

A UK alternative package to Horizon Europe that works for the chemical sciences

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Association to Horizon Europe is a vital enabler for the UK's continued growth as a research and innovation world leader. The international networks and collaborations that European Framework Programmes facilitate are unparalleled and irreplaceable. Under the previous Framework programme, Horizon 2020, the UK collaborated with over 160 countries. Our view is that association is the best outcome for the research and innovation community. As a contingency the UK Government is developing a UK alternative package to Horizon Europe: we are keen to help ensure this enables chemical sciences researchers and SMEs based in the UK to make the world a better place.

Chemistry and chemical technologies are fundamental to many of the sectors where the UK takes a leading role globally, including medical research, aerospace, scientific research and education. The UK chemical sciences have received more than £850 million and £120 million for chemical sciences SMEs over the lifetime of Horizon 2020. Alongside this, our international case studies¹ show the many intangible benefits that participation in European programmes have brought to UK chemistry. In the sections below, we set out what will be important in a UK alternative package to Horizon Europe to deliver the same combination of benefits. This will be essential to ensure that strength in the chemical sciences is retained and that the UK chemistry community can continue to play a leadership role globally and attract top scientific talent.

RSC's recommendations

Longer-term alternatives to Horizon Europe must deliver the same combination of benefits for both UK researchers and the UK more widely². Any UK alternative package therefore must:

1. Be supported by long-term funding commitments that inspire researcher and industry confidence and be easy for potential applicants to navigate;
2. Enable researcher-driven discovery research and researcher mobility through long-term, excellence-based funding, alongside visa and mobility arrangements that make talented people feel welcome in the UK;
3. Facilitate wide-reaching collaborative international networks and fund Third Country Participation in Horizon Europe;
4. Offer tailored support for SMEs to unleash innovation; and
5. Continue to enable access to international facilities as well as developing UK infrastructure.

In the section that follows, we set out greater detail on these recommendations.

Detail

1. Be supported by long-term funding commitments that inspire researcher and industry confidence and be easy for potential applicants to navigate

Funding set aside for Horizon Europe is ring-fenced for alternatives and budget commitments are demonstrably for the long term, enabling grants and fellowships of 7-10 years, whilst giving the sector confidence these commitments will be honoured to enable long-term schemes and certainty

Funding schemes across the alternative package must be independent of political agendas and timescales, with a long-term and transparent budget to provide confidence to the researchers and business after extended uncertainty.

The UK alternative package is easy to navigate, and bureaucracy is minimised where possible

As highlighted by the minister in his recent speech at Onward³ and by the Tickell Review of research bureaucracy, the UK funding system can be "very bureaucratic", therefore it is important that the alternative package is easy to navigate and builds on the principles outlined in the review. Additionally, many international Horizon Europe programmes on global challenges bring together cross-sector with interdisciplinary and international collaboration. They enable complementary and heterogeneous actors to come together and tackle complex missions, often within a single proposal. UK alternative programmes on global challenges must make it equally easy for UK actors to 'plug into' these existing international networks, without unnecessarily complex application processes.

2. Enable researcher-driven discovery research and researcher mobility through long-term, excellence-based funding, alongside visa and mobility arrangements that make talented people feel welcome in the UK

Long-term, excellence-based funding on a comparable scale to the ERC and MSCA

We welcome the science minister highlighting the importance of long-term funding and the intention for the UK alternative package to include flagship high-value 10-year fellowships under the Talent pillar. Scientific discovery and breakthroughs can be long-term endeavours and currently no UK schemes match what ERC and MSCA fellowships offer to researchers. The impacts of these programmes have been shown to be considerable, for example from 2007 until 2014 more than 40% of ERC-funded projects generated research that was subsequently cited in patents⁴ and from 2013 to 2022, the MSCA-programme produced 15 successful Nobel prize winning laureates⁵. The UK and chemical sciences within the UK have been highly successful in these impactful and prestigious programmes and our community is concerned that it will be very difficult to replicate this scale and prestige.

Visa routes and mobility arrangements that enable researchers to move and collaborate

We agree with the science minister that global talent paths are needed that are “not behind a Home Office visa wall”⁶. Inherent problems with migration routes for people with STEM skills, such as costs and processing times, must be resolved. Analysis on visa costs carried out in 2019 by the Royal Society⁷ shows that the UK has some of the most expensive upfront costs in the world for immigrating scientists and their sponsors. These costs are the most significant barrier for many individuals to come to the UK, especially if accompanied by their family. They are also prohibitive to SMEs, with half of small businesses saying they cannot afford visa sponsorships⁸.

3. Facilitate wide-reaching collaborative international networks and fund Third Country Participation in Horizon Europe

Multi scale grants that encourage wide-reaching collaborative international networks

We frequently hear from our community that the international networks and collaboration, enabled by participating in European Framework Programmes, are the most beneficial components of the programmes. Our community fears this will be the most difficult aspect to replicate in UK alternatives.

To ensure that UK researchers and innovators can still make the same or greater impact through new international networks led by the UK, the UK needs a step-change in our levels of international engagement. Funds under the Global Collaboration pillar should be open to countries within and beyond the EU and should focus on both attracting international talent to the UK and enabling UK researchers to share and develop their skills in the EU and beyond. Agreements for bilateral and multilateral programmes under the Global Collaboration pillar should ensure that researchers are subject to the application and monitoring processes of one funder only.

