations, such as state aid rules, and that this issue should be addressed properly.

4.2.4. Strengthening the 'spreading excellence' programme

The 'spreading excellence' programme is supported by most of the Member States and stakeholders in the sense that, as the Czech Republic puts it, it brings European countries closer together in terms of their research and innovation performance. Slovakia, Slovenia, Italy, Hungary and Cyprus suggest an increase of the budget for this specific objective, a position supported by EUA and the Guild, the latter requiring 2.5 % of FP9 budget for the programme.⁵⁸ Whereas Croatia and Hungary would like to see spreading excellence as a cross-cutting priority throughout the programme, the United Kingdom considers that capacity-building should be kept distinct from the rest of the FP. Regarding implementation, France proposes to adopt a regional approach to the programme on

⁵⁷ To improve synergies, the Committee of Regions proposed that the EU, Member States, regions and cities share five operational principles: coherence, with shared governance; compatibility, by pooling resources simply and effectively and addressing the issue of state aid; complementarity, by means of a clear distribution of roles; co-construction, through joint design and management; and a principle of ecosystems, recognising the role of local collective initiatives.

⁵⁸ The current [budget](#) of the 'spreading excellence and widening participation' specific objective is 1.1 % of Horizon 2020 budget.

widening participation, and that a widening participation programme should be introduced in the excellence pillar, supported by ESIF.

In its conclusions, the Council recognises that addressing the participation gap and the innovation divide must continue and that measures to spread excellence should continue and be strengthened.

4.2.5. Additional ideas to promote cohesion and spread excellence

Addressing the issue of an EU-internal brain drain, mentioned by Poland, Portugal, and Slovakia, Poland suggests creating targeted mobility schemes. The Czech Republic proposes to increase the minimum number of partners in a consortium, an idea supported by Croatia, and to introduce bonuses for consortia with a certain number of underrepresented Member States. Croatia suggests that fair representation should be acknowledged when designing new instruments. Slovakia and Hungary propose to take the EU macro-regional strategy into account in the FP. The United Kingdom, Poland, Hungary, Slovakia and Lithuania request a review of the rules on researchers' remunerations. Finally, the Guild suggests finding innovative ways to fund ERC grants for participants from lower performing regions.

The Science and Technology Options Assessment (STOA) of the European Parliament published the results of an expert study on overcoming the innovation gap in the EU in March 2018.⁵⁹ The experts consider that addressing the low participation of EU-13 countries in the FP requires action at local, national and European levels. They suggest five policy options that could be promoted to address this issue: creating and exploiting the existence of pockets of excellence; improving the governance of national research and innovation systems; improving the use and exploitation of FP research and innovation projects; strengthening the role and use of national contact points; and expanding the spreading excellence and widening participation programme with an enlarged budget.

4.3. EU added value and collaboration: key features of the FP

4.3.1. EU added value of the FP

Another key aspect stressed by the Member States, associated countries and stakeholders is the role of the FP in creating EU added value which is, as defined by Ireland, value beyond what can be achieved by Member States acting individually. Whether in the definition of the topics and challenges or of the type of instruments to use, the FP should create genuine EU added value. The Czech Republic considers that FP9 should focus on topics that bring significant pan-European added value and challenges common to all countries and all European citizens.

A link is often made between EU added value and cross-border collaboration. For Slovakia, EU added value must be a key principle of the FP9, and mainly regards collaborative research, researcher mobility and research infrastructures. Belgium notes that EU added value comes from collaboration, while Ireland and EARTO consider that collaborative projects have the greatest potential for EU added value. Finland requested that the FP emphasise European added value and multilateral cooperation. For Slovakia, the emphasis on collaborative research as cooperation is a truly essential European added value. Cyprus notes that excellent cooperation projects with an evident European added value and socioeconomic impact should be funded.

⁵⁹ European Parliament, [Overcoming innovation gaps in the EU-13 Member States](#), EPRS, March 2018. A short [briefing](#) on the results of the study is also available (March 2018).

The Committee of the Regions stresses that the EU added value of the FP was based primarily on its collective and collaborative dimension. The Council stresses that EU added value must be the major driver for the design and implementation of the next FP.

