Horizon Europe
Framework programme for research and innovation 2021–2027

OVERVIEW

In June 2018, the European Commission proposed a total budget allocation of €100 billion to finance science, research and innovation projects during the 2021-2027 period, of which the vast majority, €94.1 billion in current prices, would be allocated to the Horizon Europe framework programme. The main aims are to strengthen science and technology, to foster industrial competitiveness, and to implement the sustainable development goals in the EU. Horizon Europe introduces new features such as the European Innovation Council, missions to promote research results, and new forms of partnerships. Horizon Europe also aims at reducing administrative burdens and promoting the concept of open science. More operational synergies are expected through better linkage with other EU programmes.

In March 2019, Parliament and Council reached a partial agreement on most aspects of Horizon Europe. However, the financial aspects were only settled in December 2020 as part of the broader MFF negotiations, together with the sensitive issue of third-country association. The final text was adopted in April 2021 and entered into force retroactively from 1 January 2021.
Introduction

On 7 June 2018, the Commission presented its proposed next long-term research and innovation programme. The Horizon Europe package consists of proposals for:

- the Horizon Europe framework programme, including laying down its rules for participation and dissemination (COM(2018) 435),
- a specific programme to implement Horizon Europe (COM(2018) 436),

Horizon Europe will be the ninth framework programme (FP9). It builds on Horizon 2020, the eighth framework programme, which came to an end on 31 December 2020. The Commission's proposal for a regulation establishing Horizon Europe – the framework programme for research and innovation, laying down its rules for participation and dissemination, envisaged a financial envelope for the implementation of the framework programme of €94.1 billion (in current prices) for the 2021-2027 period. In addition, the Commission proposed another €3.5 billion from the InvestEU Fund for Horizon Europe. Together with the €2.4 billion for the Euratom research and training programme, this made a total budget allocation of €100 billion (€88.7 billion in constant or 2018 prices) for science, research and innovation-related projects. This would represent an increase of 29% compared to the 2014-2020 multiannual financial framework (after adjusting for the UK's departure).

This briefing focuses on the Horizon Europe framework programme proposal only – a separate EPRS briefing describes the specific programme proposal for the implementation of Horizon Europe.

Context

Every seven years, the European Union decides on its long-term budget. On 2 May 2018, the European Commission proposed the next multiannual financial framework (MFF) for the 2021-2027 period. Ahead of the adoption of the proposal for a long-term budget, the European Commission had presented various options (and their financial consequences) for a framework that delivers efficiently on EU policy priorities after 2020. The 2001-2027 MFF will be the first for the European Union of 27 Member States, taking account of the budgetary consequences of the withdrawal of the United Kingdom from the EU.

Existing situation


Parliament's starting position

On 13 June 2017, the European Parliament adopted a resolution on the assessment of the implementation of Horizon 2020, in view of its interim evaluation and the ninth framework programme (FP9) proposal.

Overall, the Parliament is a supporter of the EU’s research and innovation programme. It welcomed the success of Horizon 2020 and the 1:11 leverage factor and stated that the EU has ‘the potential to become a world-leading global centre for research and science’ and ‘that in order to promote growth, jobs and innovation to this end, FP9 has to become a top priority for Europe’. Parliament called on the Commission to propose an increased overall budget of €120 billion for FP9 – €20 billion above the level the Commission proposed for the Horizon Europe programme. In addition, the Parliament underlined the importance of keeping reporting obligations to a minimum – in order to
prevent ‘red tape’ from obstructing innovation – as well as the importance of greater involvement of small and medium-sized enterprises (SMEs) in collaborative projects and innovation.

The Parliament also urged the Commission to tackle the problem of oversubscription and low success rates. It suggested considering the reintroduction of a two-stage evaluation procedure with a unified first stage and a specified second stage dedicated to the selected applicants.

Furthermore, the Parliament called on the Commission to provide more support in FP9 ‘for young researchers, such as pan-European networking tools and to reinforce funding schemes for early-stage researchers with less than two years of experience after PhD completion’.

Preparation of the proposal

In the 2017 interim evaluation of Horizon 2020, stakeholders criticised, among other things, the uneven distribution of the framework programme funding across the EU. They also requested greater interlinkage of the shared, multi-level governance between the EU, Member States and regions. Finally, the complex funding landscape was criticised as requiring streamlining.

