Government announces plans for largest ever R&D budget

- Business Secretary confirms how the £39.8 billion R&D budget for 2022-2025, the largest ever, will be allocated between partner organisations
- allocations will deliver on the government's Innovation Strategy, including the ambition to increase total R&D investment to 2.4% of GDP by 2027
- investments will enable the government to strengthen our world-leading R&D system and cement the UK's position as a science superpower and innovation nation

The largest ever research and development budget, worth £39.8 billion, has been allocated across the Department for Business, Energy and Industrial Strategy's partner organisations, the government has confirmed today.

Driving forward the government's ambitions as a science superpower, the Spending Review committed record levels of investment in the UK's world-leading research base over the next 3 years, with R&D spending set to increase by £5 billion to £20 billion per annum by 2024-2025 – a 33% increase in spending over the current parliament by 2024-2025.

The allocations will allow the government to deliver on the ambitions set out in the Innovation Strategy, with these investments supporting our commitment to ensure total R&D spending reaches 2.4% of GDP by 2027.

These investments will contribute to the new cross-government approach on research and development, helping to deliver strategic advantage in science and technology, work alongside industry to leverage private investment, and deliver prosperity, security and resilience this century.

In turn, the investment will support priorities that are key to the UK's prosperity, from tackling climate change to levelling up opportunities across the country, enabling investment in new technologies from clean tech to AI, where the UK has a strong competitive advantage globally and industrial strength at home.

Business Secretary Kwasi Kwarteng said:

> For too long, R&D spending in the UK has trailed behind our neighbours – and in this country, science and business have existed in separate spheres. I am adamant that this must change. Now is the moment to unleash British science, technology and innovation to rise to the challenges of the 21st century.
>
> My department's £39.8 billion R&D budget – the largest ever R&D budget committed so far – will be deployed and specifically

> targeted to strengthen Britain's comparative advantages, supporting the best ideas to become the best commercial innovations, and securing the UK's position as a science superpower.

This includes full funding for EU programmes, for which £6.8 billion has been allocated to support the UK's association with Horizon Europe, Euratom Research & Training, and Fusion for Energy. If the UK is unable to associate to Horizon Europe, the funding allocated to Horizon association will go to UK government R&D programmes, including those to support new international partnerships.

A significant proportion of the budget has been allocated to UK Research & Innovation (UKRI), which will receive over £25 billion across the next 3 years, reaching over £8.8 billion in 2024-2025, its highest ever level and over £1 billion more than in 2021-2022. This will include an increase in funding for core Innovate UK programmes by 66% to £1.1 billion in 2024-2025, helping connect companies to the capital, skills and connections they need to innovate and grow.

The UK Space Agency's budget will also grow to over £600 million by 2024-2025, recognising the fact that our world-leading space sector adds nearly £16 billion to UK GDP while underpinning complementary parts of the economy including finance, logistics and agriculture. This is equivalent to a real terms increase of 14%.

These allocations follow the government's recent commitments made in the Levelling Up White Paper to increase public investment in R&D outside the greater South East by at least a third over the Spending Review period, and for these regions to receive at least 55% of BEIS domestic R&D budget by 2024-2025.

The government's ambitious R&D investment plans, combined with our generous R&D tax credits programme, will give businesses the confidence to invest in the field following the pandemic, with research finding that every £1 of public expenditure in R&D eventually leverages an average of £2 of additional private investment.

Read the full partner organisation allocations publication.

Military justice to be enhanced by digital overhaul

- Modern software to reduce delays, increase collaboration and identify criminal trends
- Five-year £8 million contract, with new system to be operational in

early 2023
- Aligns with 16 UK police forces and the Home Office

The Service Police – comprising the Royal Air Force Police, Royal Military Police and Royal Navy Police – in partnership with the Service Prosecuting Authority and Military Court Service, have signed a five-year, £8 million agreement with NEC Software Solutions for their Connect product to deliver an integrated IT system.

This move is in addition to the Armed Forces Act, which is delivering a series of improvements to the Service Justice System (SJS), ensuring personnel have a clear, fair and effective route to justice wherever they are operating.

Configuration and deployment of the new software will commence immediately, with operational capability expected in early 2023.

