National Audit Office

REPORT

DSIT's investment in research infrastructure

Department for Science, Innovation & Technology

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Key facts

£1.2bn

UK Research and Innovation (UKRI) spending on research infrastructure in 2024-25

£451mn

UKRI spending on the Infrastructure Fund between April 2022 and March 2025

£2.04bn

approved cost of the 30 projects being delivered through UKRI's Infrastructure Fund

58%	proportion of current Infrastructure Fund projects that report they do not face any major issues threatening delivery of the agreed outcomes
£750 million	estimated cost (including contingency) of building the Next National Supercomputer and operating it for five years
£287 million	10-year budget for the National Quantum Computing Centre approved by HM Treasury in July 2025
£5.6 billion	estimated cost of restoring research infrastructure owned by English universities to a fully operational condition

Summary

1 Research infrastructure consists of the facilities, resources and services used to conduct research and innovation activities. They can include specialist equipment, laboratories, supercomputers, and large-scale multi-use facilities. They are a key part of the UK’s research and innovation landscape and are integral to the UK’s role as a hub for international collaboration. The government’s ambition is for the UK to be “one of the top three places in the world to create, invest in and scale-up a fast-growing technology business by 2035”. This ambition requires high-quality, accessible, and internationally competitive science and technology research infrastructure.

2 The Department for Science, Innovation & Technology (DSIT) is the government department responsible for “positioning the UK at the forefront of global scientific and technological advancement”. It sponsors UK Research and Innovation (UKRI) which is a non-departmental public body bringing together seven disciplinary research councils,[1] Research England (which supports research and knowledge exchange at higher education institutions in England), and Innovate UK (which supports businesses). UKRI’s purpose is to invest in research and innovation to “advance knowledge, improve lives and drive growth”.

3 Building, maintaining, and upgrading research infrastructure requires strategic decision-making to ensure that the most crucial research infrastructure is accessible within the budget available. In 2016, we conducted a study examining spending on research infrastructure.[2] We concluded that the Department for Business, Innovation & Skills (BIS) – DSIT’s predecessor department – had not used good-quality information to inform investment decisions, and we recommended a more structured and strategic process for deciding what to fund. UKRI was subsequently created in April 2018.

1 The seven research councils are: Arts and Humanities Research Council, Biotechnology and Biological Sciences Research Council, Economic and Social Research Council, Engineering and Physical Sciences Research Council, Medical Research Council, Natural Environment Research Council, and Science and Technology Facilities Council.

2 Comptroller and Auditor General, *BIS’s capital investment in science projects*, Session 2015-16, HC 885, National Audit Office, March 2016.

4 This report examines how effectively DSIT and UKRI work together to develop and operate research infrastructure that meets the needs of the government, researchers and industry. It examines:

- how well DSIT understands the research infrastructure landscape, how DSIT and UKRI determine what infrastructure to fund, and whether they manage infrastructure as a portfolio (Part One);
- whether DSIT and UKRI are working effectively to deliver the research infrastructure the UK needs (Part Two); and
- whether existing research infrastructure assets are being used in a way which achieves the best possible outcomes (Part Three).

Key findings

Strategic oversight of research infrastructure

5 The UK's research infrastructure funding landscape is fragmented, although UKRI is responsible for almost all the DSIT group's spending. UKRI spent £1.17 billion on research infrastructure in 2024-25. Since April 2022, UKRI funding for infrastructure has been split into multiple funding streams comprising UKRI-wide funding lines, funding through Research England that universities can use on new or existing infrastructure, and funding provided by the individual research councils themselves. In 2024-25, the most significant funding streams were World Class Labs (£628 million spending) and the Infrastructure Fund (£248 million spending). World Class Labs funding is either spent by UKRI's research councils or passed on to universities. The Infrastructure Fund enables construction of new infrastructure or major upgrades which the research councils or Innovate UK would not be able to fund themselves. DSIT provides a comparatively small amount of research infrastructure funding grants directly (£68.9 million over the last three years) (paragraphs 1.5, 1.7 to 1.9 and 1.13).

6 UKRI has introduced a more consistent approach to funding larger research infrastructure projects. UKRI conducted a review of the research infrastructure landscape and, in 2022, established the Infrastructure Fund. This was intended to provide a more structured and strategic approach for identifying, prioritising and selecting major research infrastructure projects for investment than existed previously. UKRI has approved 30 projects, with an expected total cost of £2.04 billion (it has spent £451 million on the Infrastructure Fund as of March 2025). UKRI also established new governance structures around the Infrastructure Fund (paragraphs 1.6, 1.7, 1.9, 1.11 and 1.16).