A European Parliamentary Research Service (EPRS) publication has analysed the complex architecture of Horizon 2020. The implementation of the Horizon 2020 budget, for instance, is the responsibility of nine different directorates-general (DGs) of the European Commission and implemented by 22 different bodies. Some of them channel resources from other funding bodies (other EU, national, regional, and/or private funds) and act as a secondary source of funds. Horizon 2020 had introduced three pillars – ‘excellent science’, ‘industrial leadership’, and ‘societal challenges’ – and two specific objectives – ‘spreading excellence and widening participation’ and ‘science with and for society’. This intricate system of pillars, objectives and funding added an extra level of complexity: ‘For example, the funding for a given societal challenge usually falls under the budget responsibility of two DGs and can be implemented in part by executive agencies and in part by public-public or public-private partnerships. Linear situations, where one DG is in charge of one part of the programme under the management of one implementing body, have become the exception’.

Between January and March 2018, the European Commission ran a public consultation on future EU funds in investment, research and innovation, SMEs, and the single market. The Horizon Europe stakeholder consultation synopsis report summarises the more than 4,000 responses submitted. Almost half of respondents (46%) replied as individuals, followed by business and industry representatives (17%) and universities (14%). Some 90% of survey respondents reported having experience of the Horizon 2020 programme.

According to most stakeholders, the main obstacles to the current programme achieving its objectives are: very complex procedures; high administrative burden; lack of flexibility to react to unforeseen circumstances; insufficient synergies between the EU programmes/funds; and the difficulty of combining EU action with other public interventions and private finance.

On the other hand, most stakeholders expressed their satisfaction with the existing three-pillar structure of Horizon 2020 and asked for minor refinements, such as a better linkages between pillars for better coverage of the whole knowledge chain. Stakeholders also suggested boosting funding for the widely appreciated European Research Council (ERC) and Marie Skłodowska-Curie Actions (MSCA) and greater promotion of EU funded research results to the public (through, e.g. missions). There were also suggestions to reinforce the role of social sciences and humanities (SSH) as they offer strong value for tackling societal challenges and achieving missions.

According to some stakeholders, the reimbursement rates under Horizon 2020 work well, although indirect costs for non-profit organisations could be increased. Introducing lump-sum payments would simplify matters. Furthermore, a better model is required for reporting personnel costs, and guidance documents should be streamlined.
Some stakeholders proposed to reserve initial use of the outcome (e.g. products, innovation, patents) of EU-funded research and the innovation programme for European entities and, if necessary, to underline this aim through binding legislation.

Suggestions were also made regarding the definition of the word 'impact' in the context of research gaps and research results. Some stakeholders called for not only economic, but also social, scientific and cultural impacts to be taken into account.

In the June 2018 impact assessment accompanying the new Horizon Europe proposal, the Commission states that it has reacted to the criticism of Horizon 2020 and lists several areas for improvement, such as continued simplification; supporting breakthrough innovation; creating more impact through mission-orientation and citizen involvement; increasing synergies with other EU funding programmes and EU policies; strengthening international cooperation; and reinforcing openness. In this context, the Commission suggests improving the creation and diffusion of high-quality new knowledge and innovation in Europe; reinforcing the impact of research and innovation in policy-making; a rapid uptake of innovative solutions; and strengthening the European Research Area (ERA). EPRS prepared an initial appraisal of the Commission’s impact assessment.

The changes the proposal would bring

According to the Commission, investing in research and innovation is investing in Europe’s future as it helps to compete globally and preserve the Union’s social model. About two-thirds of Europe’s economic growth over recent decades has been driven by innovation. The Commission therefore proposes €94.1 billion for the implementation of the framework programme for 2021-2027 (plus an additional €3.5 billion from the InvestEU Fund).

The main goals of Horizon Europe would be to:

- strengthen EU science and technology thanks to increased investment in highly skilled people and cutting-edge research;
- foster the EU’s industrial competitiveness and its innovation performance, notably supporting market-creating innovation via the new European Innovation Council (EIC) and the existing European Institute of Innovation and Technology (EIT);
- deliver on the EU’s strategic priorities, such as the Paris Agreement on climate change, and tackle global challenges that affect the quality of people’s daily lives.

