THE ROYAL SOCIETY | The British Academy | ROYAL ACADEMY OF ENGINEERING | The Academy of Medical Sciences

Science, research and innovation on the doorstep

Whether it is Brexit, or climate change, healthcare or the economy – all of the major issues that voters care about are underpinned by science, research and innovation.

YouGov's issues tracker gives us an insight into what these major issues might be. **Aside from Brexit, here are some of the other top issues identified by the public, and the reasons why we must support our research and innovation system to tackle them.**

Health – Science, research and our ability to find innovative solutions will be key to combatting many of the health challenges our population faces. This includes tackling major issues like anti-microbial resistance, freeing up hospital beds by identifying illness and disease earlier through new diagnostic techniques, meeting the needs of an ageing society and developing new drugs to cure diseases like cancer. **If supported effectively, breakthroughs in medical sciences could improve our health, extend length and quality of life, increase efficiency in the NHS, and save the public purse billions.**

Environment – Climate change is one of the most pressing challenges we face. As well as encouraging behavioural change, **we need to rapidly develop and adopt new low carbon energy sources, like solar, wind and tidal power whilst phasing out fossil fuels**. Advances in science and engineering are needed to transition from combustion engines to electric vehicles – and enhance our energy storage capabilities. But as well as reducing our emissions, we will need to actively remove CO2 from the atmosphere to achieve net-zero. As we do this, 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 our health. For all of this, advances in research and innovation will be essential.

Economy – Economic growth and boosting productivity will be dependent on harnessing new and emerging technologies, and better understanding what skills we need in our knowledge-based economy. Already, **businesses that invest in Research & Development (R&D) are on average 13% more productive than those that don't[1].** Research-intensive industries also create highly skilled jobs: **the UK's pharmaceutical industry alone employs 63,000 people with 23,000 dedicated to R&D[2].** Technologies like Artificial Intelligence will change the way we live our lives – some jobs will be lost altogether, and others will be created that don't even exist yet. We will need to have open public conversations to ensure we adopt these technologies in ethical and effective ways that maximise the economic benefits for all sections of society.

Crime – New technologies and research have the potential to significantly help law enforcement. **Algorithms which detect suspicious communication patterns can be used to bring down terrorist networks or fraudsters**. Advancements in forensic science can lead to more secure prosecutions. As digital technologies become an increasingly dominant feature in our lives, we need new cyber security techniques to keep pace with cyber criminals who wish to do harm. Beyond these technologies, disciplines like sociology and psychology will be essential if we want to develop preventative approaches to crime – allowing for help and support to be offered to 'at-risk' people.

The UK's relationship with the European Union ranks as the top issue for the public in all pre-election polls. The eventual outcome of Brexit will have a profound impact on science, research and innovation in the UK. Equally important will be the UK's future immigration policy which ranks as the 6th top issue in the YouGov tracker. **On the next page find out what scientists, researchers and innovators need from the next government to address challenges like those outlined above.**

1. Department for Business Innovation and Skills (2014) Innovation Report 2014: Innovation, Research and Growth.
2. Association of British Pharmaceutical Industry.

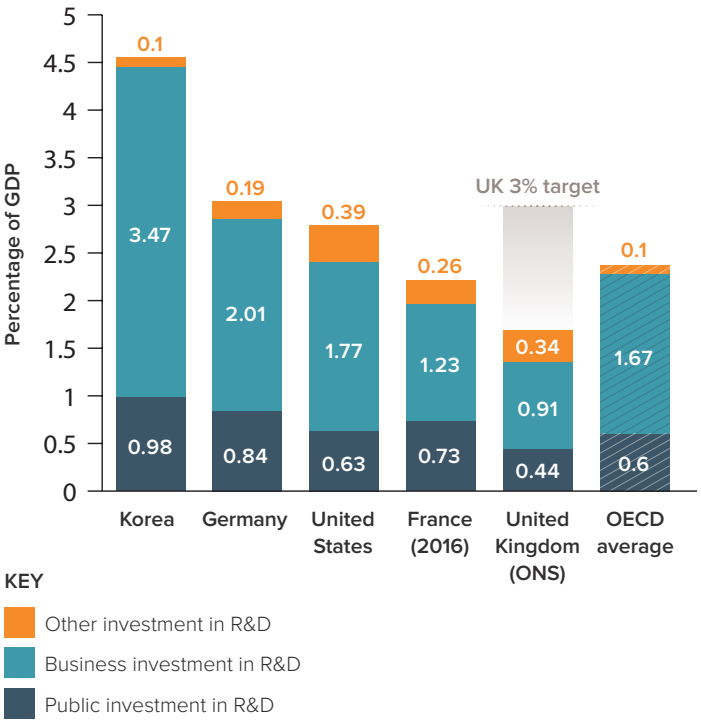
A new start: supporting science, research and innovation in the next Parliament

From the discoveries of penicillin, graphene and the structure of DNA, to the creation of the internet, UK researchers and innovators have been central to developing the new knowledge, new products and new approaches that have fuelled our country's progress and prosperity. Despite our strength, we have a history of underinvestment in research and innovation – we invest a lower proportion of our national wealth in research and development (R&D) than many other leading scientific nations.

Now is the time to address this failure to invest, as tackling shared global challenges such as climate change and antimicrobial resistance; delivering the technologies of tomorrow; and addressing the issues that voters care about will all be underpinned by research and innovation. That is why it is essential that the next Government takes concerted steps to support research and innovation in the next Parliament.

FIGURE 1

How does UK investment in R&D compare internationally?



Sources: Office for National Statistics (2019). GERD release, 2017. OECD Main Science and Technology Indicators 2016. Data for comparator countries shown. Note – figures are rounded.

Whatever the outcome of Brexit, the National Academies call for the next Government to:

Ensure the UK has the skilled workforce we need

- The UK excels in research and innovation thanks to our highly skilled, creative and international workforce. To flourish we must continue to develop and support our own home-grown talent and be welcoming to skilled individuals whatever their background and wherever they come from.
- To achieve this the next Government must ensure that:
  - All young people have the opportunity to study a wide range of subjects to 18.
  - Our immigration system works for researchers, innovators and their families.
  - Everyone has the opportunity to access and thrive in a career in research and innovation.

Invest in research and innovation

- The next Government must act to raise our level of investment to globally competitive levels, putting the UK on a trajectory to invest 3% of our GDP in R&D.
- To reach this target we will need a plan that includes:
  - A transformative increase in public investment.
  - Initiatives to boost R&D across the country.
  - Measures to encourage businesses to invest in R&D.

Take an outward-looking approach, which promotes openness and collaboration

- Many of the major issues that we face today cannot be tackled without international collaboration.
- We must strengthen our existing relationships alongside developing new global partnerships.
- The next Government should commit to funding UK participation in EU research and innovation programmes such as Horizon Europe and Erasmus.

Who are the UK's National Academies?

The Academy of Medical Sciences, the British Academy, the Royal Academy of Engineering and the Royal Society are independent and politically neutral organisations representing over 5,000 of the world's most distinguished researchers in academia, industry, charities, and the public sector.