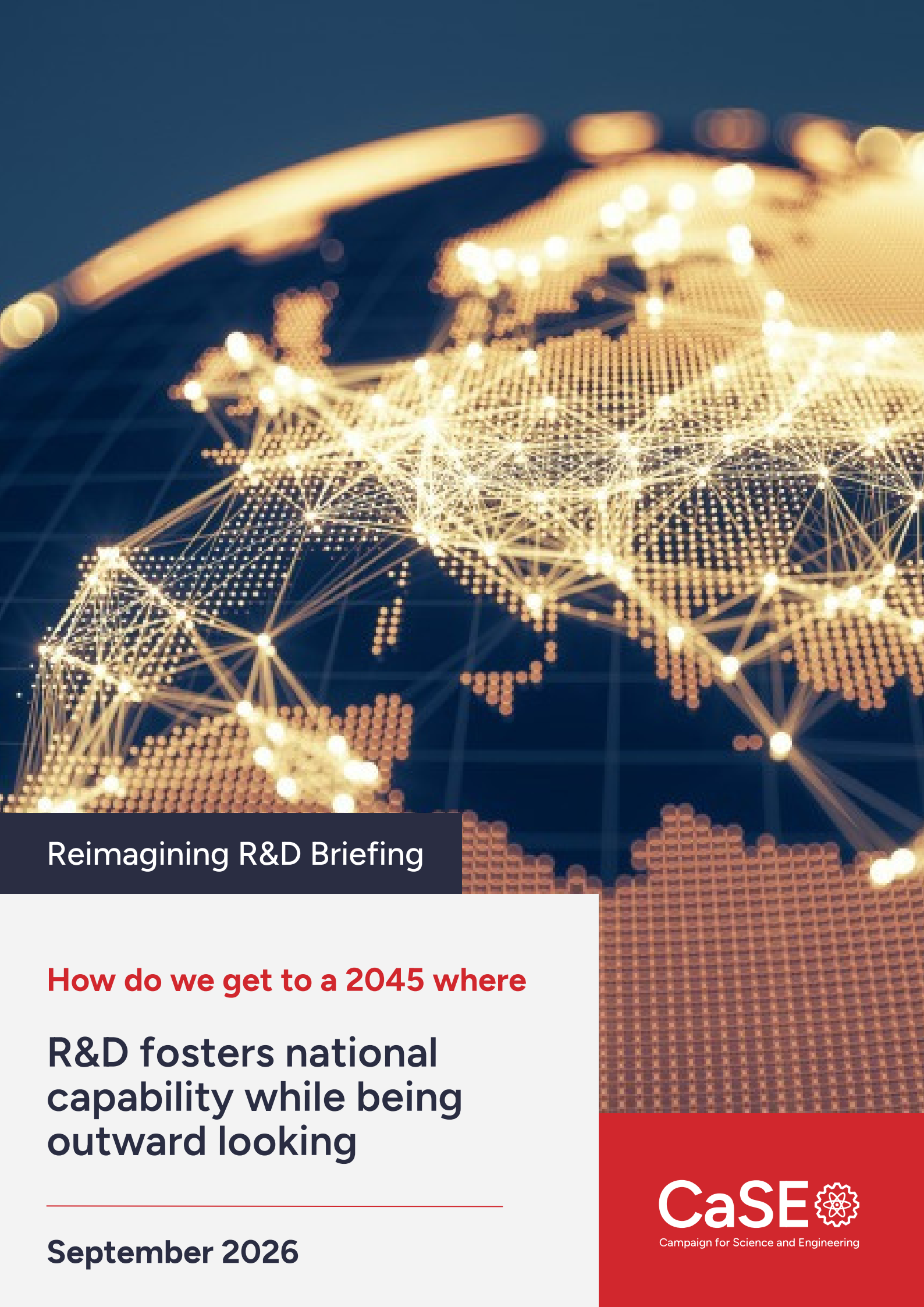




Reimagining R&D Briefing

How do we get to a 2045 where

**R&D fosters national
capability while being
outward looking**

September 2026

Introduction

The future of UK research and development (R&D) is at a pivotal moment. It faces a complex interplay of global and domestic uncertainties including from a changing geopolitical context, domestic political fragmentation, declining public trust in institutions and rapid technological development. Now is the time for the R&D sector to take deliberate steps to ensure R&D remains resilient and relevant in the decades ahead.

