

Shifting sand: putting research on stable ground

EPC Congress 2019 – Engineering Change



David Sweeney
Executive Chair

14 May 2019



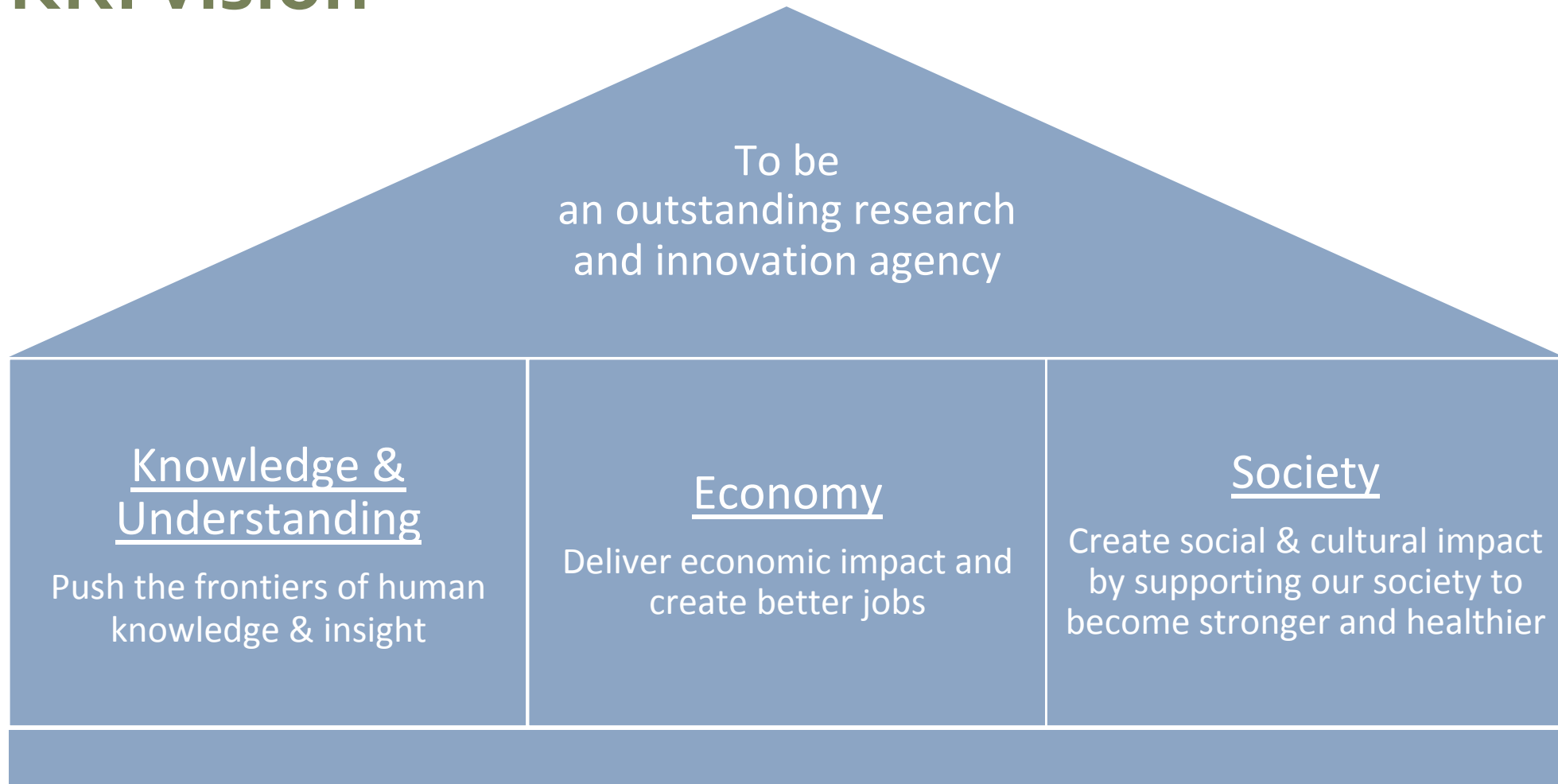
UKRI creates and sustains the conditions for a healthy and dynamic research and knowledge exchange system in higher education institutions, providing a strategic lead but listening to universities as key partners.

UKRI vision

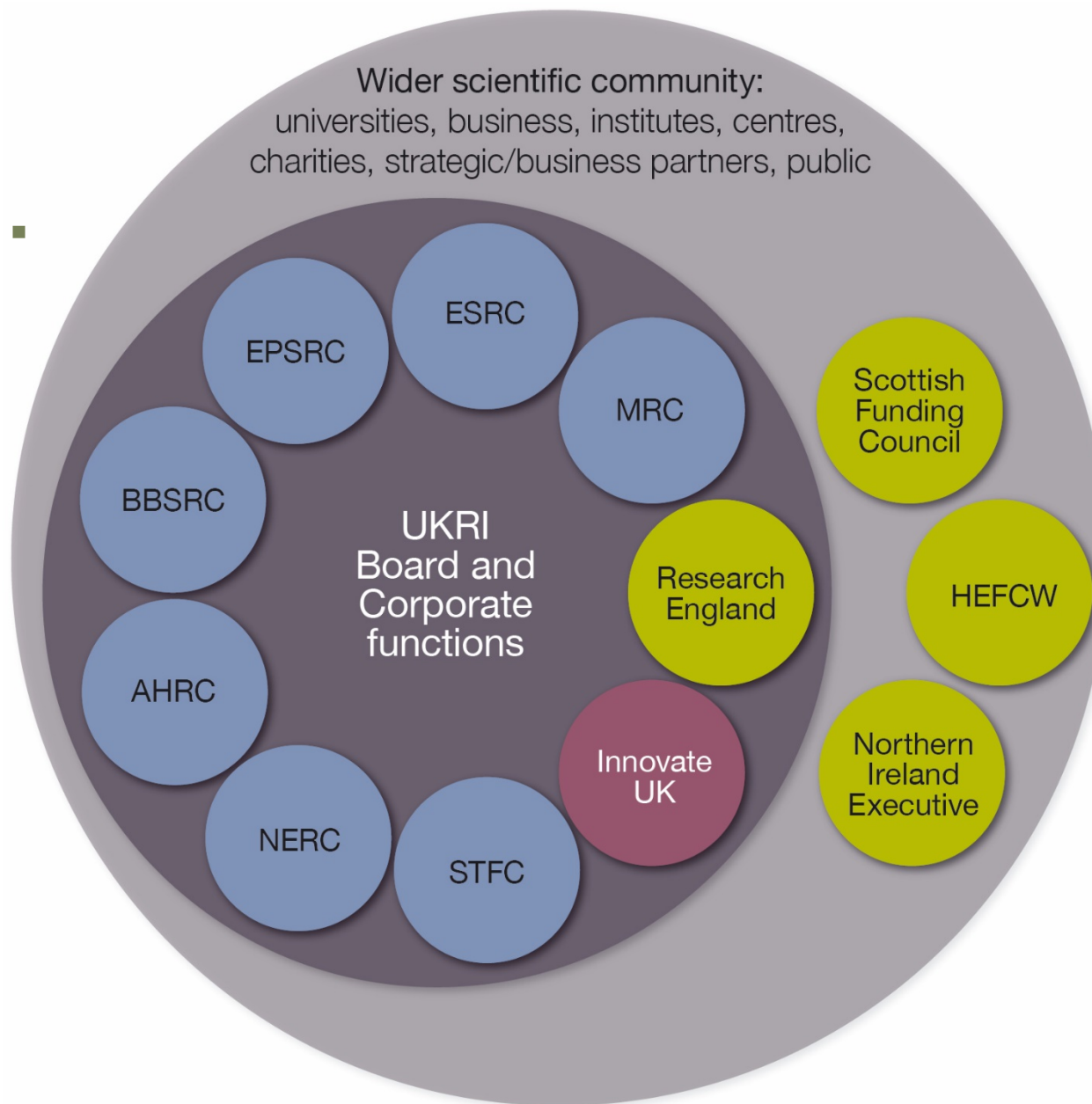
UK Research and Innovation intends to be an outstanding organisation that ensures the UK maintains its world-leading position in research and innovation

