A post-Brexit agreement for research and innovation

Outcomes from a simulated EU-UK negotiation

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Nevertheless, the report itself was produced by Bruegel and Wellcome scholars as an analysis of what can be learned from the exercise, and unless otherwise stated the views presented in this report are our own rather than those of the participants themselves. The agreement itself was created by the simulated negotiation process rather than by Wellcome or Bruegel.

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Executive Summary

The UK will leave the European Union on 31 January 2020. Negotiators and commentators have spent more than three years discussing the terms on which the UK will withdraw, but comparatively little attention has been paid to the future relationship between the UK and the EU after Brexit at a sectoral level. Withdrawing is merely the first stage of the process, and the UK and the EU will soon begin to think about negotiating a new relationship and decide which issues to prioritise.

Research and innovation is one of the key areas in which the UK and the EU will need to establish a post-Brexit relationship. Over the past two decades, the UK and the EU have been at the forefront of that enterprise through the development of the European Research Area (ERA). Together, European nations have created a world-leading research base. Six of the world's top twenty universities are in the ERA, and Europe produces a third of the world's scientific publications with just 7% of the global population.

A new post-Brexit relationship on research and innovation will need to be negotiated to ensure we sustain and grow this valuable and mutually beneficial partnership. Research and innovation are critical to achieving lasting competitiveness and economic development, especially with the dominance of the USA and the rising challenge of China in this field. An early agreement providing for cooperation on research and innovation would reflect the economic and social importance of research and innovation to the people of the UK and the EU.

This report sets out what the Wellcome Trust and Bruegel have learned from a project to simulate a negotiation process between the UK and EU to create a post-Brexit research and innovation agreement. Our negotiating scenario assumed that the UK had left the EU with a withdrawal agreement, and that the negotiation was taking place during a 'standstill' transition period.

Our exercise demonstrated that it is possible to reach agreement among experts on the terms of an EU-UK research and innovation deal. However, the project also revealed that some elements of an agreement may be harder to negotiate than expected. A shared purpose and belief in the importance of research and innovation is not enough to see a deal come to fruition. It is also necessary to overcome a number of political and technical challenges that are spelled out in this report. The process must start now to ensure an agreement is reached as soon as possible. We hope that this report will provide inspiration and guidance for that process.

Our simulated negotiation highlighted specific areas for attention that we hope will create a roadmap for UK and EU post-Brexit discussions:

- **UK association to Horizon Europe[1] needs to be a core part of a research and innovation agreement**, and this would be a win-win for the UK and the EU. Both parties in our exercise wanted UK inclusion in all parts of Horizon Europe to be the default option. The teams hoped this would keep cooperation between the UK and EU as close as possible to its current levels
- **The EU moving away from its historical GDP-based financial formula could make it easier for the UK to agree terms**, as would the inclusion of a "correction mechanism" designed to address any "significant imbalance" between what an Associated Country pays in and the money it receives. This should reassure the UK that it will get value for money. Our teams reached an agreement based on the UK 'paying its way', including a contribution towards the running costs of the programme
- **Suitable precedent was found to provide the UK with an appropriate degree of influence over the Horizon Europe programme**, without needing to grant the UK formal voting rights. It was agreed that UK participation in the programme would mean accepting Court of Justice of the European Union and European Court of Auditors' jurisdiction in this area
- **Arrangements to facilitate the exchange of research workers and their direct families are essential to a research and innovation agreement**. Our negotiating teams were able to agree suitable wording on this issue, albeit through a commitment to establishing "reciprocal" and "favourable" arrangements rather than attempting to detail a specific system for achieving this
- **Finding suitable wording that reflected both teams' views on common standards was difficult**. The UK team sought to preserve UK sovereignty while recognising the practical benefits of common standards for research purposes. The EU team aimed to ensure high standards in the UK after leaving the EU. Wording on adopting regulatory approaches that were "compatible to the extent possible" was agreed, based on similar text in the October 2019 Political Declaration

- **Due to its importance to research, the teams also agreed a backstop mechanism for the sharing of personal data**. Facilitating the free flow of data for research was felt to be an essential part of an agreement, but the teams hoped that this could be superseded by a broader post-Brexit decision by the EU on the adequacy of the UK's data protection arrangements.

Our negotiation process explored a research and innovation agreement separately from broader political issues. This focused our work, but we sought to keep wider political issues and pressures in mind. Researchers are mainly influenced by the need for continuity in cooperation to maintain world-class performance on both sides of the Channel. Politicians and officials, however, will also be influenced by concerns over sovereignty, the unity of the EU's single market, and the autonomy of decision-making, as well as the parameters of the broader post-Brexit relationship between the two parties. Given our starting point, it is therefore likely that our process reached a post-Brexit agreement more readily than officials or politicians might.

Several of the most important issues for research and innovation overlap with these broader political discussions – for example, researcher mobility and common standards. Discussion of such issues as part of a research and innovation agreement would intersect with negotiations on the overall future relationship between the EU and UK, adding a significant layer of complexity to the process.

The UK and EU have two main options: either wait for the future overall shape of their relationship to be agreed first or pursue without delay a standalone research and innovation agreement.

With Horizon Europe due to begin on 1 January 2021, there is a significant risk that a research and innovation agreement will not be in place in time for the start of the programme. Delaying negotiations until after an overall EU-UK future framework has been agreed would increase this risk. The legislation establishing Horizon Europe is still being negotiated within the EU institutions, and countries wishing to associate cannot formally start the process until the legislation is in place. This will create further time pressures.

Any discontinuity in the UK's participation in Horizon 2020, the existing Framework Programme, or Horizon Europe, its successor, would be highly damaging to research and innovation in the UK and the EU. Our exercise suggests that the UK government and the European Commission must start work on a research and innovation agreement as soon as possible, and that this should be a priority.

A standalone research and innovation agreement represents the best chance of the UK fully participating in Horizon Europe from the start of the programme. The intersection with wider political discussions will be difficult to manage, but our exercise suggests that compromises could be found.

Dr Michael Leigh, Project Facilitator

Dr Beth Thompson, UK team lead

Professor Reinhilde Veugelers, EU team lead

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Chapter 1: Introduction

This chapter of our report explains the background to our project and sets out why there is a need to explore what a post-Brexit agreement on research and innovation would look like. We also explain our objectives for the project and the limitations of the exercise.

Background

The UK will leave the European Union on 31 January 2020. Negotiators and commentators have spent more than three years discussing the terms on which the UK will withdraw, but comparatively little attention has been paid to the future relationship between the UK and the EU after Brexit at a sectoral level. Withdrawing is merely the first stage of the process, and the UK and the EU will soon begin to think about negotiating a new relationship and decide which issues to prioritise.

Research and innovation is one of the key areas in which the UK and the EU will need to establish a post-Brexit relationship. This report sets out what the Wellcome Trust and Bruegel have learned from a project to simulate a negotiation process between the UK and EU to create a post-Brexit research and innovation agreement.

The importance of a post-Brexit research and innovation agreement

The UK and the EU have a rich history of scientific cooperation. Together, European countries have created a world-leading location for research and innovation. Six of the world's top 20 universities are in the European Research Area (ERA), and Europe produces a third of the world's scientific publications with just 7% of the global population.[2,3,4]

EU-UK cooperation is key to this success: 60% of the UK's internationally co-authored papers are with EU partners.[5] Thirteen of the UK's top 20 'most collaborated with' countries are EU Member States.[6] Cooperation with the EU is also associated with exceptional performance. Collectively, University College London (UCL), Imperial College London, Oxford University and Cambridge University publish about one-quarter of the UK's research output, and their collaboration with EU partners is greater than for UK universities overall, at 35% of the total publications in 2016 (compared to a UK average of 31%).[7] The 2013 Nobel Prize in Physics was shared between Peter Higgs, a British researcher, and François Englert, a Belgian researcher, whose fundamental work was confirmed through experiments at CERN's Large Hadron Collider in Switzerland.

Science is important for the future prosperity of the EU, the UK and Europe as a whole. Research is key to ensuring that the UN Sustainable Development Goals are met, including in addressing the challenge of climate change. Advances in science and engineering are needed to transition from combustion engines to electric vehicles and to enhance energy storage capabilities. Developing a better understanding of how the planet is changing will also be vital, including forecasting rises in sea levels, understanding impacts on biodiversity, identifying extreme weather patterns and understanding the implications for health. For all of this, advances in research and innovation will be essential.[8]

Cooperation on research is even more important in the light of growing international competition. China is building up its global competitiveness in knowledge-intensive sectors and aims to be a global leader in science and innovation by 2050. China outperforms the European Union in terms of expenditure on research and development as a share of its GDP, and already produces about the same number of scientific publications, and more PhDs in natural sciences and engineering, than the United States[9].

World-leading research and innovation capacity is also critical to achieving lasting economic development. According to research by the European Commission, for every €1 spent in Framework Programme 7 (one of a series of EU funding programmes on research and innovation), the direct and indirect economic effects through innovations, new technologies, and products is €11.

More broadly, evidence shows that international cooperation makes science stronger. Analysis of the most highly cited research publications shows citation rates increase when the UK and EU collaborate, compared to papers published without the other partner. Even a temporary pause in cooperation between the UK and the EU would be damaging to both parties.

Our project

Wellcome has argued previously that there is a need for a post-Brexit agreement on research and innovation, either as a chapter within an overall EU-UK agreement defining future relations or as a standalone science deal.[12] Many in the research community assume that agreeing the terms of a science deal is likely to be relatively straightforward, since the interests of the UK and EU are well-aligned in this area. However, this assumption has not yet been tested.

Previous work in this area has focused on what 'the research community' across the UK and the EU sees as being important, based on scientific needs. For example, Wellcome's Future Partnership Project with the Royal Society consulted individuals and organisations across Europe to identify the key themes that a research and innovation agreement would need to encompass, and it brought researchers together to explore the results. Key issues were access to EU Framework Programmes, cooperation on pre-competitive regulation, and facilitating the movement of people; these are summarised in Wellcome's 'Brexit and Beyond' report.[13]

Wellcome and Bruegel came together in summer 2019 to take this previous work to the next level. Using the themes previously identified as important to research, we introduced the dynamics of a negotiation between the two sides to explore what could realistically be agreed in this area. By focusing on the objective of producing the text of an agreement, we sought to explore:

- whether the win-win nature of the negotiation led naturally to an agreed text;
- what the UK and EU teams considered to be their priorities and negotiating objectives; and
- which themes led most swiftly to agreement and which issues required greater negotiation and ingenuity to resolve.

Our work was designed to inform the UK government and the European Commission's prioritisation of issues after Brexit. Once the UK has left the EU, a broad range of negotiations will need to take place to determine the future relationship, as laid out in the draft Political Declaration. We hope that our work will help define the place of research and innovation in that process, especially considering the importance of reaching agreement before the start of Horizon Europe on 1 January 2021.

What is Horizon Europe?

The research and innovation agreement negotiated in this exercise placed association to Horizon Europe at the heart of the agreement. Horizon Europe is the EU's ambitious €100 billion research and innovation programme that will run from 2021–2027. The programme aims to strengthen European science and technology research, boost innovation capacity, competitiveness and jobs, and deliver on citizens' priorities. Horizon Europe will also address global challenges – including climate change, food security, and cancer. The Commission has made its proposal for Horizon Europe and is currently in negation with The Council of the European Union and the European Parliament.

Horizon Europe is the ninth Framework Programme for research and will be the successor to the current programme, Horizon 2020.

'Association' vs 'Third Country' status

The legislation for Horizon 2020 allows non-Member States to participate either as an 'Associated Country' or as an 'industrialised third country', and it is expected that Horizon Europe will operate on a similar basis.

Associated countries participate in all parts of Framework Programmes through a dedicated association agreement. Organisations and researchers from Associated Countries have a similar status to those from EU Member States and can participate under the same conditions. The variety of existing models of association reflects the diversity of countries involved – for example, the agreement with Israel does not include freedom of movement or regulatory alignment. On the other hand, as a European Economic Area (EEA) member, Norway is in the EU single market and signed up to free movement of people.

Association to the Framework Programmes through an agreement should not be confused with the much broader 'Association Agreements' that the EU has with some countries, which set out economic and political cooperation in areas of mutual interest.

Industrialised third countries can only participate in some parts of the Framework Programmes. If the UK were a third country for the purposes of Horizon 2020, it would not be able to participate in the European Research Council and Marie Skłodowska-Curie Actions programmes, and would have no access to funding for industrial partnerships and collaborations. UK researchers would also be restricted from leading projects funded through the Framework Programme.

The UK and EU's shared intention to create a research and innovation agreement

Encouragingly, the British government and the European Commission have both expressed interest in ensuring that cooperation on research and innovation continues smoothly after Brexit.

