

Institution: Lancaster University**1. Context and mission****1.1. Overview**

- 1.1.1 Our goal is research of world-leading quality, insight and influence. We have invested significantly in our people and facilities to achieve this and to better our REF2014 result of 83% research ranked as either internationally significant or world leading. We are committed to pioneering research and impact that has local, regional, national and global reach and significance across a true universality of fields.
- 1.1.2 Established in 1964 by Royal Charter, we are one of only 6 UK collegiate universities. Our main campus, situated within 300 acres of parkland south of the city of Lancaster, is home to a vibrant, diverse and inclusive community of staff and students (figure 1.1).
- 1.1.3 Our uniqueness is exemplified by: the [Centre for Global Eco-innovation](#); the [Centre for Research and Evidence on Security Threats](#) - combining behavioural and technological perspectives; the [Centre for Corpus Approaches to Social Science](#); the [Health Innovation Campus](#); [IsoLab](#) – our advanced environment for studying quantum systems; [The Ruskin](#) - the largest collection of Ruskin's works; the [Work Foundation](#) – the leading think-tank for improving work in the UK; the first British university campus in sub-Saharan Africa ([Ghana](#)) and as partners in two Chinese Academy of Science institutes: [Guangzhou Institute of Geochemistry](#) and the [Institute of Urban Environment](#).
- 1.1.4 Our 'Strategy for 2020' has three equally important priorities:
- **Research** that changes practice and thinking
 - **Teaching** that transforms people's lives and society
 - **Engagement** with students, businesses and our communities.
- 1.1.5 To deliver our strategy we have grown staff and student numbers (figure 1.1), research and engagement income, research impact, and invested in our estate to secure world-class research facilities (see sections 2 and 4).
- 1.1.6 As a Civic University signatory, our priorities align with those of our local partners and we support the rural and relatively disadvantaged communities and economies across the north-west of England. We bolster this through membership of the [N8 Research Partnership](#), cementing our reach and scale to deliver benefits to the economy and communities of the North and beyond.
- 1.1.7 We were Times 'University of the Year 2018' and Sunday Times 'International University of the Year 2020'. We have ranked in the top-10 of the three main UK league tables since 2016 and our QS University Ranking has increased from 156th (2014) to 136th (2021). We were awarded a Queen's Anniversary Prize for Engineering and Technology for 'Furthering Understanding in Language' (2015) and since REF2014 seven of our staff have been recognised in the Queen's honours lists (for example Professor Louise Heathwaite was awarded a CBE in 2018).

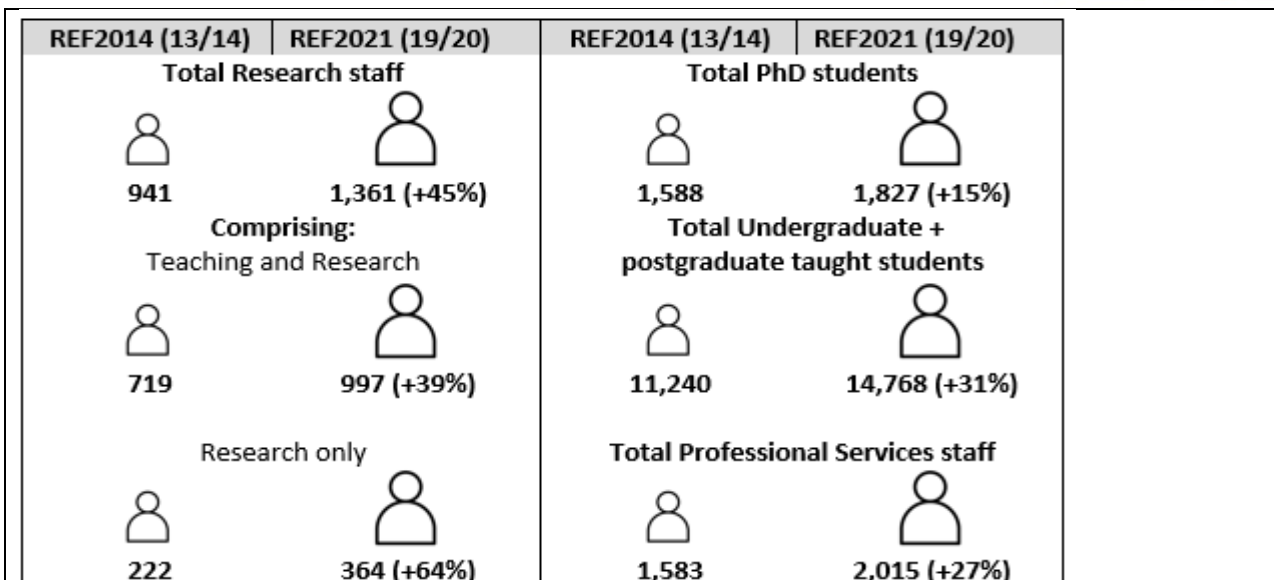


Figure 1.1 Lancaster University staff/student profile for 2013/14 and 2019/20 (headcount)