CaSE has developed a [long-term vision](#) for UK R&D in 2045 that sets out desirable outcomes that the sector would like to see, as well as the challenges and trade-offs that need to be addressed for this to become reality. The vision is based on views gathered through an extensive consultation process with CaSE's membership – including businesses, universities, charities and learned and professional societies – as well as a diverse array of stakeholders across the R&D sector.

The vision sets out four themes for a successful UK R&D system in 2045:

- 1) R&D delivers benefits for the economy and society**
- 2) R&D is embedded in society, with greater public involvement**
- 3) R&D fosters national capability while being outward looking**
- 4) R&D features in an open innovation system, with strong public and private collaboration**

This vision is intended to guide both the R&D community and the UK Government in shaping the future of the R&D system. CaSE is exploring the themes from the vision in greater depth through a series of roundtables. The discussions aim to further explore the challenges, opportunities and trade-offs identified.

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The views and recommendations expressed within this report are those of Campaign for Science and Engineering (CaSE) and inclusion on this list does not imply endorsement for the contents of the report.

About this briefing

This briefing draws on a roundtable discussion and provides recommendations to unlock progress towards the third theme from the vision, which sets out that in 2045:

R&D fosters national capability while being outward looking:

- **The UK leverages R&D to foster sovereign capability and safeguard national security - with data considered a sovereign asset.**
- **The UK leverages its agility and flexibility as a small state, and uses strength in R&D as a soft power asset.**
- **R&D is aligned with strategic domains, has translation capacity and the domestic and international talent it needs to thrive.**
- **People choose R&D careers and perceive R&D as a desirable career option.**
- **The UK has broadened beyond its traditional alliances – research collaboration has enabled the UK to grow its international partnerships with emerging economies.**

Participants at a roundtable were asked to assess the feasibility of the third theme of the vision within the current policy landscape, explore trade-offs and identify policy interventions needed to deliver it.

This briefing highlights what stakeholders at the roundtable identified as working well, including the actions already being taken by the sector and Government that help to achieve this vision. It also sets out some of the barriers to delivering this vision, and what could be improved. A key aim of this work is to ensure we identify clear recommendations that work towards making this vision a reality, which are aimed at Government, the research community, businesses, and funders.

People choose R&D careers and perceive R&D as a desirable career option

In 2045 the sector would like to see that R&D continues to benefit from the domestic and international talent it needs to thrive. This includes greater support for pathways into R&D careers to ensure they are flexible, keep pace with technological change and are perceived as a desirable option. Without clear, attractive and adaptable routes into R&D, the UK risks losing the skills and expertise needed to sustain innovation, respond to future challenges and compete internationally.

Domestic Talent

What is working well?

In our discussions, stakeholders welcomed the Government putting more of an emphasis on skills and training to make sure the UK develops the R&D talent it needs. In England, [Local Skills Improvement Plans](#) were cited as an example of an initiative that has the potential to enable high value regional growth. In Scotland, the [National Improvement Framework 2026](#) sets out key priorities and outcomes for education and skills in children and young people, and in Wales the [Regional Skills Partnerships](#) help to identify regional and sub-regional skills priorities to drive regional skills investment. Stakeholders highlighted that there has been an increased effort to encourage young people into science, with good existing bottom-up outreach programmes in schools.

What could be improved?

Whilst there are good outreach programmes aimed at attracting young people into R&D careers, this needs to be enhanced further by having better top-down messaging and clear mechanisms from businesses and Government that identify skills gaps and increase awareness of R&D careers.

R&D careers need to be made more attractive and pathways diversified. To ensure we are getting more young people into R&D careers, alternative career pathways need to be strengthened, such as apprenticeships that are aligned with industry needs. CaSE's previous report on the [skills gap](#) emphasised the need to provide employers incentives for workplace training and streamlining the framework for apprenticeships. Scotland have made steps towards this, with the establishment of a new apprenticeships committee under the [Tertiary Education and Training \(Funding and Governance\) \(Scotland\) Bill](#). This will simplify the funding system for post-16 education and have university, college, and apprenticeship funding in one place.

For many people who complete an undergraduate degree, the next step towards an R&D career is typically further study through a master's degree or PhD. Over the last five years, the UK has produced an average of 23,500 PhD graduates each year^[1]. However, more people do PhDs than there are career opportunities in UK academia, and those starting a PhD are often unaware of this. Furthermore, the working culture of research is known to place a significant burden on early career researchers, and careers paths for PhD graduates are often unclear, precarious and with patchy support for developing transferable skills.

