The benefits of associating to EU research and innovation programmes

UK association with the world's biggest research programme can help deliver new advances to tackle major challenges and drive inclusive growth

Horizon Europe is the world's biggest research and innovation (R&I) programme, worth €95.5 billion between 2021 and 2027.[1] After a period of uncertainty, the UK associated to Horizon Europe and Copernicus as a third country from 1 January 2024. Historically, **the UK has been highly successful in EU science programmes, leading research in AIDS vaccines, aerospace engineering, graphene, cancer care, social policy and environmental protection: in Horizon 2020, it received €7.8 billion in EU funding.[2]**

EU R&I programmes bring huge advantages for the UK, boosting jobs and opportunity across the country, building UK research capacity and capabilities and keeping us at the forefront of key technological advances such as AI. Critical benefits include:

- **The European Research Council (ERC):** ERC grants are highly prestigious, based on peer review across the EU and eligible associated countries. ERC-funded research has a reputation for excellence that helps universities attract the best global research talent to the UK:
    - The UK continues to perform strongly, winning 45 Consolidator Grants and 42 Advanced Grants in the ERC's 2023 Work Programme, second only to Germany.[3]
- **Collaboration between different sectors:** Horizon Europe's collaborative pillar brings universities and research institutes together with businesses and healthcare providers to work on shared challenges, drive inclusive growth and improve lives: UK institutions forged nearly 225,400 collaborative links under Horizon 2020 alone.[4]
- **Ready-made routes to global collaboration:** Horizon Europe provides unrivalled, ready-made routes for work across borders. Common rules and funding cycles, access to talent, infrastructure, networks, collections and data allow participants to operate on a scale no one country can replicate.
- **Supporting new technologies and start-ups:** over 2,000 UK businesses received nearly €1.5bn from Horizon 2020: SMEs received nearly €870m of that, boosting jobs and opportunity around the country.[5] Horizon also provides access to large-scale patient groups the UK cannot deliver alone.
- **Alliances with like-minded partners:** Most of the UK's largest research partners are in the EU. Countries with strong links such as Canada, New Zealand and South Korea are in Horizon Europe: others may sign up in future. As geopolitical tensions increase, working with partners who share our values is more important than ever.

The **University of Manchester**'s isolation of graphene, which drew on core research funding for UK universities, has led to an array of products incorporating graphene – including some of the world's bestselling cars, running shoes and smartphones. Building on this, the EU-funded GrapheneCore3 project aims to turn graphene innovation into commercial applications.

Manchester, Cambridge, Imperial, UCL, Sheffield, QMUL and Warwick took part in GrapheneCore3, with over 160 partner organisations in 24 countries and a €150m budget. Academics gained access to a huge network of research and expertise. Graphene Flagship partners created over a dozen new companies in areas such as photonics, medical technologies and materials production.

Academics working with industry and start-ups founded by students at **Imperial** have benefited hugely from European Innovation Council (EIC) funding, allowing acceleration towards market and scaling-up of businesses.

Multus, a startup founded by four Imperial students that is developing lab-grown meat products was awarded a €2.5m grant from the EIC Accelerator to help the company build a manufacturing facility and double the company's employees. Multus later received an additional £5.8m in a Series A funding round, supported by the EIC award.

Today's focus: UK participation in Horizon Europe

EU Framework Programmes have provided an enormous boost to R&I in the UK, across Europe and the world. Association to Horizon Europe was a top priority for the Russell Group and **participation for the full duration of the programme was the best outcome for UK and EU science**.

UK association to Horizon Europe is helping rebuild links between UK and EU researchers, innovators and universities. Now the UK is associated to Horizon Europe, the shared task for universities, business and the government is to realise the full benefits. Russell Group universities are raising awareness of Horizon opportunities with their academics, delivering targeted programmes to upskill potential applicants, helping applicants find partners to collaborate with and offering advice. Our members will continue to work with the government and all of our research partners to get the most out of Horizon.

Russell Group universities are investing to drive participation rates. For example, the universities of Edinburgh, Glasgow and Imperial created specific funds to support Horizon collaborations, and the University of Bristol deployed its International Strategic Fund for the same purpose. UCL holds weekly online drop-in sessions, open to external collaborators as well as UCL staff, to advise and support on Horizon Europe applications and grants.

Tomorrow's opportunity: the UK and Framework Programme 10

An early declaration of intent to associate to Framework Programme 10 (FP10 – the successor programme to Horizon Europe), will help secure and enhance relationships with EU partners. This collaboration will be critical to addressing the biggest challenges facing us, such as transitioning to a low-carbon future, tackling inequality and improving health outcomes. Committing to association now would also boost efforts to increase participation: partners in other countries will be more willing to build long-term collaborations within Horizon if future UK-EU ties in R&I are stable and predictable.

Dr Steven Spoel, at the **University of Edinburgh,** was awarded €2 million in 2020 to investigate how a group of proteins called ubiquitin help prevent plant disease and could produce new ways of protecting crops and boosting food security. Plant disease often affects crops and reduces agricultural yields, reducing food supply and costing billions of dollars a year. This research could produce more environmentally sustainable and longer-lasting defence against plant diseases.

Full participation in FP10, with as few areas excluded as possible, would also form a natural part of any EU-UK security pact. R&I can play a crucial role as the UK and the EU consider how to co-ordinate across military, economic, climate, health, cyber, and energy security issues. Ensuring the broadest possible scope for UK participation in FP10 maximises the opportunities to work together on these and other issues.

The **University of Sheffield's** Nuclear Advanced Manufacturing Research Centre (AMRC) led the Amos Project, a €2.6 million Horizon-funded collaboration between European and Canadian aerospace manufacturers and researchers. This project investigates the use of additive manufacturing techniques for repair and remanufacturing of aerospace components. It could significantly reduce the time and cost of regular maintenance and repair, reduce material waste, and extend the life of expensive components.

Meanwhile, discussions about what FP10 should look like are gathering pace, and the Russell Group has published a position paper on its future.[6] We hope the EU will build on Horizon's existing strengths by:

- protecting and further boosting **the role of fundamental research**
- including **more collaborative calls supporting genuinely new technologies**
- **promoting existing innovation opportunities** for university spin-outs and business collaborations.

These priorities align with ensuring FP10 works as well as possible for UK science, research and innovation, working with partners in other countries. In Horizon 2020, UK institutions received €4.1 billion in Pillar I, €2.5 billion in Pillar II and €1 billion in Pillar III funding: more fundamental research in FP10 means greater emphasis on a core UK strength within Horizon, and better value for money for UK taxpayers.[7]

Scientists at the **University of Oxford** pioneered mass photometry (MP), a method of analysing molecules enabling the accurate mass measurement of single molecules. It opens up new possibilities for bio analytics and research into the functions of biomolecules, with new applications in gene and cell therapy. EU Consolidator Grant and Proof of Concept (PoC) funding helped enable its development, with profound benefits for the life sciences. With external investment support from Oxford's innovation ecosystem and specialist innovation teams at Oxford University Innovation (OUI), a new company was formed. Refeyn, headquartered in Oxford, has over 170 employees, with products used extensively by pharmaceutical companies.

[1] Horizon Europe Budget, European Union (2024)
[2] EU Funding and Tenders Portal (R&I Projects)
[3] ERC (2023) and ERC (2024)
[4] EU Funding and Tenders Portal (Country Profile)
[5] EU Funding and Tenders Portal (R&I Projects)
[6] Framework Programme 10 briefing, Russell Group (2024)
[7] EU Funding and Tenders Portal (R&I Projects)

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