UKRI Strategic Themes
Objective 5: World-class impacts

Focusing the UK’s world-class science and innovation to target global and national challenges, create and exploit tomorrow’s technologies, and build the high-growth business sectors of the future.

▪ Address major national and global challenges
▪ Harness the opportunities of tomorrow’s technologies
▪ Transform key sectors that are key to the future economy
Five strategic themes: 2022 to 2027

Creating opportunities, improving outcomes
To improve outcomes for people and places across the UK by identifying solutions that promote economic and social prosperity.

Building a green future
To accelerate the green economy by supporting research and innovation that unlock solutions essential to achieving NetZero in the UK by 2050.

Building a secure and resilient world
To strengthen security and resilience, from individual to national level, across a range of social and economic areas at the heart of daily life.

Securing better health, ageing and wellbeing
To improve population health, tackle the health inequalities affecting people and communities, and promote interventions that keep us healthier for longer.

Tackling infections
To better prepare for future disease epidemics and halt the ‘slow motion pandemic’ of antimicrobial resistance (AMR).
Strategic principles:
- Creating multi-disciplinary funding opportunities
- Harnessing the full power of the UK's research and innovation system
- Working right across UKRI capabilities and capacity
- Leveraging new and existing UKRI investments and actions
- Forging new partnerships; ensuring better synergies

Strategy:
- Transforming Tomorrow Together

Strategic Themes:
- Building a Green Future
- Building a Secure and Resilient World
- Creating Opportunities, Improving Outcomes
- Securing Better Health, Ageing and Wellbeing
- Tackling Infections
New investment areas (examples)

Strategic theme

Building a Green Future
- Transforming Land Use for Net Zero, Nature and People
- Accelerating the Green Economy
- Global Centres of Excellence in Clean Energy and Climate Change

Building a secure and resilient world
- A research and coordination hub
- Quantum position, navigating and timing (PNT) technologies
- UK Climate Resilience

Creating opportunities, improving outcomes
- Local Policy Innovation Partnerships
- UK Resilient Coastal Communities and Seas Network
- Future of the Internet

Securing better health, ageing and wellbeing
- Centre in Climate Change and Health
- UKRI Ageing Network & Global Partnerships
- Mental Health Platform Hubs

Tackling infections
- Rapid response (avian influenza)
- Proactive vaccinology
- Evolution and ecology of infectious disease (NSF-led)
UKRI Strategic Themes are both...

Mission-led challenges

Showing how UKRI can convene the whole of our research and innovation system to change lives and our planet, transforming tomorrow together.

Ideas-led investment

Innovating how we fund to bring researchers and innovators together to transform science and tackle our greatest challenges.
Building a Green Future

UKRI Strategic Themes
Our approach

Areas of focus:

**Targeting national priorities**
Working in partnership with government to co-create research and innovation programmes that address strategic priorities for green growth in the UK.

**Achieving the last 20%**
Research and innovation in currently immature technologies needed to achieve reduced emissions beyond 2030.

**Accelerating the green economy**
Addressing the near-term costs of transition to a low-carbon economy, by unlocking solutions and focusing private sector investment.
Building a Green Future

**UKRI Strategic Themes**

**Investment portfolio**

**Areas of focus:**
- Targeting National Priorities
- Accelerating the Green Economy
- Achieving the Last 20%

**Investing into...**
- Transforming Land Use for Net Zero, Nature and People
- Net Zero Transport for a Resilient Future Research Hub
- Sustainable and equitable low-carbon living
- Maximising the health benefits of the transition to net zero
- Measuring UK Emissions (GEMMA)
- Equitable nature-based climate resilience in Sub-Saharan Africa
- Climate Adaptation
- Accelerating the Green Economy
- Global Centres of Excellence in Clean Energy and Climate Change
Climate Change in North West England

Using carbon budgeting tools developed by the Tyndall Centre for Climate Change, Greater Manchester Combined Authority slashed its goal of 80% carbon reduction by 2050 to zero emissions by 2038. Greater Manchester public buildings now produce 7,000+ tonnes less CO2 per year, saving over £2m annually.