- We will do this by creating a system that maximises the contribution of each of the component organisations and which creates the best environment for research and innovation to flourish
- We will preserve the strengths which have made today's system successful, in particular around the Haldane Principle, dual support and recognition for the particular strengths and roles of each partner body

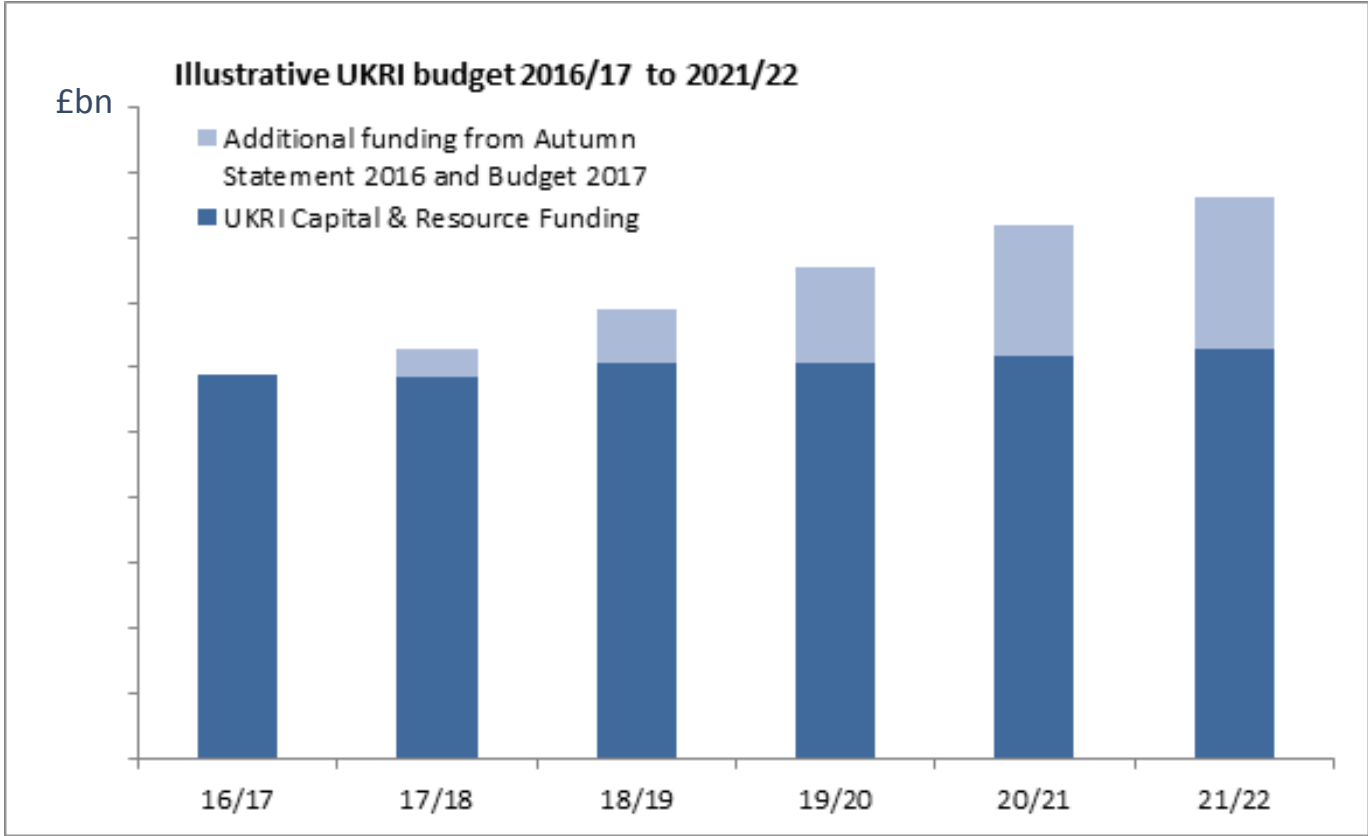
UKRI vision



UKRI in context...

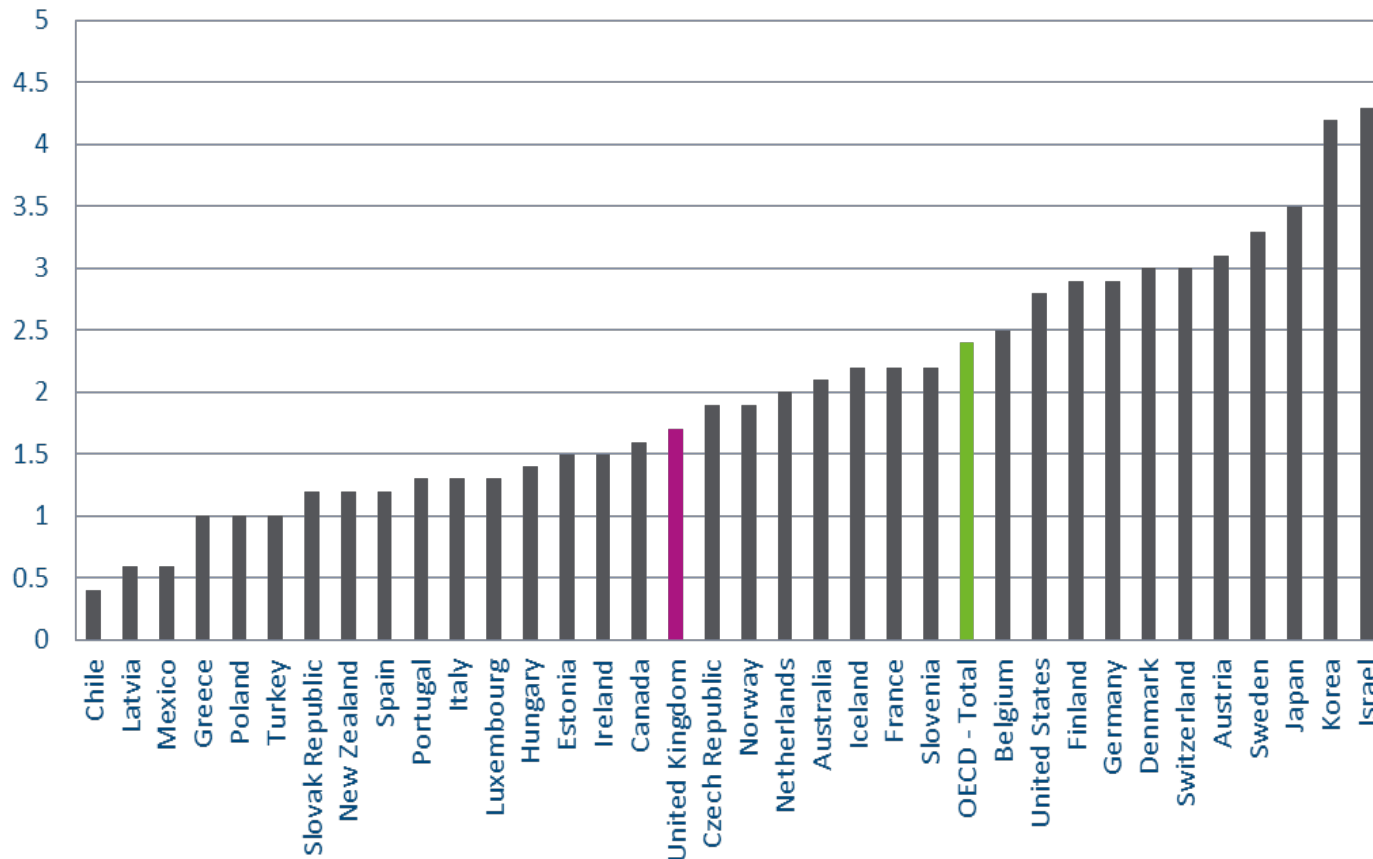


Context: rising funding



Context: the 2.4% target

Gross Expenditure on R&D as a percentage of GDP



Source: OECD STI. Data is the latest available for each country.