4.3.2. Plea for collaborative instruments

This places a strong focus on the importance of collaborative projects in the FP, knowing that the share of the FP budget for collaborative projects has decreased, due to the increase of mono-beneficiary instruments.⁶⁰ Germany stresses that the focus should continue to be on trans-border and trans-disciplinary cooperation; France states that mono-beneficiary projects are not the aim of the FP; and Slovenia that mono-beneficiary instruments should be limited; Sweden notes that the FP projects should mainly be cross-border cooperation, a position shared with Denmark, and requests more bottom-up collaborative projects in basic research, a position shared with Lithuania and Norway; Finland considers that multilateral cooperation should remain a key element in FP9, while Ireland stresses that collaborative projects should remain its bedrock; for Hungary the dominance of collaborative projects is strongly recommended; finally, Italy points out that transnational research is instrumental in the achievement of a fully functional ERA. EUA advocates for more funding for collaborative research projects and frontier research, while the Guild requests an increased budget for collaborative research.

The European Parliament noted the need to strengthen collaborative research. The Council stresses that the FP is the main instrument at EU level fostering competitive trans-national and interdisciplinary research and innovation cooperation and, thereby, supporting the objectives and implementation of ERA. It expects the current balance between collaborative projects and mono-beneficiaries activities to be preserved under FP9.

4.4. Streamlining and simplification: making FP9 user-friendly

There is wide consensus that EU research and innovation funding landscape should be streamlined, and that greater simplification of the FP implementation processes is required.

4.4.1. Streamlining: reducing the number of instruments and partnerships

Regarding the funding landscape, Germany states that the portfolio of instruments under Horizon 2020 must be reviewed and consolidated to lead to an adequate number of clearly defined and complementary instruments and funding mechanisms. The Czech Republic wants a simplified structure and unified rules. For Croatia, there is a need to decrease the number of bodies and configurations managing the FP. Hungary, Lithuania and Slovenia want to limit new initiatives, a position supported by Science Europe. A large share of the expectations expressed focus on streamlining the number, rules and procedures for public-public and public-private partnerships.

The European Economic and Social Committee called for the number of instruments to be reduced, loan-based financing to be limited, and procedures to be further simplified. The European Parliament, noting that the management and implementation of the FP is spread between 20 different EU bodies, also calls for streamlining of the programme. The Council also acknowledges the complexity of the EU funding landscape in research

⁶⁰ The share of the FP budget for mono-beneficiary instruments was 6 % under FP5, 10 % under FP6, 26 % under FP7 and 34 % under Horizon 2020. For more information see V. Reillon, [Evolution of the framework programme](#), September 2017.

and innovation and calls on the Commission and the Member States to jointly consider ways to rationalise the EU research and innovation partnership landscape.

4.4.2. Simplification: reducing the administrative burden

As far as simplification is concerned, Sweden requests a better balance between trust and control; Portugal, a simplification of the application processes and contract management; and Cyprus, increased transparency and trust. Denmark synthesises expectations by stating that instruments should be lean, simple, user-friendly and flexible, and the programme easy to understand, use and administer. Slovakia notes that simplification is an ongoing learning process.

The European Parliament also requests the Commission to continue work on the programme's coherence, simplification, transparency and clarity, on improving the evaluation process, reducing fragmentation, duplication, and avoiding unnecessary administrative burdens.

4.4.3. Ideas for simplification

Slovakia, Belgium, Poland and Lithuania agree on increasing the bottom-up approach. Hungary and Belgium advocate the use of local accounting practices when reporting, a position supported by EUA. Denmark, Poland, Hungary and Cyprus are in favour of a broader use of lump sums in funding, a position supported by the European Parliament, whereas Germany is opposed to their use. Most stakeholders agree that the evaluation process should be improved, including providing clearer feedback for applicants. Slovakia and Slovenia stress the need for balance between small and large projects. The United Kingdom and Denmark both agree that measures to discontinue or adjust instruments in the course of FP implementation are necessary. Belgium would like to abolish time sheets and Denmark would like the participant portal to include all calls for proposals, including those linked to partnerships.

