

The Relationship between EU Membership and the Effectiveness of Science, Research and Innovation in the UK: Call for evidence

This is an **Institution of Chemical Engineers** response to the House of Lords Select Committee on Science and Technology's call for evidence on the Relationship between EU Membership and the Effectiveness of Science, Research and Innovation in the UK.

The development of this response was led by:

The IChemE UK Research Committee

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The Relationship between EU Membership and the Effectiveness of Science, Research and Innovation in the UK

Summary

The prestige of UK research receiving EU funding and the relationships that it creates offset any costs incurred in the funding process.

The UK has benefitted from a large number of EU funding schemes, with its fellowship programmes providing excellent opportunities and prestige for UK researchers.

Collaboration is the key benefit of EU membership for researchers; if the UK were no longer part of the EU IChemE feels that this would negatively impact upon the UK research community.

IChemE thinks that the UK chemical engineering research community would have difficulties operating effectively at the postgraduate level without the flow of EU students, many of whom remain in the system at more senior levels.

The UK alone cannot provide the international academic and industrial networking opportunities that the EU can offer.

Funding

The UK receives a fair share of the available funding from the EU¹. Some other, less-affluent countries do better, but it is appropriate for the UK and EU to support them in this way.

Levels of funding from the EU and the UK Research Councils (RCUK) are directly comparable, when considering similar funding routes.

A major issue of concern for UK researchers applying for EU funding is that the level of overheads given as a part of EU grants is significantly less than needed to cover full economic costs (fEC). RCUK funding offers 80% fEC, but the EU pays less than this which can discourage UK researchers². Due to this discrepancy some researchers are discouraged from applying for EU funding.

However, the majority of researchers recognise the prestige of receiving EU funding and the collaborations it brings as off-setting this financial penalty. Increasing the level of overheads offer as a part of EU funding would significantly increase the incentives for UK researchers to apply.

The UK has benefitted from a number of EU funding schemes³ over the years and this promotes EU cooperation (even cooperation with non-EU countries in some cases). IChemE does not think that UK research funding would go up if we withdrew from the EU and did not need to contribute to the central EU pot, so such a decision would be highly detrimental to the UK research base.

The EU research fellowship programme provides funding for academics to focus on their research and are very prestigious as competition across Europe is strong. The fellowship programme offers an excellent benchmarking exercise for UK research versus the rest of Europe. Chemical Engineering has been relatively successful in gaining such awards across UK universities.

Collaboration

Collaboration is the key benefit of EU membership for researchers; the relationships that it creates offset any costs incurred in the funding process. It would be of great benefit to the UK to strengthen further its collaborations and knowledge exchanges within the EU, as these relationships offer advantages to both academics and industrialists alike.

¹ https://ec.europa.eu/research/fp7/index_en.cfm?pg=country-profile

² <http://www.rcuk.ac.uk/RCUK-prod/assets/documents/reviews/fec/fecexecsum.pdf>

³ https://ec.europa.eu/research/fp7/index_en.cfm?pg=country-profiles-detail&ctry=united_kingdom

For existing collaborations, EU funding brings in additional resources to RCUK funding and enhances the scope for travel and exchanges to make the collaborations effective and truly interactive. Importantly EU funding acts as a great driver to develop new collaborations within the EU and offers the opportunity for UK researchers to make contacts that would not have otherwise been possible; gives them the use of facilities that they would not otherwise have access to; as well as creating the opportunities for the exchange of researchers to work in EU-wide laboratories.

SoftComp⁴ is an EU Research Network that funds exchange of scientists between both university and industrial labs and access to state-of-the-art equipment, in the area of complex soft materials and formulation. It is an excellent example of a very effective network that links UK academics with both other EU universities and multinational companies like BASF, Schlumberger and Unilever. The sustained funding over a decade or so has increased the effectiveness of such a mechanism and enabled leverage of other EU funds and national research council funding.

However, the UK also has significant excellent collaborations with researchers world-wide. But these collaborations, whilst as strong as those with the EU, lack the mechanisms that the EU offers to support these research relationships. Freedom of researchers to travel and exchange knowledge is a major benefit for collaborations of any kind within the EU.

If the UK were no longer part of the EU, IChemE feels that this would negatively impact upon the ability of the UK research community to become involved in these important collaborations and also to develop research networks and access to specialist equipment.

EU projects can make it easier and more attractive for UK companies to work with partners in the EU and vice versa. This has been especially useful in technology areas which have been a lower priority for UK universities and funding agencies in recent years; such as chemical engineering areas supporting petrochemicals and oil refining. If the UK were not in the EU these kinds of relationships would be much more difficult.