The evolution from Horizon 2020 would be, inter alia, reflected in the revamped structure. The three-pillar structure of Horizon 2020 would be continued, but redesigned to give greater coherence, both between and within pillars, in support of the programme objectives:

- The ‘open science’ pillar (€25.8 billion) would continue to focus on excellent science and high-quality knowledge. It would support frontier research projects defined and driven by researchers themselves through the European Research Council (ERC) (€16.6 billion), fund fellowships and exchanges for researchers through Marie Skłodowska-Curie Actions (€6.8 billion), and invest in European research infrastructures.
- The ‘global challenges and industrial competitiveness’ pillar (€52.7 billion) would directly support research relating to societal challenges, reinforce technological and industrial capacities by, inter alia, integrating the Horizon 2020 ‘societal challenges and leadership in enabling industrial technologies’ into five clusters (i.e. health; resilience and security; digital and industry; climate, energy and mobility; and food and natural resources). In addition, it would set EU-wide missions. It would also include activities pursued by the European Commission’s Joint Research Centre (JRC) (€2.2 billion) that supports EU and national policymakers with independent scientific evidence and technical support.
- The ‘open innovation’ pillar (€13.5 billion) would aim at making Europe a frontrunner in market-creating innovation through the EIC (€10 billion), which would become a one-stop shop for innovators. A reorganisation of Horizon 2020 instruments (such as the SME
Horizon Europe (instrument) is suggested. In addition, this pillar would increase cooperation with innovation ecosystems and actors by further strengthening the EIT to foster the integration of business, research, higher education and entrepreneurship (€3 billion).

A further part on “Strengthening the European Research Area” (€2.1 billion) would be dedicated to sharing excellence and reforming and enhancing European R&I systems.

Horizon Europe would also have some new features and enhancements to improve impact and openness, such as:

- **EIC:** this would become a one-stop shop to support high-risk, market-creating innovation projects by bringing promising ideas from the laboratory to real world application through, inter alia, direct financial support provided by two main funding instruments.
- **EU-wide research and innovation missions:** Examples could range from the fight against cancer, to clean transport or plastic-free oceans.
- **Open science:** This would become the modus operandi of Horizon Europe. It would require open access to publications, data, and to research data management plans.
- **New European partnerships:** Horizon Europe would streamline the number of partnerships and follow a more impact-focused approach. These partnerships would be open to all types of stakeholders (e.g. industry, Member States and philanthropic foundations) and would be limited in time, with clear conditions for the phasing out of framework programme funding.
- **Simpler rules:** This would increase legal certainty and reduce the administrative burden for beneficiaries in particular.

Horizon Europe is expected to generate new and more knowledge and technologies, as well as to have positive effects on growth, trade and investment, together with a positive social and environmental impact. According to the Commission, each euro invested by the programme can potentially generate a return of up to €11 in gross domestic product (GDP) over 25 years. Union investments in research and innovation are expected to directly generate an estimated gain of up to 100 000 jobs in the programme period (2021-2027).

A legal innovation is that the Horizon Europe package replaces two current legal acts with a single legal act, by repealing Regulation (EU) No 1291/2013 (which establishes the Horizon 2020 framework programme) and Regulation (EU) No 1290/2013 (which defines the rules for participation in Horizon 2020 and dissemination of funding).

### Advisory committees

The European Economic and Social Committee (EESC) appointed Gonçalo Lobo Xavier (Employers – Group I, Portugal) to draft an opinion. The opinion was adopted in plenary during the 17 and 18 October 2018 session. The opinion welcomed the Commission proposal. It suggested, however, that missions should focus on a specific, quantifiable and achievable target, and should take the high importance of low technological readiness level into account. Furthermore, the opinion urged that the European Innovation Council should particularly focus on very innovative SMEs and start-ups. The EESC supported the open science policy approach, but stressed the need to introduce ‘a certain timeframe’ for publishing all the scientific results. It welcomed the aim of further simplifying state aid rules to facilitate the combination of different funds that can be instrumental in overcoming the major disparities between Member States and regions.

