

Briefing – Backbench business debate: Brexit, science and innovation

06 September 2018

Key points:

- **The UK should seek the closest achievable association with future EU research and innovation programmes.** A future UK-EU partnership should seek to build on existing strengths, mutual successes, established relationships and shared history. A future partnership should continue to support collaboration and partnership at many different levels, at a range of scales, and across the research and innovation pipeline. The partnership should provide stability and certainty for all partners involved.
- **UK industry, like our academic base, are consistently highly engaged across all industrially relevant areas of the EU research and innovation framework programmes.** UK industries currently rank fifth of all EU member states in terms of amount of funding received from Horizon 2020.
- **EU support for UK SMEs is critical and unique when compared to national programmes.** Some lines of support such as the SME Instrument will become unavailable to UK businesses in the event of ‘no deal’ as the UK becomes a third country, as pointed out by the Department for Business, Energy and Industrial Strategy.
- **The benefits from EU research and innovation programmes accrued by business and innovation stakeholders are far broader than just financial:** access to expertise, knowledge and networks; collaboration through provision of trusted, multilateral frameworks; ability to connect to emerging regulation and standards at an early stage; access to customers and end-users, and route to market; attracting investment and integrating supply chains. Mechanisms to access these benefits should be part of the UK’s innovation strategy, from domestic support to international partnerships, including the future UK-EU relationship.
- **Engineering business, research and innovation is a global endeavour. The pace of technology development combined with the length of time it takes to fully train qualified engineers in the near term means that engineering in the UK is highly dependent on non-UK nationals.** The UK faces an engineering skills crisis, with an estimated 124,000 new engineers and engineering technicians needed per year.

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- A strong innovation system, with extensive business participation, is necessary to reap the returns from the UK's investment in research. While Higher Education Institutions represent the greatest share of UK participations in EU research and innovation programmes, accounting for 59% of UK participations in Horizon 2020, it is also important to recognise the significant involvement of UK businesses.¹
- Business and innovation, like research, are global endeavours and companies, including those based in the UK, have to make global decisions about where to situate high-value R&D and innovation activities. This reflects the fact that some 95% of R&D and innovation is conducted outside of the UK and, increasingly, companies can access knowledge, markets, skills and partners on a global basis.
- In terms of number of Horizon 2020 grants signed with a business as a participating organisation, the UK currently ranks fifth of all EU member states with 2,546 participations (9.7% of EU total participations), slipping from fourth in March 2018.²
- For amount of funding received (Table 1), UK business participation is currently ranked fifth among EU member states, slipping from second position in September 2016, with €890 million (9.7% of EU total) received in funding by May 2018.³

Date	Total H2020 EC funding to UK Private for-profit entities (€ millions) to date	UK share of EC total funding Private for-profit entities to date	UK ranking (share of total EC funding to Private for-profit entities)
May 18	890	9.7%	5
Sept 17	786	10.5%	5
May 17	726	10.9%	5
Sept 16	564	11.7%	2

Table 1. Horizon 2020 UK Participation Statistics: European Commission funding to private for-profit entities (ie. businesses).⁴

EU support for SMEs is critical and unique when compared to national programmes

- SMEs received the majority of funding awarded to UK businesses from Horizon 2020, with 65% of total funding granted to UK companies between 2014 and 2016.⁵ As SMEs account for only 5% of total business investment in R&D in the UK,⁶ EU funding constitutes a much higher proportion of total R&D spend for SMEs than for the business sector as a whole.
- The UK has been particularly successful with the SME Instrument programme which supports highly innovative SMEs with a clear commercial ambition. UK SMEs rank third in most funding received for Phase 1.⁷
- The programme is perceived as unique by UK participants when compared to national support mechanisms given the terms of the scale of financial support provided and the availability of funding across the development pipeline (feasibility, innovation and business acceleration).
- An assessment of the motivations for SME engagement in FP7 concluded that “access to financial assistance not available nationally or regionally” was a particular motivation for UK SMEs.⁸

¹ [UK Participations in Horizon 2020](#), Department for Business, Energy and Industrial Strategy. July 2018. Data extracted on 31 May 2018. ‘Businesses’ here refers to ‘private for-profit entities’ in the dataset

² *Ibid.*

³ *Ibid.*

⁴ *Ibid.*

⁵ [The role of EU funding in UK research and innovation](#), Technopolis Group, May 2017

⁶ [Business enterprise research and development, UK: 2016](#), Office for National Statistics, November 2017.

⁷ [Representation in the United Kingdom](#), European Commission, April 2018.

⁸ Performance of SMEs within FP7, An interim Evaluation of FP7 components, Vol 1. Main Report, European, Commission, 2014

- In the event of 'no deal', the SME Instrument will not be available to UK businesses as third countries are not eligible for this funding stream, as pointed out by the Department for Business, Energy and Industrial Strategy.⁹

The benefits accrued by business and innovation stakeholders are far broader than just financial

- Businesses do not make decisions about R&D and innovation investment in isolation. Wider factors such as access to expertise, knowledge and networks; collaboration through provision of trusted, multilateral frameworks; ability to connect to emerging regulation and standards at an early stage; access to customers and end-users, and route to market; attracting investment and integrating supply chains, can all contribute to a coherent, supportive environment for innovation to flourish.
- For example, Clean Sky is a €4 billion public-private partnership with a strong focus on integrating breakthrough technologies at aircraft level. It allows UK companies in this interconnected European sector to develop systems and solutions in their supply chain in partnership with the customer community, bringing greater leverage to the export market that has been pre-seeded to require these specific systems.
- On regulation, participating in EU programmes allows UK researchers and businesses, and in some instances government, to influence and shape regulation and standards. For example, participation in large-scale international projects (usually between €5 million and €7 million per project) in advanced manufacturing and materials is facilitating the development of standards that will influence the future of many areas, such as additive and hybrid manufacture.¹⁰
- Mechanisms to access these benefits should be part of the UK's innovation strategy, from domestic support to international partnerships, including future UK-EU relationship.

Engineering business, research and innovation is a global endeavour. The pace of technology development combined with the length of time it takes to fully train qualified engineers in the near term means that engineering in the UK is highly dependent on non-UK nationals.

- The UK faces an engineering skills crisis, with an estimated 124,000 new engineers and engineering technicians needed per year.¹¹
- The pace of technology development combined with the length of time it takes to fully train qualified engineers means that it is impossible to fill all engineering skills gaps and shortages in the near term by increasing the UK pipeline, although that clearly must be part of the response to future restrictions on access to EU labour.
- It will be essential that the UK's future immigration system is designed to allow the realisation of the ambitious and close partnership for research and innovation that the UK is seeking with the EU. This should include ensuring that talented engineers, researchers and innovators from non-UK EU countries have certainty, both near-term and long-term, about the opportunities to work in the UK and likewise for UK researchers to work in other EU countries.

Engineering disciplines are among those that receive most income from the EU.¹²

- Four engineering disciplines feature among the top ten in terms of most income received from EU government bodies in 2014-15.
- IT, systems sciences & computer software engineering (£46 million); Electrical, electronic & computer engineering (£39 million); Mechanical, aero & production engineering, (£34.5 million); General engineering (£28 million).

⁹ [Horizon 2020 funding if there's no Brexit deal](#), Department for Business, Energy and Industrial Strategy, Guidance notes, August 2018.

¹⁰ [Science priorities for Brexit – evidence report](#), Parliamentary and Scientific Committee, March 2017.

¹¹ [The state of engineering 2018](#), Engineering UK, March 2018.

¹² [The role of EU funding in UK research and innovation](#), Technopolis Group, May 2017