7 **DSIT is starting to do more to ensure that UKRI spends money in line with its policy ambitions for the UK than it has done previously.** DSIT has identified six 'frontier technologies' it believes will be particularly important for achieving its objectives. DSIT has generally limited itself to providing high-level guidance to UKRI about current government priorities, and only became involved in the later stages of business case approval processes for the largest projects. In late 2025 it set three broad priorities for the research and development (R&D) system. UKRI subsequently set out how its spending would support these priorities, and how much it expected to spend on R&D to benefit the 'frontier technologies' and on other government priorities (paragraphs 1.20 to 1.22).

8 **Although there have been improvements since we last reported in 2016, UKRI is still not managing all its research infrastructure as an integrated portfolio.** Managing projects and other activities as a portfolio allows organisations to maximise the likelihood that they achieve their intended outcomes regardless of the performance of individual components of the portfolio. UKRI does not manage its research infrastructure estate as a portfolio, though it is seeking to apply portfolio management techniques to the Infrastructure Fund in a more comprehensive way. However, its ability to do so is limited by the inflexibility of the funding arrangements. In particular, UKRI did not allow any projects to bring spending forward between November 2023 and July 2025 – despite knowing other projects were proceeding more slowly than planned because UKRI needed to restrict spending to remain within its overall budget. This resulted in an £81 million (18%) underspend. We did not see any evidence of UKRI slowing or stopping research infrastructure projects to enable more strategically important projects to proceed until December 2025 (paragraphs 1.14 and 1.16 to 1.19).

Commissioning research infrastructure

9 **Our review of research infrastructure business cases identified opportunities for streamlining.** For novel and complex research infrastructure, there is a high level of uncertainty about outcomes. We found that information on cost-benefit analysis was less likely to be useful for decision-makers as they do not primarily rely on benefit-cost ratios to compare different projects. This is because it is particularly challenging to quantify and monetise the benefits that an individual proposal would be expected to deliver. Other elements of the business case are more useful for investment decision-making and judging proposals against one another. We found that, while some strategic cases were strong, some did not articulate the rationale for funding a project as clearly as they could have done. DSIT has issued additional guidance about business cases to ensure they are more appropriate for research infrastructure (paragraphs 2.2 to 2.5).

10 **Some of the earlier business cases we reviewed seriously underestimated how difficult it was likely to be to deliver the project.** One of these projects will not now deliver all the benefits anticipated in its business case. Another project to upgrade an aircraft would not have delivered all the planned benefits even before UKRI decided it would decommission the aircraft instead (after this project had spent £46 million of its £49 million budget). Our review of business cases found that UKRI did not do enough initially to ensure that the projects' delivery risk assessments were realistic, and it fixed budgets too early before costs could have been well-understood. UKRI did not initially put in place appropriate safeguards to ensure it challenged over-optimism from individual research councils – who were naturally keen to ensure that their priorities were funded. Some business cases did not assess whether the available contingency was likely to be sufficient. However, 58% of the Infrastructure Fund projects report that they expect to achieve the intended outcomes and do not face any major issues significantly threatening delivery. We also saw some examples of UKRI taking action to increase the likelihood that the project succeeds (paragraphs 2.6 and 2.8 to 2.10).

11 **UKRI and DSIT have shown they can adapt their processes where technology is advancing particularly rapidly but both were too slow to replace ageing supercomputers.** The UK's supercomputers have lagged behind those available to researchers in other countries in recent years. The cost of building and operating supercomputers has increased significantly in recent years – the Next National Supercomputer is expected to cost up to £750 million to build and operate for five years. DSIT and UKRI did not act quickly enough to replace the ageing ARCHER2 supercomputer and did not have an overarching strategy for computing until recently. ARCHER2's declining performance relative to other supercomputers means it is less capable of supporting world-leading research. Additionally, it is currently expected to close 13 months before its replacement can be switched on, although UKRI believes it will be able to limit the consequences of this for researchers. However, DSIT and UKRI did work together effectively to develop the National Quantum Computing Centre (NQCC). Both adapted their processes appropriately to reflect the importance of quantum computing and the need for speed and agility. The NQCC is currently one of two DSIT-sponsored programmes with a budget that extends beyond the current Spending Review period: HM Treasury has agreed it can spend at least £287 million over the next 10 years (paragraphs 2.12 to 2.13, 2.17, 2.19 and Figure 6).

Utilising research infrastructure

12 **Researchers are using research infrastructure to make breakthroughs with benefits for people and for the economy.** We explored the potential impacts of research infrastructure for society and the economy through six case studies spanning disciplines such as quantum computing, medical research, biotechnology, and climate science. All had already produced tangible benefits, such as UK Biobank's work to develop methods to identify people at high risk of particular diseases, or the John Innes Centre's contribution to improving wheat productivity (paragraph 3.3).