In its "report of the independent High Level Group on maximising the impact of EU Research & Innovation Programmes", the Directorate-General for Research and Innovation recommended that:

> Whatever Brexit modalities are agreed between the UK and the EU by 2019, full and continued engagement with the UK within the post-2020 EU R&I programme remains an obvious win-win for the UK and the EU. The UK has one of the strongest science bases of all European countries. A positive cooperation model (e.g., based on mutual investment) should be established, so that the UK remains part of the European Research Area.[14]

The current draft Political Declaration (October 2019) on the UK and EU's future relationship includes an agreed expression of intention to cooperate on research and innovation:

> Noting the intended breadth and depth of the future relationship and the close bond between their citizens, the Parties will establish general principles, terms and conditions for the United Kingdom's **participation in Union programmes**, subject to the conditions set out in the corresponding Union instruments, in areas such as science and innovation […]
>
> The Parties should engage in dialogue and exchanges in areas of shared interest, with the view to identifying opportunities to cooperate, share best practice and expertise, and act together, including in areas such as culture, education, science and innovation. **In these areas, the Parties recognise the importance of mobility and temporary movement of objects and equipment in enabling cooperation**. […]
>
> The Parties agree to consider conditions for entry and stay for purposes such as research, study, training and youth exchanges.[15]

The political will for a post-Brexit research and innovation agreement clearly exists. This would be of mutual benefit to the UK and the EU. The focus for our project was to identify what this might look like in practice.

Project limitations

Our project, and therefore the draft agreement text itself, was limited in a number of ways which should be acknowledged and understood:

- Our negotiation process was run over three sessions – a real negotiation is likely to take much longer than this. This meant the scope of the exercise was limited to a small set of key issues
- Several adjacent issues that were felt to be important to both teams – such as UK participation in the Erasmus Programme and Euratom – were not dealt with in detail but will need to be addressed fully in the real negotiations
- We did not devote time to exploring the specifics of access to the many different research infrastructures in the UK and EU. Those that are not covered by the Framework Programmes directly have their own individual legal basis and would require dedicated attention
- The focus of our work was primarily on research rather than innovation, and there are likely to be additional areas of interest in a research and innovation agreement that we have not considered. The teams we assembled had expertise in academic research in particular. In the limited time we set for our exercise, we prioritised issues relating to academic research, and many of these will be relevant to innovation (including association to the whole of Horizon Europe). This should not be interpreted as suggesting that other innovation elements of a research and innovation deal are any less important than those relating to research
- While the agreement produced is presented in a formal legal style, the focus of the project was the negotiation itself rather than ensuring that the text of the agreement is legally robust
- The project explored the feasibility of a research and innovation agreement separately from the far more complex question of the overall future relationship between the EU and the UK. The assumption that it is possible to consider research and innovation separately may not be confirmed in practice, particularly if the EU and UK work on the basis that "nothing is agreed until everything is agreed"[16]
- Participants were drawn primarily from the research community, with the inclusion of a small number of former senior officials and others to provide political insight. This may have tilted the outcome towards cooperation rather than confrontation. Actual negotiations may well be more politically challenging
- We asked our participants to assume that the negotiation was taking place in a cooperative environment, and that sufficient time had passed for the manner in which the UK withdrew from the EU not to impinge on the negotiations. This may not prove to be the case, and we explore this question further in Chapter 4
- While we aimed to inject a degree of political realism into the simulated negotiation, the agreement produced is not intended to be a prediction of what might occur. Rather it is a demonstration that agreement is possible, and a way of identifying the main challenging issues. The extent to which our agreement might be politically acceptable is explored in Chapter 2.

Chapter 2:
Our simulated negotiation process

In this chapter we set out the process we used for our project, including the scenario we adopted, the composition of the negotiating teams, and an overview of the dynamics of the process as the simulation was conducted. We explain below how existing precedents were used to provide a structure for the agreement, and conclude with some reflections from the participants.

The teams

The teams comprised researchers alongside individuals with experience of working within or with the European Union, to create groups that would bring a degree of political reality alongside an understanding of the needs of research and innovation. We asked the teams to combine the scientific community's desire for a deal with a realistic assessment of what each side could offer and accept, and to bear in mind how any compromises could be sold to the UK government or the Commission and the EU. However, we did not ask the participants to adopt specific named 'roles' or identities to mirror the real negotiation environment, nor did we attempt to 'war game' their responses to any simulated 'political events' during the process.

Over the course of the project the following participants contributed to their respective teams:

EU negotiation team

Name	Position/Affiliation
Reinhilde Veugelers	**EU team lead. Senior fellow at Bruegel. Full professor at KU Leuven in Department of Management, Strategy and Innovation**
Alessandro Damiani	President of APRE, the Italian Agency for the Promotion of European Research
Marga Gual Soler	Science Diplomacy Consultant, Founder & Director, SciDip GLOBAL. Member of the Research, Innovation, and Science Experts Group (RISE) to former European Commissioner Carlos Moedas
Debarati Guha	Director of the Centre for Research and Epidemiology of Disasters (CRED)
Mark Hallerberg	Non-Resident Fellow, Bruegel
Martin Mueller	Executive Director Academic Forum, Geneva Science and Diplomacy Anticipator
Karin Sipido	Professor of Medicine and Head of Experimental Cardiology at KU Leuven, University of Leuven
Luc Soete	Rector Magnificus and professor of International Economic Relations at the School of Business and Economics, Maastricht University
Annika Thies	Director of the Brussels office, Helmholtz Association
Jan Truszczyński	Former Director-General of Education and Culture of the European Commission (Appointed 2009)

UK negotiation team

Name	Position/Affiliation
Beth Thompson	**UK Team Lead and Head of UK and EU Policy and Advocacy, Wellcome Trust**
Eilis Ferran	Pro-Vice-Chancellor (Institutional and International Relations), University of Cambridge
Clare Moody	Member of the European Parliament for South West England, 2014–19
Andrew Scott	Professor of European Union Studies at the University of Edinburgh Law School
Uta Staiger	Pro-Vice-Provost Europe and Executive Director, UCL European Institute
Janet Thornton	Director Emeritus of EMBL-EBI and Senior Scientist
Paolo Vineis	Chair in Environmental Epidemiology, MRC-PHE Centre for Environment and Health, Imperial College London

The scenario

A hypothetical scenario was constructed to try and move the participants away from the current political uncertainty around the UK's withdrawal from the EU and focus instead on what a future relationship between the two parties might entail. The main premise of the scenario was that the UK left the EU in late 2019, or early 2020, and that the 'dust had settled' following its departure.

We asked participants to assume that the UK had left the EU with a withdrawal agreement in place and that a transition period had followed. However, it is possible that reality may diverge from this scenario, as the risk of a no-deal Brexit remains in play. At the end of our negotiation process we asked the participants to reflect on how a no-deal withdrawal would have affected our exercise. Comments from participants are assembled in Chapter 4. They provide some clear messages on the need to avoid this outcome and the effect this would have on the prospects of securing a timely post-Brexit research and innovation deal.

The negotiation structure

The simulated negotiation took place over three face-to-face meetings in Brussels and London, with additional team meetings and bilateral contact between individuals on an ad hoc basis. The meetings were overseen by a project facilitator, Dr Michael Leigh, Academic Director, European Public Policy, Johns Hopkins University, School of Advanced International Studies, Bologna, Italy. Dr Leigh's experience as a former senior European Commission official helped us to ensure that the exercise ran smoothly and was informed by the process of real EU negotiations. He offered his advice and expertise to both teams, while also acting as chair for the meetings and keeping the negotiations moving forward.

The project began with a scoping meeting in Brussels – an initial opportunity for the teams to meet, both separately and together, set out their broad expectations for the project, and determine what issues should be included in the negotiation process. At this early stage, agreement in some areas was already reached. Where agreement could not be reached, each team designated a person to lead on that issue in discussion with their counterpart from the other team.

The teams met again separately in the following weeks and bilateral communication began. The Bruegel and Wellcome secretariat produced a first draft text – using each team's opening positions and current Horizon 2020 association agreements as a template. The draft agreement contained elements of standard text which were unlikely to be controversial, areas where broad agreement had already been reached, and key areas where further negotiation was needed.

The main face-to-face negotiation took place on 17 September 2019. This meeting was structured to allow back-and-forth negotiation sessions and separate team meetings, with the aim of reaching final agreement on all outstanding issues. Progress was made but no final agreement could be reached. It was, therefore, decided that a final negotiation session would be needed, and offline negotiations between team members would continue in the meantime.

The final negotiation session was held in London on 11 October 2019, where agreement on the text of a deal was reached. The text of the deal is appended to this report, and Chapter 3 provides an explanation of how the wording was arrived at.

Our use of existing precedents

Much of the text in the agreement produced by this process is based on text from existing Horizon 2020 association agreements – particularly those for Norway, Switzerland, Israel, Ukraine and the Faroe Islands. We focused specifically on the precedents of the Horizon 2020 agreements as these provided the level of specificity needed and reflected the negotiating teams' focus on associating to Horizon Europe as a core component.

The EU also has a range of bilateral science and technology agreements with other countries that do not include association to the Framework Programmes. For instance, with the USA, Japan and Mexico. The EU can also include science cooperation as part of wider free-trade agreements. For example, CARIFORUM-EU Economic Partnership Agreement.[17]

These agreements are generally more aspirational in tone, setting out broad areas for cooperation. For example, promoting visits and exchanges, sharing information, and setting up joint projects, workshops and conferences.[18] The agreement we produced includes elements of this more aspirational wording (e.g. Article 4). This was included to ensure cooperation between the UK and EU was not confined to the Framework Programmes and should be expanded wherever possible.

Using existing precedents, particularly those from Horizon 2020 association agreements, gave a starting point to this project and provided guidance to the participants. However, deviation from existing precedents may be justified considering the size of the UK and the fact it is already a significant partner to the EU in research and innovation. The Brexit situation itself is unprecedented, which calls for creativity and flexibility on all sides.

The text agreed through our process diverges from existing Horizon 2020 association agreements in various ways. The most noticeable of these is the basis for financial contributions to the programme, although this reflects the expectation that Horizon Europe contributions will need to be calculated in a different way from predecessor programmes. This is explored in more detail in Chapter 3.

An overview of the negotiation

A detailed discussion of the specifics of the agreement reached through this simulation is given in Chapter 3. However, the general shape of the negotiation process and the participants' experience of it also provides some valuable insights.

Initial meeting

The negotiations began positively. Both teams came to a similar view as to what issues a deal should cover, and their opening offers broadly matched each team's expectations.

In this meeting, and throughout the process, the participants grappled with how far the agreement they were creating should be a completely standalone deal or designed to be subordinate to a wider free-trade agreement. This would affect what needs to be included in a research and innovation deal and what would be better covered in other agreements between the parties. This issue is discussed further in Chapter 4.

The EU team started by stressing the importance of reaching an agreement for the benefit of research and innovation in both the UK and EU. They saw an agreement on research and innovation as a win-win for both sides. The EU team recognised the UK's contribution to European research over the last 40 years and the collective need for collaboration to continue. They offered the UK full participation in Horizon Europe (with no cherry-picking of certain areas) and suggested that the terms of such an agreement be closely based on similar association agreements to Horizon 2020. They were clear that any "special treatment" towards the UK in comparison to other Associated Countries would need to show a clear added benefit to the Union.

Scientists on the EU team saw the current research and innovation relationship between the EU and UK (with the UK as a Member State) as mutually beneficial and wanted to keep as many arrangements as close as possible to the status quo. However, other participants and observers noted that changes in the EU-UK relationship would be necessary following Brexit, even if they were not in the interest of scientific cooperation. Difficulties arose at various points in the negotiations when attempts to maintain the status quo, for the benefit of research and innovation, were found to be in conflict with the teams' views of what would be politically acceptable.

The UK team reciprocated the EU's positive opening tone. They noted the importance of EU cooperation to its research and innovation sector and the role that EU funding and EU scientists have had in creating a strong research base in the UK. The UK team stated its commitment to the EU scientific community and its strong desire to continue collaborating, no matter what happens with Brexit. The UK team also wanted full access to Horizon Europe and made an upfront commitment to fully cover the financial cost of its participation, including a contribution to the programme's administration costs.

Both teams were clear that a research and innovation deal would have to go beyond the provisions of a typical agreement focused on association to a Framework Programme. They agreed that arrangements on researcher mobility and regulatory alignment would need to be included to make any deal acceptable to both sides.

The UK team made an early decision to accept Court of Justice of the European Union oversight on this agreement and not to ask for voting rights in the committees that administer Horizon Europe – two areas that could potentially have been contentious. The UK team did not believe that this would be deliverable by the EU side, as it would be unprecedented, and that pushing these issues would waste time and set the wrong tone for the negotiations.

Second meeting

The second joint meeting, the main negotiation, proved to be more challenging. While there had been broad agreement on the objectives for the negotiation, it was harder to find agreement on specific wording that would be acceptable to both teams. On the three key remaining areas for negotiation – people, money, regulation – progress was slow, and ultimately no conclusion was reached.

