



The UK's research and innovation infrastructure landscape plays a central role in levelling up the UK¹. Infrastructures leverage significant long-term co-investment from the private sector and act as a magnet for international businesses and collaborations to stimulate innovation and productivity growth, strengthening our science base across the country.

The UK has a rich and diverse landscape of research and innovation infrastructures located in all regions of the UK. These range from large-scale physical facilities (such as synchrotrons or 'living labs'), mobile infrastructures (such as research ships or scientific satellites), distributed networks and knowledge-based resources (such as collections and population cohorts), to virtual resources (such as data sets or digital images).

Delivering Economic Impact Across the UK

COLLABORATION



Offshore Renewable Energy Catapult supported 803 industrial collaborations and 114 international projects since 2013²



John Innes Centre supported 60 industry projects with 149 active partners⁹



Health Data Research UK combined expertise from NHS, charities, academia & industry to create 157 health datasets & delivered 300 multi-sector projects⁴

CO-INVESTMENTS



The 5G Innovation Centre registered over 20 UK, European and international patents and leveraged £5.49 from private and public sources for every £1 invested⁵



High Value Manufacturing Catapult produced £518m total industry R&D activity⁶



ISIS Neutron and Muon Source paid for itself twice over with a return on investment of £2.14 per £1 spent (gross estimate)⁷

ECONOMIC IMPACT



The Hartree Centre generated £7.1m in net economic impact as result of operational expenditure during the first four years⁸



Centre for Process Innovation collaborated with over 1400 businesses and produced £58m of industry R&D activity³



The European Molecular Biology Laboratory – European Bioinformatics Institute contributed to the wider realisation of future research impacts estimated to be worth £465 million annually¹⁰

Case Study



Image credit: Levenmouth Demonstration Turbine

Levenmouth Demonstrator Turbine, Fife

Located off the coast of Fife in Scotland, the Levenmouth Demonstration Turbine allows developers to demonstrate, test and validate new systems and methods in a cost-effective way. By integrating automated systems and robotics into its operations, the offshore wind sector has the potential to cut inspection cost by up to 40%. The Levenmouth Demonstration Turbine serves as a test-bed for technology developers to work on experimentation and new digital applications in areas such as data and digitalization, as well as robotics and automation. Over 122 instruments have been installed in the turbine's foundation, blades and tower to enable operational insight, including early warning lightning strike detection systems. Within its first five years of operation, the turbine has provided 7,414 homes with power, offset 7,050 tonnes of CO2, attracted 98 SMEs for research, testing and demonstration of new and innovative technologies and enabled 45 collaborative projects.