The Government has committed to reaching **2.4% of GDP** investment in R&D by 2027, and to reaching **3% in the longer term**.

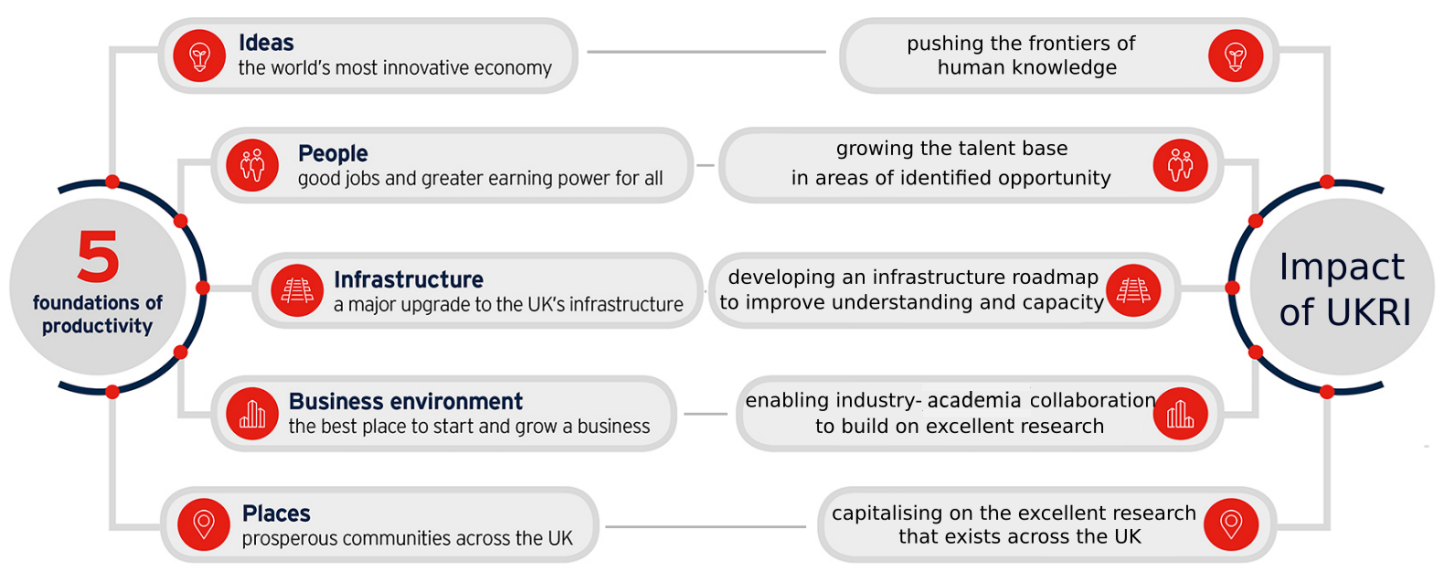
As a first step it will invest an **additional £2.3bn** over what was previously planned in 2021/22.

UKRI will work with the Government to develop a roadmap for meeting this target to be published in 2018.

Some UKRI priorities

- Industrial Strategy (including Place)
- Supporting research talent
 - Future Leaders Fellowships:
<https://www.ukri.org/funding/funding-opportunities/future-leaders-fellowships/>
- Commercialisation
- Business-led innovation
- Global Challenges
- International collaboration
- Research conduct
 - Includes openness, integrity and misconduct and reproducibility

Foundations to the Industrial Strategy

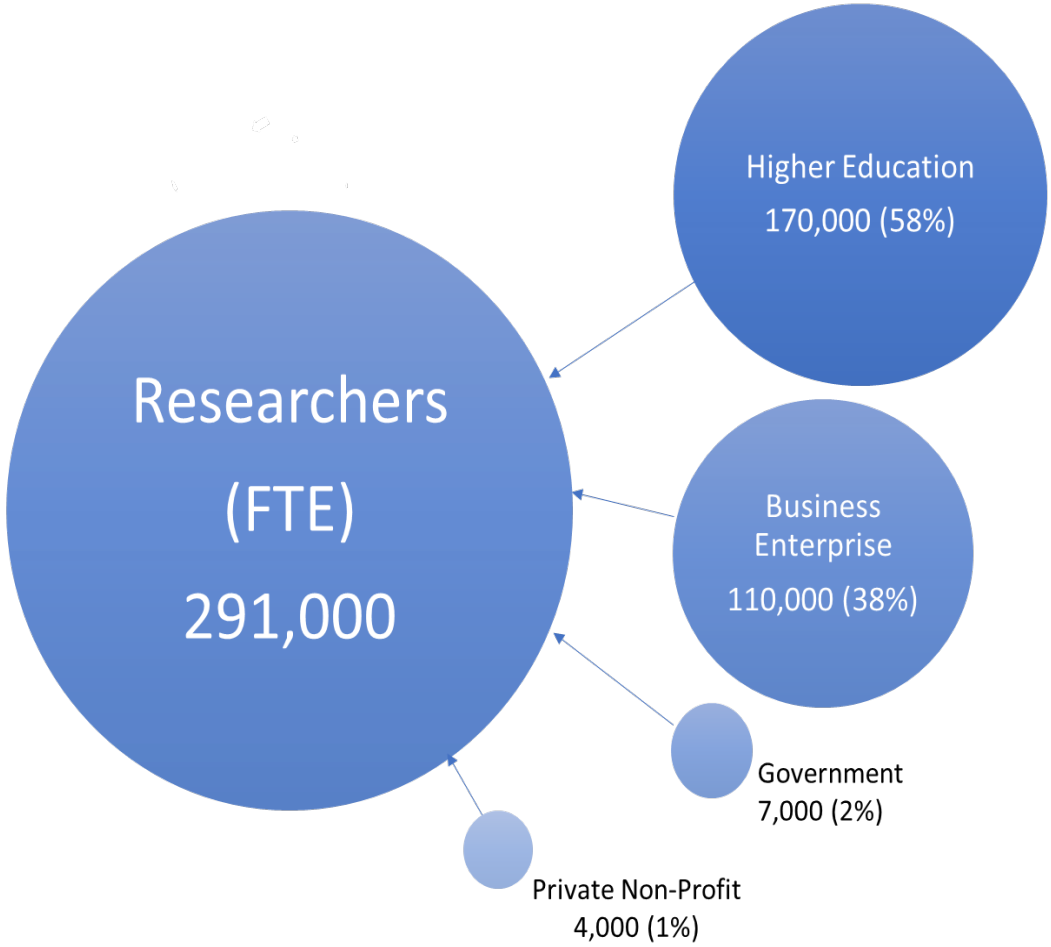


Supporting Research Talent

- Research Talent is central to achieving the government's 2.4% target.
- A thriving international competitive knowledge base is key.
- The talent pipeline delivering people and skills for industry and academia, is crucial.



UK Research talent by sector of employment



*Source: 2018 OECD and HESA data. As defined in the OECD Frascati Manual, Researchers are defined as professionals engaged in the conception or creation of new knowledge, products, processes, methods and systems, as well as in the management of the projects concerned.

UKRI

- UKRI funds a wide range of grants and fellowships, across all career stages - from early career researchers, to independent researchers and research leaders
- Funding schemes aim to deliver targeted investments addressing gaps and unmet demand in the research talent pipeline
- For example, the new c. £900m Future Leaders Fellowships focus upon the 'progression to researcher independence' and interdisciplinary research
- UKRI provides over £400m of funding for doctoral training per year. This funds about 20-25% of all studentships in the UK, making UKRI the biggest single direct funder of PhDs. Other sources of student funding include other funders, self-funding, institutional support and international.