The European Committee of the Regions (CoR) appointed Christophe Clergeau (France, PES) to draft an opinion on the proposal. The opinion was adopted in the plenary session of 9 October 2018. The opinion welcomed the Commission proposal, but called, inter alia, for the level of scientific excellence to be improved in Europe ‘as a whole and not in just a few large regions and cities’. To this end, the full involvement of cities and regions, as stakeholders in the strategic planning of the future European Innovation Council forum, was requested. Moreover, the CoR was ‘disappointed’ to note the lack of recognition of the territorial roots of scientific excellence and the contribution made by regional ecosystems and innovation hubs. According to the Committee, the budget allocation...
for the 'European innovation ecosystems' was 'too low’. The opinion also urged strengthening the ties with smart specialisation strategies and developing synergies with other EU and national programmes. In this regard, the CoR criticised the fact that the option of transferring a share of cohesion policy funds to the Horizon Europe programme was systematically decided by the Member States and not by the managing authority concerned, which is often a region.

National parliaments

The deadline for the submission of reasoned opinions on the grounds of subsidiarity was 24 September 2018. The national parliaments largely support the Commission proposal and no reasoned opinions were issued.

Stakeholder views

The European Association of Craft, Small and Medium-sized Enterprises, UEAPME, recommended the application of a less restrictive definition of innovation (to ensure access for innovative SMEs) and to include a 20 % target for SME participation (including start-ups) in the Horizon Europe programme. It also recommended increasing the share of the budget dedicated to the European Innovation Council (EIC) from 10 % to 15 %, and ensuring preferred access for SMEs and start-ups to these instruments.

TP Organics, the organic movement's European technology platform, welcomed the proposal but urged the European Parliament and Member States to ensure Horizon Europe makes a clear choice for sustainable development. They considered it is unclear how the objectives on 'food and natural resources' (in respect of the sustainable development goals) would be achieved. They called for stronger organic and agro-ecological principles by, for example, promoting circular systems, building on systemic interactions, using diverse crops and animals, relying on biological processes for soil fertility, and controlling pests.

The European Council of Doctoral Candidates and Junior Researchers, Eurodoc, welcomed calls for cross-cutting open science in the framework programme, but urged an increase in the funding targeted at basic science and young researchers. The budget increases for the Marie Skłodowska-Curie Actions (MSCA) and for the European Research Council (ERC) are considered insufficient to adequately support early-career researchers.

The Guild, an association of 19 European research-intensive universities in 14 countries, urged that scientific excellence should be the sole evaluation criterion for the ERC and opposed geographical criteria in ERC grant evaluation. The association was also against limiting the ERC's focus to young researchers, 'as the programme should be open to the best scientific talent regardless of their age or the stage of their career'. The Guild welcomed the support for research in the social sciences and humanities (SSH) and the targeted budget for SSH, but opposed proposals related 'to the boosting of the cultural and creative industries. The focus of Horizon Europe should remain in fostering excellent research and innovation, and not in subsidising sectors'.

The Association of European Research Establishments in Aeronautics, EREA, called for a significantly increased budget for Horizon Europe, to at least €120 billion. EREA criticised 'the vagueness on exactly which topics and technologies will be supported, and with how much of the budget', as this would make the present proposal difficult to assess. EREA welcomed the concept of missions in research and innovation, but after several years of discussion, it would be 'disappointing to note the absence of a stringent concept for missions in the Horizon Europe proposal'.

Legislative process

The European Parliament, assigned the file to the Industry, Research and Energy Committee (ITRE), which appointed Dan Nica (S&D, Romania) as rapporteur. The draft report was presented on 13 July,
and the deadline for tabling amendments was 6 September 2018. The ITRE committee adopted the report on 21 November 2018.

Contrary to the Commission (see chapter 'The changes the proposal would bring'), Parliament proposed a much higher financial envelope of €120 billion (in 2018 prices) for the 2021-2027 period. This would be distributed as follows: Pillar I: Excellent and Open Science: 27.4 %; Pillar II: Global Challenges and European Industrial Competitiveness: 55.5 %; Pillar III: Innovative Europe: 12.7 %, plus 4.4 % specifically for the part on 'Strengthening the European research area'.