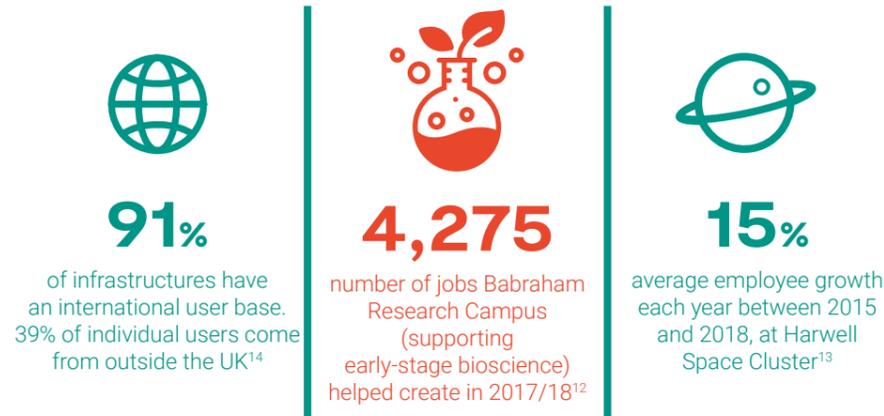
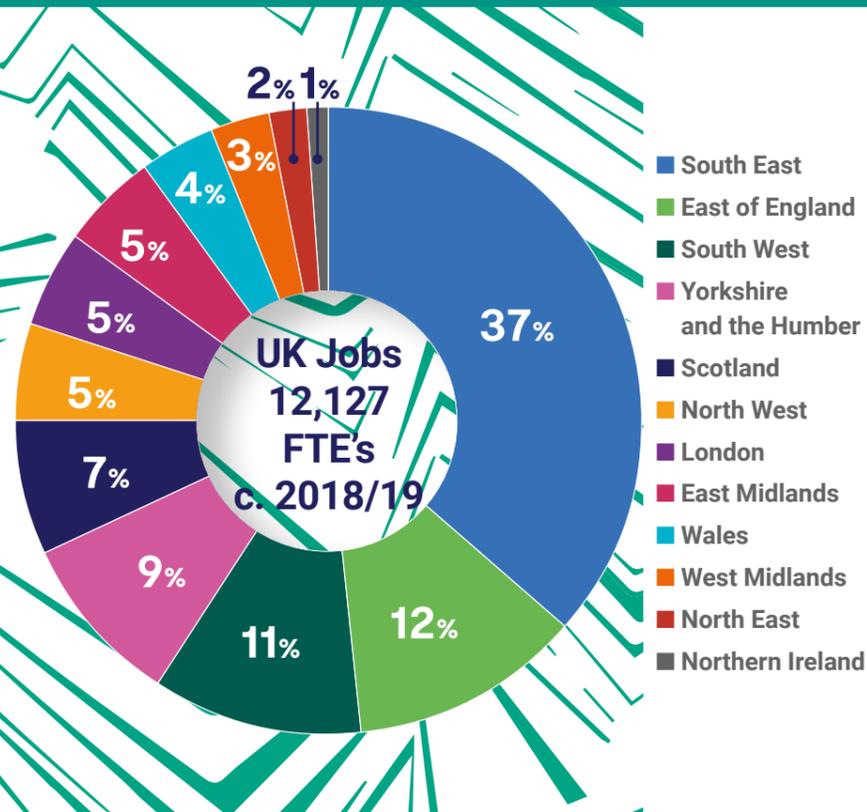
1 HM Government, *Levelling Up the United Kingdom* (February 2022)
2 Offshore Renewable Energy Catapult, *Summary Annual Report 2019/20*, 2020
3 Centre for Process Innovation, *Our Impact*, (website accessed 2021)
4 HDR UK, *Data Insights in A Pandemic Annual Review 2020/21*, 2021
5 Research England, *5G Innovation Centre (5GIC) Case Study*, (Website accessed 2021)
6 High Value Manufacturing Catapult, *Annual Review 2019/20*, 2020
7 Technopolis Group, *ISIS Neutron and Muon Source Lifetime Impact Report*, 2016
8 Technopolis Group, *Hartree Centre Phase 1 & 2 Baseline Evaluation*, 2018
9 John Innes Centre, *2020/2021 Annual Report*, 2021
10 Charles Beagrie, *Data-driven discovery: The value and impact of EMBL-EBI managed data resources*, 2021

Attracting international talent and creating highly skilled jobs

UK research and innovation infrastructures act as a magnet for top talent from across the world, training the next generation of researchers and enriching the national pool of specialist technical expertise. They directly support over 12,000 highly skilled technical, research and management professionals across all regions of the UK, driving skills improvement and supporting local communities¹¹.

They attract a constant flow of academic and industry users seeking to access the best facilities, resources and services, alongside indirectly creating many more jobs in areas such as construction, business supply chains and operational support.

Research and Innovation Infrastructures directly support over 12,000 jobs across all regions of the UK¹¹



11 Unpublished UKRI Roadmap Data, 2019
 12 Cambridge Economic Associates, *Identifying, Capturing, and Demonstrating the Benefits and Impact of the Babraham Research Campus*, May 2020
 13 Harwell Space Cluster, *Harwell Space Cluster Multidisciplinary Innovation Brochure*, May 2019
 14 UKRI, *The UK's Research and Innovation Infrastructure Landscape Analysis*, 2019

Building productive clusters and driving innovation

Large-scale research and innovation infrastructures attract research intensive businesses and organisations, build supply chains and create productive geographical clusters of capabilities and expertise. These clusters bring many benefits to the local and national economy, inviting significant inward investment, increasing local skills and employment prospects, and attracting talent from academia and industry.