Therefore, recognising that these qualifications represent significant commitments of time, money and public investment, the UK should create more structured frameworks for postgraduate study. This could include offering opportunities for more varied experiences outside academia during a PhD, strengthening technical training and skills development throughout postgraduate study, and connecting research more clearly to the industrial strategy. All of this could build on the Research Development Concordat.

[1] [Higher Education Student Statistics: UK, 2024/25 - Qualifications achieved | HESA](#)

Having better careers advice, stronger links between universities and employers, and targeted support for transitions into industry, could help both undergraduates and postgraduates understand the full range of R&D opportunities available to them and ensure that their skills are applied where they can have the greatest impact.

International Talent

What is working well?

The [Global Talent visa](#) and [Global Talent Fund](#), the latter funded by the Department for Science, Innovation and Technology (now the Department for Business, Innovation, Science and Trade (BIST)), have helped strengthen the UK's ability to attract international researchers. The Global Talent visa delivers clear benefits to the UK by enabling universities, research institutes and specialist employers to fill highly skilled roles that cannot be met by the domestic labour market alone. It was highlighted in our discussions that the Global Talent Fund appears to have been particularly important at a time of increased instability in the US research environment, which may have encouraged more US-based researchers to consider opportunities in the UK.

What could be improved?

While targeted funding can help attract talent, wider barriers in the immigration system continue to limit the UK's competitiveness. Visa costs remain high for researchers and their families, and the process can be difficult for organisations to navigate. CaSE's previous work on [barriers in the visa system](#) highlights how these issues can discourage international mobility and make it harder for R&D organisations to recruit the talent they need.

To strengthen the UK's offer, our discussions suggested that the government and the R&D sector should explore more structured exchange programmes, enabling international researchers to work with UK universities and businesses for a fixed period. These could draw on models such as the European Union (EU) Erasmus Mundus master's programme or other study-abroad schemes focusing on work placements rather than study. It was suggested this could help to build long-term research links and widen access to international expertise.

Recommendations

1

People and Skills

- **Government, universities and funders should create more structured frameworks for postgraduate study, including structured pathways into industry, government, charities and technical specialist roles.** This should include improving awareness of the full range of R&D career routes available through stronger careers guidance and better signposting of non-academic opportunities, employer incentives and more opportunities for postgraduate researchers to build transferable, technical and commercial skills alongside their research training.
- **Government should establish structured exchange programmes, enabling international researchers to work with UK universities and businesses for a fixed period.** These could draw on models such as the EU Erasmus Mundus master's programme or other study-abroad schemes, focusing on work placements rather than study.

R&D becomes a sovereign capability which safeguards national security

For R&D to deliver national capability, the UK needs to understand where it can have sovereign capability and how it can safeguard these assets, whilst remaining open to international collaboration. To do this, the R&D sector must be forward-looking and anticipate how technologies, such as artificial intelligence (AI), quantum, and satellites will change research itself. This is important for helping to protect the critical knowledge, infrastructure, data, and technologies that underpin national resilience, while ensuring that decisions about funding, prioritisation, and restructuring are assessed for their impact on the UK's long-term national capability. It should also give researchers and innovators the confidence to collaborate internationally in ways that are secure, strategic, and mutually beneficial.

Data as a Sovereign Asset

What is working well?

The UK holds significant datasets that support research and innovation, public service improvement and national resilience. Examples discussed included [UK Biobank](#) and [NHS England's digital and data functions](#). These datasets are governed by established legal, ethical and policy frameworks, including General Data Protection Regulation (GDPR) and intellectual property (IP) law, which are intended to support responsible data use and protect privacy. Recent concerns, including reported unauthorised access to UK Biobank participant data, highlight the need to keep reviewing and strengthening safeguards to ensure data infrastructure remains robust and effective.

What could be improved?

In our discussion, stakeholders highlighted an opportunity to make better use of the large historic datasets held within businesses by using AI to search, organise, and analyse them more effectively. This could help unlock insights that are currently difficult to access, support innovation, and increase the value of these datasets as national assets. However, this would require appropriate safeguards for AI companies, so that data owners can be confident their data is protected and will not be exploited.