Research England – Talent and Dual Support

- Delivered jointly with the UK funding bodies
- Research Councils (support training of researchers in areas of strategic priority)
- Research England (provides HEIs with the flexibility to support training in areas identified as priority):
 - UKRI invests around £260m per annum in England through Quality Related (QR) Research Degree Programme (RDP) Supervision funding.
 - Over 15% of total mainstream unhypothecated QR spend (approx. £157m) is used for training and doctoral students and 5% (approx. £52m) to attract and/or retain talent.

Our mission

Research England creates and sustains the conditions for a healthy and dynamic research and knowledge exchange system in English higher education institutions.



Our roles

■ **Funding for higher education institutions**

■ **Institutional engagement and dialogue**

■ **System intelligence and analytics**

■ **Close working with the devolved funding bodies and the OfS**

The purposes of our funding

- Our funding supports the university sector at the “whole institution” level (rather than project / academic level)
- Over 90% of our funding is provided to institutions in a single annual grant:
 - This is based on performance in research or KE
 - Performance is assessed through the REF and other mechanisms
- Funding can be used to support the research and knowledge exchange missions of universities
- We also run a small number of competitive funding schemes
 - Proposals are at the institution-level
 - Competitive funding should have sector-wide benefit

Accountability for our funding

- The institutions that receive our funding must be financially sustainable, well-governed and well-managed
 - This is assessed by the Office for Students
- Our terms and conditions of grant specify the formal relationship between the institution and Research England
 - Our relationship management strategy provides assurance
 - Data audits seek assurance on the quality of the data provided by institutions
 - Performance-based funding (assessed through the REF and other mechanisms) ensures universities are delivering on our aims

Current priorities

- Research assessment
 - Forum for Responsible Research Metrics
 - REF 2021 evaluation
 - Future planning
- Open research
- Research Integrity and Misconduct
- Public Engagement
 - National Co-ordinating Centre for Public Engagement
- International
 - Universities UK International
 - UKRI overseas offices
- Knowledge Exchange Framework
- Place-based research and innovation
 - UKRI Strength in Places Fund – delivering in partnership with Innovate UK
- Commercialisation/business relationships
- Infrastructure
- Balanced funding advice
- E3 Fund
- RED Fund

Joint working with the Office for Students

- Skills capability and progression
- Knowledge exchange (including HEIF)
- Infrastructure funding
- Financial sustainability and efficiency of the HE system and providers
- Accountability and assurance
- Evidence gathering and system intelligence
- TEF, REF and KEF

Why do universities matter?

- Universities represent a major UK industry, contributing £95bn each year to the economy
- They are key influencers in their local and regional contexts and well as major players on the national and world stage
- Universities build and maintain the environments that allow research and innovation to flourish:
 - Facilities and infrastructure
 - Staffing – research, teaching, knowledge exchange, support/administrative staff
 - Partnerships with businesses, charities, local government, other institutions, international partners
- Universities are autonomous institutions with their own strategic priorities. They make significant investments (from their own funds) to meet these.

University research income vs. expenditure in 2016-17



Our government funding for financial year 2018-19



Quality-related Research (QR)
funding
£1,642m

UK Research
Partnership
Investment
Fund
£133m

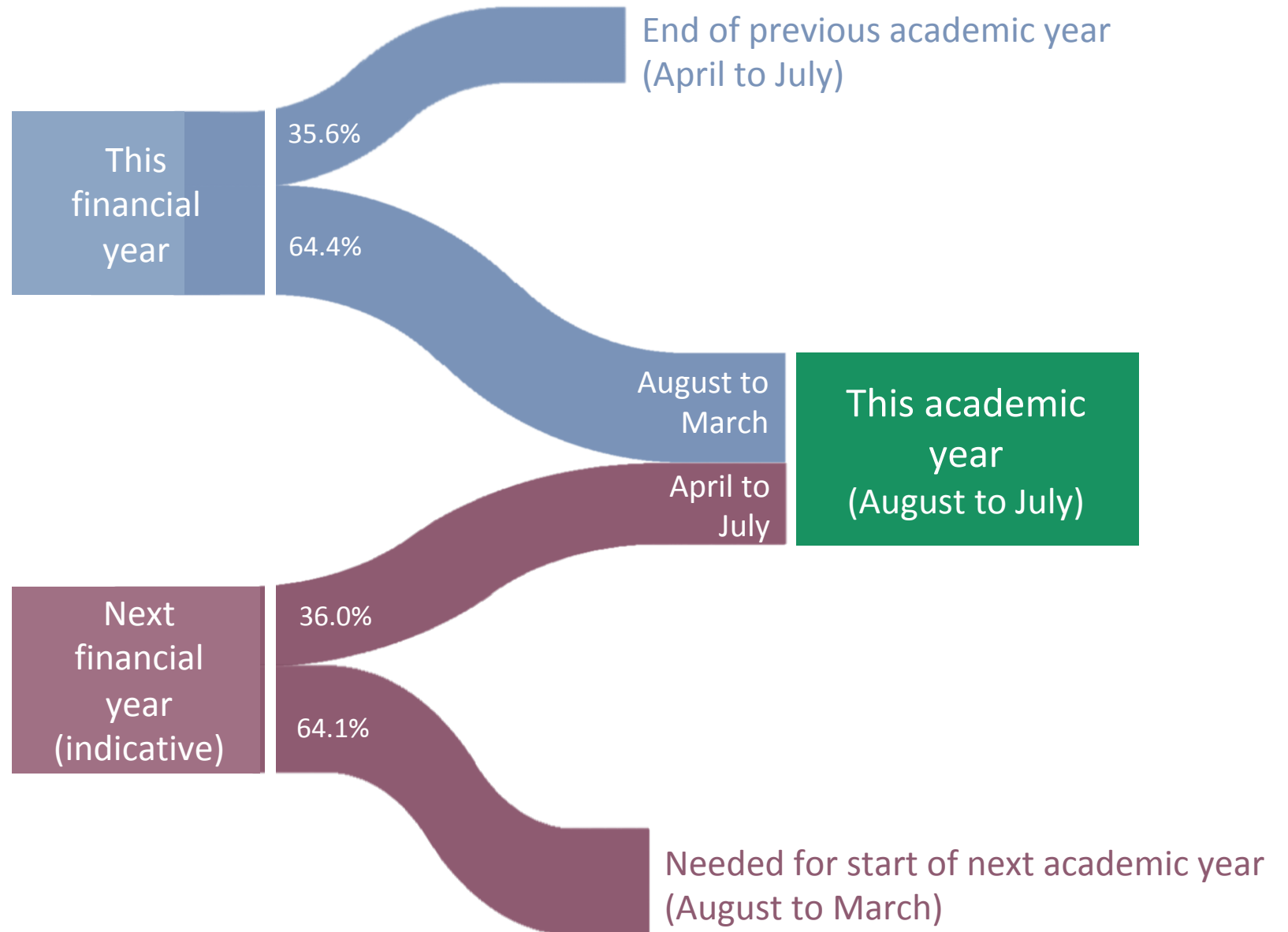
Higher
Education
Innovation
Funding
£210m