They include campuses which host a collection of infrastructures, such as the Norwich Research Park which hosts the John Innes Centre and science parks such as Culham Science Park which hosts Culham Centre for Fusion Energy.

Clusters catalyse the formation of 'innovation ecosystems' that enable rapid knowledge exchange, create partnerships and drive innovation to accelerate the development and the commercialisation of novel technologies to grow R&D strengths. Innovation infrastructures, such as demonstrators, living labs and test beds, can act as a catalyst for the formation and growth of clusters. Often tailored towards specific missions or challenges at the government's foremost priorities, encouraging competition in a particular area or accelerating the development and application of novel and strategically important technologies, they translate research concepts into real-world applications.



Case Study

Advanced Manufacturing Research Centre, Sheffield

Part of the High Value Manufacturing Catapult, the University of Sheffield's Advanced Manufacturing Research Centre (AMRC) is a network of world leading research and innovation centres working with advanced manufacturing companies around the globe. It provides specialist capabilities from design and prototyping to additive manufacturing and structural testing and supports a range of industrial sectors from aerospace and automotive engineering to medical device development. It employs over 500 highly qualified research and technical professionals from around the globe, as well as offering roles in management and administration. The AMRC Training Centre operates an Apprentice Training Programme that has 250-300 positions per year. The programme structure includes a two-year basic apprenticeship, a two-year higher apprenticeship and a foundation degree. As part of the University of Sheffield, the apprentices can then progress to Honours, Masters, EngD and PhD levels. For the young people in the Sheffield City Region, it provides the foundation for a rewarding career in some of the world's most innovative industries.



£6.8m

generated GVA to UK supply chains between 2013 – 2017¹⁶ by The European Marine Energy Centre (including non-additional impact)



10%

of academic patents are linked to ISIS Neutron and Muon Source research¹⁷



3/4

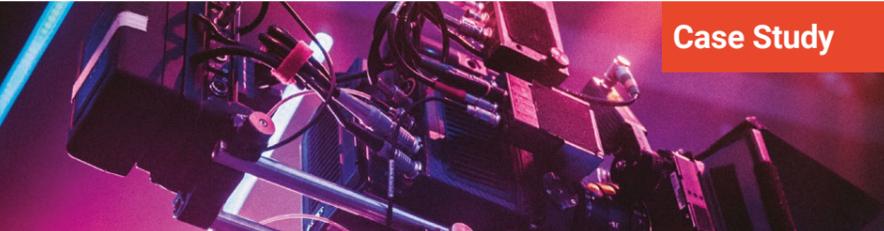
of all UK based infrastructures collaborate with UK business¹⁰



Case Study

Sci-Tech Daresbury Campus, Daresbury

Sci-Tech Daresbury Campus is one of the UK's leading science and innovation campuses. It directly supports approximately 150 technology-focused businesses, employs around 900 FTE across the campus, and indirectly supporting approximately 1,000 jobs across the UK¹⁴. Through a collaboration with IBM in 2021, the Science and Technology Facilities Council provided funding for a new Digital Technology Cluster to be located on the Daresbury Campus based around infrastructures such as the Hartree Centre and the Hartree National Centre for Digital Innovation. It will provide businesses and researchers with a dynamic environment and open access to globally unique techniques, research and support in supercomputing, data analysis and AI to rapidly develop new and innovative software products¹⁵.



Case Study

East Bank Creative Cluster, London

East Bank in London is one of the UK's fastest growing creative communities and ambitious new culture and education districts in the world. Over 2,500 jobs are expected to be created across the East Bank development, generating an estimated £1.5bn for the local economy. The Victoria and Albert Museum (V&A) East's new Waterfront Museum and a new Collection and Research Centre is currently taking shape at East Bank. The Waterfront Museum will host a pioneering partnership with the Smithsonian

Institution, producing innovative exhibitions and a jointly curated programme bridging arts, sciences, design and the humanities, as well as collaborative research. The centre will consist of a unique storage facility housing 250,000 objects and over 900 archives spanning the breadth of the V&A's collections, from textiles, fashion, furniture and sculpture to theatre and performance. The centre also aims to serve as an experimental 'lab' enabling innovative research and modes of engagement and sharing the collections in ways never previously possible.