The UK team in particular gave a lot of thought to how to balance what might be desirable for the research community against what was likely to be politically acceptable to the UK government. In some areas this prompted the UK to begin by offering general statements of intent, using phrases such as "best endeavours", instead of the binding commitments. The EU team also struggled with its own internal dynamics, trying to find positions that would be acceptable to all its team members and, in turn, the wider Union. This led the EU to stick closely to precedent and what had already been offered, or was expected to be offered, in other association agreements.

Final meeting

A third and final negotiation meeting was added to the process to focus on crystallising existing progress into agreed text and to focus attention on a small number of outstanding areas. Finally, agreement was reached on the text of a deal, subject to minor modifications to reflect the spirit of the discussions.

The overall outcome

Both teams were happy with the negotiated deal, with a shared belief that the negotiations were conducted in a constructive and pragmatic manner. This process has shown that a deal is possible if focus remains on the mutual benefits of cooperation on research and innovation. However, it is important to recognise the actual negotiations may be more hard-nosed and less pragmatic than our process. This could see the EU and the UK being less willing to compromise. The UK team are aware this agreement is close to a best-case scenario for the UK. It is likely, with wider political factors at play, the actual negotiations will see the UK having to offer more and expect less in return.

It is possible that in reality the agreement our process produced would not be politically acceptable to the Commission, the Member States or the British authorities. However, in many areas the agreement draws on existing precedents, including Horizon 2020 association agreements.

Chapter 3:
Our research and innovation agreement

In this chapter we analyse the key issues in the research and innovation agreement that our process produced, explaining the background to each area, the positions that the two teams adopted, and the conclusion of the negotiating process. This provides a guide to interpreting the text of the agreement produced.

Major themes in the agreement

As noted in Chapter 2, the format of the agreement is based on existing Horizon 2020 association agreements, with additional content added to reflect the broader ambition of the proposed deal.

To provide a framework for the discussions, Wellcome staff analysed the EU's association agreements with Norway, Switzerland, Israel, Ukraine and the Faroe Islands and assembled a skeleton agreement. This also provided a set of precedents in areas such as influence and calculating an Associated Country's financial contributions.

Using existing association agreements as a model for our deal raised the question of whether it should be a standalone agreement or subordinate to an overall framework for EU-UK relations. This issue is considered in more detail in Chapter 4.

The full text of the agreement produced is appended to this report. In each section that follows we begin with key quotations from the final text and then go on to explain how this was agreed and why. We have arranged the key issues as follows, grouping together information that is spread across different sections of the agreement text itself:

1. **Full participation in Horizon Europe**
2. **Financial contribution**
3. **Governance and 'soft influence'**
4. **Dispute settlement**
5. **Researcher mobility**
6. **Regulation and common standards**
7. **Free flow of data for research**
8. **Erasmus, Euratom and access to infrastructure**
9. **Time to implement 'enhanced' provisions**
10. **Areas not covered by the agreement or not discussed in detail as part of the process**

1. Full participation in Horizon Europe

Background

As a Member State, the UK has benefited from complete access to the Horizon 2020 programme. Other non-EU countries such as Israel and Ukraine have dedicated association agreements that also allow them to participate fully.

The successor programme, Horizon Europe, will begin in 2021 – when the UK is expected to no longer be a Member State. The current proposed draft regulation establishing the Horizon Europe programme suggests that third-country participation could be limited – either by excluding non-Member States from entire pillars of the programme[19] or limiting participation in areas relating to security[20]. It is currently unclear whether Associated Countries will be able to access single-beneficiary schemes such as European Research Council grants.

From the opposite point of view, it is conceivable that a country wishing to associate to Horizon Europe might want to pick and choose which elements of the programme it wished to participate in, perhaps prioritising only the area's most important to its own research interests or programmes in which it has been more successful in the past.

Negotiating positions

The EU team was clear from the start that the UK's association agreement would be closely based on precedents established by existing Horizon 2020 association agreements, and that anything beyond that would need to demonstrate clear benefit to the Union.

During the initial scoping meeting it become clear that both parties wanted the UK to be a full member of Horizon Europe, with access to all pillars and parts of the programme as a default, including the single-beneficiary schemes. Both parties were keen to keep cooperation as close as possible to the mutually beneficial relationship that was enjoyed when the UK was a Member State.

However, the possibility of exclusion was clearly established in the draft regulation for Horizon Europe, and both teams recognised that in some circumstances it would be justifiable for the UK not to participate in certain programmes (for security or market sensitivity reasons). The UK team made it clear that any wider exclusion from whole areas, like the European Research Council, or other single-beneficiary grants, would undermine any benefit to the UK from participation in the programme, and privately they discussed the possibility of walking away from the negotiations if this were the case.

> The United Kingdom shall have access to all pillars and horizontal programmes under the framework, unless specified in the work programme in accordance with [Article 18.5 of the regulation to establish Horizon Europe]. Should any limitations on United Kingdom participation in specific work programmes be introduced under [Article 18.5], the Joint Committee established by Article 16 of this agreement must be notified at least six months in advance of the limitation coming into force.
>
> — Paragraph 5 of the research and innovation agreement our teams negotiated.

Outcome

The teams concluded that full participation in Horizon Europe would be the default, but in any situation where the EU wished to exclude the UK from specific programmes, the joint committee, established as part of this agreement, (see section 3 below) would be informed at least six months before any exclusion came into force. The EU team agreed not to exclude the UK from entire pillars or parts by default (such as single-beneficiary schemes).

2. Financial contribution

Background

To participate in Horizon 2020, a GDP-based formula is used to determine the financial contribution of Associated Countries. The standard formula, used by Switzerland, Israel, Ukraine, the Faroe Islands and others is as follows:

> The proportionality factor governing the contribution of [country] shall be obtained by establishing the ratio between the gross domestic product of [country], at market prices, and the sum of gross domestic products, at market prices, of the Member States of the European Union.[21]

That is, the GDP of the country is divided by the total GDP of the EU Member States to determine that country's proportional contribution.

Norway and Iceland, as members of the European Economic Area (EEA), use a modified GDP formula with their own GDP added to the denominator. This results in a lower total cost than for other countries using the standard formula above.

How much the UK is willing to pay into Horizon Europe could depend on how much it expects to get back from the program. The UK is currently very successful in Horizon 2020. It is currently second in both the number of participants in the programme and the amount of programme funding received. The UK's current average success rate in Horizon 2020 is 14.6%, compared to the EU average of 12%.[22] In certain programmes, the UK's success is even higher – receiving 22% of total European Research Council funds[23]. Between 2007 and 2013, the UK received €8.8 billion of direct EU funding for research, against an estimated contribution of €5.4bn.[24]

However, the UK has already seen a dip in its success rate since the referendum result. Figures from EU databases show that the UK's share of funding fell from 16% of Horizon 2020 funding in 2015, just before the referendum, to just over 11% in 2018. The figures also show that the number of UK applications to Horizon 2020 fell from 19,127 to 11,746 over the same period – a reduction of nearly 40%.[25]

On the other hand, several countries are content to be net contributors to the Framework Programmes – clearly recognising that the benefits of participation are more than financial. For example, Norway has made association a core element of its national research policy since 1987 despite often paying more into the programme than it receives back.[26] The Norwegian Research Council has described full association as "without any doubt our country's most important international partnership within research and innovation".[27]

The UK's GDP is such that it would be the largest non-member contributor to the programme if its financial contribution were to be calculated using the Horizon 2020 methodologies, at around £1.5 bn per year.[28] Some commentators have suggested that this would mean that the UK should be able to demand a greater degree of influence over the programme (see section 3).

> The financial contribution of the United Kingdom to the Programme shall be established on a yearly basis in addition to the amount available each year in the general budget of the European Union. The United Kingdom's contribution shall be obtained using a rolling average of its receipts committed under the Programme and its predecessor, Horizon 2020. The average will be calculated over the previous three years in which the United Kingdom was an active participant in the Programme or its predecessor.
>
> Where figures from the predecessor programme are used in calculating the three-year rolling average referred to [above], these will be scaled to reflect the budget for Horizon Europe. Active participation shall be understood to mean participating as a Member State or an Associated Country.
>
> An appropriate figure to cover programme functioning costs will be added to the UK's annual contribution. This figure will be based on the most recent and accurate data available to the European Commission.
>
> — Paragraphs 27–29 of the research and innovation agreement our teams negotiated.

On the other hand, and as reflected in EU proposed text establishing rules for participation in Horizon Europe, the EU is expected to move away from a fixed GDP-based formula for computing the contributions of Associated Countries.[29] Under the proposed Horizon Europe rules, contributions are to be regularly and automatically corrected so as to reflect "fair balance"[30] (or address "any imbalance"[31]) as regards each country's contributions and benefits. This automatic correction mechanism effectively implies a move away from fixed GDP-based contributions.

The wording leaves much room for interpretation – i.e. the initial contribution, though ultimately corrected, may still be based on a GDP-based formula. What is clear however, is that the EU is looking to tie participation more closely to the

direct financial benefit received by each partner country, rather than on the relative size of the country's economy. This move away from a fixed GDP-based formula may be motivated by several factors. Most relevant for our discussion is the EU's ambition to broaden the Horizon Europe associations to include large economies such as the USA and Canada. Given their size and potential level of participation, a fixed GDP-based formula may make such an association unattractive to these countries.

Negotiating positions

Both teams agreed it would not be politically acceptable to the EU for the UK to remain a net beneficiary of Framework Programme funding as a non-Member State. The EU team did not see "subsidising" UK research and innovation at the cost of its own Member States as acceptable to the Union, and the UK was willing to accept this, given that the draft regulation for Horizon Europe suggests this will be the EU's position.

The UK team's position was that the UK should "pay its way" to participate in Horizon Europe, albeit with an additional contribution to cover programme administration and running costs. Recognising that the benefits of participation were more than financial, the UK wanted to make a "generous and fair" contribution, fully covering its participation. The UK team did not want to accept a GDP-based formula – considering the size of UK GDP and the large upfront costs this would involve, even if it were subject to the subsequent correction mechanism.

The UK team was also conscious that the UK's current high success rate under Horizon 2020 may not continue into Horizon Europe, making a seven-year commitment to large GDP-based payments a risk, even with a subsequent correction mechanism. The UK team was also mindful of increased public and political scrutiny over payments to the EU, and the need to demonstrate value for money.

The EU team focused on the mooted correction mechanism, deciding that the initial upfront payment was less important if any "significant imbalance" between an Associated Country's contribution and receipts would subsequently be rebalanced. The EU team was ready to move away from the GDP calculation, feeling it was no longer relevant in the context of the correction mechanism. Furthermore, the EU team was keen to stress that administration costs, around 5% in Horizon 2020,[32] were not the same as the true functioning costs of the programme and wanted to ensure any contribution by the UK acknowledged this difference.

'Functioning costs' refer to all costs incurred in "the management, execution and operation of the Programme",[33] of which administration costs are just a subset. For example, functioning costs also include expenses relating to "evaluating the achievement of [the Programme's] objectives […] to the studies, meetings of experts, information and communication actions, in so far as they are related to the objectives of the Programme, as well as expenses linked to information technology networks focusing on information processing and exchange".[34]

Some dissenting voices on both teams worried about the precedent that moving away from a GDP-based approach would set. They believed that the defining feature of the Framework Programmes was the concept of the "communal pot", with excellence being the only criteria used to determine which projects or people were funded. They were concerned that a combination of the "pay as you go" contribution and the correction mechanism would lead to a "juste retour" approach to research funding – with every participant expecting to get back what it pays in.

The EU took a very even-handed approach to the UK financial contribution – deciding that a new "pay in what you take out" formula would be acceptable if the functioning costs were also covered. If pushed, the UK team would have accepted a GDP-based formula, although this was not its preferred outcome. This would have resulted in a considerably higher initial UK contribution (before 'corrections'). If the EU team had pushed for a GDP-based calculation, the UK would likely have asked for more concessions elsewhere in the agreement in an attempt to justify such a large financial settlement.

Outcome

The teams agreed that the UK's annual contribution should be calculated from a rolling average of the UK's 'programme receipts' over the previous three years. Programme receipts refers to money received by the UK from the programme in the form of grants to UK researchers and organisations. The initial annual contribution to Horizon Europe would be calculated using the UK's average receipts during the whole of Horizon 2020, scaled up to represent the new Horizon Europe budget. In subsequent years, as new Horizon Europe figures become available, they would be incorporated into the rolling average. The teams agreed that only "active years", where the UK is a Member State or Associated Country, would count. This would protect the EU if there was a discontinuity in UK participation which would cause UK receipts to fall dramatically – and thereby pull the rolling average down.

The teams also agreed that the UK would pay an additional percentage on top of its yearly receipts to compensate the EU for the administration and running costs for the program. It was agreed that the two teams did not have the relevant information to determine what this percentage should be. The UK team was content for the Commission to calculate an appropriate contribution to the costs using the most recent and relevant data. They did, however, stipulate that "appropriate" be added to the agreement to prevent this clause being used more generally to increase the UK's contribution.

