

General Election Manifesto briefing

12 ideas to boost UK science and innovation

November 2019

Educating and training the UK's scientists

- Boost technical science courses in 16-19 education with a sustained funding increase and support for SMEs:** There is a growing skills gap in laboratory technicians in the chemical sciences that will only be compounded by the ageing workforce. Targeted interventions to grow the number of students and apprentices is required if the UK is to be a hub for science and discovery. A future government must give targeted support to SMEs to get involved in scientific technical education, including via apprenticeships and work experience. Furthermore, funding for scientific technical education, including T-Levels, must receive a sustained funding uplift to reflect that scientific courses are more expensive to run due to the requirement to maintain laboratories.
- Ensure continued, stable funding of science teaching in our universities:** The value of STEM courses and their higher costs of delivery are recognised in higher education through high-cost teaching grants. Any changes to funding structures must safeguard overall funding levels to ensure the sustainability of high-quality teaching at our science departments. In particular, where a new government has a policy to reduce tuition fees, this must be balanced through an increase in teaching grants or by other means.
- Support teachers' subject expertise so that they want to stay in the profession:** In 2017 just over 10% of chemistry teachers in state-funded schools left the profession for reasons other than retirement, and the number of people training to be chemistry teachers has frequently been below government targets. Improving retention and making the profession more attractive requires a multi-faceted approach that includes addressing teachers' wellbeing and workload and supporting their professional development. Teachers must be given the time and opportunities to develop subject-specific expertise throughout their careers, to improve self-efficacy, retention, as well as students' outcomes.

Funding great science

- Make the UK one of the top 3 R&D investors in the OECD:** The UK needs to invest at least 2.4% of its GDP in R&D by 2027. However, we need to supercharge efforts to achieve this target and make sure we don't fall behind international competitors. A future government should be far more ambitious in order to remain competitive on the global stage, and create a long-term roadmap to ensure that by 2027 the UK is in the top 3 investors in the OECD in terms of % GDP invested in R&D.
- Create a 'digital shop window' to attract R&D investment:** There are a huge range of science funding streams and grants with different purposes and source budgets, and it can be very unclear to investors and researchers what the opportunities are. A single digital shop window that provides clarity here would be a cost-free way of growing UK R&D.

- **Negotiate continued participation in EU research programmes:** If the UK leaves the EU without negotiated association to EU Research and Innovation programmes there will be a £1.5bn hole in UK research funding. Continued association to these programmes, and the funding and international collaboration that they bring, is an essential part of making British science great. A future government should negotiate to its best ability to ensure the UK is able to associate, while making £1bn in contingency funds for R&D available (alongside the £0.5bn filled by the underwrite guarantee) in case this is not achieved.

Protecting our environment from plastic and electronic waste

The chemical sciences play an important role in preventing and remediating the adverse impacts of waste from human activity, including tackling waste from plastics and consumer electronics.

- **Require all new products to incorporate eco-design:** Ecodesign should be made part of product requirements to ensure that products and components are durable, repairable and reusable. A future government should ensure that products are effectively labelled (to ease recycling), and their environmental impact assessed and reported on the basis of their entire lifecycle.
- **Incentivise ‘reduce and re-use’:** Strategies to tackle waste should follow the ‘waste hierarchy’, with measures that focus on reducing and re-using *before* discarding and eventually recycling. Measures should include offering convenient product take-back schemes for waste electronics that guarantee secure data wiping, as well as convenient deposit return schemes for plastics. There should be incentives to substitute the use of rare elements in electronics manufacturing.
- **Invest in R&I that ensures we can recycle our waste:** Achieving a circular economy needs investment in research and innovation. For example, if everyone started recycling their household electronics today, there isn’t the available large-scale infrastructure to extract the rare elements. A future government should work in partnership with academia, industry and consumers to explore scientific solutions. Investment must be made available to research the chemistry of materials to substitute rare elements and plastics, and to find large-scale methods of recycling materials and recovering rare elements.

Making the UK an international hub for scientific talent

Our immigration system must increase access to skilled scientists so that UK employers (particularly scientific SMEs and start-ups) are able to attract the best and brightest, to make the UK an international hub for science and innovation.

- **Exempt SMEs from the salary threshold on Tier 2 visas:** Scientific SMEs may be missing out on international scientific talent due to the salary threshold on skilled (Tier 2) visas. SMEs – which make up 96% of chemicals and pharmaceuticals companies – have specific requirements for the researchers they need to employ and often cannot afford to pay starting salaries over £30,000. A future government should make qualifications and skills the condition for work visas, not salary.
- **Ensure Exceptional talent (Tier 1) visas are available for industry:** Fast-track, exceptional talent routes are needed in science, but Tier 1 exceptional talent visas are underused and primarily focus on academia. This visa route is available to science employees and employers in industry, particularly SMEs, as well as those in academia.
- **Provide proof of a right to remain under the EU Settlement Scheme:** Having a physical proof of right to stay in the UK is imperative to securing the rights of anyone who has registered on the EU Settlement Scheme, avoiding future confusion and putting EU nationals’ minds at ease.