ECIU suggests face to face presentations for final selection of proposals, to combine funding schemes with similar intervention logic and to address heterogeneous interpretation of the grant agreement terms by staff from different implementing bodies. YERUN requests a revision of the submission and evaluation process to render it less onerous for both evaluators and applicants.

In March 2018, the European Court of Auditors published a briefing paper on simplification of the implementation of the FP.⁶¹ The Court recognises that simplification is complicated, but presents proposals that include the use of lump sums and prizes, acceptance of beneficiaries' accounting practices, and direct recognition of good FP project proposals for funding by other programmes. The Court also requests a reasonable timespan is allowed between the adoption and implementation of legal acts, so that applicants can adapt to potential new rules.

4.5. Governance and implementation: the role of the Member States

4.5.1. Better coordination between the EU and Member States

A large share of Member States and associated countries, such as Portugal, France, Germany, Denmark, United Kingdom, Norway and Switzerland, stress that the FP must be complementary to national efforts and funding and must take them into account and supplement them. In this context, Sweden, Belgium and Croatia note that there is a need for synergies and coherence across EU, national, and regional levels. Slovakia adds that

⁶¹ European Court of Auditors, [A contribution to simplification of EU research programme beyond Horizon 2020](#), March 2018.

for the FP to constitute a real European programme, Member States should refrain from pursuing partial national priorities and support a common European dimension and value. Norway expects that FP9 will develop a better framework for synergies and division of labour with the national level, based on EU added value. These positions question the role of the Member States and associated countries in the governance and the implementation of the FP.

4.5.2. Governance: linking the levels

The Member States agree that they have to play a key role in the definition of priorities for the framework programme. Denmark considers that the FP should set a common, strategic agenda for European research and innovation investments as alignment between national and European strategies, instruments and programmes is vital in terms of maximising the impact of EU and national investments. Germany advocates the consistent involvement of the Member States in defining the strategic orientation and design of FP9, and agrees with France that the societal needs and grand challenges should be identified in common.

Slovenia considers that the design of the next FP should take the multi-level governance of the European innovation ecosystem into account, and that governance cooperation between the Commission and the Member States should be strengthened. Poland requests the programme is managed in close and direct collaboration with the Member States, so that consultation with the Member States is strengthened. For Portugal, effective coordination between the Commission and the national research agencies and councils should be guaranteed. Croatia considers that FP9 should reflect a more coherent approach between national and EU policies. France points out that the Member States need to be more involved in the governance of the partnerships.

For Norway and Switzerland, EU added value should guide choices and priorities at all stages of the design and implementation of the programme. On that note, France suggests setting up a mechanism of governance that can identify the EU added value by sector, to help select priorities. Slovenia proposes joint development of a comprehensive impact measurement framework to help define objectives for the FP.

The Council stresses the importance of dialogue between the Commission and the Member States in the preparation, and close cooperation in the governance and implementation, of FP9, to ensure inter alia that national policies and EU policy are mutually consistent.

4.5.3. Implementation: the preparation of the work programmes

Member States also agree that they should be more involved in the implementation of FP9, especially regarding the preparation of the work programmes. Portugal seeks to ensure that Member States and associated countries have a more important role in the setting of work programmes and priorities. Germany considers that the opportunities for the Member States to become actively involved in programme implementation needs to be improved and that the rights of Member States in the programme committees must therefore be strengthened.

For France, comitology must be used at best to establish a renewed and respectful dialogue for a real co-construction of the EU programming strategy.⁶² Slovenia agrees

⁶² For more information on the preparation and adoption of the work programmes by the programme committees, referred to as the comitology process, see V. Reillon, [EU framework programme process](#), January 2018.

that the comitology process should be enhanced and requires the programme committees to be more involved in strategic discussions. For Croatia, the work programmes should greater reflect the interests and needs of the Member States. Slovakia considers that the topics of the calls for proposals should be drafted in broader cooperation with the Member States and the scientific community. Belgium expects the procedures for the preparation of the work programmes to be more transparent. For its part, Norway expects that development of the work programmes might assume a greater role under a more flexible framework programme. To the contrary, CESAER suggests completely abandoning work programmes, all the topics then being defined bottom-up by the participants.