How the correction mechanism will work in practice, such as the level of financial imbalance that triggers the correction mechanism, was not negotiated. It was felt that these details will be set in the final Horizon Europe legislation, and as the mechanism will apply to all Associated Countries equally, further negotiation was not needed.

3. Governance and 'soft influence'

Background

Countries associated to Horizon 2020 have some 'soft influence' over decision-making as part of the programme, even without the formal representation that comes with being a Member State. Associated Countries can participate in Programme Committees, the committees which oversee and administer the Framework Programmes. Associated countries do not have voting rights in these committees, but they do have the same access and speaking rights as Member States. Representatives from Associated Countries can also participate in the European Research and Innovation Advisory Committee (ERAC), Expert Advisory Groups and working groups which support and advise the Programme Committees.

However, there is also precedent for Associated Countries to have additional mechanisms for influence. Israel's association agreement establishes a designated "Joint EU-Israel Committee". This committee has responsibility to "evaluate and review" the implementation of the Israel association agreement, and "to ensure and facilitate the timely and continuous provision of information concerning the implementation of activities under the Horizon 2020 Programme".[35]

Negotiating positions

The UK team took an early decision not to pursue formal voting rights, as this would be unprecedented for a non-Member State. Their view was that securing this would also be of limited benefit, since Programme Committees are consensus driven and votes are very rare.[36] The UK team also understood the political need for the EU to distinguish between member and non-Member States, and that voting rights are an important way to do this.

However, the UK team did want to secure additional informal influence and proposed that a joint EU-UK committee should be formed. Like the EU-Israel Committee, it would be responsible for monitoring and overseeing the delivery of the agreement but also ensure the regular exchange of views between the two parties. However, it appears that the EU-Israel Committee only meets every two years, and the UK team wanted a commitment to more regular meetings secured in the text. During the negotiation the EU team argued that this was unnecessary: the agreement states that "the Committee shall meet upon the request of one of the Parties", reflecting the arrangements Israel currently has.

The UK requested additional influence over the long-term strategic direction of Horizon Europe through the joint committee. This is something not currently granted in any Horizon 2020 association agreement. The UK asked that the scope of the proposed joint EU-UK committee be extended to include the discussion of "strategic priorities", to give the UK some say over the long-term direction of the programme. The UK team felt that Horizon Europe's move towards a more "top-down", mission-led, approach to research[37] could make UK influence in this area even more important.

> The Joint EU-United Kingdom Research and Innovation Committee composed of the representatives of the European Union and the United Kingdom is hereby established. The Committee's functions shall include the following:
>
> (a) To ensure, evaluate and review the implementation of this Agreement.
>
> (b) To ensure and facilitate the timely and continuous provision of information concerning the implementation of activities under the Horizon Europe Programme.
>
> (c) To discuss the future orientations and strategic priorities of the Programme, and policies to support the European Research Area.
>
> — Paragraph 16 of the research and innovation agreement our teams negotiated.

The EU team accepted that the knowledge and expertise of the UK research community was an asset to the Union. They agreed that maintaining this influence, via formal and informal channels, was in the interest of both the UK and EU. The EU saw granting the UK's request for a joint committee as a win-win solution and following the overall precedent set in other association agreements.

Outcome

On paper, this could have been one of the more difficult issues to resolve. The UK could have demanded voting rights, based on its size, financial contribution and historical research base – something that the EU was unlikely to grant. The EU could have rigidly stuck to what it had previously offered to other countries associated to Horizon 2020, with no scope for improvement. Instead, a compromise was found. The EU was willing to accept a slightly augmented form of the Joint EU-Israel Committee, and the UK accepted it would not get voting rights. Both parties agreed that the knowledge and experience of the UK research community has contributed to the success of the Framework Programme, and its influence should continue.

4. Dispute settlement

Background

A mechanism for settling legal disputes is needed in all international agreements.[38] For most countries associated to Horizon 2020, this role falls to the Court of Justice of the European Union (CJEU). For Norway and Iceland, under the provisions of the EEA Agreement, dispute resolution is overseen by the separate EFTA Court system.[39]

The CJEU interprets and enforces EU laws, ensuring they are applied consistently across countries and institutions. It is made up of judges from all Member States, meaning that the UK would lose its formal representation following a withdrawal from the EU.[40] Some in the UK see the jurisdiction of the ECJ over the UK as a barrier to sovereignty. This has previously been a "red line" for the UK.[41]

Outcome

The UK team decided to accept ECJ and European Court of Auditors jurisdiction over the agreement and did not try and negotiate an alternative dispute resolution mechanism.

This decision was partly based on the belief that the ECJ would only mediate disputes between individual researchers and not impact national laws. Wellcome's own review of ECJ rulings over the past ten years found "no examples of it arbitrating pre-competitive research disputes between collaborators under Framework Programmes."[42]

The need for the UK to accept ECJ oversight over EU programmes it wished to participate in was acknowledged by Theresa May when she was UK Prime Minister.[43] However, her successor, or future governments, could make a different assessment.

If the UK had decided to explore alternatives to Court of Justice of the European Union oversight, this would have needed to be established in an overreaching agreement covering all the UK's interactions with the EU. It would be impractical to establish such a system solely for a research and innovation agreement such as this.

> Recovery and enforcement decisions taken by the Commission under the Programmes covered by this Agreement which impose a pecuniary obligation on persons other than states shall be enforceable in the UK. If so requested by the Commission, the authority designated by the UK shall commence proceedings for the enforcement of the decision on behalf of the Commission. In this case, the decision of the Commission shall be submitted to the UK court, without other formality than verification of the authenticity of the decision, by the authority designated for this purpose by the UK, which shall inform the Commission thereof. Enforcement shall take place in accordance with the UK law and rules of procedure. The relevant enforcement provisions shall be incorporated in the grant agreements and/or contracts with participants from the UK. The Court of Justice of the European Union shall have jurisdiction to review the legality of the decision of the Commission and suspend its enforcement. Moreover, the courts of the UK shall have jurisdiction over complaints that enforcement is being carried out in an irregular manner.
>
> — Paragraph 26 of the research and innovation agreement our teams negotiated.

5. Researcher mobility

Background

Evidence shows that international collaboration makes research stronger and the research workforce is internationally mobile – mobile researchers have around 40% higher citation rates[44] in scientific journals and collaborative publications generally have more impact.[45] Surveys have shown over 48% of EU researchers have been internationally mobile at some point during their career[46] and that Europe is a particularly mobile and connected research community.[47]

As a member of the European Union, the UK has been committed to the free movement of people under EU law. This has allowed researchers, their families, and those in the wider research community, to travel, live and work across the Union with limited restrictions.

Provisions covering the mobility of researchers, and migration more broadly, are often found in overarching association agreements or free-trade agreements that would be in place before association to the Horizon frameworks could be agreed.

The extent to which association agreements to Horizon 2020 include provisions on immigration and researcher mobility varies:

- Norway, Iceland and Switzerland, although not EU Member States, are signed up to free movement of people with the EU – Norway and Iceland through their EEA membership[48] and Switzerland via its own bilateral agreement[49]
- The broader Israel Euro-Mediterranean Agreement[50] states that "the Parties shall cooperate with a view in particular to: defining areas of mutual interest concerning policies on immigration". Israel's Horizon 2020 Association Agreement[51] makes no mention of researcher mobility
- The broader EU-Ukraine Association Agreement[52] states that "The Parties shall also endeavour to enhance the mobility of citizens and to make further progress on the visa dialogue". It also states that "the Parties shall take gradual steps towards a visa-free regime in due course, provided that the conditions for well-managed and secure mobility […] are in place". Ukraine's Horizon 2020 Association Agreement goes further, to say, "the Parties will make every effort, within the framework of the existing provisions, to facilitate the free movement and residence of research workers participating in the activities covered by this Agreement".[53]

> The Parties commit to establishing favourable immigration arrangements to ensure the good functioning of the European Research Area. The Parties will ensure the reciprocal right of movement and residence of individuals participating in the activities covered by this Agreement, along with their direct family members. Direct family members of those individuals will be granted the right to work.
>
> — Paragraph 18 of the research and innovation agreement our teams negotiated.

Negotiating positions

The EU team prioritised maintaining researcher mobility in way that matches as closely as possible the current freedom of movement arrangements, for research workers at least. They argued that the movement of researchers was critical to the success of grants awarded through the Framework Programme, and that without the free movement of researchers, UK association to Horizon Europe would not be in the best interest of the EU.

The UK team mirrored this sentiment and was keen to make an offer that would ensure there was easy and flexible movement of researchers and their immediate families. They reflected on public opinion surveys showing support for skilled migration[54] and signals from the Boris Johnson government that they are looking to expand mobility schemes for scientists.[55]

However, the UK team was concerned about trying to set or restrict the immigration policy of the current, or future, UK government. They also knew that continued free movement in its current form would be politically difficult in the UK.

Although both teams had similar desires for a speedy and flexible immigration system, they had fundamental differences in the level of commitment they were willing to make. The EU team was looking for cast-iron guarantees that would protect the movement of its researchers and ensure they were legally protected when resident in the UK. The UK team wanted to make an aspirational 'best efforts' statement to deliver such a system but felt unable to offer the level of detailed commitments needed by the EU.

The gap between the initial positions persisted throughout the process, with the UK determined to stick to broad statements of best endeavours and the EU requesting tangible commitments and protections for its citizens.

Outcome

The breakthrough came when the EU team moved away from "free" movement and instead focused on "reciprocal" movement as its core demand.

Both teams looked at the current EU directive (2016/801) covering the entry of third-country nationals for the purposes of research for guidance as to what a future reciprocal system could entail.[56] The UK is currently not subject to this directive, as the UK has an opt-out on issues relating to home affairs. The provisions in this directive provide a helpful framework for what reciprocal movement arrangements could look like.

The existing directive states that:

- researchers covered by Union or multilateral programmes are granted a stay of at least two years;
- the directive makes provisions for researchers' family members to join the researcher and work;
- researchers are able to move from one Member State to another in order to carry out part of their research for a period of up to 180 days;
- the directive calls for "collaboration between research organisations and the immigration authorities" to speed up decision-making. It also calls for research organisations to be given a "key role in the admission procedure" and the ability to "approve" applications.

Both teams saw these provisions as a starting point for a future "reciprocal" researcher mobility system that could be both open and flexible, while moving away from free movement. The UK team requested the added caveat that the new system should offer "favourable immigration arrangements" to ensure it promoted an open and welcoming system, as the teams intended it.

The UK team was also happy that many of the provisions highlighted above are already present elsewhere in the UK immigration system. For example, the UK's Research and Innovation Talent Visa[57] enables individuals with exceptional talent to live and work in the UK for up to five years. Therefore, although major changes would be needed to implement this provision, nothing being proposed would be completely new.

There have also been signals in the UK that the Boris Johnson government was willing to explore making special arrangements for researchers, which meant that a 'carve-out' for the sector could be politically acceptable. The EU side was also happy that arrangements along these lines would ensure the mutually beneficial movement of researchers continued.

Rather than reference the directive itself, the agreed wording in the agreement refers to a broad commitment to establish arrangements. It was felt that this would be a better approach than referring to EU legislation directly.

6. Regulation and common standards

Background

As a Member State, UK regulation is aligned with that of the EU. This means that collaborative research between UK and EU institutions is made easier by everyone playing by the same rules. For example, Cancer Research UK has previously reported that differing standards between the EU and the USA have made some clinical trials unfeasible.[58] Wellcome also has direct experience of the time, cost and effort needed to ensure European animal welfare standards are met for research taking place in the USA, which is a requirement of our funding.[59]

As with mobility, issues of regulatory alignment would normally be covered by an overarching agreement between the two parties. For example, the EU-Ukraine association agreement states that "The Parties recognise the importance of the approximation of Ukraine's existing legislation to that of the European Union. Ukraine shall ensure that its existing laws and future legislation will be gradually made compatible with the EU acquis".[60] This reflects the Ukraine's intention to seek EU membership in the future. Neither the Israel Euro-Mediterranean agreement nor Israel's association agreement to Horizon 2020 mentions the alignment of regulation.

Norway and Switzerland have close regulatory alignment with the EU through their EEA/EFTA membership and bilateral agreements.[61] More broadly, common standards are often an important part of trade agreements and could be a wider political issue in the UK's future relationship with the EU.

Negotiating positions

The EU team was clear that the current level of regulation in the field of research and innovation between the UK and EU should remain the minimum acceptable level. They suggested that the UK would be free to enhance regulation, as it already does in some areas, but the EU would not accept deregulating in key areas connected to this agreement.

The EU team were worried that deregulation by the UK would make collaboration more difficult and costlier, and in some areas impossible. They were also concerned that the UK may try and undercut EU regulation to give themselves a competitive advantage. They believed this would lead to lower overall standards in areas such as animal welfare and data protection, and would put EU research and innovation at a disadvantage.

