

## Horizon Europe – What are the benefits of a multilateral research programme?

*Horizon Europe is the world's largest collaborative research programme. It provides participants with unparalleled routes to international partnerships within and beyond the EU and an established infrastructure of funding and training. All parties agree that having the UK as an associate member of Horizon Europe will be mutually beneficial: creating capability resilience and huge opportunities for us, while also strengthening the programme in the face of research competition from China and elsewhere.*

*This is why British membership of EU science programmes was a key part of the post-Brexit Trade and Co-operation Agreement. With final sign-off on UK association currently stalled, it is important that work to develop an ambitious alternative programme has been continuing in the background. But why should we continue to try and secure our participation in Horizon Europe?*

### What does association to Horizon Europe, Euratom and Copernicus offer?

#### Ready-made routes to collaboration on a global scale

The UK punches above its weight in R&D, underlining its status as a genuine science superpower. International collaboration is a key pillar of this as we draw on talent and knowledge from around the world to boost our own capabilities, knowledge, and ideas base. At the core of the UK's global engagement strategy is participation in Horizon Europe. Along with Euratom and Copernicus, the Horizon programme builds on longstanding relationships and provides access to ready-made routes that make it easier for multilateral global collaboration between the UK and countries around the world. Under Horizon 2020 (the previous programme) the UK established over 237,000 collaborative research links in 163 countries, with 12% of the individual links outside the EU. This allowed us and our partners to operate on the same scale as countries such as the US and China.

#### Established funding streams benefitting British researchers and businesses

Horizon offers a range of network opportunities, facilities access, and funding – including grants, which the UK has been highly successful in winning. In Horizon 2020, for example, the 24 Russell Group universities alone won 1400 European Research Council grants worth €1.8bn – more than the whole of France. In the same round nearly 2,000 UK businesses received €1.4bn, with SMEs receiving more than €840m of that to boost jobs and opportunity across the country. The UK also benefitted from around €1.1bn from Horizon 2020 to train the next generation of scientists.

#### Recruiting the best and brightest

Association to Horizon Europe continues to be cited as a pull factor for the best and brightest research talent from around the world. Being able to draw on the collaboration, funding and training opportunities it provides levels-up the UK's offer to the best researchers in the world. Continued participation will help secure the UK's status in the 'Champions League' of R&D, with all of the economic, health and other benefits that follow. Ultimately, one of the key impacts of collaborative research is the diverse talent pool this creates, making the UK more resilient: able to meet new challenges as they arise (such as Covid) and better able to take opportunities and innovate as new and emerging technologies develop (such as AI and quantum).

University of Birmingham • University of Bristol • University of Cambridge • Cardiff University • Durham University  
University of Edinburgh • University of Exeter • University of Glasgow • Imperial College London • King's College London  
University of Leeds • University of Liverpool • London School of Economics and Political Science  
University of Manchester • Newcastle University • University of Nottingham • University of Oxford  
Queen Mary University of London • Queen's University Belfast • University of Sheffield • University of Southampton  
University College London • University of Warwick • University of York

## A seat at the table

As well as links to the best and brightest researchers from the 27 EU countries, Horizon projects build the links with partners around the world that help to shape the future of R&D. Those relationships are crucial not just for new innovations and breakthroughs but for shaping the future agenda and direction of science and research as it targets solutions to society's big challenges.

## What happens if we can't secure association?

Failure to secure association to Horizon, Euratom and Copernicus will significantly limit the UK's attractiveness as a destination for talent and investment. We will be locked out of our leadership position in key disciplines such as the health & life sciences and nuclear fusion – putting us in competition with countries that should be our key global partners. It will also make it harder for Britain to get a seat at the table to influence the agenda and direction of international science. Global collaborations of the kind that laid the foundation for vital breakthroughs like the Covid vaccines that unlocked the UK economy will become much more challenging without an established ecosystem to plug into.

To mitigate these risks, the sector is ready to work with the Government to develop an ambitious alternative programme, should it be needed, backed by the full funding set aside for Horizon and other science programmes. A UK alternative approach must prioritise:

- Large, long-term grants and fellowships for discovery research at all career stages and across all disciplines to attract and retain talented researchers from around the world
- Flexible and low-bureaucracy opportunities for bilateral and multilateral global collaboration, as well as uncapped third-country access to Horizon Europe
- A long-term end-to-end innovation programme to give SMEs and other businesses opportunities and support innovation in areas of industrial strength and new emerging fields.

## What kind of research would Horizon Europe facilitate for the UK?

### European AIDS Vaccine Initiative

EAVI is a consortium of researchers from 22 public organisations and biotech firms from across Europe, Australia, Canada and the US aimed at making protective and therapeutic HIV vaccines. Led by Imperial College London, EAVI was funded by a €23m Horizon grant, helping scientists pool knowledge and expertise to develop vaccines that can be taken to human trial in five years.

### More efficient solar energy capture, conversion and storage

At Newcastle University researchers are using a €1m grant from the European Research Council to develop new, more efficient ('P-type') solar panels that are better at capturing, converting and storing solar energy. Their research also aims to develop new engineering techniques to produce lower-cost solar panels making it easier to integrate them into house building, thus reducing reliance on fossil fuels, lowering energy costs and helping to deliver Net Zero.

### Taking a novel approach to combatting antimicrobial resistance

Researchers at Exeter University have been awarded a €2m grant to explore different 'languages' used by viruses to communicate and co-ordinate infections. Their focus is on Phages (viruses that attack bacteria) that can be used instead of antibiotics. Alternative treatments are becoming more important as a growing number of infections, including pneumonia and TB, become harder to treat with antibiotics, resulting in higher death rates, longer hospital stays and higher costs.

### Using ammonia to store renewable energy

Researchers at the University of Cambridge have recently won a €2.1m grant to investigate the possibility of using 'green ammonia' as a carbon-free way to store renewable energy. The process aims to provide a step change in how ammonia is synthesised – making it easier to store and distribute renewable energy created in geographically isolated locations. If successful it could be a major step towards a carbon-free future.