13 **The research councils and universities have not adequately maintained facilities, and some infrastructure can no longer be used as intended.** The Science and Technology Facilities Council – which operates some of UKRI's largest research facilities – has not carried out sufficient maintenance to ensure its estate continues to meet its standards. It estimates that it would need to spend £360 million to restore its condition to an acceptable standard. The higher education sector is facing financial sustainability issues, and the condition of research infrastructure owned by universities is also deteriorating. Research England estimates that around £5.6 billion would be required to restore university-owned research infrastructure to a fully operational condition. It has also estimated that English universities are currently spending £1.82 billion each year on their research infrastructure, with £758 million of that spent entirely on maintenance. UKRI provided universities with £233 million of funding in 2025-26 to spend on new and existing research infrastructure this year (£59 million of which can only be spent on maintaining existing infrastructure) (paragraphs 3.4, 3.6 to 3.8).

14 **Across our case studies, there are examples of sites exploring innovative approaches to ensure infrastructure adapts to technological changes.** These include modular and adaptable workspaces on the polar research ship *RRS Sir David Attenborough*. The John Innes Centre (which supports research in plants and microbiology) has upgraded its facilities to let scientists control environmental factors such as temperature more flexibly and precisely. CoSTAR (Convergent Screen Technologies and Performance in Realtime) – which supports the UK creative industries – demonstrated its innovative approach to facilitating collaboration between industry and academia, leading to valuable knowledge transfer. UK Biobank – which stores biological samples and health-related data – outlined how improving the capacity of the site will enable it to increase the richness of the data available to researchers (paragraph 3.9).

15 Some research councils monitor how research infrastructure is being used well: this good practice could be shared within UKRI to support decision-making. UKRI has a framework for monitoring and evaluation but has not issued specific guidance about how the performance of research infrastructure should be monitored. Across the case studies, we saw a variety of approaches to monitoring inputs, outputs, outcomes, and impacts. There are some examples of good practice: for example, the Arts and Humanities Research Council developed a quarterly reporting template for the CoSTAR Network which collects qualitative and quantitative data. However, DSIT told us that the lack of a consistent approach makes it harder for DSIT to understand the entire research infrastructure landscape and report publicly on the impact of research infrastructure (paragraphs 3.11 to 3.15).

Conclusion

16 Academic and private sector researchers depend on publicly financed research infrastructure to make scientific advances and develop innovative products and solutions to global problems. Since we last reported, DSIT has started providing a clearer direction on the technologies it believes are particularly strategically important to the UK, and its expectations about how much money UKRI should spend supporting the government's policy priorities. UKRI has also introduced a more consistent and professional approach to funding research infrastructure, for example ensuring all projects have strong investment cases, meaning these projects have made, and will continue to make, significant contributions to global science. DSIT and UKRI have also shown that the UK government can take action quickly in particularly fast-moving and strategically important areas.

17 While UKRI and DSIT now have a clearer understanding of future infrastructure requirements than they had previously, UKRI can still do more to manage its research infrastructure as a portfolio – including balancing acquisition of new capabilities with maintenance and renewal of existing infrastructure – some of which can no longer be used for its intended purpose. There is also scope for UKRI to improve the value for money of its infrastructure projects by ensuring they adhere more closely to good practice, particularly around addressing over-optimism at early stages of project delivery.

18 Recommendations

a **Strategic oversight: governance, strategic direction, and oversight of research infrastructure.** UKRI – working with DSIT and other government departments where appropriate – should:

- assess how existing research infrastructure can be used to support strategic government priorities and innovative companies;
- determine the appropriate balance between research activities and spending on infrastructure for each of the priority-focused programmes it is establishing; and
- ensure that UKRI internal funding opportunities allow the priority-focused programmes to develop research infrastructure in line with their priorities, enabling contributions from other government departments and the private sector where appropriate.

b **Strategic oversight: improving portfolio management.** UKRI should take a broader view of portfolio management than it does currently, focusing on managing its projects so that they, collectively, achieve UKRI's objectives. It should look to introduce more flexibility into how it manages projects such as staged funding, and it should explore whether there is scope to manage the portfolio in a way which reflects UKRI's desire to take on more risk where this is justified by the potential reward.

c **Commissioning research infrastructure: improving business cases to support innovative research infrastructure.** DSIT should build on its current work on business cases and issue authoritative guidance specific to research infrastructure projects to ensure the projects it is responsible for approving understand what information decision-makers need.

d **Maintaining and utilising research infrastructure: improving financial management for maintaining and operating existing research infrastructure.** UKRI should improve its financial management capabilities by developing frameworks which allow it to better understand the relative merits of spending on new infrastructure, maintaining existing infrastructure or directly funding research. UKRI should explore whether there are any internal financial management arrangements which hinder this, noting that all UKRI spending is classed as capital spending.

e **Maintaining and utilising research infrastructure: sharing good practice on research infrastructure management.** UKRI should share good practice on ways to proportionately monitor the operation, successes, and challenges in the research infrastructure it invests in, and how to use this information to support future funding decisions.