The UK team also understood the need for a similar level of regulation between both parties in the key areas covered by this agreement. However, they were concerned that committing the UK to regulatory alignment with the EU in large areas would have implications well beyond the research and innovation sector.

Ultimately, the UK team wrestled internally with the difficulty of trying to reconcile a desire for common standards with the political imperative of not giving up the UK's 'sovereignty' in this area. To try to tackle this tension, the UK began with a list of specific areas where it was felt that commitment to alignment would be appropriate – for example, animal welfare and clinical trials regulation. Realising that such an approach would be complex and difficult to administer, the UK team changed tack during the negotiation, instead looking for a more general statement of intent to keep regulation between the UK and EU "compatible". The UK was looking for softer language in order to make the agreement as palatable as possible to a UK audience.

> While preserving regulatory autonomy, the Parties will put in place provisions to promote regulatory approaches that are transparent, efficient, promote avoidance of unnecessary barriers to scientific collaboration and are compatible to the extent possible.
>
> — Paragraph 19 of the research and innovation agreement our teams negotiated.

The EU team was looking for a more concrete commitment to regulatory alignment, like that found in the Ukraine association agreement – committing the UK to have approximation/ compatible regulation to the EU in the areas covered by this agreement. However, the context of Ukraine's agreement is that the country is aspiring to join the EU in the future, whereas the UK intends to leave.

Outcome

A compromise was found when the UK offered language from the current EU-UK Political Declaration. Although the wording was adapted from a paragraph originally on trade, the EU side saw it as a fair precedent that already had agreement from the real UK and EU negotiators.

The EU team was also reassured that many regulatory standards are enforced through the terms of Model Grant Agreements (MGAs). MGAs provide a legal framework for consortia participating in Horizon 2020 and include provisions relating to, for example, ethical standards, data sharing, intellectual property rights, and ECJ jurisdiction. These provisions provide safeguards for the EU to ensure that EU standards are respected in Horizon 2020 collaboration. The provision granting legal authority to the ECJ is an especially powerful tool in safeguarding EU laws.

This would effectively maintain EU standards for any UK organisation looking to access funds through this programme.

Both teams agreed that the free flow of data was of such significance that it should be treated separately in the agreement. This is explored in the next section.

7. Free flow of data for research

Background

The transfer of personal data between the UK and EU is a critical component of research collaboration. Wellcome's 'Brexit and Beyond' report explains that:

> Personal data about individuals is an essential resource for health and social research, for example for understanding the links between lifestyle and disease or education and life outcomes. Researchers often use fully anonymous data, but in some cases identifiable data is needed in order to identify significant patterns or to link datasets. Using personal data therefore supports research that saves and improves people's lives, for example by better diagnosing disease. To deliver these benefits, researchers need to be able to exchange personal data across borders. For example, there are typically around 2,500 requests a year from EU27 countries for access to data from the UK 1958 Birth Cohort.[62]

While the UK is a Member State, the GDPR regulation provides for free flow of data between the UK and EU. When the UK leaves the EU, this will no longer be the case. For free flow to continue, the UK will require an "adequacy"[63] decision from the European Commission demonstrating that its data protection approach is of a comparable standard to that of the EU. Once adequacy is granted, data can flow to and from the UK without the need for additional safeguards.[64] An adequacy decision by the Commission is by no means guaranteed. Even as an EU Member State the UK has breached EU laws in this area and concerns remain within the EU over the UK's use of bulk data collection.[65] These concerns will only be amplified after Brexit and make a quick and positive adequacy decision for the UK less likely.

Negotiating positions

Nothing of this nature is found in other association agreements. This provision was requested by the UK team to ensure there was no disturbance in the flow of research data between the UK and the EU because of Brexit. It is the UK team's belief that such a provision will be needed to protect UK research while a UK adequacy decision is reached, in the event one cannot be reached, or if for any reason a UK adequacy decision is revoked in the future.

Outcome

This article proposes a voluntary system where organisations can opt-in, and by doing so will comply with EU data processing standards. Although the system would be voluntary, once an organisation had made the commitment it would be legally bound by the higher standard. In return, any organisation covered by the arrangement would benefit from an adequacy decision. This provision is based on the EU-US and Swiss-US Privacy Shield Frameworks,[66] which similarly provide a sector-specific voluntary mechanism by which to comply with data protection requirements. The EU agreed to this provision with the caveat that it would only come into force should a UK-wide adequacy agreement not be possible.

> A dedicated data protection arrangement will be put in place to ensure both Parties maintain equivalent levels of protection of personal data during activities carried out under this agreement. The agreement will provide a framework for registered organisations in the United Kingdom to benefit from an adequacy determination by the European Commission. It will ensure the safe flow of personal data between those registered organisations and the European Union, without being subject to any further safeguards or authorisations. Adequacy determinations will be regularly monitored by the Commission. This provision will become redundant should an overarching adequacy decision covering the United Kingdom be adopted.
>
> — Paragraph 20 of the research and innovation agreement our teams negotiated.

8. Erasmus, Euratom and access to infrastructure

Background

Erasmus is the EU's programme to support education, training, youth and sport in Europe. It provides opportunities for over 4 million Europeans to study, train and gain experience abroad. The movement of young scientists was seen by both parties as having an important role in encouraging and underpinning international scientific cooperation.

The European Atomic Energy Community (Euratom) provides the basis for the regulation of civilian nuclear activity. It also funds leading international research. The current Political Declaration on the future relationship between the UK and the EU states that "the Parties note the United Kingdom's intention to be associated with the Euratom research and training programmes".[67]

Negotiating positions

Erasmus and Euratom were seen as important programmes for supporting scientific research and collaboration by both parties. However, it was decided that they sat outside the direct scope of this negotiation. Paragraph 2 was included in the recitals section of the negotiated agreement to express both teams' desire for continued UK participation in these projects.

Similarly, the teams agreed that it was important that researchers were able to access scientific infrastructure in the UK and the EU that was not covered by association to Horizon Europe, of which there are many examples. In each case the UK's participation is subject to its own unique agreement, and our project did not attempt to explore the detail of these.

Outcome

The teams agreed to include an acknowledgement of the importance of Erasmus, Euratom and access to infrastructure in the recitals section.

NOTING:

The importance of Euratom and Erasmus in supporting and encouraging the aims of this agreement, and the need for the United Kingdom to continue to participate in these programmes;

The need for scientific infrastructure in the European Union and United Kingdom to remain open and assessable to the citizens of both Parties;

— Paragraph 2 of the research and innovation agreement our teams negotiated.

9. Time to implement ‘enhanced’ provisions.

This agreement goes beyond the terms of a standard Framework Programme association agreement, with additional provisions on researcher mobility, regulatory alignment and data sharing.

These three areas of enhanced cooperation will require both parties to set up additional arrangements to meet the requirements laid out in this agreement. For example, the provision on researcher mobility shows the type of system the parties wanted to see. However, it will take time for the UK and EU to design and implement such a system.

This article gives both parties one year to put in place the necessary systems to be fully compliant with the agreement text. It also keeps open the possibility of extending this deadline if agreed by both parties. One consequence of this provision is that for one year the UK could be associated to Horizon Europe but without the enhanced provisions on researcher mobility, regulatory alignment and data sharing being in place. Although this situation should be avoided at all costs, the teams felt cooperation under these conditions, for a short period, was better than no agreement at all. The only alternative is to hold off on signing the agreement until the above provisions are met, which would likely mean the UK missing the start of the Horizon Europe programme.

> Provisions to meet Articles 18 [migration], 19 [regulation] and 20 [data] of this agreement must be implemented by both Parties within one year of this agreement entering into force. Failure to do so will see this agreement void. This deadline can be extended with the written consent of both Parties. The implementation of these provisions will be monitored by the Joint Committee…
>
> — Paragraph 21 of the research and innovation agreement our teams negotiated.

10. Areas not covered by the agreement or not discussed in detail as part of the process

Alongside understanding the areas of debate and disagreement, it is also important to record which areas received relatively little attention during our project. This does not necessarily mean that they will not be important in the real negotiation process, but is partly a reflection of their perceived priority relative to other issues.

- The idea of 'reciprocal access' – providing EU access to UK national funding programmes in return for full UK access to the EU Framework Programme – was raised by the EU team. The proposed text for establishing rules for participation in Horizon Europe does foresee reciprocal access, "where appropriate".[68] It is therefore likely that, during the actual negotiations, the EU will raise this issue. Switzerland provides an example of an Associated Country where national programmes are open to EU nationals. However, the teams assessed that considerations around reciprocal access would substantially complicate the negotiations. As a result, these considerations were left aside. Furthermore, true reciprocity would require ensuring funding provisions for European participation in UK R&D programmes,[69] e.g. set out in Horizon Europe regulation or in the future EU-UK agreement. Such provisions are unlikely to materialise in the foreseeable future
- Liability for payments if the agreement is terminated part-way through Horizon Europe was not discussed as it was assumed that arrangements in existing Horizon 2020 agreements would be appropriate in this case
- The role of the European Anti-Fraud Office (OLAF), and the European Public Prosecutor's Office (EPPO) are likely to be raised during the actual negotiation in order to reduce potential fraudulent use of EU funds by a non-EU country. This issue was not discussed during our negotiation but the role of such organisations was likely to have been seen to be acceptable by the UK team, based on their acceptance of the role of the ECJ and ECA.

Chapter 4: Next steps

In this chapter we explore how the UK and EU could pursue a research and innovation agreement. We set out some of the challenges associated with the process, including the timetable for reaching an agreement, whether to seek a standalone agreement on research and innovation, and how a no-deal Brexit could make the process more difficult.

The process of reaching an agreement

The October 2019 EU-UK Political Declaration suggests the most likely future relationship will be a combination of a free-trade agreement and other elements of cooperation that are in the "mutual interest of both parties".[70] An agreement of this kind would provide the overall framework within which UK association to Horizon Europe, and wider cooperation on research and innovation, could be built.

We refer in a following section to the intended wider agreement between the EU and the UK as 'the overall framework for future relations', since the exact form is not yet known.

Any research and innovation agreement between the UK and EU would have to go through the EU's standard ratification process. Association to Horizon Europe will have its own processes, based on the legislation establishing the programme. An agreement that includes association to Horizon Europe will be affected by this.

Seeking association to Horizon Europe

Horizon Europe is expected to be even more international in scope than its predecessor, Horizon 2020. The draft text for Horizon Europe includes a new category that would be open to the UK after Brexit alongside other countries. It creates scope for association for:

> third countries and territories that fulfil all of the following criteria:
>
> i. a good capacity in science, technology and innovation;
>
> ii. commitment to a rules-based open market economy, including fair and equitable dealing with intellectual property rights, backed by democratic institutions;
>
> iii. active promotion of policies to improve the economic and social wellbeing of citizens[71]

A range of countries have expressed an interested in participating in Horizon Europe in this way, including Argentina, Australia, Brazil, Canada, Japan, New Zealand, South Africa and the USA.[72] Many of the issues that we explored in this project are likely to be relevant to the EU's discussions with these countries as well.

Once the Horizon Europe regulation is fully adopted by the Union,[73] countries that wish to associate can start formal negotiations with the Commission. If the precedent of Horizon 2020 is followed, each country would then negotiate a specific association agreement. However, it is currently expected that the regulation will not be finalised until well into 2020, with reports suggesting that the EU is delaying the process until the outcome of Brexit is clearer.[74]

The UK can act now to ensure it is fully prepared for association ahead of the Horizon Europe legislation being ratified and formal association negotiations beginning. To plan their budgets, several countries associated to the existing Framework Programme (Switzerland, Israel, Canada) are in the process of exchanging at a technical level with the EU over their financial contribution to Horizon Europe. Further afield, it is being reported Canada and Japan have already earmarked money for collaboration with the EU.[75] The UK should do the same as part of a post-Brexit budget.

Negotiation and ratification process

Any negotiations between the UK and the EU, whether for the overall framework for future relations or a standalone research and innovation agreement, will start with negotiating a mandate from the Council of the European Union on the basis of a draft prepared by the Commission. This mandate, once approved by EU Member States, will allow the Commission to begin the negotiations. Although legally speaking the mandate only requires the approval of a qualified majority of Member States, in practice such decisions are taken by common accord – i.e. unanimously – wherever possible.

The Council also often adopts separate negotiating directives to the Commission, which specify in more detail what it expects the Commission to achieve in the negotiations. Such directives are not necessarily made public, although in recent times transparency has become more common.

Negotiating rounds then begin, with the Commission keeping the Council and Parliament updated as the process develops. Once a final text is agreed, the Commission informs the Council and Parliament and a copy of the text is sent to EU Member States. A process of 'legal scrubbing' then begins to ensure the text is consistent in all EU languages and offers 'legal certainty'.