The upgrade will:

- Create a single digital data source for the Service Police, Service Prosecution and Military Courts, improving information flows from the start of an investigation through to prosecution, hearing and sentencing.
- Significantly reduce workload burdens, reduce delays in data transfer and mitigate against errors, confusion, or ambiguity, adopting an ‘input once and use multiple times’ approach.
- Provide real-time statistical and data analytics of criminal patterns, trends, themes and identification of areas of concern, both inside and outside the military.
- Enable creation of dedicated witness and victim management processes, to further improve the standard of care and service to victims.

Minister for Defence People and Veterans, Leo Docherty said:

> We have one of the fairest and most stringent justice systems in the world and it’s important we equip those in the Service Justice System with the latest technology and digital tools to streamline investigations and better support victims.
>
> By upgrading the IT platform throughout the military justice network, we will align better with civilian forces to collectively tackle criminal activity.

The new computer system will cover policing investigation management, Service Police intelligence, case preparation, prosecution, court management and custody.

This will create single data source, enhance electronic ways of working, enabling collaboration across not just the SJS but also alongside external policing and law enforcement agencies This will happen through secure network interfacing by providing connectivity to Home Office applications such as the

Police National Computer.

Chief of Defence People, Lieutenant General Swift said:

> This is a positive step forward to a more collaborative, smoother and more compassionate justice system for our Armed Forces people, Service families and veterans around the world.
>
> Having a long-term contract for a modern digital system will also compliment the wider reforms taking place across the Service Justice System.

NEC Software Solutions Connect system is currently used by 16 UK police forces and demonstrates how policing is adapting to a digital environment, streamlining of processes and efficiencies of service. It offers future proofing for growth and development.

The new system will satisfy a significant number of the recommendations put to different elements of the SJS from recent reviews in relation to greater collaboration, improving recording accuracy and reducing delays.

The software is replacing the extant Service Police REDCAP, Coppers and Tribase Intel systems.

Background

NEC Connect manages Victim Code of Practice and Witness Charter in line with statutory guidance. It will improve witness care through a number of new ways, including:

- Adding a Victim to NEC Connect will automatically identify where they are repeat victim of crime, ensuring the officer in charge manages their safeguarding appropriately
- Overdue updates being automatically escalated to a supervisory unit
- Victim vulnerability mandated at the point of first recording
- Sensitive information held in NEC Connect can be restricted to protect the vulnerable

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PM call with President-elect Yoon Suk-yeol: 14 March 2022

Press release

Prime Minister Boris Johnson spoke to President-elect Yoon Suk-yeol.

The Prime Minister spoke to President-elect Yoon Suk-yeol to congratulate him on his successful election in the Republic of Korea.

The Prime Minister said he looked forward to deepening the UK's relationship with the Republic of Korea during Yoon's Presidency and hoped negotiations would begin later this year on an enhanced trade deal.

Both leaders shared their ambition to deepen digital, industrial and military cooperation between the two countries.

Discussing the situation in Ukraine, the leaders agreed that Russia's bombardment of Ukraine was a threat to values shared by the UK and Republic of Korea, and attack on freedom and democracy everywhere.

President-elect Yoon also shared his concern at North Korea's recent missile testing, and the Prime Minister said the UK condemned the tests and would continue to push for a tough position at the UN Security Council.

Speaking about the upcoming Queen's Platinum Jubilee, President-elect Yoon conveyed his congratulations to the UK and the Queen on the remarkable milestone.

The leaders agreed to stay in close contact.

Published 14 March 2022

CMA publishes environmental sustainability advice to government

- Advice suggests clarifying the law on providing environmental information to consumers – including having standard definitions for terms like 'carbon neutral'
- CMA outlines views on exemptions for environmental initiatives that restrict competition
- Sustainability Taskforce to lead CMA's continuing efforts to support the

UK’s transition to a low carbon economy

In July 2021, Kwasi Kwarteng, the Secretary of State for Business, Energy and Industrial Strategy (BEIS) wrote to the Competition and Markets Authority (CMA) asking it to provide advice to the government on how competition and consumer law frameworks could be enhanced to better support net zero and sustainability goals, including preparing for climate change.