As part of the general Union objective of mainstreaming climate actions and of spending 30 % of the Union budget in support of climate objectives, actions under the Horizon Europe programme would contribute at least 35 % of the expenditure to climate objectives, where appropriate.

At least €2.5 billion would be dedicated to grants for incremental innovation in SMEs. At least €1 billion would be spent on quantum research.

Some 45 % of the budget for the cluster 'Inclusive and Creative Society' would support research on cultural and creative sectors, including the Union’s cultural heritage, with €300 million to be earmarked for the creation of a European Cultural Heritage Cloud. Horizon Europe would promote broad geographical coverage in collaborative projects, and ensure the effective promotion of gender equality and the gender dimension.

On 12 December 2018, the plenary adopted amendments to the Commission’s proposal, based on the report, and provided the mandate to enter into informal negotiations (trilogue) with the Council.

In the Council, the Competitiveness configuration (Internal Market, Industry, Research and Space) dealt with the Commission proposal. Although most delegations welcomed the Commission proposal, a number of issues were raised (see September 2018 progress report). The Council adopted a partial general approach on 30 November 2018, which did not however cover the budgetary aspects of the proposal. The Council decided to wait until it had reached an overall agreement on the 2021-2027 MFF before negotiating budgetary details for the individual programmes.

Trilogue meetings on the framework programme (as well as the specific programme implementing Horizon Europe, negotiated together) between the two co-legislators started on 9 January 2019. During the 19 March trilogue meeting, Parliament and Council reached a partial agreement. This agreed text was adopted in plenary at first reading on 17 April 2019.

In addition to the above mentioned points, Parliament prioritised getting Member States with low performance in research and innovation to participate in the programme by, inter alia, reducing the existing remuneration gap between researchers across the EU, and by increasing the budget dedicated to spreading excellence.

Five potential research focus areas were agreed: adaptation to climate change; cancer; healthy oceans, seas and waters; climate-neutral and smart cities; and soil health and food. Horizon Europe will now also place greater emphasis on social sciences, humanities and the creative industries.

Furthermore, the European Innovation Council (EIC) will be a centrally managed 'one-stop-shop' for implementing actions under Pillar III 'Innovative Europe' which relate to the EIC. At least 70 % of the EIC budget is to be dedicated to SMEs, including start-ups.

Parliament adopted the content of the partial agreement at first reading in April 2019. The Parliament’s first-reading position included aspects of Horizon Europe that were not yet negotiated with the Council, such as the proposed budget allocation (Parliament reiterated its support for a total budget of €120 billion, in constant 2018 prices) and the terms of third-country association.

The budget allocation for Horizon Europe was part of the broader MFF negotiations, which started with the Commission’s original MFF proposal (May 2018), and only concluded with the formal consent by Parliament and Council’s adoption of the agreed MFF (16-17 December 2020).
between the Commission issued a new MFF proposal to counter the economic crisis provoked by the Covid-19 pandemic (May 2020), its centrepiece being the Next Generation EU (NGEU) recovery plan for Europe. NGEU will allocate a further €750 billion in exceptional funding to the EU Member States over the coming years, in addition to the core MFF funding for regular EU programmes. Nevertheless, the proposed budget for Horizon Europe was significantly reduced by the Council in successive rounds of negotiations. The special European Council meeting on 17-21 July 2020, which ultimately approved the NGEU recovery plan, included a core budget for Horizon Europe of only €75.9 billion (constant 2018 prices), with further funds to be allocated from NGEU. Subsequent MFF negotiations between the Council and the Parliament, which concluded on 10 November 2020, saw a further €5 billion allocated to Horizon Europe from NGEU and another €4 billion from other sources. Although these negotiations increased the total budget of Horizon Europe to €84.9 billion (in constant 2018 prices), this amount is still lower than in the original Commission proposal (€94.1 billion) and far below the level of funding that Parliament had initially sought (€120 billion).