Once the final text has been signed off within the Commission, it is passed to the Council for approval. This approval is made up of two separate Council decisions: one relates to the signature of the agreement by the EU (indicating formal intent to ratify), and the other to the formal conclusion (ratification) of the agreement itself. In most cases, the Council has to adopt the decisions for both signature and conclusion by qualified majority but in practice again operates by consensus wherever possible.

After the Council has approved the decision to sign, the EU can then formally add a signature to the text with its negotiating partner. At this point, elements of the agreement can be brought into force pending final ratification (referred to as "provisional application").

After the Council has approved the signing of the agreement, the final text is sent to the European Parliament, where it is debated and scrutinised by the relevant committees before being put to a full vote of the Parliament for approval by simple majority.

After such consent has been given, the Council decision concluding the agreement is adopted by the Member States. Whether an agreement also requires ratification by individual Member State parliaments depends on whether it includes provisions that are beyond the exclusive competences of the EU. For example, ratification of the EU-Canada agreement was delayed due to opposition from the Walloon Parliament. Formal ratification in such cases requires both the EU-level procedures and national ratification procedures – which vary by country – to be fulfilled.

Timetable

Under the terms of the draft EU-UK Withdrawal Agreement (October 2019), the UK will enter a "transition period" after leaving the EU. In this transition period the UK will be treated as a Member State until 31 December 2020, with the exception of participation in the EU institutions and governance structures.[76]

If, as our project scenario assumes, the UK leaves the EU in early 2020, there will be less than one year to agree the overall framework for future relations before the end of the transition period. Meanwhile, Horizon Europe is due to begin on 1 January 2021.

The Withdrawal Agreement does allow for this transition period to be extended,[77] but an extension would not automatically mean UK participation in Horizon Europe from January 2021 – indeed, the Agreement explicitly states that an extension of the transition period would not include participation in EU programmes. Ultimately, the UK and EU must come to an agreement on the UK's participation in Horizon Europe before 31 December 2020 to avoid a discontinuity in the level of UK participation.[78]

This creates a window of 11 months for the real negotiations on research and innovation. Broader arrangements between the EU and another country (some of which are referred to as association agreements – which detail the legal, political and economic arrangements between the two parties) take over six years on average to be negotiated and enter into force.[79] As a former Member State, the UK will initially be in full regulatory alignment with the EU while negotiating the future relationship. In principle this should make broader negotiations more straightforward than other third-country agreements. Nevertheless, fundamental questions – such as future regulatory alignment, movement of people and financial contributions – will continue to complicate the process even in uncontroversial areas like research and innovation, as this project has shown.

There is a risk of a no-deal exit from the Union at the end of the transition period. If the terms of the future relationship are not agreed by the end of 2020, and the UK or EU decided against an extension to the transition period, the UK will leave the EU without an agreed future relationship. This could be as disruptive to research and innovation as leaving without a withdrawal agreement in January would have been, but could be mitigated if progress has been made on a standalone agreement on research and innovation.

Another possible outcome is that the UK ends the transition period with a limited trade agreement that does not provide a framework for cooperation on research and innovation. Such a 'thin-deal' Brexit would create the same damaging discontinuity for research.

What if the UK misses the start of Horizon Europe?

If the parties cannot agree terms of the UK's participation in Horizon Europe before the programme is due to start in January 2021, the UK will likely be downgraded to a third-country participant and would be unable to access some elements of the programme.

While it will be important to avoid such a discontinuity, there is precedent for countries to associate to the Framework Programmes after the programme has begun. The legislation establishing Horizon 2020 was only adopted in December 2013, a few weeks before the programme began in January 2014. This tight turnaround meant even long-established Associated Countries such as Norway could not join the framework until May 2014, some four months after initial calls opened. Norway's association was backdated[80] to the start of the programme, allowing researchers from Norway to enter programmes even though calls for applications had already opened. Additionally, Ukraine, Tunisia, Georgia and Armenia all joined Horizon 2020 part-way through the programme.[81]

Lessons from Switzerland

In February 2014, a referendum on immigration led to the Swiss government delaying the ratification of a protocol extending the agreement on free movement of people to Croatia. This might have contravened Switzerland's bilateral agreement with the EU, which included freedom of movement and research.[82] As a result, the association agreement to Horizon 2020 (and negotiations for an association to Erasmus+) was suspended.[83]

The Swiss government attempted to mitigate loss of funds by establishing a grants programme through the Swiss National Science Foundation. They funded 48 grants, allocating a total of 92.2 million Swiss francs.[84] Although some research funding was maintained, this required setting up a new commission and evaluation panels, and the recruitment of additional employees. Furthermore, scientists in Switzerland expressed concern over a loss of prestige linked to European Research Council funding.[85]

In September 2014, Switzerland and the EU agreed on a 'partial' association agreement for the three years leading up to the actual transcription of the referendum result into law.[86] During this period, the participation of Switzerland as an Associated Country covered actions under the Excellent Science pillar containing the European Research Council, Future and Emerging Technologies, Research Infrastructures, and the Marie Skłodowska-Curie Actions, as well as association to the Euratom research and training programme, and to ITER.

However, Switzerland was still ineligible for funding in two of the three pillars of Horizon 2020, including some innovation and enterprise programmes, as well as Euratom and ITER. The number of Swiss leadership roles in Horizon 2020 projects also decreased significantly.

Switzerland eventually returned to Associated Country status in 2017 with full participation in the Horizon 2020 programmes. This was only possible through implemented Swiss legislation respecting free movement and thus allowing the ratification of the Croatian protocol.[87]

Science as part of a wider EU-UK relationship or as a standalone agreement

The uncertainty around the future EU-UK relationship made it difficult for participants in our simulated negotiation to decide what should be included in a research and innovation agreement and what would be covered by a wider association or overarching agreement with the EU.

This question persisted throughout the negotiation. It was decided that provisions needed to be included to give both sides the reassurances and protections they needed, while accepting that this would involve straying outside the remit of standard Framework Programme association agreements or research and innovation agreements. For example, both sides wanted provisions on researcher mobility to be included, the EU team was keen for some form of provision on regulatory alignment, and the UK wanted a specific provision on data adequacy. All of these would normally be found in a broader umbrella agreement with the EU.

The core of the agreement is the terms of the UK's association to Horizon Europe, but with additional provisions requested by either or both teams. The agreement makes association to Horizon Europe the starting point of research and innovation cooperation between the two parties, with cooperation expanding beyond the limits of the Framework Programmes. For example, the recitals in the agreement mention both parties' commitment to the United Nations Sustainable Development Goals and the role research and innovation will play in helping both parties to meet these obligations.

Participants discussed whether a research and innovation agreement could stand alone – i.e. be implemented without the need for any additional arrangements – or if it was necessarily contingent on a wider agreement being put in place first.

Pursuing a standalone research and innovation agreement which included association to the Framework Programmes would be unprecedented. Every country that is associated to Horizon 2020 has a pre-existing broader arrangement in place with the EU. These arrangements can include a broader association agreement, a free-trade agreement, or other bilateral international agreements that provide the legal, economic and political framework within which cooperation on research and innovation can be incorporated.

Our recommendation

The likelihood of having the EU-UK future relationship concluded within 11 months seems remote. The most likely outcome at this point is therefore that the UK misses the start of Horizon Europe due to delays in the Brexit process.

Our analysis is that the best way to minimise disruption is by negotiating a standalone agreement as soon as possible, regardless of ongoing Brexit uncertainty elsewhere.

The unique circumstances of Brexit, the limited time available, and the significance of research and innovation to both parties, justifies exploration of this route. A discontinuity in EU-UK cooperation though the Framework Programmes would damage research and innovation on both sides of the Channel. With no easy options available, unprecedented steps will need to be considered.

The EU does have standalone research and innovation agreements with third countries, but an EU-UK agreement will need to be more ambitious than these and include association to Horizon Europe.

Scientific cooperation agreements have long been used to symbolise improving political relations and are often the first bilateral agreements after a conflict between nations. The universality of science can provide inspiration for the wider negotiations if a suitable standalone agreement can be developed.

The agreement negotiated during this project may provide a blueprint for such an agreement, which would offer the guarantees and certainty needed for both sides and could subsequently sit within a wider EU-UK framework once that has been agreed.

While formal negotiations that include association to Horizon Europe cannot begin until the legislation establishing the programme is finalised, this should not preclude the UK and EU from making progress on the other areas that would need to be included in standalone agreement. In practice, our simulated negotiation suggests that it is these areas that will require most work.

This approach would give the best chance of meeting the demanding timetable for securing a productive future relationship on research and innovation, to the mutual benefit of the UK and the EU.

Agreement Text

EU-UK agreement on research and innovation

Final text

1. AGREEMENT between the European Union and the United Kingdom of Great Britain and Northern Ireland on cooperation in research and innovation, including the participation of the United Kingdom in the Union programme 'Horizon Europe – the Framework Programme for Research and Innovation (2021–2027)'.

2. THE EUROPEAN COMMISSION, hereinafter referred to as 'the Commission', on behalf of the European Union, of the one part, and THE GOVERNMENT OF THE UNITED KINGDOM, hereinafter referred to as the United Kingdom, of the other part, hereinafter referred to as the 'Parties'.

RECOGNISING:

- the importance of research and innovation to the future prosperity of the European Union, the United Kingdom, and the health of our citizens;
- the long history of mutual collaboration between the Parties in the areas covered by this agreement and the resulting benefits to scientific progress and humankind's understanding of the world;
- that world-leading research and innovation capacity is critical to achieving lasting economic development;
- the continued commitment of the Parties to the European Research Area;
- the shared commitment of the Parties to the UN Sustainable Development Goals and the role of research and innovation in helping humanity reach these targets;
- the role that research and innovation will play in tackling the issue of climate change and other global challenges.

NOTING:

- the importance of Euratom and Erasmus in supporting and encouraging the aims of this agreement, and the mutual benefit to the parties of the United Kingdom continuing to participate in these programmes;
- the need for scientific infrastructure in the European Union and United Kingdom to remain open and assessable to the citizens of both Parties;

HAVE AGREED AS FOLLOWS:

Scope

3. The United Kingdom shall participate as an Associated Country in 'Horizon Europe – the Framework Programme for Research and Innovation (2021–2027)', (hereinafter referred to as the 'Programme'), in accordance with the conditions laid down in the protocol, and under the terms and conditions set forth in this Agreement.

4. Cooperation on research and innovation may also include:

   (a) regular discussions on the orientations and priorities for research policies and planning in the United Kingdom and the Union;

   (b) discussions on cooperation prospects and development;

   (c) timely provision of information concerning the implementation of programmes and research projects of the United Kingdom and of the Union, and concerning the results of work undertaken within the framework of this Agreement;

   (d) joint meetings resulting in joint declarations;

   (e) visits and exchanges of research workers, engineers and technicians;

   (f) regular and sustained contacts between programme managers or project managers of the United Kingdom and the Union;

   (g) participation of experts in seminars, symposia and workshops.

Terms and conditions of participation in the Programme

5. The United Kingdom shall have access to all pillars and horizontal programmes under the framework, unless specified in the work programme in accordance with [Article 18.5 of the regulation to establish Horizon Europe]. Should any limitations on United Kingdom participation in specific work programmes be introduced under [Article 18.5], the Joint Committee established by Article 16 of this agreement must be notified at least six months in advance of the limitation coming into force.

6. The United Kingdom shall participate in the activities of the Programme in conformity with the objectives, criteria and procedures defined in the regulation establishing Horizon Europe, including delegated acts and any other subsequent rules, and any other rule pertaining to the implementation of the Programme.

7. Eligible United Kingdom entities shall participate in direct actions of the Joint Research Centre and in indirect actions of the Programme under the same conditions as those applicable to legal entities of Member States of the European Union.

8. In relation to eligible United Kingdom entities, the terms and conditions applicable for the evaluation of proposals and those for the conclusion of grant agreements and the notification of grant decisions shall be the same as those applicable for grant agreements and grant decisions in respect of research entities in the Union.

9. Representatives of the United Kingdom shall participate as observers in all the European Commission committees which assist the Commission in the management, development and implementation of the activities of the Programme. These committees shall meet without the presence of the representatives of the United Kingdom at the time of voting. The United Kingdom will be informed of the result. Participation as referred to in this paragraph shall take the same form, including procedures for receipt of information and documentation, as that applicable to representatives from Member States of the European Union.

10. Representatives of the United Kingdom shall participate as observers in the Board of Governors of the Joint Research Centre. Participation as referred to in this paragraph shall take the same form, including procedures for receipt of information and documentation, as that applicable to representatives from Member States of the European Union.

11. Travel costs and subsistence costs incurred by representatives and experts of the United Kingdom for the purposes of taking part as observers in the work of the committees referred to in Articles 6 and 7, or other meetings related to the implementation of the Programme, shall be reimbursed by the Commission on the same basis as and in accordance with the procedures currently in force for representatives of the Member States.