Following a public consultation, the CMA has recommended a number of actions for the government to consider, including changes to consumer law which make it easier for shoppers to make sustainable choices. This could be achieved by, for example, introducing legislative definitions for potentially misleading terms like “recyclable” and “carbon neutral.” Standard definitions of commonly used terminology would help shoppers to compare similar products. It would also complement the CMA’s work on the Green Claims Code which helps businesses accurately communicate their green credentials to shoppers in an honest and transparent way.

At this stage, the CMA has not seen sufficient evidence that competition law prevents firms from acting sustainably. For example, it is already possible for companies to work together to lessen the environmental impact of their sector, by pooling resources or expertise, without breaching competition rules.

However, the CMA has found that more clarity about what is, and is not, legal would help firms work towards sustainability goals without worrying that they are breaking the law in the process.

For example, in its advice, the CMA has expressed a view on the ongoing international debate around the circumstances in which agreements that restrict competition can qualify for exemption under competition law. These agreements between businesses could include working together to reduce waste or improve biodiversity.

For an agreement to be exempt from competition law, the businesses’ customers should receive a ‘fair share’ of the resulting benefits, which may typically be through lower prices or higher quality goods.

Overall, the CMA thinks that there is some flexibility under the current rules to take environmental benefits into account when considering exemptions for agreements that restrict competition, and has committed to bringing forward more detailed guidance in this area.

To build on its advice, and further its wider objective of supporting the UK’s transition to a low carbon economy, the CMA has launched a Sustainability Taskforce within the CMA. It will lead the CMA’s work in this area and will bring together colleagues from across the CMA, while also drawing on outside expertise. The Taskforce will develop formal guidance, lead discussions with government, industry and partner organisations and continually review the case for legislative change, particularly in light of market developments.

Sarah Cardell, General Counsel at the CMA, said:

> We want it to be as easy as possible for businesses and, ultimately, shoppers to make choices which are better for the environment.
>
> That's why we plan to shine a light on what businesses can and can't do under current competition and consumer laws, as well as advising the government on changes that will help people shop more sustainably.
>
> Our new Taskforce will take a leading role in helping to make sure the UK's economy not only serves the interests of consumers but also delivers on its environmental responsibilities.

The CMA's advice is informed by responses to its consultation. It considered submissions from law firms, industry and consumer groups, other regulators, and members of the public. It also drew on its own markets and enforcement work in relation to electric vehicles; recent consultation and revisions to the Merger Assessment Guidelines; publications on sustainability and antitrust; and work on the Green Claims Code.

1. The BEIS Secretary of State wrote to the CMA on 19 July 2021, requesting that it provide advice by early 2022.
2. The CMA launched a call for inputs (CFI) to help inform its advice to BEIS on 29 September 2021.
3. You can read the CMA's advice in full here.
4. The information issued by the CMA should not be viewed as a substitute for legal advice or relied upon as a complete statement of the law.
5. To get in touch with the Sustainability Taskforce, please email sustainabilitytaskforce@cma.gov.uk.
6. For media queries, please contact the press office via press@cma.gov.uk or on 020 3738 6460.

New space funding paves the way for pioneering approaches to energy, communication and resources

Science and Innovation Minister George Freeman announced the £2 million boost for 13 new projects during British Science Week (11-20th March), which aims to inspire interest in and celebrate science, engineering, technology and maths for people of all ages.

The projects include Rolls-Royce developing a power station for space that could power the generation of water, breathable oxygen and fuels for solar exploration.

Another will develop new imaging technology which can withstand the high radiation levels on Mars, while a third will build a communications tool for astronauts to tackle the delay in conversations between Mars and Earth. Engineers will also develop a robot that will search for resources such as oxygen and water in Moon rocks.

Science and Innovation Minister George Freeman said:

> As we celebrate British Science Week, I am pleased to announce this £2 million package to support 13 new projects for the UK's brilliant scientists and engineers to help us take significant strides in space exploration and discovery.
>
> In addition to discovery breakthroughs, these projects will also ensure that people here on Earth benefit from new technology, including micro-reactor technology with the potential to support our Net Zero commitments.

Abi Clayton, Future Programmes Director, Rolls-Royce said:

> The support of the UK Space Agency has been instrumental in enabling the continued progress of the Rolls-Royce Micro-Reactor development programme.
>
> This shows the true value of public and private partnership as we bring together the space domain experience of the UK Space Agency with our own unique nuclear expertise. Together we can achieve ambitious technological firsts for the UK as we develop the power systems of the future.