The Council calls on the Commission and the Member States to very early jointly establish a strategic programming process as part of the implementation of FP9, by developing its priorities and determining the optimal instruments for achieving the goals identified. It also reiterates the strategic importance of the programme committee and its configurations, and stresses the importance of involving the programme committee fully and in a timely manner in all stages of work programme design, preparation and implementation.

4.5.4. More flexibility in the implementation of the framework programme

Linked with the streamlining of instruments and simplification of the procedures, Member States and stakeholders call for more flexibility in the framework programme. For Lithuania, Slovakia, Cyprus, the United Kingdom, Iceland and Switzerland, this flexibility is required to adapt easily to new challenges and new priorities over the course of FP9. It includes the possibility for applicants to choose their instrument, requested by Sweden and Hungary, or the possibility to combine different funding schemes as proposed by Belgium. Norway stresses the need for FP9 to be a flexible and learning programme with greater possibilities for adjustment in the implementation phase. The European Parliament also requests a balanced and flexible set of instruments responding to the dynamic nature of emerging problems.

4.6. Innovations: European Innovation Council and missions

4.6.1. European Innovation Council: support, but diverging views

The idea of establishing a European Innovation Council sparked interest in the Member States and with stakeholders. However, their opinions diverge on the role and objectives of the EIC. For Denmark, Sweden, Finland and the United Kingdom, the EIC should focus on high-risk, breakthrough, market-creating innovation. Belgium and Portugal consider that incremental innovation should also be supported, whereas Hungary and Cyprus agree that the EIC should address all types of innovation. Ireland thinks that the EIC should help scale-up initiatives and support small high-risk ventures.

Germany considers that the EIC could serve as an umbrella for a consolidated portfolio of European innovation funding instruments, but continues to reject individual support for SMEs at EU level. Sweden would like the EIC to support collaborative activities as well as individuals. Croatia does not want new instruments and warns against overlap with existing instruments. Cyprus and Denmark request synergies with the European Institute of Innovation and Technology (EIT), a position supported by EUA and the Guild.

For Ireland, Switzerland and the United Kingdom, the EIC has to provide EU added value to national systems, so the alignment and interface of the EIC with national innovation supports must be carefully considered. Poland agrees with this opinion, requesting the EIC is designed in such a way that it fosters and structures innovation efforts in Europe.

Cyprus considers that the EIC should invest in creation and strengthening of networks, whereas LERU claims that the EIC's primary role should be to advise the Commission on innovation policy and instruments.

Finally, France requests the creation of a separate agency for breakthrough innovation, following a proposal by President Emmanuel Macron, and considers that the EIC should provide an umbrella of the existing instruments for innovation.

The European Parliament welcomes the creation of EIC, if it does not completely replace the second pillar of Horizon 2020, and expects the Commission to propose a balanced mix of instruments for the EIC portfolio. The Council highlights the need for a consolidated portfolio of European innovation funding instruments and initiatives. The EIC should provide added value and help strengthen the innovation ecosystem. The Council stresses that current national and EU activities for funding innovation should be considered to ensure synergies and avoid duplication.

4.6.2. Missions: agreement on the concept, doubts regarding its implementation

The idea of 'missions' was promoted in July 2017 by the Lamy report after some of the Member States or stakeholders had adopted their position regarding FP9. The concept of mission-oriented research and innovation received a positive welcome from the Member States. Sweden considers that missions can promote systemic change in society and their goal must be to bring together resources and knowledge from different disciplines. For Denmark, tangible missions could enhance visibility and create a stronger engaging narrative of the programme. The United Kingdom sees missions as a useful framework for tackling large scale societal challenges or exploiting market opportunities and expects a flexible and consultative approach for their implementation. For Ireland this focused approach should lead to greater synergies between research programmes and sectors.

France supports the concept, as long as co-construction with the Member States is ensured. This opinion is supported by Cyprus, which asks that missions demonstrate EU added value, to be clearly defined and co-designed with Member States and associated countries and be limited in number. Germany considers that missions must be defined in the context of societal needs and the grand European and global challenges. Slovenia is concerned that missions could induce major short term perturbations in implementation for Member States. Sweden, Ireland, the United Kingdom, and Switzerland, as well as LERU and the Guild, expect missions to be aligned with the United Nation's SDGs.