Formula
research
capital funding
£183m

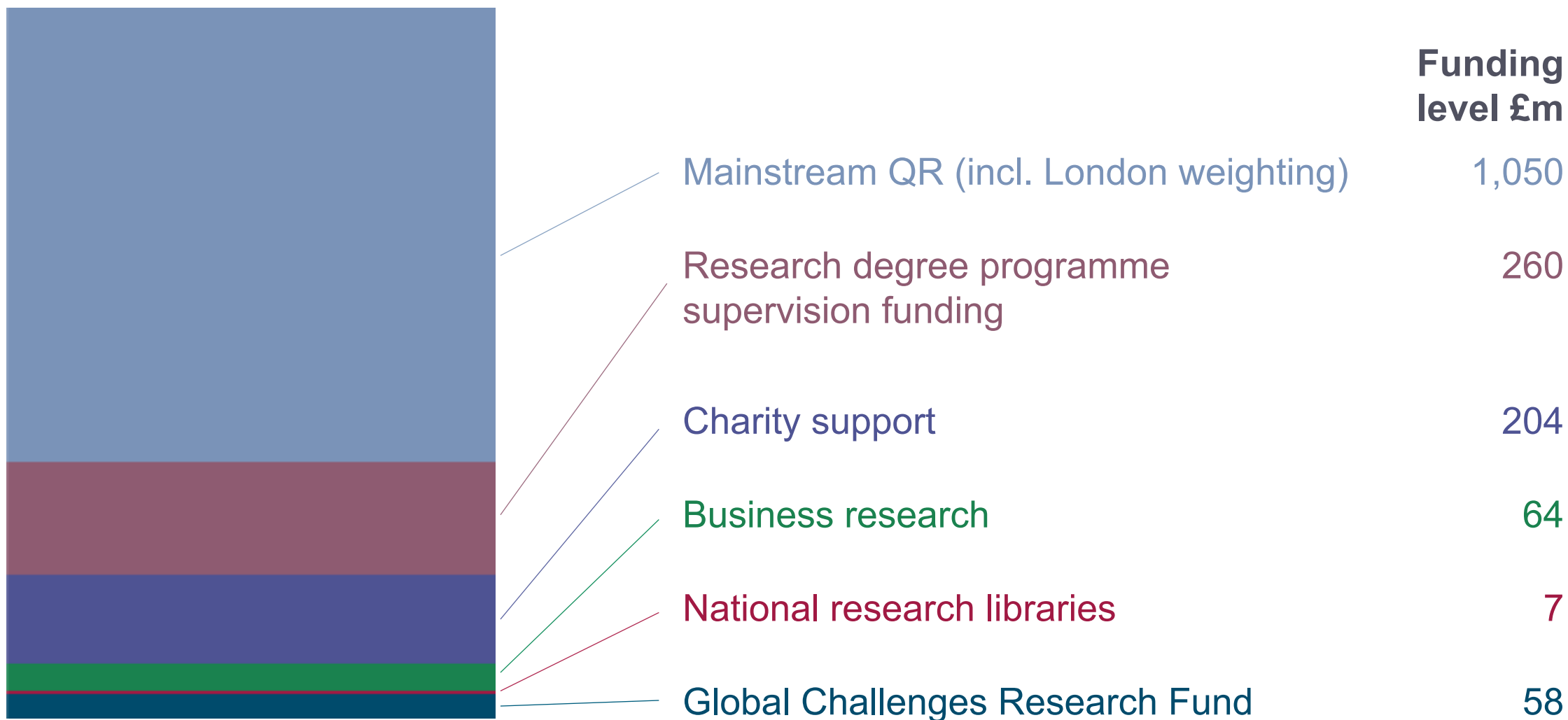
National
Facilities
and
Initiatives
£43m

Connecting
Capability
Fund
£25m

Funding on an academic year cycle: how it works



Quality-related research (QR) funding in 2018-19



Quality-related research (QR) funding in 2018-19

Element of QR	Purpose
Mainstream QR	<ul style="list-style-type: none">• Strengthens and supports the university research base• Enables ground-breaking research in keeping with university missions
Research degree programme supervision funding	<ul style="list-style-type: none">• Helps universities meet the costs of supervising research degree programmes
Charity support	<ul style="list-style-type: none">• Support for research carried out with charities
Business research	<ul style="list-style-type: none">• Support for research carried out with business, encouraging collaboration and relationship development
National research libraries	<ul style="list-style-type: none">• Supports the five designated national research libraries
Global Challenges Research Fund	<ul style="list-style-type: none">• Supports research that addresses the challenges faced by developing countries in accordance with Official Development Assistance principles

Quality-related research (QR) funding in 2018-19

	Funding level £m	Basis for calculation	Stability vs dynamism
Mainstream QR (incl. London weighting)	1,050	<ul style="list-style-type: none">• REF quality profile• REF submitted staff• Subject cost weightings	Stable (REF cycle)
Research degree programme supervision funding	260	<ul style="list-style-type: none">• REF quality profile• Number of home/EU PGR students• Subject cost weightings	Dynamic (annual PGR numbers)
Charity support	204	<ul style="list-style-type: none">• Amount of competitively won charity funding	Dynamic (4-year rolling average)
Business research	64	<ul style="list-style-type: none">• Amount of competitively won business funding	Dynamic (4-year rolling average)
National research libraries	7	<ul style="list-style-type: none">• Review	Stable
Global Challenges Research Fund	58	<ul style="list-style-type: none">• In line with mainstream QR and approved 3 year strategies	Dynamic (3 year cycle)

Research Assessment in UK

- Research Assessment Exercise – RAE, now Research Excellence Framework
 - Periodically since 1986 approximately every 6 years
 - Primarily a peer review exercise for all disciplines (34 now) – metrics play a strictly limited part
 - Carries the confidence of academics and universities – because it is run by academics
 - A selective exercise, not an assessment of all UK research
 - The single most important driver for academics and universities in the United Kingdom.
 - Liked by Government as allows funding on the basis of quality.
 - Reputation attached is a very significant factor
 - Embedded in university management systems



REF: A UK-Wide Framework



‘Aiming to maintain the capacity of higher education to undertake world-leading research across a range of academic disciplines, promote economic growth and national well-being and the expansion and dissemination of knowledge’

- Drives our selective allocations of research funding, supporting excellence wherever it is found, with strong performance incentive
- Provides international benchmarks and reputational yardsticks
- Provides accountability and demonstrates the benefits of public investment in research
- Evidence base for strategic decisions at national level
- Used by universities and others for resource allocation decisions
- It provides a periodically updated reputational benchmark, which is based on rigorous peer judgement by fellow academics

Research Excellence Framework

REF2021

- The benchmark for research assessment internationally – Japan, China, EU
- Efficient funding driver
- Key reputational measure both nationally and internationally
- Performance-based funding ‘drives up quantity temporarily’ but, if based on peer review, ‘drives up quality permanently’
- Increased benefit from use of REF information in UKRI
- Key part in the development of the impact agenda – culture change in universities
- Key way into EDI issues in universities

Checchi, Malgarini & Sarlo

Performance-based funding

- *'is a very useful instrument to steer the university system'*
- *'increase the overall impact of the scientific research of a country on a permanent basis'*
- *'more efficient the higher the share of the funds which is distributed on the basis of the results of the evaluation'*
- *'less expensive than relying on ex ante evaluation'*

UK is the only country to have been deploying peer-review-based performance-based funding since before 1995

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Research capital schemes

UK Research Partnership Investment Fund (UKRPIF)