Impacts from the Energy Programme

EPSRC has invested £1.1bn supporting extensive collaboration with project partners. By 2018 they had generated c.£500bn in UK revenues and employed over 2 million people. In 2019 alone spin-out companies generated known UK revenues of £28.9m and employed 180 people.

Cleaning up our air

£4.3m NERC funding established cutting-edge ‘supersites’ to gather more high-quality data on urban air pollution than ever before. Through NERC science, governments, businesses and communities have taken evidence-based action to tackle air pollution, yielding benefits worth an estimated £1.2b p.a.

Climate Change in North West England

Using carbon budgeting tools developed by the Tyndall Centre for Climate Change, Greater Manchester Combined Authority slashed its goal of 80% carbon reduction by 2050 to zero emissions by 2038. Greater Manchester public buildings now produce 7,000+ tonnes less CO2 per year, saving over £2m annually.

Offshore Renewable Energy Catapult Academy

The Offshore Renewable Energy Catapult’s national Launch Academy has taken 20 companies through its nine-month programme since 2019, focusing on accelerating technology within the industry. Over £9m has been raised in investment with 50 new staff taken on by participating companies.
Our approach:

Helping strengthen the UK’s role in shaping an international order that is secure, resilient and just.

- Mitigating the impact of natural and anthropogenic hazards and risks on wider societal processes and operations being responsive to particular requirements of place.

- Advancing the capacity of defence and security, economy and society to respond to/recover from shocks through innovation and technological advancement.

- Reducing the impact of shocks on individuals and communities through adaptation and embracing change, deployment of resources for personal resilience that is fair and just.

- Increasing the resilience of supply chains (food, critical materials, manufacturing, complex systems) to a wide variety to potentially interacting shocks.

- Increasing the resilience of supply chains (food, critical materials, manufacturing, complex systems) to a wide variety to potentially interacting shocks.

Building a Secure and Resilient World UKRI Strategic Themes
Investment portfolio
Areas of focus:

- Global order in a time of change
- Technologies for resilience, security and defence
- Resilient and secure supply chains
- Behavioural and cultural resilience
- Strengthening resilience in natural and built environments
- Cross-cutting

Investing into...

- Polarisities and Regions Network Plus
- Digital Twins
- Quantum position, navigating and timing (PNT) technologies
- Data and analytics facility for national infrastructure (DAFNI)
- National centre for space situational awareness (NCSSA)
- Strengthening resilience across UK food system
- Supply chains as complex systems
- Building behavioural science capability for defence and security research
- Mobilising community assets to tackle health inequalities
- Cultural Heritage and Climate Change
- Nature-based solutions for equitable resilience
- UK Climate Resilience
- De-risking the risk of solid earth hazards (in partnership with India)
- A research and coordination hub
- BSRW Flexible Fund
Stopping cyber-attacks before they happen

Cyber-attacks are on the rise with many organisations affected. Support from UKRI allowed Orpheus Cyber to develop their existing capabilities into a full-spectrum cyber risk management platform. By turning data into actionable insights their platform enables organisations to proactively stop cyber-attacks before they happen.

Building a UK supply chain

The UK does not currently have a domestic supply of the rare earth magnets (REM) used in electric vehicles and wind turbines. HyProMag used UKRI funding to create the world’s shortest loop recycling process for end-of-life audio equipment. The project created a UK REM recycling supply chain that also reduces landfill and environmental damage.

Creating new approaches to emergency planning

Covid-19 transformed everyone’s lives when people were suddenly confined to their homes. The Performance as City Pandemic Response, investigated how arts, culture, and performance can open new perspectives on city emergency and resilience strategy and practice. Their toolkit has changed the future of emergency planning and is used across the UK and overseas.