The UK has a leading role in space exploration and invested £180 million over five years in the European Space Agency's global exploration programme in 2019.

The UK, through Airbus, is leading on the Sample Fetch Rover, which will play a key role in the joint NASA/ESA Mars Sample Return mission – the first mission aiming to bring back samples of Mars to Earth.

The UK is also supporting international efforts to return humans to the Moon, with industry expected to build parts of the Lunar Gateway – a new space station that will orbit the Moon and provide a key stepping stone for human and robotic expeditions to the lunar surface.

The Power to Explore – Rolls-Royce Space Reactor Programme

Lead: Rolls-Royce

Funding: £249,000

Rolls-Royce will continue the development of Space Reactor technology. Utilising its 60-year nuclear expertise, the British engineering firm is developing a uniquely deployable, safe, and autonomous Micro-Reactor for use in the space domain. The technology being developed is equally suited for use on Earth, supporting the government's Net Zero Strategy. The high-power Space Reactor will accelerate human exploration of the Moon, Mars and beyond, providing continuity of power for critical operations. Additionally, the technology will power the generation of water, breathable oxygen and rocket fuels from human Lunar and Martian exploration missions.

Plasma Water Purification System for In Situ Resource

Lead: University of Southampton

Funding: £100,000

One of the technical challenges in long-term crewed space missions is having safe drinking water as it is not feasible to carry all required amounts of water for the entire mission duration. The only practical option for surface expeditionary crews and future par-point outposts is in-situ resource utilisation and recycle/reuse of onboard water. However, recycled system water or extracted water from extra-terrestrial bodies can contain organic contaminants, bacteria, and viruses of known and unknown origins. In this project they will explore the feasibility of a novel non-thermal plasma water purification method to remove biological and chemical contaminants in water.

Advancing deep space communications technology to improve crew health and performance in exploration class missions

Lead: Braided Communications, Glasgow

Funding: £100,000

On future missions to Mars the crew will face some obvious hazards – for example microgravity and radiation – and some less obvious ones, including communication delays. A radio signal takes many minutes to reach Mars so you cannot have a normal conversation with someone on Earth. Braided Communications has invented a tool to address this issue. They cannot remove the delay – that is down to a fundamental law of physics – but they can make it feel as if the delay has gone. They are working with Thymia Ltd and The UCL Centre for Space Medicine to study how this tool can help astronauts on those missions.

Moon-RISE: Moon Robotic Inspection

Lead: GMV, Harwell Space Cluster

Funding: £222,000

Water, other elements that would evaporate in sunlight and lunar materials present potential resources that can support sustainable human and robotic exploration of the Moon and the Solar System beyond. The first step is to identify and characterise resource potential of the Moon through prospecting and mapping. In the Moon-RISE project GMV are proving the concept of autonomous prospecting using a mobile robot, robot arm and instrumentation suitable for prospecting and mapping. The robot will use a combination of cameras and LIDAR for mapping during exploration and a Laser Induced Breakdown Spectrometer (LIBS) will be used to analyse mineral composition. The robot will demonstrate navigation, mapping and prospecting both on the surface and underground mines as an analogue for lunar lava tube caves that are a key subject of future exploration mission.

Augers Not Included: A new deep-drilling concept

Lead: University of Glasgow

Funding: £85,000

When exploring the surface of another planet, it may be necessary to drill into the soil. However, this has always required the use of a rotating drill string, which uses a lot of power and involves heavy rotating equipment. This project seeks to determine if a new approach, based on vibration, can be used to extract material from the bottom of the hole without rotation. This would reduce the mass of future landers, which would in turn mean that they could be deployed more quickly and more cheaply than before.

Dynamic Radioisotope Power Conversion Technology Feasibility Study for Lunar Surface Applications

Lead: University of Leicester

Funding: £50,000

This project will focus on developing a dynamic radioisotope power conversion concept design that uses the standard baseline European Large Heat Source (a 200 W radioisotope heat source). Adopting a system engineering approach, the design will be backed up by analytical models and will be a building block for further Leicester led work. The ELHS could be the heat source for a much larger set radioisotope power generators both within and outside Europe, thus transforming access to challenging regions in the solar system, enabling a host of new mission types and opening bilateral and multilateral collaboration opportunities.