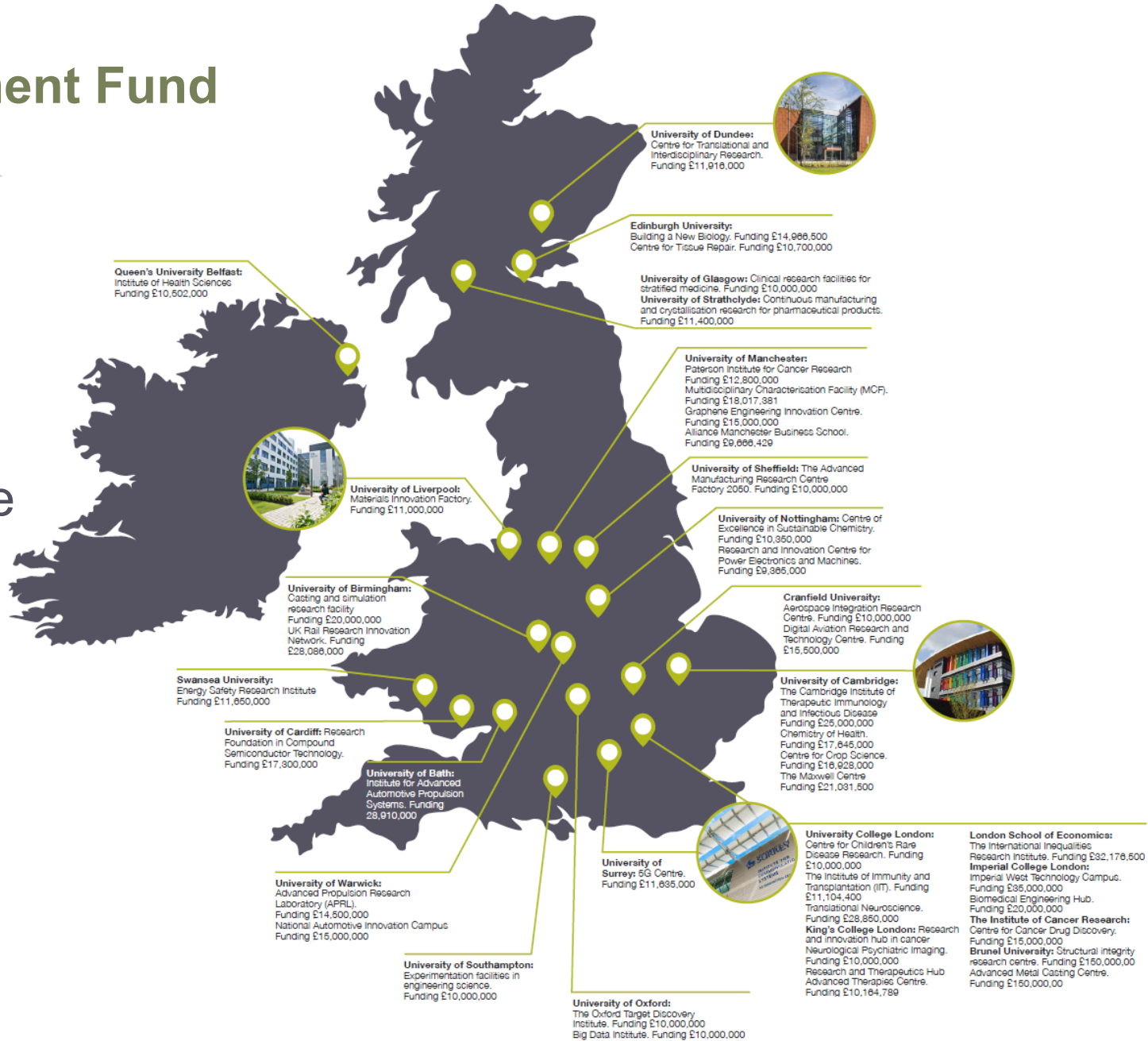
- UKRPIF is administered by Research England on behalf of the whole of the UK and aims to:
 - Enhance the research facilities of UK HEIs
 - Encourage strategic partnerships
 - Stimulate additional investment in HE research
 - Strengthen the contribution of the research base to economic growth
- Minimum £10m project size
- Bids must be double-matched with contributions from industry or other non-public funding
- Bids assessed by an independent panel



*Centre of Excellence for Sustainable Chemistry
University of Nottingham*

UK Research Partnership Investment Fund (UKRPIF)

- £900m total fund value up to 2021
- 43 projects funded since the fund was established in 2012
- £1.73bn co-investment. To date, the UKRPIF has attracted £2.45 for every £1 invested.
- Funds a wide range of disciplines - Bio-medical; Clinical Medicine; Fundamental; High Value Manufacturing; Engineering and Social Science.



Research capital schemes

Research Capital Investment Fund (RCIF)

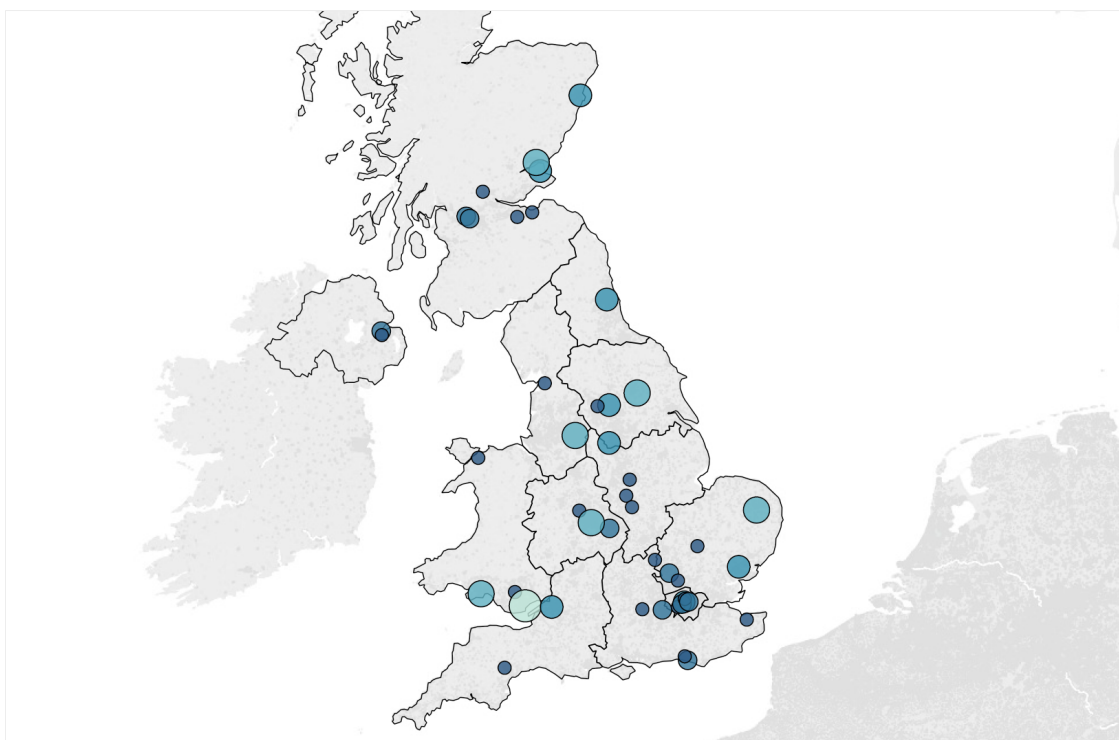
- £203m per financial year
- Allocated by formula
- Two 'pots', two methods:
 - **HEI Research Capital England (£96m)**: allocated pro rata to last two years' QR funding and research income from other (non-Research Council) sources.
 - **Higher Education Research Capital (HERC) England (£87 million)**: allocated pro rata to last three years' research income from Research Councils.
- The remainder is allocated to national facilities and initiatives

Research funding in 2018-19 – key changes

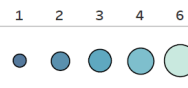
- £70m additional funding available
- Continuity in allocation method for 18/19: mainstream QR, research degree programmes funding, charity QR, business QR, research libraries, formula capital funding
- **New approach** on Global Challenges Research Fund
- **New opportunity:** Expanding Excellence in England (E3) Fund
- UK Research Partnership Investment Fund: round 6 in progress

Expanding Excellence in England fund (E3)

Pockets of Excellence from REF 2014



Locations of 'pockets of excellence' identified from the REF 2014 results. The number of separate submissions per institution identified as 'pockets of excellence' are illustrated as per the legend on the right.