Support is also strong within stakeholders. The Guild expects 30 % of the calls linked to missions to be bottom-up; a position supported by YERUN, which insists on the co-production of results. ECIU gives a more cautious welcome to the exploration of a mission-driven approach, pointing out that management and governance structure will be crucial to the success of missions.

The Council calls on the Commission and the Member States to explore development of a strategic, interdisciplinary mission-oriented approach to addressing commonly agreed challenges.

4.7. Co-design and co-creation: the role of citizens

Citizens' and civil society participation in the definition and implementation of FP9 is underlined by a range of Member States and stakeholders, especially regarding the implementation of missions. Belgium expects improvement in citizen participation in the

definition of research policies, research agendas and research questions. Finland wishes to enhance measures to include citizens and civil society in setting and planning research and innovation priorities and research and innovation activities. For Ireland, citizens should participate in the co-design of the FP9 research agenda.

Hungary considers that key stakeholders and the wider public should be involved in identifying the most relevant missions. Iceland states that research and innovation are collaborative endeavours to be guided by principles such as co-creation and the involvement of users and citizens. For Germany, Member States must play a major role in shaping dialogue with society.

EUA considers that citizens need to take an active part in decision-making processes. ECIU stresses the importance of collaboration with society, public institutions, industry and citizens, and considers there is a need for options that involve citizens without requiring a legal entity to represent citizens in projects.

The European Parliament recognises the need for public and private sector stakeholders and civil society involvement, and the importance of citizen science in ensuring that society plays a more active role in the co-definition of priorities and the co-creation of solutions. On this aspect, the Council suggests launching a pilot project to involve citizens in the agenda-setting process, and encourages the Commission and the Member States to jointly develop a common action plan to enhance communication and interaction with society and stakeholders.

4.8. The interactions between research, innovation and higher education

For Germany and Denmark, European education, research and innovation policies must be linked more closely and more coherently. Sweden also sees close links between research and education. Croatia expects FP9 to support a closer connection between research and higher education.

The stakeholders representing higher education institutions, such as CESAER, are also supportive of better integration of education, research and innovation. EUA seeks a stronger alignment of EU policies and instruments in education, research and innovation. ECIU considers that the role of universities in providing higher education should be recognised in the formation of FP9, and welcomes initiatives to combine funds and policies in a European education, research and innovation area. YERUN stresses that the education-research-innovation triangle is of pivotal importance to promote and spread excellence and impact.

In this context, France proposes to create networks of excellence of European higher education institutions, referred to as European universities, which could be considered as hubs of excellence.⁶³

The European Parliament welcomes efforts to secure better links between the ERA and the European Higher Education Area and stresses the importance of closer cooperation between industry and the university and scientific establishment.

The Council also recommends establishing stronger links and coherence between ERA and the European Higher Education Area by improving the synergies between EU funds in education, research and innovation.

⁶³ This follows the [proposal](#) made by French President Emmanuel Macron in his speech in September 2017.

4.9. International cooperation: improving participation

The participation of third countries in the FP decreased between FP7 and Horizon 2020, and the interim evaluation of Horizon 2020 has concluded that international cooperation should be strengthened in the future. EU Member States, associated countries and stakeholders are proposing various measures to reverse the current trend.

Germany considers that open international cooperation should be based on scientific expertise and common innovation goals, to safeguard Europe's independence. For Portugal and Denmark, there is a need to define strategic areas for international cooperation in FP9. Poland suggests renewing the international cooperation (INCO) roadmaps, while Belgium requests a part of FP9 is dedicated to international cooperation. France, Denmark and Finland consider that reciprocity of access to research programmes is an important aspect in the participation of third countries, a position supported by LERU and the Council.

Denmark seeks to explore the possibilities to extend the status of associated country to third countries, while France considers that association should be granted if there is a clear EU added value. The United Kingdom stresses that the terms of association and third country participation should be fair. Iceland considers that new measures should be included to encourage partnership with countries outside Europe. Switzerland is considering exploring new mechanisms of participation for countries with strategic importance to European research and innovation.