Radiation characterisation of infrared detectors for future Mars exploration

Lead: Open University

Funding: £91,000

The Open University (OU) is investigating the suitability of a new UK-based imaging technology for use in future Mars exploration missions. Researchers at the OU are subjecting newly developed infrared detectors, provided by Teledyne e2v based in Chelmsford, to radiation levels like those experienced during a mission to Mars. By investigating how well the detectors cope with the damage caused by radiation, this exciting new technology may provide a new avenue for remote observations of Mars in the infrared band and commercial applications in the UK technology market.

Development of a Deeply Throttleable Pintle Injector for Lander Applications

Lead: Protolaunch, Westcott

Funding: £194,000

This project will further advance Protolaunch’s deeply throttleable pintle injector technology, with a particular focus on lander applications.

Protolaunch is a chemical propulsion start-up company developing engines for NewSpace applications that are throttleable, reliable, and don’t need a turbopump.

This project builds upon previous hot-fire engine tests and will be one of the first test campaigns to take place at the newly opened and state-of-the-art Protolaunch Propulsion Test Facility situated at Westcott Venture Park in Buckinghamshire. The project is well-aligned with Protolaunch’s technology roadmap as the company rapidly advances the technology readiness of engine sub-systems as they bring their family of propulsion system products to market.

Developing In Situ Resource Utilisation Production Technology (DISRUPT)

Lead: TAS-UK

Funding: £ 218,000

This project will establish an end-to-end demonstration capability in the UK which would contribute significantly to the de-risking of technology used for In Situ Resource Utilisation (ISRU). This end-to-end demonstration capability would allow many of the uncertainties present in the process chain to be understood and characterised; especially the effect of the regolith (Moon soil) collection and pre-processing of the feedstock for the Metalysis-FFC process reactor. This activity will be conducted in partnership with Metalysis, AVS, URA Thrusters and the Open University.

Microwave Heating Demonstrator (MHD) payload –Develop hardware of 250W Microwave Generator and oxygen/water extraction subsystem

Lead: Open University

Funding: £174,000

This project will work on a Microwave Heating Demonstrator (MHD) payload concept which has been developed to investigate the potential of the microwave heating method for lunar construction and resource extraction such as oxygen and water from lunar soil through a series of experiments on the Moon surface.

NEBULASS –Nuclear Energy research at Bangor University and Leicester for Advanced Space Systems

Lead: Bangor University

Funding: £50,000

Nuclear reactors for space will require extremely robust fuels and to enable efficient launch and operation. Properties such as density and mass are far more important than for terrestrial nuclear applications. The work being led by Bangor University's Nuclear Futures Institute (https://nubu.nu) is aiming to model the behaviour and operation of a range of space reactor concepts and tailor the fuels to be fit for purpose, enabling specific missions to the Moon, Mars and beyond. A combination of theoretical modelling and practical fuel manufacture capabilities are being targeted and extended with the help of the collaborating team at the University of Leicester, providing a new nuclear power capability for the UK Space Agency.

LEIA Hybrid Qualification

Lead: MDA UK, Harwell Space Cluster

Funding: £421,000

This grant will support the qualification of the company's LEIA LIDAR, which is used to provide a 3D map for spacecraft landing on the Moon and well as spacecraft rendezvous and docking in LEO and GEO. LEIA has been designed specifically to meet the needs of the emerging commercial space market and will be a key component for a new generation of companies providing payload delivery services to the Moon over the next few years. At the end of the project LEIA will have undergone a suite of environmental and functional tests design to raise the technology readiness level and test the unit in the field to optimise and improve performance.

An architectural feasibility study for the Curation and Analysis Facility for Extra-terrestrial Samples.

Lead: Science and Technology Facilities Council (STFC), part of UK Research and Innovation

Funding: £40,000

An architectural feasibility study will develop the construction process for the UK's first bespoke, dedicated facility for the preparation,

characterisation and analysis of pristine extraterrestrial samples. There are at least eight missions planning to return samples from asteroids and Mars over the coming decade. These missions will move planetary science from analysis by space instrumentation to analysis using more sophisticated techniques on Earth.