- New element of QR funding for 19/20 onwards (£75M over 3 years)
- Aim: support the **strategic expansion** of **excellent** research units and departments in HEIs **across England**
- Bidding process: expressions of interest by 17 July 2018, shortlist Sep/Oct 2018, full bids by Jan 2019, successful bids confirmed May 2019

International Investment Initiative (I3)

- £4m – max £500k (award allocated over 5 yrs)
- Single stage competitive scheme
- Delivered by UUK
- English HEIs and universities and research organisations outside UK (minimum of 1 international partnership)
- Requirement: demonstrate *existing* research excellence, strategic alignment with partners, evidence effective *existing* collaboration
- Designed to support scale up of existing strategically collaborative research relationships
- Aims to:
 - Increase scale and impact – existing international collaborations
 - Strengthen contributions of international collaborations involving English HEIs
 - Contribute to government strategy – incl. Industrial Strategy

Definitions of knowledge exchange

“the range of knowledge-based interactions between higher education and business, public and third-sector organisations, communities and the wider public, linked with both research and teaching, creating economic and societal impact.”

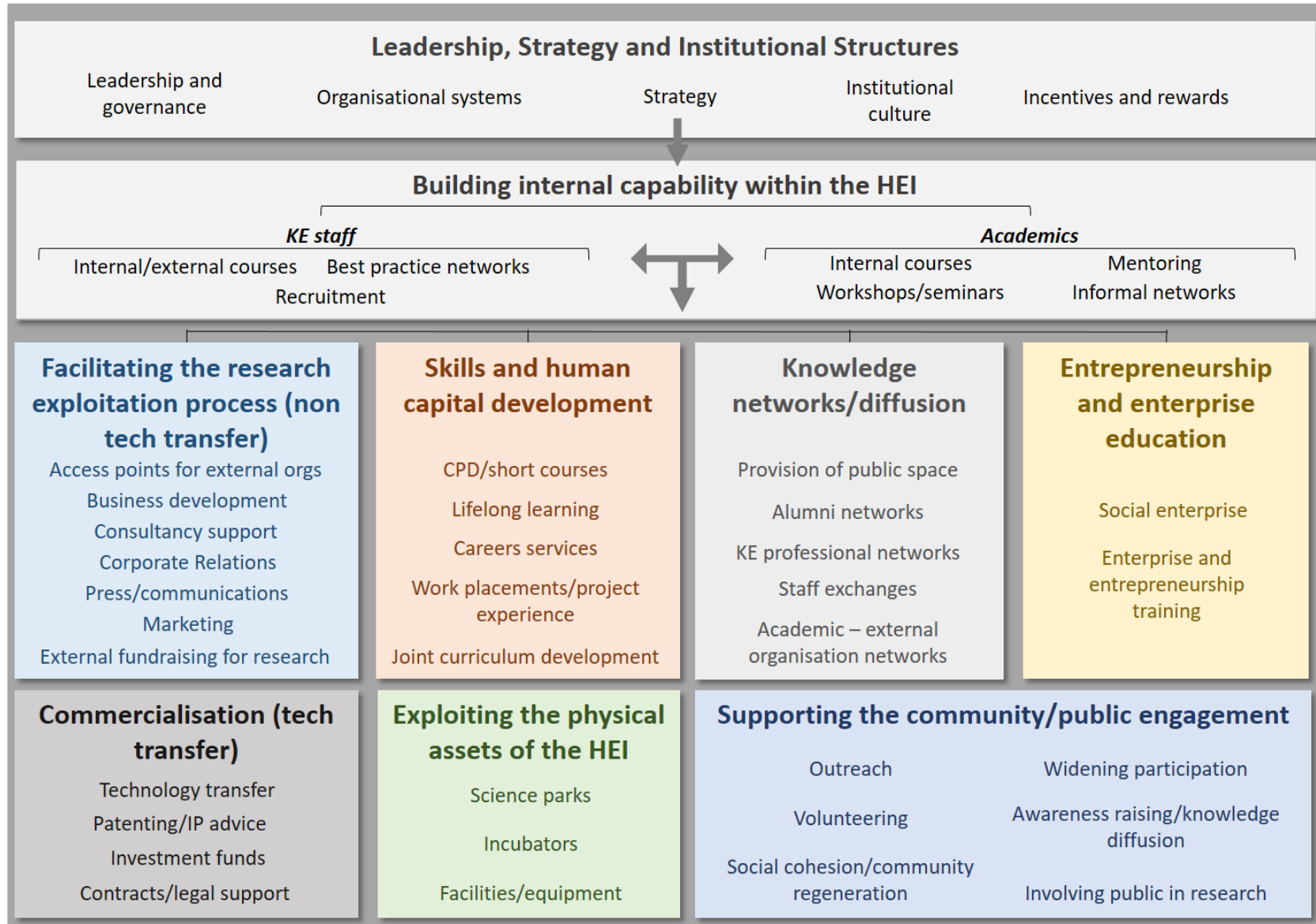
HEFCE

“any process which has the aim of acquiring, collecting and sharing explicit and tacit knowledge, including skills and competence in both economic and non-economic activities such as research collaborations, consultancy, licensing, spin-off creation, publication and mobility of researchers and other personnel involved in those activities”

EC state aids

“knowledge exchange, in relation to science, technology, humanities or new ideas, means a process or other activity by which knowledge is exchanged where— (a) the knowledge is in, or in connection with, science, technology, humanities or new ideas..., and (b) the exchange contributes, or is likely to contribute, (whether directly or indirectly) to an economic or social benefit in the United Kingdom or elsewhere.”

Higher Education and Research Act 2017



Higher Education – Business and Community Interaction (HE-BCI) survey

- Purposes – policy, benchmarking, HEIF allocations
- Part A – Questions on KE infrastructure
- Part B – activity:
 - Collaborative, contract research, consultancy
 - Commercialisation activity – IP generation, licencing and spin-off companies
 - Local regeneration and development
 - Skills - CPD
 - Community and public engagement

HEIF

- Funded from Science/ Research Budget and the OfS teaching grant
- Secured against a long-term institutional strategy for KE, and plan for use of HEIF
- Used for full range of KE aligned with institutional KE strategy

Infrastructure category	Expenditure (£ million)
Facilitating the research exploitation process (non-technology transfer)	64.9
Commercialisation (technology transfer)	26.8
Skills and human capital development	19.2
Knowledge sharing and diffusion	18.2
Supporting the community and public engagement	9.7
Enterprise and entrepreneurship, including social	14.4
Exploiting the HEI's physical assets	6.8
Total	160.0