The rules and processes around data handling need to be streamlined so that organisations can use data more effectively, while still protecting privacy and ownership. The responsibilities for protecting data should be considered across the full data-use chain, including both organisations that curate data and AI companies that access or use it. The Government's work on AI and copyright should help clarify how AI companies' access and use copyright-protected data, what permissions or licensing arrangements may be required, and what transparency is expected. However, stakeholders noted that this may not fully address wider questions about how research data should be handled, shared and protected across the R&D system.

To support organisations, such as charities and research institutes, to protect their data and ensure they are getting the most out of their historic data, stakeholders also discussed introducing grants and funding to support the digitalisation of data, which would help organisations utilise their data to become a national asset.

In our discussions, the importance of international digital cooperation was highlighted for strengthening a secure and competitive business environment for digital technologies. [Digital Europe](#), a trade association built to ensure that Europe has sovereign capability for digital technologies, was cited as an example of a mechanism that could facilitate this. It was suggested that there could be benefits to the UK associating to its programmes to facilitate greater collaboration in this domain with the EU.

AI and Data Processing Power

What is working well?

AI is already accelerating the pace of research through automation, which could become a strength for the UK if it acts quickly to protect and build on its research assets.

What could be improved?

Large language models (LLMs) are increasingly being used to process and synthesise research data, raising questions about data ownership, reproducibility, reliability and protection of research outputs. Roundtable participants discussed whether the UK should consider options for developing or accessing high-quality LLM capability to support research and noted that any approach would need appropriate governance. Participants also highlighted practical constraints, including energy availability, land use and the location of existing data-centre clusters, which may affect whether some compute capacity is developed domestically or accessed overseas. This points to a need for clearer consideration of how data centres, compute capacity and energy infrastructure are planned together, and how decisions about overseas processing should include guidance on data ownership, national security, intellectual property, and broader questions of sovereign capability.

Recommendations

2

Sovereignty

- **Government and funders should provide targeted funding to help organisations digitise and organise historic datasets, particularly where these datasets have long-term research, public service or economic value.** This should support organisations to make data easier to find, access and use, while maintaining strong privacy, security and ethical safeguards.
- **Government should develop a clearer and more streamlined policy framework for data handling, ownership and AI copyright within the R&D sector.** This should clarify the responsibilities of data owners, research organisations and AI companies, including how data can be accessed, licensed, shared and protected.
- **Government should take a systematic approach to securing the infrastructure needed for future R&D, including data centres, compute capacity, and the energy required to power them.** Government should assess future demand across the research and innovation system, identify where sovereign capability is needed, and coordinate procurement and investment so the UK has reliable access to the processing power required for AI-enabled research.

Broadening beyond traditional research alliances

What is working well?

In our conversations it was highlighted that the UK has a leading global position and strong global influence due to its research strength and abilities, noting that the UK has 148 Nobel prize winners, second only to the United States^[2]. The Government's international comparison of the UK research base highlights this strength, showing that the number of publications and citations is continually growing, with a 4.8% increase from 2018 to 2022. International relationships are central to this strength: in 2022, 60% of UK research articles were co-authored with an international researcher, placing the UK first among other G7 countries for international collaboration^[3]. These partnerships help extend the reach and impact of UK research by opening access to global expertise, infrastructure, datasets, markets, and policy networks.

To maintain this position, the UK should continue to treat international collaboration as a soft power asset, while adapting and broadening its relationships as other economies rapidly strengthen their own research capabilities.

What could be improved?

Our discussions noted that there is an opportunity for the UK to build on its existing research partnerships and go further in response to shifting global dynamics and research gravity. The UK already has a long-standing presence in countries such as China and India, including through UK Research and Innovation's (UKRI's) international offices established to build R&D partnerships there.

At the same time, China and India are continuing to increase their research capabilities and output, and Brazil is starting to see increasing economic growth and increased R&D spending. Stakeholders felt these shifts present an opportunity for the UK to deepen and expand these international relationships further, but that this needs to be done with both openness and security. However, stakeholders noted that reductions in Official Development Assistance funding have already impacted the resources available to support these international research partnerships, and that this needs to be considered when looking to grow the UK's global research relationships.