Science Europe notes that participation in and/or association to FP9 should be promoted and encouraged based on excellence. CESAER expects a new and uniform framework for association in FP9 while the Guild requests that international cooperation constitutes a genuine two-way collaboration.

The European Parliament underlines the need to strengthen international cooperation within FP9 and to spread science diplomacy. The Council invites the Commission and Member States, together with the associated countries, to support strategic coordination of international cooperation between the EU and national level, and invites the Commission to interact closely with Member States on the modalities for association of third countries to FP9.

4.10. Research programme in defence

Following discussions regarding the inclusion of defence in FP9, Germany, Belgium, Denmark, Ireland, Slovakia, Cyprus, France, Iceland and Switzerland consider that FP9 should remain a civilian programme and that the future EU research programme in defence should be separate. This position is supported by LERU. Finland supports the programme but does not express a position regarding its inclusion in FP9. The European Parliament is also in favour of a separation of the research programme in defence from FP9.

5. Outlook

The preparation of an EU framework programme for research and innovation reveals the tensions that exist between EU institutions, Member States and stakeholders regarding EU policy in this field. These tensions find their origin in the acknowledgement that the FP is a key EU instrument in filling two gaps. The first is the external research and innovation gap between the EU as a whole and its global competitors. The second is the

internal EU research and innovation gap between the countries and regions considered innovation leaders and those which remain modest innovators.

To close the first gap, the FP should focus on excellence in order to maintain Europe's position at the forefront of the global competition in research and innovation. However, this focus on excellence tends to concentrate capacities in regions and countries that are already leaders, with the effect of maintaining, or even widening, the internal EU research and innovation gap. To close this second gap, the structural funds – ESIF – are seen as the key EU instrument for supporting capacity-building, in complement to cohesion measures implemented in the FP. However, the lack of complementarity between the rules of the FP and ESIF inhibit the capacity to create effective and genuine synergies between the two funds. To succeed in closing the first gap, the EU needs to be able to draw on the full potential of all its regions, implying reducing and closing the second gap. It is then necessary for FP9 and ESIF to be designed to work in perfect synergy and complementarity for them to address both gaps efficiently.

The positions on the streamlining and simplification of the programme also reveal diverging views about the objectives of the FP. There is an agreement that the FP must provide high EU added value, and that this added value mainly derives from the FP's collaborative feature. However, the share of the budget for mono-beneficiary instruments – including the European Research Council grants, the Marie Skłodowska Curie Actions for mobility, or some of the instruments reorganised in the EIC pilot – has greatly increased in recent FPs. The support for these instruments is reaffirmed for FP9, while at the same time there is a strong call for collaborative instruments. Striking the right balance on this aspect will be a key issue in the coming negotiations.

The introduction of the new features in FP9 – the European Innovation Council and missions – reveals the need for increased flexibility in FP implementation. The FP proposal is adopted almost 10 years before the end of the programme: new challenges may emerge and existing instruments might need to be modified or terminated in the lifetime of the programme. The current legal framework for Horizon 2020 is too rigid to allow for the necessary flexibility.

Nevertheless, providing increased flexibility implies that a higher level of trust is achieved between the EU institutions, the Member States and the stakeholders. Such an evolution requires the Commission, the Parliament and the Council to find the right balance in the regulation of FP9 between a solid legal base and possibilities to adapt the implementation processes. This also calls for the role of the Member States in the governance and implementation of the programme to be revised, to ensure complementarity with national initiatives.

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The preparation process for an EU framework programme for research and innovation includes a variety of activities: evaluation of the previous programme; expert studies to define the scope and priorities of the new programme; and proposals for new instruments. The EU institutions, the advisory committees, the Member States and other stakeholders also put their expectations and opinions forward on the shape and content of the programme.

This paper provides an overview of all the activities developed to contribute to the preparation of FP9. It also analyses the position of all the actors on 10 key discussion points including: the difficult battle over the FP9 budget; the tensions between support for excellence and the need for cohesion; streamlining of instruments and simplification of processes; requests for greater EU added value from the programme, linked to its collaborative nature; the role of the Member States in the programme's governance and implementation; and the expected innovations: the European Innovation Council and a mission-oriented approach.

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