

# Brexit and European science

The United Kingdom's vote in favor of leaving the European Union (EU) has considerable ramifications for science. As the UK negotiates its "Brexit," there is recognition that research is crucial to long-term economic success and that Europe needs a strong knowledge and innovation system to compete internationally and tackle challenges such as climate change and improved health care. It would be unacceptable to allow Brexit to jeopardize this.

Unlike some contentious issues in the Brexit negotiations, when it comes to science and scientists, there appears to be an emerging consensus on the importance of maintaining a close association between the UK and the remaining EU. UK Prime Minister Theresa May has identified science and innovation as one of 12 Brexit priorities. Michel Barnier, the EU's chief negotiator for Brexit, reportedly vetted a July 2017 report on the future of EU research, chaired by former director-general of the World Trade Organization Pascal Lamy, that recommends "full and continued engagement with the UK."

The European science ecosystem is increasingly international, and the EU has long supported the collaborations that have led to its strengthening. Freedom of movement and funding from the European Research Council and the Marie Skłodowska-Curie Actions have been particular catalysts for progress. In 2015 and 2016, 17% of UK university staff were from other EU countries. In Germany, the number of foreign researchers employed by universities increased by 74% in the past 10 years, with more than half from other European countries. Introducing barriers to this exchange is in nobody's interest.

The scientific community across Europe indeed recognizes the threat posed by barriers to collaboration that would ultimately harm science. To avoid this, academies such as the UK's Royal Society and the Leopoldina (German National Academy of Sciences) are pressing for a Brexit agreement that allows the freest flow of people and ideas. A thriving research and education base strengthens industry, business, employment,

health care, and culture. The scientific community must emphasize this point with governments or risk long-term damage to European economic growth, cooperation, and societal well-being.

To avoid these risks, the Brexit agreement will have to facilitate easy movement of ideas and skilled people. Impenetrable paper work or restrictions on family members could be enough to make a UK researcher choose

California rather than Berlin, or an Italian choose Beijing instead of Oxford. The agreement should include participation in the EU Framework Programme 9, due to start funding research in 2021. There is considerable discussion within the EU about making this program more global than Horizon 2020. Pascal Lamy's report recommends greater openness to "association by the best and participation by all;" non-EU countries such as Norway and Israel are already associated. Other shared facilities and vehicles for collaboration, including the European Atomic Energy Community (Euratom), the European Organization for Nuclear Research (CERN), and the European Centre for Medium-Range

Weather Forecasting, need to be strengthened and emulated with continuing UK involvement.

Uncertainty creates risk. In April, a UK parliamentary committee warned of a brain drain if the current uncertainty for researchers and universities continued. When the damage becomes evident, it will be hard to turn the situation around. Discussion of a "no deal" exit only worsens this. Both sides in the negotiations need reminding that it is in everybody's interests to act quickly. National academies can help by pressing this point with their national and EU representatives.

Politicians might view the considerable goodwill that exists on all sides in relation to research as an opportunity to create an early agreement on science that benefits everyone. Such an agreement might even set a positive tone for the rest of the negotiations.

—Alex Halliday and Jörg Hacker



***"Introducing barriers to [scientific] exchange is in nobody's interest."***



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# Science

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