Developing sponge cities

Problems like flooding, air pollution and wildfires are becoming more frequent. Researchers from the UK and China created nature-based solutions (NBS) to reduce the impact of climate change in urban settings. These sponge cities, use NBS to:

- absorb and capture rainwater to reduce flooding
- reduce water and air pollution.
Creating Opportunities, Improving Outcomes

UKRI Strategic Themes
Our approach

Areas of focus:

**Community Connectedness**
Strengthening civic engagements, relationships, trust and local pride to reduce the social and economic marginalisation of groups and areas.

**Health Inequalities**
Understanding the causes and effects of disparities in population health across the UK and identifying sustainable and cost-effective solutions to these.

**Economic Growth And Innovation**
Addressing long-standing regional economic disparities and delivering solutions that focus on sustainable, inclusive growth and innovation.

**Cross-cutting**
The activity is focused on coordinating, connecting, convening and generating robust evidence on cost-effective solutions to reduce spatial disparities and promote prosperity.
Creating Opportunities, Improving Outcomes

**Areas of focus:**

- Cross-cutting
- Economic Growth And Innovation
- Health Inequalities
- Community Connectedness

**Investing into...**

- Local Policy Innovation Partnerships Strategic Coordination Hub
- OECD Transforming Places
- UK Resilient Coastal Communities and Seas Programme
- Trans-Atlantic Collaboration on Trust, Governance, and Democracy

- Creating Opportunities Trial Accelerator Fund
- Creating Opportunities Evaluation Development Fund
- Creating Opportunities Strategic Fund
- UK Resilient Coastal Communities and Seas Network
- Centre for Community Participation and Connectedness
- Future of the Internet
- Health inequalities in the food system
- Mobilising community assets to tackle health inequalities
Legacy Examples: We’re building on...

What Works Network
The Wales Centre for Public Policy, part of the wider UK’s What Works Network, identifies evidence and expertise to help inform and improve policy to address key societal and economic challenges with a focus on place, such as the Loneliness and Connected Communities programme. They led a review highlighting key societal factors that lead to loneliness inequalities.

Place-Based Impact Acceleration
Place-Based Impact Acceleration Accounts enhance the capabilities of research and innovation clusters, driving regional growth across the UK. Awards support research organisations to co-create impact activities with civic actors, businesses and publics that are tailored to the needs of each place. EPSRC will invest up to £50m across two rounds.

Innovation Accelerators
The £100m Innovation Accelerators programme helps accelerate the growth of three high-potential innovation clusters in Glasgow, Greater Manchester and the West Midlands.

26 research and development projects across these areas will attract private R&D investment, create new jobs, boost regional economic growth, and develop tomorrow’s technologies.

The Productivity Institute
The £30m Productivity Institute brings together over 40 world-leading experts across many disciplines, from economics and management science to engineering and environmental science, who work directly with national, regional and local stakeholders to pinpoint the causes of productivity stagnation across many parts of the UK.
Our approach

Areas of focus:

**Population health improvement**
Progress interventions that benefit the health of populations, prevent illness and close the gap between the richest and the poorest.

**Digital Health**
We will amplify council activities in advanced data science and digital health to bolster UK strengths and promote new healthcare innovations.

**Ageing throughout life**
Probe the biological mechanisms of ageing, including environmental, social and cultural influences, with the aim of developing interventions that will keep us healthier for longer.

**Mental Health**
Harness and share a wide range of data and key capabilities to advance the detection, prevention and tailored treatment of mental illness.
Investing into...

Areas of focus:

- Population health improvement
- Ageing throughout life
- Mental Health
- Digital Health

Investing into...

- Population health improvement: network of clusters
- Centre in Climate Change and Health
- Ageing Research Development Awards
- UKRI Ageing Network & Global Partnerships
- Ageing mouse models & non-animal technologies
- Mental Health Platform Hubs
- Human Functional Genomics Initiative
- Digital Health Innovation Hubs
- HDR UK Driver project: societal and environmental determinants of health
Securing Better Health, Ageing and Wellbeing

Legacy Examples: We’re building on...

Preventing spina bifida

In 2021, the UK Government announced the introduction of mandatory fortification of non-wholemeal wheat flour with folic acid, in the wake of work by the MRC Vitamin Study Research Group.