14 Sci-Tech Daresbury Campus, *Impact Study, A Final Report to the Science and Technology Facilities Council*, March 2017
 15 UKRI, *North-west Digital Tech Cluster to create 1,000 jobs*, website accessed 2021
 16 The European Marine Energy Centre, *EMEC Social Economic report*, May 2019
 17 STFC, *ISIS Lifetime Impact Report*, July 2018

Connecting locations and spreading opportunity across the UK

Research and innovation infrastructures play an important role in connecting and growing capability across the UK. Many infrastructures are distributed across multiple sites or operate hub-and-spoke models, whereby facilities are located across multiple sites across the UK and coordinated via a central hub. This enables them to capitalise on the unique strengths of facilities, environment, skills and expertise in different regions of the UK to achieve the Government's ambition to be a science superpower.

Digital infrastructures and virtually accessible resources and facilities increase the reach and distribution of scientific and technical resources through providing access beyond geographical boundaries. They offer distinct benefits through making more effective use of resources, democratising access to leading technologies, sharing skills and best practice, and enabling operation at increased capacity and scale.

Distributed and virtually accessible infrastructures also reduce travel requirements, minimising the costs and environmental impacts of R&D activities. Their impacts flow beyond local boundaries and have enabled the UK's research and innovation ecosystem to thrive during the COVID-19 pandemic by accelerating new ways of working.



400

remotely accessible datasets for use by Administrative Data Research UK accredited researchers across the UK¹⁸



4 million

objects made accessible in 2020 by the British Library, through their Collections Online Programme²⁰



700

users and 180 companies have used Diamond Light Source for their research since 2007¹⁹



4 billion

records collected by UKCRIC, measuring over 60 environmental indicators from across the UK²¹

The UK's Research and Innovation Infrastructure Portal

Explore the full diversity of over 750 research and innovation infrastructures across the UK by visiting the interactive map on the InfraPortal website: www.infraportal.org.uk/Searchmap

UKRI's Infrastructure Fund considers the geographical balance of our infrastructure portfolio in our decision-making supporting the Government's ambition to factor levelling up into investment decisions for R&D infrastructure and facilities.

In June 2021, UKRI announced new infrastructure investments across the UK, including the UKRI Airborne Laboratory (Leeds and Cranfield), the Ultra-high-field 1.2 GHz Nuclear Magnetic Resonance (NMR) spectrometer (Nottingham) and the Relativistic Ultrafast Electron Diffraction Imaging (RUEDI) Facility (Cheshire).

Case Study



UK Collaboratorium for Research on Infrastructure and Cities

The UK Collaboratorium for Research on Infrastructure and Cities (UKCRIC) is an integrated research capability dedicated to understanding and addressing critical infrastructure challenges. UKCRIC's mission aims to bring into focus issues including low carbon materials, digital twins for infrastructure, affordable urban mobility and responsiveness to innovation and change. UKCRIC works closely with stakeholders through collaborative research to gain a better understanding and promote active knowledge sharing of complex challenges that face UK infrastructure. By being located across the UK, the UKCRIC can learn from and utilise research and findings from each location to evidence and analyse data, trends and innovation needs for future sustainable infrastructure capabilities. With locations including Manchester, Newcastle, Bristol and Cambridge, each facility is linked to a university and the environmental data collected is openly available.

¹⁸ Administrative Data Research UK, Annual Report 2020/21

¹⁹ Diamond Light Source, *Technopolis Group – Socio-Economic Impact Study Report* May 2021

²⁰ The British Museum, *Report and Accounts for the Year Ended March 2021*

²¹ UK Collaboratorium for Research on Infrastructure and Cities, *Annual Review 2018 - 2019*