The agreed allocation of funding to the different components of Horizon Europe is as follows:

Pillar I 'Excellent Science' will be allocated €25.0 billion in current prices (€22.2 billion in constant 2018 prices), accounting for 26.2% of the Horizon Europe budget. Within this pillar, the European Research Council (ERC) will have a budget allocation of €16 billion in current prices (€14.2 billion in constant 2018 prices), after the Parliament secured an additional €1 billion for the ERC in its final negotiations with the Council. Meanwhile, the Marie Skłodowska-Curie Actions (MSCA) will receive €6.6 billion in current prices (€5.85 billion in constant 2018 prices), while European Research Infrastructures will receive €2.4 billion in current prices (€2.13 billion in constant 2018 prices).

Pillar II 'Global Challenges and European Industrial Competitiveness' will receive €53.5 billion in current prices (€47.6 billion in constant 2018 prices), accounting for 56% of the total budget. Within this pillar, the Parliament secured additional funding for health; culture and creativity; climate, energy and mobility; digital, industry, and space; and civil security for society.

Pillar III 'Innovative Europe' has a budget allocation of €13.6 billion in current prices (€12.1 billion in constant 2018 prices) accounting for 14.2% of the total budget. The bulk of this will go to the new EIC, which receives €10.1 billion in current prices (€9 billion in constant 2018 prices). In its final negotiations with the Council, the Parliament secured an additional €1.25 billion for the EIC as well as modest increases in the budget of the EIT and for European innovation ecosystems.

The part on 'Widening participation and strengthening the European Research Area' will receive €3.4 billion in current prices (€3 billion in constant 2018 prices), accounting for over 3.5% of the Horizon Europe budget. This reflects the importance the Parliament places on this initiative, which now has a higher level of funding than envisaged in the original Commission proposal.

Other than the budgetary aspects of Horizon Europe, the co-legislators also reached agreement on the terms of third-country association. Article 16 of the new regulation sets out specific criteria that third countries would need to meet: good capacity in science, technology and innovation; respect for a rules-based open market economy (including protection of intellectual property); respect for human rights (backed by democratic institutions); and the active promotion of policies to improve the economic and social well-being of citizens. Furthermore, Article 16 makes it clear that third countries can be excluded from parts of the Horizon Europe programme where this is in the EU interest – the only countries with a right to join the whole programme are EEA states and those countries negotiating to join the EU. Article 16 sets out a series of principles that each association agreement needs to meet, involving a fair balance of contribution and benefits for the third country; clear conditions for participation and calculation of financial contributions, including a share of administrative costs; no decision-making power over Horizon Europe for third countries; and the right for the EU to guarantee sound financial management and protect its financial interests.

The other aspects of Horizon Europe agreed in the final rounds of trilogue negotiations concern the enhanced synergies with other EU spending programmes; the Seal of Excellence for deserving
projects that do not get EU funding due to budget limitations (to enable them to obtain national funding); and the insertion of new clauses on freedom of research, on request of the Parliament.

The Council adopted the agreed text at first reading on 16 March 2021. The ITRE committee voted through the same text on 13 April 2021, and this was then adopted at second reading in plenary on 27 April 2021. The final act was signed on 28 April 2021, and entered into force on 12 May 2021 as Regulation (EU) 2021/695. The new Horizon Europe regulation applies retroactively from 1 January 2021.

**EP SUPPORTING ANALYSIS**


Karakas C., European research area (ERA) – Regional and cross-border perspectives, EPRS, April 2019.

Karakas C., Research and Innovation - Thinking about future EU policy, EPRS, November 2020.


Reillon V., Preparing FP9: Designing the successor to the Horizon 2020 research and innovation framework programme, European Parliament, EPRS, April 2018.


**OTHER SOURCES**

Horizon Europe: framework programme for research and innovation 2021–2027, European Parliament, Legislative Observatory (OEIL).
ENDNOTES

1 Current prices make no adjustments for inflation, whereas constant prices adjust for the effects of inflation as they are expressed in the price terms of a base period (normally a year; in this briefing, it is 2018).


3 All amounts in this section are expressed in current prices (in 2018).

4 This section aims to provide a flavour of the debate and is not intended to be an exhaustive account of all different views on the proposal. Additional information can be found in related publications listed under 'EP supporting analysis'.

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eprs@ep.europa.eu (contact)

www.eprs.ep.parl.union.eu (intranet)

www.europarl.europa.eu/thinktank (internet)

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