Third Country Participation in Horizon Europe fosters global collaboration

Third Country Participation in Horizon Europe will enable the UK to continue working with the best scientists and innovators across the world on the biggest challenges that face humanity by connecting into existing international collaborations or consortia.

4. Offer tailored support for SMEs to unleash innovation

Innovative SMEs have early and long-term funding to support their product development, access to local and international networks and markets, and support and mentorship

SMEs should also be eligible for other forms of funding, including longer term, excellence-based grants, and international consortia. We know from many SMEs in our community that connections to other actors through international networks are vital to recruit the specialist talent needed to support their cutting-edge businesses and their growth, for example Dr Hugo Macedo, founder of Smart Separations, benefitted from access to the EU Mentorship Scheme⁹. Horizon 2020 included mechanisms to link SMEs with private investors and coaching in innovation and business skills.

They also need to be designed to meet the needs of deep-tech SMEs that aim to develop and commercialise potentially disruptive technologies, including those that make a positive difference to climate and human health. Challenges for these companies include access to finance for longer development times (particularly outside the Golden Triangle); learning innovation management and leadership; intellectual property management¹⁰.

SMEs developing and commercialising new technologies can also need access to rare and specialist skills, for which the labour market is international. Global Cleantech 100 2023 company Eonic

Technologies CEO, Dr Rowena Sellens, said “our employees have been working in groups inside and outside the UK on particularly strong research that just made them good candidates”¹¹.

5. Continue to enable access to international facilities as well as developing UK infrastructure UK-based researchers and innovators can access and use international facilities and equipment
In addition to developing new UK-based infrastructure, the UK alternative package must provide support for researchers and innovators to access and use internationally based facilities and equipment, including to enable international collaboration.

Investments in UK infrastructure go beyond the immediate capital costs to cover long-term maintenance and the staff resources to run, repair and upgrade infrastructure

We welcome commitments to develop world class infrastructure and digital research capability, but funding streams must be flexible to support the long-term running and operating costs of new and existing infrastructure, avoiding a ‘batteries not included’ scenario.

About us

With around 50,000 members and a knowledge business that spans the globe, the Royal Society of Chemistry is the UK’s professional body for chemical scientists, supporting and representing our members and bringing together chemical scientists from all over the world. Our members include those working in large multinational companies and small to medium enterprises, researchers and students in universities, teachers and regulators.

¹ International collaborations create chemistry: Smart Separations Ltd. case study, Royal Society of Chemistry, April 2021. See <https://www.rsc.org/globalassets/04-campaigning-outreach/policy/international-funding-and-collaborations/smart-separations-case-study-on-the-value-of-international-collaboration.pdf>

² UK Chemistry funding needs post-EU exit, Royal Society of Chemistry, July 2020. See <https://www.rsc.org/globalassets/04-campaigning-outreach/policy/international-funding-and-collaborations/royal-society-of-chemistry-recommendations-on-alternatives-to-horizon-europe.pdf?epiditmode=False>

³ Science minister says reforms could ‘unlock golden era’ of R&D, Research Professional, 3 February 2023. See <https://www.researchprofessional.com/0/rr/news/uk/politics/2023/2/Science-minister-says-reforms-could--unlock-golden-era--of-R-D.html>

⁴ New study reveals how frontier research spurs patented inventions, European Research Council, 19 January 2023. See <https://erc.europa.eu/news-events/news/new-study-reveals-how-frontier-research-spurs-patented-inventions#:~:text=A%20new%20analysis%20finds%20that%20more%20than%2040%25,show%20how%20curiosity-driven%20frontier%20research%20enables%20technological%20development.>

⁵ Marie Skłodowska-Curie Actions: a game-changing benchmark mobility programme for talented researchers worldwide at all stages of their careers, European Research Executive Agency, 24 January 2023. See https://rea.ec.europa.eu/news/marie-skłodowska-curie-actions-game-changing-benchmark-mobility-programme-talented-researchers-2023-01-24_en

⁶ Science minister says reforms could ‘unlock golden era’ of R&D, Research Professional, 3 February 2023. See <https://www.researchprofessional.com/0/rr/news/uk/politics/2023/2/Science-minister-says-reforms-could--unlock-golden-era--of-R-D.html>

⁷ UK science and immigration: why the UK needs an internationally competitive visa offer, The Royal Society, 2019. See <https://royalsociety.org/-/media/policy/Publications/2019/international-visa-systems-explainer-july-2019.pdf>

⁸ A world of talent: Building an immigration system that works for small businesses, fsb, accessed 12 October 2022. See <https://www.fsb.org.uk/resource-report/a-world-of-talent.html>

⁹ International collaborations create chemistry – Case study: Smart Separations Ltd, Royal Society of Chemistry, 2021. See <https://www.rsc.org/globalassets/04-campaigning-outreach/policy/international-funding-and-collaborations/smart-separations-case-study-on-the-value-of-international-collaboration.pdf>

¹⁰ What works for innovation, Royal Society of Chemistry and Enterprise Research Centre, 2022. See <https://www.rsc.org/globalassets/22-new-perspectives/discovery/igniting-innovation/what-works-for-innovation-report.pdf>

¹¹ Case study: Eonic Technologies, Royal Society of Chemistry, 2018. See https://www.rsc.org/globalassets/04-campaigning-outreach/policy/international-funding-and-collaborations/rsc_eonicttechnologies_casestudy_2018.pdf