Clearer government guidance around engaging strategic partners is required to enable universities and businesses to more easily manage the complexity of international relationships and national security interests. For example, China was highlighted as a crucial partner for universities to collaborate with as it produces high-quality and leading research that the UK can benefit from. However, collaboration is currently restricted due to national security concerns and differences between research and political priorities – the Government should help to facilitate these conversations. Researchers searching for collaborations is the fastest moving element in initiating partnerships, whereas research governance tends to be a lot slower.

The UK is strong in research and discovery, but turning new ideas into commercial products often requires access to larger markets, investment and international supply chains. If the UK wants more of its research to be developed and sold from the UK, rather than being commercialised elsewhere, it will need stronger partnerships with other countries. An international R&D strategy would help the UK rebuild and deepen relationships with the EU, develop strategic links with emerging economies, and sustain the long-term partnerships needed to strengthen the R&D sector.

[2] [Nobel Prizes by Country 2026](#)

[3] [International comparison of the UK research base, 2025 - GOV.UK](#)

Recommendations

3

International Collaboration

- **Government should develop clearer guidance for universities, research organisations and businesses on how to remain open to collaboration while protecting sensitive knowledge, data, infrastructure, and intellectual property.** This guidance should set out principles for identifying trusted partners, assessing risks and opportunities, and managing collaborations with countries where research, commercial and national security interests may not fully align.
- **Government should develop a clear international R&D strategy that provides greater coherence and long-term certainty for global research and innovation partnerships.** This would help ensure international engagement supports the UK's wider ambitions for research excellence, innovation, and societal benefit. It would also help maintain the UK's attractiveness as a world-leading destination for research, talent, and investment, while enabling researchers and innovators to collaborate effectively on shared global challenges.

R&D is aligned with strategic domains and has the translation capacity it needs

What is working well?

During our discussions, stakeholders highlighted that there is good overall Government support for research and innovation with strong spending review commitments, including funding increases and investment in collaborative infrastructure. Furthermore, the industrial strategy provides a good framework that strongly aligns R&D with strategic domains. However, the next step is to move to translation of the framework to develop strategic advantage for UK R&D. To do this requires understanding industry capabilities, connecting it to research strengths and creating longer horizons for partnerships through longer-term funding cycles.

What could be improved?

The financial sustainability of the R&D sector, including universities, is essential to the success of the industrial strategy and the long-term vision for UK R&D. Without a stable funding base, universities and research organisations will struggle to invest in new capabilities, support innovation and contribute to the UK's soft power ambitions. Long-term investment programmes are therefore needed to provide financial stability, but they must be underpinned by clear criteria so that the R&D sector understands how funding decisions are made and can plan with confidence.

Industry partnerships are key to strengthening the UK's translation capabilities, but long-term partnership funding is required for sufficient return on investment. For example, five-year funding cycles are often only long enough to advance through two stages in the Technology Readiness Level pathway. Furthermore, in our discussions some stakeholders felt it was not always clear why certain projects, such as quantum computing, have received 10-year funding cycles, whilst other projects have not. Clearer criteria would help explain when longer-funding cycles are achieved and would help research organisations plan projects and partnerships more effectively. This suggestion reflects CaSE's previous work on [long-term R&D funding](#), which highlighted the importance of sustained investment for giving organisations the confidence to plan, build partnership and develop capability over time. It also links to issues raised in another of CaSE's [Reimagining R&D roundtables](#) on public and private collaboration, where stakeholders highlighted that the financial sustainability of universities is an important condition for effective collaboration with businesses.

Recommendations

4

Translation Capacity

- **Government and the R&D sector should map sector capability against the industrial strategy to improve visibility of existing industry and research strengths, gaps, and opportunities across the UK.** This should bring together evidence on university research capacity, business R&D activity, technical infrastructure, skills availability, and regional specialisms, so that Government and funders can map where the UK's capabilities are and make more strategic decisions about where to invest for the future.
- **Government and funders should set clearer criteria for when longer-term funding cycles are needed, particularly for projects that require sustained partnerships, specialist infrastructure or progression through multiple stages of technology readiness.** It should be explained why some strategic domains receive longer investment horizons and how those decisions align with national capability, industrial strategy priorities, and expected economic or societal impact.



About CaSE

Campaign for Science and Engineering (CaSE) is a non-partisan charity with a membership that cuts across R&D sectors. It takes a high-level, cross-sector view of the research and innovation environment, and gives impartial expert insight on the whole R&D system to decision-makers.

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