Source: Institutional strategies; PACEC

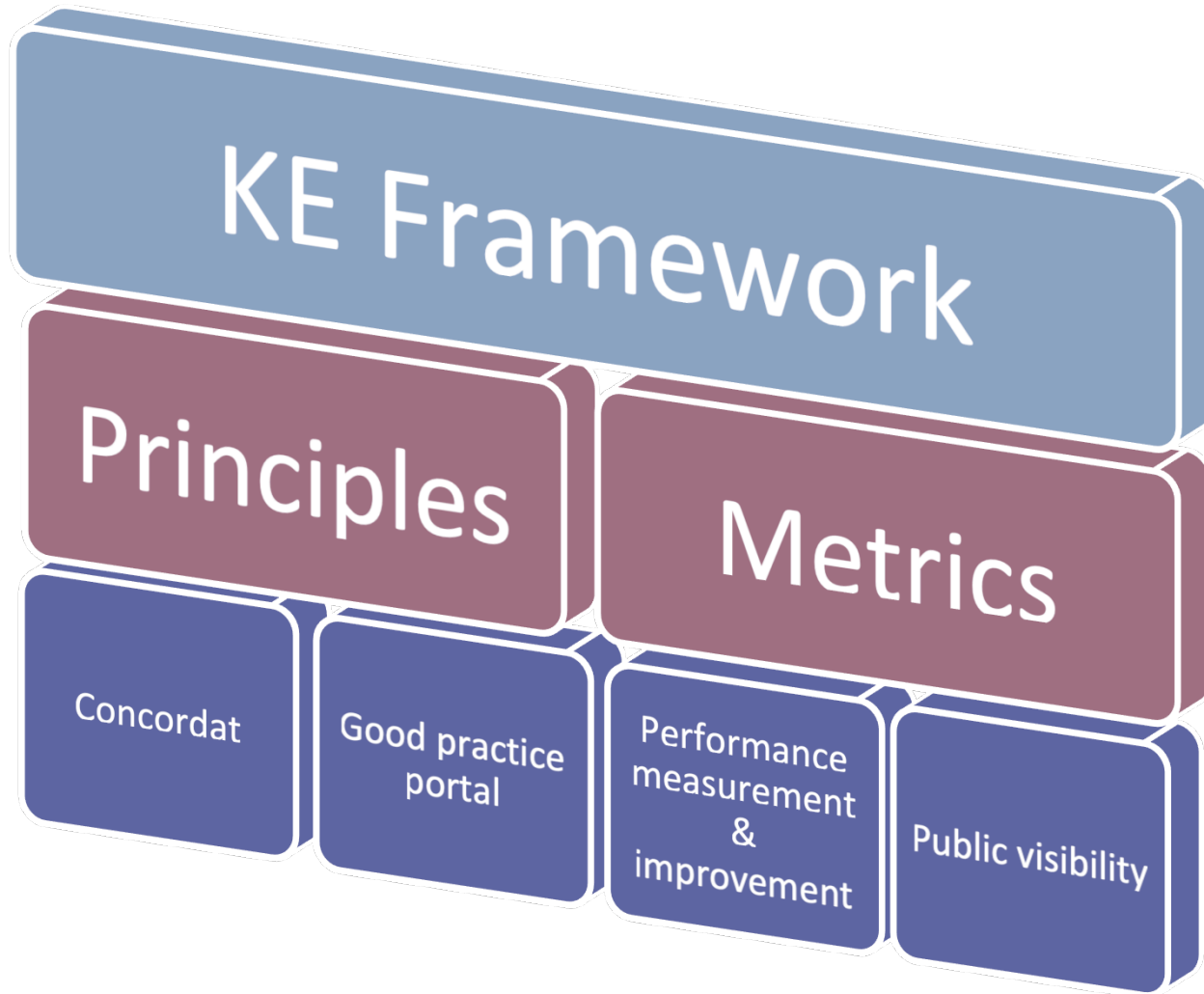
Current HEIF - formula

- **£210 million allocated in 2018-19**
 - £47 million from OfS teaching grant
 - £50 million in support of industrial strategy delivery
 - Long term commitment to reach £250 million
- **Calculated from KE income metrics** from HE-BCI, HESA finance record and Innovate UK Knowledge Transfer Partnerships
- Calculated from KE income metrics from HESA and Innovate UK Knowledge Transfer Partnership data
 - Three year's data, weighted 2:3:5 (**balances stability vs. rewarding recent performance**)
 - Minimum allocation £250k
 - Maximum allocation £4.395 million
 - circa. 78% of eligible institutions receive an allocation

New KE developments

- **Connecting Capability Fund (CCF):**
 - £100m from **HEI-HEI collaboration** to drive research commercialisation
 - £15m formula funding in 2017-18
 - £85m for competitive projects to 2020-21
 - 18 projects awarded funding across two rounds of bidding:
 - <https://re.ukri.org/news-events-publications/news/research-england-invests-67-million-in-collaborative-projects-to-drive-university-commercialisation/>
- From April 2018-19: c. £15m - **HEIF projects** as part of wider RE fund

KE Framework



KEF metrics: “How well do institutions use the assets they have to create economic and societal value?”

- Approach guided by Technical Advisory Group (chair Prof R Jones)
- Focus on fair comparison
- **Principles:**
 - Exploration of good practice (e.g. McMillian review of technology transfer)
 - Future **Concordat Consultation**

Research England Development Fund

- Competitive projects fund – £25m (year 1)
- Support for innovative projects that benefit whole sector or nation
- Initial priorities:
 - Industrial strategy through KE
 - Research collaborations
 - International collaborations
- University Enterprise Zones (UEZs)
 - Additional £5m (BEIS)/£5m (RE) = £10m
 - Proposals £500k to £1.5m. Leverage R&D and expertise from university and industry; generating partnerships to drive local growth.
 - Contribute to university delivery of business incubation and further good practice
 - Four pilot UEZs (2015): Nottingham, Liverpool, Bradford, Bristol

National facilities and initiatives

- Museums and galleries
- Jisc
- National Centre for Universities and Business
- National Coordinating Centre for Public Engagement
- UUK International
- Vitae

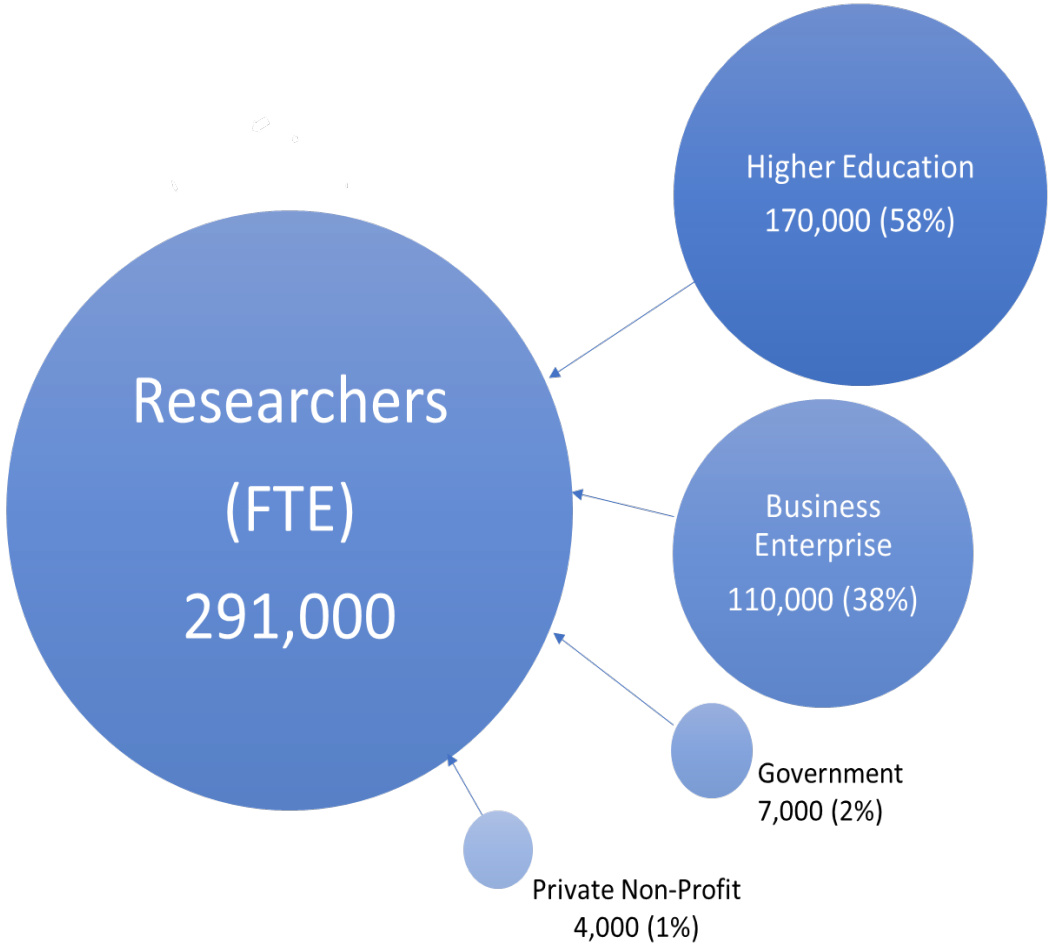


Supporting Research Talent

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UK Research talent by sector of employment



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🌐 www.ukri.org/re