Intellectual property

12. Legal entities established in the United Kingdom participating in Programmes covered by this Agreement shall, as regards ownership, exploitation and dissemination of information and intellectual property arising from such participation, have the same rights and obligations as legal entities established in the Union participating. Adequacy decisions will be regularly monitored.

13. This provision shall not apply to the results obtained from projects started before this agreement entered into force.

Financial contribution

14. To participate in the Programme, the United Kingdom shall every year pay a financial contribution to the general budget of the European Union in accordance with Annex I of this Agreement.

15. The financial contribution of the United Kingdom shall only cover the parts of Horizon Europe in which it can participate.

Joint EU-UK R&I Committee

16. The Joint EU-United Kingdom Research and Innovation Committee composed of the representatives of the European Union and the United Kingdom is hereby established. The Committee's functions shall include the following:

    (a) To ensure, evaluate and review the implementation of this Agreement.

    (b) To ensure and facilitate the timely and continuous provision of information concerning the implementation of activities under the Horizon Europe Programme.

    (c) To discuss the future orientations and strategic priorities of the Programme, and policies to support the European Research Area.

17. The Committee shall meet upon the request of one of the Parties. The Committee will work on an ongoing basis through the exchange of documents, emails and other means of communication. The Committee shall adopt its rules of procedure.

Cooperation on Research and Innovation

18. The Parties commit to establishing favourable immigration arrangements to ensure the good functioning of the European Research Area. The Parties will ensure the reciprocal right of movement and residence of individuals participating in the activities covered by this Agreement, along with their direct family members. Direct family members of those individuals will be granted the right to work.

19. While preserving regulatory autonomy, the Parties will put in place provisions to promote regulatory approaches that are transparent, efficient, promote avoidance of unnecessary barriers to scientific collaboration and are compatible to the extent possible.

20. A dedicated data protection arrangement will be put in place to ensure both Parties maintain equivalent levels of protection of personal data during activities carried out under this agreement. The agreement will provide a framework for registered organisations in the United Kingdom to benefit from an adequacy determination by the European Commission. It will ensure the safe flow of personal data between those registered organisations and the European Union, without being subject to any further safeguards or authorisations. Adequacy determinations will be regularly monitored by the Commission. This provision will become redundant should an overarching adequacy decision covering the United Kingdom be adopted.

21. Provisions to meet Articles 18, 19 and 20 of this agreement must be implemented by both Parties within one year of this agreement entering into force. Failure to do so will see this agreement void. This deadline can be extended with the written consent of both Parties. The implementation of these provisions will be monitored by the Joint Committee established in Article 16.

Final Provisions

22. This Agreement is hereby concluded for the duration of Horizon Europe. It shall enter into force on the date on which both Parties have notified each other of the completion of their procedures for that purpose. [It shall be provisionally applied as of [date to be agreed]].

23. The United Kingdom's participation in the subsequent multi-annual research programme of the Union may be subject to a new Agreement to be agreed between the Parties.

24. If this Agreement is terminated or ceases to apply:

    (a) For the year during which the Agreement ceases to apply, the United Kingdom shall pay the financial contribution proportional to the number of months of its participation in the Programme during that year. For the purpose of calculating such a contribution, the month that has commenced at the time of receipt of the notification pursuant to the notice of termination or when the Agreement ceases to apply if the wider agreement is terminated shall be counted as a full month.

    (b) The Union shall reimburse to the United Kingdom the part of its contribution, already paid to the general budget of the European Union, that will not be spent because of the termination and/or cessation of application of this Agreement.

Audit, recovery and enforcement

25. The grant agreements and/or contracts concluded with participants in the Programme established in the United Kingdom shall provide for scientific, financial, technological or other audits to be conducted at any time on the premises of the participants and of their subcontractors by Commission agents or by other persons mandated by the Commission.

26. Recovery and enforcement decisions taken by the Commission under the Programmes covered by this Agreement which impose a pecuniary obligation on persons other than states shall be enforceable in the UK. If so requested by the Commission, the authority designated by the UK shall commence proceedings for the enforcement of the decision on behalf of the Commission. In this case, the decision of the Commission shall be submitted to the UK court, without other formality than verification of the authenticity of the decision, by the authority designated for this purpose by the UK, which shall inform the Commission thereof. Enforcement shall take place in accordance with the UK law and rules of procedure. The relevant enforcement provisions shall be incorporated in the grant agreements and/or contracts with participants from the UK. The Court of Justice of the European Union shall have jurisdiction to review the legality of the decision of the Commission and suspend its enforcement. Moreover, the courts of the UK shall have jurisdiction over complaints that enforcement is being carried out in an irregular manner.

Annex 1 – financial contribution

Calculation of the United Kingdom's financial contribution

27. The financial contribution of the United Kingdom to the Programme shall be established on a yearly basis in addition to the amount available each year in the general budget of the European Union. The United Kingdom's contribution shall be obtained using a rolling average of its receipts committed under the Programme and its predecessor, Horizon 2020. The average will be calculated over the previous three years in which the United Kingdom was an active participant in the Programme or its predecessor.

28. Where figures from the predecessor programme are used in calculating the three-year rolling average referred to in Article 27, these will be scaled to reflect the budget for Horizon Europe. Active participation shall be understood to mean participating as a Member State or an Associated Country.

29. An appropriate figure to cover Programme functioning costs will be added to the UK's annual contribution. This figure will be based on the most recent and accurate data available to the European Commission.

30. The Commission shall communicate to the United Kingdom, as soon as possible, and at the latest on 1 September of the year before each financial year, the following information together with relevant background material:

    - the amounts in commitment appropriations, in the statement of expenditure of the draft budget of the European Union corresponding to the Programme;
    - the estimated amount of the contributions derived from the draft budget, corresponding to the participation of the United Kingdom in the Programme according to Articles 27, 28, 29.

31. Once the general budget has been finally adopted, the Commission shall communicate to the United Kingdom, in the statement of expenditure corresponding to the United Kingdom's participation, the final amounts referred to in the first subparagraph.

32. A correction mechanism will apply to financial contributions, designed to protect all parties to this agreement, as specified in [regulation to establish Horizon Europe]. The financial contribution of the United Kingdom will be adjusted to reflect significant imbalances in its receipts over the life span of the Programme. The Parties will review the balance of committed receipts at the mid-term evaluation of the Programme and any adjustment will be indicated in the subsequent statement of appropriations for the Programme.

Payment of the United Kingdom's financial contribution

33. The Commission shall issue, at the latest in January and June of each financial year, a call for funds to the United Kingdom corresponding to its contribution under this Agreement. These calls for funds shall provide, respectively, for the payment of six-twelfths of the United Kingdom's contribution not later than 90 days after receipt of the calls for funds. However, the six-twelfths to be paid not later than 90 days after receipt of the call issued in January shall be calculated on the basis of the amount set out in the statement of revenue of the draft budget: the regularisation of the amount thus paid shall occur with the payment of the six-twelfths not later than 90 days after receipt of the call for funds issued at the latest in June.

34. For the first year of implementation of this Agreement, the Commission shall issue a first call for funds within 30 days of its entry into force. Should this call be issued after 15 June, it shall provide for the payment of twelve-twelfths of the United Kingdom's contribution within 90 days, calculated on the basis of the amount set out in the statement of revenue of the budget.

35. The contribution of the United Kingdom shall be expressed and paid in EUR. Payment by the United Kingdom shall be credited to the Union programmes as budgetary revenue allocated to the appropriate budget heading in the statement of revenue of the general budget of the European Union. Regulation (2018/1046), hereinafter referred to as the 'Financial Regulation' applicable to the general budget of the European Union, shall apply to the management of the appropriations.

36. The United Kingdom shall pay its contribution under this Agreement according to the schedule in Articles 33 and 34. Any delay in the payment of the contribution shall give rise to the payment of default interest by the United Kingdom on the outstanding amount from the due date. The interest rate shall be the rate applied by the European Central Bank to its main refinancing operations in EUR on the due date, increased by 1.5 percentage points.

37. At the latest on 30 June of the year following a financial year, the statement of appropriations for the Programme of that financial year shall be prepared and transmitted to the United Kingdom for information, according to the format of the Commission's revenue and expenditure account.

38. The Commission, at the time of the closure of the accounts relating to each financial year, within the framework of the establishment of the revenue and expenditure account, shall proceed to the regularisation of the accounts with respect to the participation of the UK. This regularisation shall take into consideration modifications which have taken place, either by transfer, cancellations, carryovers, de-commitments, or by supplementary and amending budgets during the financial year. This regularisation shall occur at the time of the second payment for the next financial year, and for the last financial year in July 2021. Further regularisation shall occur every year until July 2023.

Participants and biographies

Michael Leigh – Project Facilitator

Sir Michael Leigh is Academic Director, European Public Policy at The Johns Hopkins University, SAIS Europe, and is a Senior Adjunct Professor of European and Eurasian Studies. He was a senior fellow at the German Marshall Fund (GMF) of the United States focusing on European Neighbourhood Policy, Eastern Europe, the Mediterranean, and the Middle East, and the future of the EU. He ran a programme at GMF on the implications of gas discoveries in the Eastern Mediterranean.

In 2006, he became Director-General for Enlargement of the European Commission after serving for three years as Deputy Director-General for External Relations with responsibility for European Neighbourhood Policy, relations with Eastern Europe, Southern Caucasus, Central Asia, Middle East, and the Mediterranean countries. He began his current role after more than 30 years in EU institutions, including as a cabinet member for various commissioners and as director in the Task Force for the EU Accession Negotiations. He began his career as an assistant professor of international relations at Johns Hopkins University and lecturer in international relations at the University of Sussex. He holds a bachelor's degree in Philosophy, Politics, and Economics from Oxford University and a PhD in political science from MIT.

European Union team

Reinhilde Veugelers – Chair of the EU Negotiating Team

Professor Dr Reinhilde Veugelers is a full professor at KU Leuven (BE) in the Department of Management, Strategy and Innovation. She has been a senior fellow at Bruegel since 2009. She is also a CEPR Research Fellow and a member of the Royal Flemish Academy of Belgium for Sciences. From 2004–2008, she was on academic leave as adviser at the European Commission (BEPA, Bureau of European Policy Analysis). She was the President-Elect of EARIE (European Association for Research in Industrial Economics). She currently serves on the ERC Scientific Council. She is a member of the Research, Innovation, and Science Policy Experts (RISE) high-level group advising Commissioner Carlos Moedas.

She was a visiting scholar at Northwestern University's Kellogg Graduate School of Management, Sloan School of Management, MIT, Stern Business School, NYU (US), UCL (BE), ECARES/ULBrussels, (BE) Paris I (FR), GSE-Barcelona (ES), UMaastricht (NL).

Alessandro Damiani

Alessandro Damiani is President of APRE, the Italian Agency for the Promotion of European Research. Before assuming the presidency of APRE, Alessandro was working for 5 years in the Italian steel industry and for 35 years in the European institutions, first the Council of Ministers, then the European Commission. Throughout his time in the EC he dealt with R&D matters, notably research policy design, priority setting, the decision-making process, programme management, and international relations.

On secondment from the Commission to the Italian Ministry of Research in the early 90s, Alessandro was the founder and first director of APRE. From 1994 to 1998 he was responsible for coordinating the first transport research programme in DG Transport. From 1998 to 2002 he was the Head of the Framework Programme Unit in DG Research. From 2002 to 2006 he was the Head of the Science/Technology/Education section at the EU Delegation in Washington DC. From 2006 to 2010 he was responsible for the 'international dimension of the FP' in DG Research. From 2011 until his retirement from the Commission in 2016 he was in charge of Transport Research Strategy in DG Research and Innovation.

Alessandro graduated with a laurea in Political Sciences from the University of Genoa in 1975.

Marga Gual Soler

Dr. Marga Gual Soler is an expert, speaker, advisor and educator in science diplomacy. She leverages the universal language of science to build bridges between peoples and nations and address cross-border challenges no country, institution or discipline can tackle alone.

As Senior Project Director at the Center for Science Diplomacy of the American Association for the Advancement of Science (AAAS), she developed and implemented global science diplomacy capacity building initiatives to help scientists, policymakers and diplomats work closer together and supported the science diplomacy strategies of several Latin American countries. She was instrumental in helping re-establish the scientific linkages between the United States and Cuba after the normalization of diplomatic relations in 2015. Since 2016 she serves on the Research, Innovation, and Science Experts Group (RISE) directly advising European Commissioner Carlos Moedas on the EU science diplomacy strategy and supports the EU Horizon 2020 Science Diplomacy Cluster.

Previously she was a science diplomacy professor at Arizona State University and a Global Competitiveness Leadership fellow at Georgetown University. In 2019 she launched her consultancy firm SciDip GLOBAL to help governments, universities, NGOs and multilateral organizations strengthen their science-policy interfaces.

She has received many awards and recognitions, including "100 Spanish experts in innovation" by Fundación Cotec, "40 Under 40 Latinos in Foreign Policy" by The Huffington Post, and in 2019 she was selected for the largest-ever all-women expedition to Antarctica to promote women's leadership in science diplomacy and climate action.