The group had found that folic acid supplementation for women around the time of conception reduced the risk of spina bifida and other serious neural tube defects. The ground-breaking study has led to the addition of folic acid to staples in more than 80 countries.

Statins cut risk of strokes and heart attacks

The world’s largest Heart Protection Study trial into statins, funded by UKRI, showed that routine use of these cholesterol-lowering drugs in patients at high risk of heart disease reduced the incidence of heart attacks and strokes by a third, even in people with normal cholesterol levels.

Treating people with statins leads to savings of 22% in hospitalisation costs for all vascular events among a wide range of high-risk individuals.

Smart meter use in healthcare influences government policy

EPSRC-funded data and analytics research at Liverpool John Moores University showed how smart meter readings could help monitor dementia patients, sending alerts to carers and family members of any unusual activity.

In 2016 Mersey Care NHS Trust ran the world’s first clinical trials of the technology. Subsequently, UK government policy recognised how such additional digital healthcare services could help patients stay in their own homes for longer.

Adults with lifetime history of mental illness at increased risk of frailty

UK Biobank, established by MRC, DHSC and UK health funders is a national health resource that aims to improve the prevention, diagnosis and treatment of a wide range of illnesses.

Recent BBSRC- and MRC-funded research showed how depression and bipolar disorder are associated with reduced life expectancy and increased frailty, suggesting that screening for frailty could identify individuals with mental disorders who are at risk of premature mortality.
Tackling Infections

UKRI Strategic Themes
Epidemic preparedness
An interdisciplinary approach to better understand, predict and prevent re-emergence of diseases of epidemic potential. Seeding interdisciplinary teams and research ideas to establish a networked, interdisciplinary research community better prepared to address future threats.

Antimicrobial Resistance (AMR)
An interdisciplinary approach to deliver innovative and effective AMR solutions. Supporting transdisciplinary networks to connect and expand the UK AMR communities, transforming our understanding of AMR and delivering innovative and effective solutions that meet the needs of policymakers, practitioners, industry, civil and broader society.
Tackling Infections UKRI Strategic Themes

Flagship investments

Interdisciplinary programme in epidemic preparedness

Interdisciplinary approach to antimicrobial resistance

Work to amplify research

Rapid response (avian influenza and mpox)

One health approach to vector-borne disease (with DEFRA)

Environmental solutions to zoonosis centre for doctoral training

Research consortia to drive proactive vaccinology


Genomics for Animal and Plant Disease Centre (GAP-DC2) (Defra-led)

Digital Health Hubs contribution – to co-support AMR hub

Tackling infections: current and planned investment portfolio
Legacy Examples: We’re building on…

**10 years of research underpins the Coronavirus Vaccine**

More than **two billion doses of the COVID-19 vaccine** developed by the University of Oxford and AstraZeneca have been released worldwide.

Over a decade of investment through UKRI has been vital to developing the viral vector vaccine platform and allowing a novel coronavirus vaccine to be developed at speed.

**Improving diagnosis for brain infections**

Research at the University of Liverpool into **brain infections, such as meningitis**, has improved surveillance, diagnosis and management leading to new UK guidelines and global impact.

The average time to UK antiviral treatment for encephalitis fell from 48 hours to 13 hours, with better outcomes, and saving over £1.1bn since 2013.

**Understanding Avian Flu strains**

Researchers led by the MRC-University of Glasgow Centre for Virus Research (CVR) conducted a series of extensive tests as part of an international study into the pandemic potential of avian flu.

They showed that understanding the genetic make-up of current avian flu strains may offer one of the best lines of defence against widespread human transmission.

**MARPLE: the cereal-killer detective.**

Rust in wheat can affects 70% of the crop. Spores move long distances and mutate quickly. The John Innes Centre, MARPLE (Mobile and Real-time PLant disEase) detects which fungus is infecting wheat in Ethiopia, so farmers can protect harvests.

Compared to sending samples to specialist labs, which takes months, the kit is used in the field, doesn’t need additional equipment and produces results in just 2 days.