UK academic researchers investigating the fundamentals of chemical engineering, including: catalysis and reaction engineering; process engineering; transport phenomena; particle technology; multiphase flow etc, have increased the strength of their research in these area by collaborating with industry in the UK, EU and beyond. This has created research that is competitive on a global scale. It can sometimes be hard for academics to find industrial partners within the UK, the EU offers more industrial partners to collaborate with and this is facilitated by being part of the EU.

Our capacity to attract investment from international companies is largely influenced by the UK's ability to create a world-class research base. There are indirect benefits of EU membership in terms of UK-based research and development having easy access to EU states, but the UK must provide a more attractive environment than all other countries to receive investment from companies for their own R&D activities. IChemE is keen to encourage a better method for companies based in the EU to invest in UK research and innovation; for example by finding ways of encouraging UK academic researchers to collaborate with non-UK-based EU companies (eg EDF, BMW) when submitting applications for RCUK and other UK-based funding.

Schemes such as the Marie Curie Fellowships⁵ offer excellent opportunities for movement of both EU and non-EU nationals. The free movement of researchers is essential to maintain the UK's place as a world leader in innovation and research, all research is now international. For instance, students from EU member countries qualify as home students in the UK and this makes exchanges and quality recruitment easier.

Currently it is much easier to get EU researchers engaged in UK work than those outside the EU, with UK visa requirements being seen as stricter and thus more of a hindrance than other EU countries.

Without the recruitment of EU students the UK chemical engineering research community would have difficulties operating at the postgraduate level. Many excellent EU students stay to work in both UK academia and UK industry.

⁴ <http://www.eu-softcomp.net/>

⁵ <http://ec.europa.eu/research/mariecurieactions/>

Regulation

Framework programmes are a major, stable source of research funding for many universities. If the UK were to leave the EU the UK would need to overhaul its research funding mechanisms to compensate support for this kind of research. The UK alone cannot provide the international academic and industrial networking opportunities that funding schemes like Horizon 2020 and the ERC offer.

The systems for the provision of scientific advice to Government are substantially different in the UK and in the EU. In the UK, every Government department (other than the Department for Culture, Media and Sport) has a Chief Scientific Adviser (CSA), whose role is to assure the quality of scientific advice in the department. The network of CSAs is overseen by the Government CSA (GCSA), head of the Government Office for Science. The GCSA acts as co-chair of the Prime Minister's Council for Science and Technology, which regularly provides advice on issues.

In the EU the Joint Research Centre⁶ (JRC) is responsible for providing scientific evidence and advice both to the Commission and to the European Parliament. For the first time, the previous President of the Commission appointed his own Chief EU Scientific Adviser, Professor Anne Glover. The current President has removed this role of Chief EU Scientific Adviser⁷ and this was a major concern for EU-wide researchers as it was felt to seriously hamper the ability of the research community to interact effectively with the European Commission. The new Scientific Advice Mechanism⁸ will go some way in filling this void and providing the EU with excellent and independent scientific advice.

IChemE considers the UK to be less risk averse than the EU. Whilst the European Commission's statement of the Precautionary Principle⁹ is fit for purpose, its application by the EU errs on the side of hazard rather than risk management. This can result in stifling innovation (eg GM foods), and increased costs (eg water treatment).

Background

The Institution of Chemical Engineers (IChemE) is the global professional membership organisation for individuals with relevant experience or an interest in chemical engineering. We are the only organisation to award Chartered Chemical Engineer (CEng) status and Professional Process Safety Engineer.

We are also licensed to award the titles Chartered Scientist (CSci) and Chartered Environmentalist (CEnv) to suitably qualified members. Founded in 1922 as the professional institution for chemical and process engineers, IChemE has grown to its current status of over 42,000 members across 120 countries.

Our Royal Charter and charitable status confers upon us an obligation to advance chemical engineering for the benefit of society as a whole and support the professional development of our membership, which spans a wide range of individuals from industry, regulators, academia and consultancies.

We can call upon our members' expertise in these fields without bias or favour, in order to reach objective advice based on sound science. IChemE welcomes the opportunity to comment on this call for evidence.

This submission has been developed by IChemE's UK Research Committee – supported by IChemE's professional policy team – which promotes chemical engineering research with representatives from both industry and academia.

⁶ <https://ec.europa.eu/jrc/>

⁷ <http://www.senseaboutscience.org/pages/maintain-eu-chief-scientific-advisor.html>

⁸ <http://ec.europa.eu/research/sam/index.cfm>

⁹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l32042>