Debarati Guha

Debarati Guha-Sapir is the Director of CRED and a professor at the University of Leuven School of Public Health, in Brussels, Belgium. She holds an adjunct professorship at Tulane University Medical Centre (New Orleans) for Health and Humanitarian Aid. Trained at Calcutta University, Johns Hopkins University and the University of Leuven, she holds a PhD in epidemiology. Since 1984, she has been involved in field research and training in emergency and humanitarian aid issues, working closely with the World Health Organisation, UNHCR, UNDP and the European Commission in various regions of the world including China, Sudan, Mozambique, Ethiopia, Bangladesh, Cambodia, the Great Lakes, Somalia and Central America. She is particularly interested in health systems research, epidemiology in unstable situations and international policy related to relief and post-conflict transition.

Mark Hallerberg

Mark Hallerberg has been a Non-Resident Fellow at Bruegel since September 2013. He is Dean for Research and Faculty at the Hertie School of Governance and signs off on all projects financed by the European Union. He is also principal investigator both for the DFG-funded Excellence Cluster and Graduiertenkolleg, and Hertie lead on CIVICA, project funded by the European Commission that brings together seven universities including LSE. He has published over 25 articles and book chapters on fiscal governance, tax competition, and exchange rate choice.

He has previously held professorships at Emory University, the University of Pittsburgh, and the Georgia Institute of Technology. He has undertaken consulting work for the Dutch and German Ministries of Finance, Ernst and Young Poland, the European Central Bank, the German Development Corporation (GIZ), the Inter-American Development Bank, International Monetary Fund, and the World Bank.

Martin Mueller

Dr Martin Mueller is Executive Director of the Academic Forum at the Geneva Science and Diplomacy Anticipator. Prior to being Executive Director, he was Head of Office at SwissCore. He additionally served as a coordinator for two years on the Horizon 2020 project InRoad. Martin was Chair of the Horizon Europe Working Group of Science Europe from June 2017 to October 2018 and was Chair of the Horizon 2020 working group of Science Europe from April 2015 to April 2017. Martin received his doctorate of science in biomedical engineering at ETH Zürich and his master of science in communication systems at Ecole Polytechnique Fédérale de Lausanne.

Karin Sipido

Karin Sipido is Professor of Medicine and Head of Experimental Cardiology at the Department of Cardiovascular Sciences at KU Leuven. She holds an MD/PhD degree from the universities of Antwerp and Leuven, did postdoctoral research at the University of Maryland and at Johns Hopkins University, Baltimore. She was visiting professor at the University of Maastricht, NL, and UMC Utrecht, NL. Her research field is rhythm disturbances and heart failure, identifying cellular and molecular mechanisms. She is elected member of the Academia Europaea, Fellow of the European Society of Cardiology, Fellow of the American Heart Association and of the International Society for Heart Research.

She has been chair of the KU Leuven Research Council and Research Coordinator on the board of the group Biomedical Sciences. At KU Leuven, she is presently chair of the Council for Research Policy. She has served on the board of the European Society of Cardiology where she was also chair of the Council Basic Cardiovascular Sciences and member of the EU affairs committee. She was founding board member and President of the Alliance for Biomedical Research Europe 2013-2015. Currently she chairs the Scientific Panel for Health under the provision of the European Commission Horizon 2020 program.

Luc Soete

Professor Dr Luc Soete is Rector Magnificus and professor of International Economic Relations at the School of Business and Economics, Maastricht University. He obtained an economics degree from Ghent University and a PhD in economics from the University of Sussex. He then embarked on a research career in Britain and the United States, producing new economic insights on the Schumpeterian dynamics of innovation. In 1986 he was appointed Professor of International Economic Relations at the Maastricht. Two years later he established the Maastricht Economic Research Institute on Innovation and Technology (MERIT), which quickly grew into a leading research institute in the economic analysis of technological development and innovation and became part of United Nations University (UNU) in 2005. He was appointed Dean of the Maastricht Graduate School of Governance (MGSoG) in 2010.

Professor Dr Soete is also a member of the Royal Netherlands Academy of Arts and Sciences (KNAW) and the Dutch Advisory Council for Science and Technology Policy (AWT)

Annika Thies

Annika Thies has been working as a lawyer both for the German Aerospace Centre (DLR) and for the European Commission in DG RTD. She is now Director of the Helmholtz Association's Brussels office. She is in charge of European research policy and European research infrastructure strategy. Additionally, Annika is one of the coordinators of the DESCA model-consortium initiative.

Jan Truszczyński

Jan Truszczyński is the former Director-General of Education and Culture for the European Commission. He was appointed in 2009 and managed a budget that amounted to €1,406 million. He joined the European Commission in January 2007, when he was appointed Deputy Director-General for Enlargement, with responsibility for enlargement strategy and communication. From 2001 to 2005 Mr Truszczyński was first Undersecretary of State, then Secretary of State in the Polish Ministry of Foreign Affairs. In this capacity, he was Poland's chief negotiator during its EU accession negotiations. Prior to that, Mr Truszczyński was Ambassador of Poland to the EU in Brussels from 1996 to 2001.

In 2005 he was awarded the Order of the Knight of the Legion of Honour for activities for the European Union and the development of Franco-Polish relations. In the same year, he was awarded the Commander's Cross of the Order of Polonia Restituta by President Aleksander Kwasniewski.

He graduated in 1972 from the Foreign Trade Department of the Main School of Planning and Statistics, obtaining a professional degree in economics, specialising in European integration. He then completed postgraduate studies in German Studies (1975) and public international law (1985).

United Kingdom team

Beth Thompson – Chair of the UK Negotiating Team

Dr Beth Thompson is Head of UK and EU Policy at the Wellcome Trust. Wellcome is a global foundation that exists to improve health for everyone by helping great ideas to thrive. It spends around £1 billion a year to support research, innovation and public engagement. Beth leads Wellcome's UK and EU policy and advocacy activities, covering issues including Brexit, research investment and emerging technology.

In 2017 Beth was awarded an MBE for services to science for successfully advocating against amendments to the EU General Data Protection Regulation that would have been severely damaging for research. Beth holds a PhD from the Medical Research Council Laboratory of Molecular Biology in Cambridge and a degree in Natural Sciences (Biochemistry) from the University of Cambridge.

Eilis Ferran

Eilís Ferran is Professor of Company & Securities Law at the University of Cambridge, a University JM Keynes Fellow in Financial Economics, and a Fellow of The British Academy. She did her undergraduate studies in Law at Cambridge University and also completed her doctorate there on the topic of mortgage securitization. She qualified as a Solicitor with Coward (now Clifford) Chance. She is a Professorial Fellow of St Catharine's College, Cambridge. She has written extensively on UK, EU and international financial regulation, company law and corporate finance law. Her recent publications include contributions to Ferran, Moloney, Hill and Coffee, The Regulatory Aftermath of the Global Financial Crisis (CUP 2012) and Ferrarini, Hopt and Wymeersch (ed), Rethinking Financial Regulation and Supervision in Times of Crisis (OUP, 2012. The new edition of her textbook Principles of Corporate Finance Law (OUP) was published in 2014. She has advised and given evidence to Parliamentary committees and other bodies, including serving as the Specialist Adviser to the UK Parliament House of Lords European Union Committee (Sub Committee A) in its inquiry into banking union (September – December 2012). She has been a visiting scholar at law schools in the United States, New Zealand and Hong Kong, and speaks regularly at conferences in Europe and beyond. She is the founding editor of the Journal of Corporate Law Studies (Hart Publishing) and serves on numerous advisory boards and committees, including the Cambridge Endowment for Research in Finance, the Board of Advisors to the Yale Program on Financial Stability and the Academic Advisory Board of the Asian Institute of International Financial Law. She is a member of the European Company Law Experts Group (ECLE) and a former member of the European Banking Authority's Stakeholder Group. She is a non-executive director of Euroclear SA/NV. Since 2015 she has served as University of Cambridge Pro-Vice- Chancellor for Institutional and International Relations.

Clare Moody

Clare Moody was elected as the Member of the European Parliament for the South West and Gibraltar in May 2014. Clare was Vice-Chair of the European Parliament Security and Defence Committee, and a member of the Foreign Affairs Committee, Women's Rights Committee, and Industry, Research and Energy Committee. Before her election, Clare spent most of her working life as a trade unionist representing people in a wide variety of industries. She also spent two years working in Downing Street for Gordon Brown when he was Prime Minister, from 2008–2010. She left office in 2019.

Andrew Scott

Andrew Scott is Professor of European Union Studies at the University of Edinburgh Law School. He is a co-director (with Professor Jo Shaw) of the Europa Institute.

He is an economist by training and has for many years researched and taught European economic integration. He has published widely in the topic of European economic integration, most recently on subsidiarity, economic and monetary union and economic and social cohesion. He has acted as expert to various EC agencies, including the European Commission and Eurostat, the statistical office of the EU. Prior to joining the University of Edinburgh, Drew Scott was a lecturer in economics at Heriot-Watt University. His current research includes the impact of devolution on the UK's European policy process, and problems of economic policy coordination in a devolved UK. From 1991–98 Drew was a joint editor of the Journal of Common Market Studies.

Uta Staiger

Uta Staiger is the co-founder and Executive Director of the UCL European Institute. Since 2010, she has led the Institute in its mission to both create and curate opportunities for research on Europe within and beyond UCL. In consultation with the Institute's Academic Director, currently Professor Piet Eeckhout (UCL Laws), Uta leads on the strategic development of the Institute and designs and oversees its portfolio of activities. She also helps drive UCL's policy engagement on EU and European matters, including relationships with key stakeholders.

In June 2017, Uta was appointed as UCL's Pro-Vice-Provost (Europe), a strategic role shaping UCL's engagement with Europe, and acting as ambassador and advocate for UCL's work on the continent. In this role she contributes to UCL's institutional strategy on Brexit while also co-convening the university's steering group on the research-based response to Brexit.

Janet Thornton

Professor Dame Janet Thornton was Director of EMBL-EBI from October 2001 to June 2015, and played a key role in ELIXIR, the pan-European infrastructure for biological data, since its inception. Her research group focuses on understanding protein structure (function and evolution) and ageing using computational approaches. After a physics degree she completed her PhD at the UK NIMR before post-doctoral studies at Oxford. She then held a joint appointment at University College London and the Bernal Chair in the Crystallography Department at Birkbeck College. Professor Thornton is a Fellow of the Royal Society, a Fellow of the Academy of Medical Sciences, a member of EMBO and a foreign associate of the US National Academy of Sciences.

Paolo Vineis

Professor Paolo Vineis is Chair of Environmental Epidemiology at Imperial College, London, and he leads the Exposome and Health theme of the MRC-PHE Centre for Environment and Health at Imperial College.

Professor Vineis has extensive experience in leading international projects. He has coordinated the European Commission funded EXPOsOMICS project (valued at €8.7m, between 2012–2017). He is currently coordinating the Horizon 2020-funded project LIFEPATH (valued at €6 million, started in 2015). He is a principal investigator/co-investigator of numerous international research projects, such as the European Commission funded GENAIR, ECNIS2, Envirogenomarkers, Hypergenes, ESCAPE and Transphorm networks, in which he has led Work Packages. In addition, he has attracted grants from the Leverhulme Trust, MRC, Cancer Research UK, HuGeF Foundation and the US National Cancer Institute. He is also the Director of the Unit of Molecular and Genetic Epidemiology, Italian Institute of Genomic Medicine (IIGM, formerly known as Human Genetics Foundation – HuGeF), Torino, Italy.

Glossary

European Research Area (ERA)
A unified research area committed to the free circulation of researchers, scientific knowledge and technology.

Framework Programme
The Framework Programme for Research and Innovation is the EU's multiyear science and research funding programme.

Horizon Europe
The EU's Eighth Framework Programme for Research and Innovation, running from 2021–2027.

Horizon 2020
The EU's Seventh Framework Programme for Research and Innovation, running from 2014–2020.

Association agreement
A legally binding bilateral agreement between the EU and a non-EU country. Association agreement normally refers to the broad agreement setting out economic and political cooperation in areas of mutual interest. This should not be confused with Framework Programme association agreements which specifically set out the terms for association to the EU's Framework Programme for Research and Innovation.

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Notes

About Wellcome

Wellcome is a global charitable foundation working to improve health, supporting over 14,000 researchers in more than 100 countries. It is politically and financially independent.

Wellcome exists to improve health by helping great ideas to thrive. Wellcome supports researchers, takes on big health challenges, campaigns for better science, and helps everyone get involved with science and health research.

About Bruegel

Bruegel is the European think tank that specialises in economics. Established in 2005, it is independent and non-doctrinal. Bruegel's mission is to improve the quality of economic policy with open and fact-based research, analysis and debate. We are committed to impartiality, openness and excellence. Bruegel's membership includes EU Member State governments, international corporations and institutions.

Designed by Wellcome.

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