1.2. Structure

1.2.1 Lancaster has four faculties:

- **Arts and Social Sciences** – comprising >20 disciplines across 9 departments and home to Lancaster Arts, providing professional arts, public performances and exhibitions. In REF2014, over 80% of research activity was rated as world-leading and internationally excellent.
- **Health and Medicine** – spanning clinical, applied health, biomedical, medical and social science disciplines addressing prominent 21st-century challenges including ageing, mental health, epidemiology, social and economic inequality. In REF2014 the Faculty ranked equal first with 100% 4* 'research environment' and third for intensity weighted GPA with 99% of eligible staff returned.
- **Lancaster University Management School** – comprising 6 departments and the Work Foundation, ranked the top UK business school for 'research power' in REF2014. The School carries quadruple accreditation by the leading international business school accrediting bodies.
- **Science and Technology** – research across chemistry, computing and communication, engineering, environment, mathematics and statistics, physics and psychology. In REF2014, over 80% of research activity was rated as world-leading and internationally excellent.

1.2.2 We have four **cross-faculty Research Institutes** (Data Science, Materials Science, Security and Social Futures) addressing grand challenges facing society through interdisciplinary research (2.1.3).

1.2.3 We have invested in senior leadership of research and impact through new roles and appointments during the period. This includes two Pro-Vice-Chancellors, for Research and Enterprise and for Engagement (new in 2018) and two Cross-Faculty Associate Deans covering Research, and Enterprise and Engagement (new in 2018 and 2020).

2. Strategy

2.1. Research

2.1.1. Delivery of our strategy to 'undertake research of the very highest quality by international standards, as recognised by our peers and by users and adopters' is evidenced by the following outcomes:

- Increased research outputs and field weighted citation impact (table 2.1);
- More international partnerships, extending our reach and significance (table 2.1);

- Significant research income growth (figure 4.1);
- Growth in grant applications and awards (figure 4.3).

2.1.2. These outcomes have been enabled by:

- New structures to facilitate interdisciplinary research (2.1.3);
- Work with external stakeholders to maximise research impact (**Error! Reference source not found.**2.2);
- Supporting our research students and researchers, especially during early career stages (3.2);
- Investment in research infrastructure and facilities (section 4).

	REF2014	REF2021
Scholarly output	10,967	17,879
<i>With international collaboration</i>	4,964	10,141
Field weighted citation impact	2.00	2.11
<i>With international collaboration</i>	2.44	2.56

Table 2.1 Research performance (SciVal)

2.1.3. Our interdisciplinary research organisation drives major, cross-cutting initiatives targeting complex global challenges outside traditional faculty structures. Researchers are encouraged to contribute to our flagship Research Institutes and Institutional Research Centres (Ageing; Energy; Global Eco-innovation; Ruskin Library, Museum and Research Centre (The Ruskin); Mobility; and the Pentland Centre for Sustainability in Business).

2.1.4. Senior academic experts, recruited internally, internationally and from industry, lead our Research Institutes to drive large-scale interdisciplinary initiatives, such as the £3M EPSRC project [Future Places](#) possible only due to collaboration between Social Futures and Data Science. Following investment of £2.6M since REF2014 the Institutes have acquired significant funding (£39.6M) and produced high-quality interdisciplinary research with impact via 3,782 outputs with 59,422 citations (SciVal).

2.1.5. Our Research Centres target external engagement opportunities in areas of research excellence to leverage funding and impact, evidenced through £33M European Structural Investment Fund (ESIF) projects for [eco-innovation](#); criticalities around museums of the future and cultural leadership via [The Ruskin](#); and informing sustainability dialogues at the [World Economic Forum](#).

2.1.6. We devolve mainstream QR to faculties and departments to invest in staff (figure 1.1), infrastructure and facilities (section 4) and discipline-specific research that engages with regional and national research priorities. Key projects underpinned by QR since REF2014 include:

- £11.8M ESRC [Centre for Research and Evidence on Security Threats](#): UK hub for behavioural and social science research led by Lancaster;
- £3.8M ESRC [Centre for Corpus Approaches to Social Science](#): cutting-edge methods in the study of language;
- £2.5M NIHR [Applied Research Collaboration North West Coast](#): multi-partner research in health inequalities and barriers, translating discoveries into practice;
- £2.3M EPSRC [OR-MASTER](#): Mathematical models and algorithms for allocating scarce airport resources.

2.1.7. We invest QR to enable institutional strategic growth, for example in our Research Institutes (2.1.3) and Doctoral Academy (3.4). QR enabled the recruitment and bespoke mentoring of future research leaders through our 50th anniversary lectureship scheme. Their successes since 2014 include 29 internal promotions, including three fast-tracked to Professor, >£8M in awarded grants, and 843 scholarly outputs with >13,000 citations (SciVal).

- 2.1.8. Additional institutional QR awards have further supported relevant grants and enabled new research initiatives that support the development of outcomes, impact and our staff. It has allowed us to forge new partnerships and collaborations with overseas organisations and local, regional, national and international policymakers. For example, facilitating the £7M [Recirculate](#) project which supports new partnership-based approaches to enable African researchers to grow transformational impact with, in and for their communities.
- 2.1.9 The [principles and practices of open research at Lancaster University](#) exemplify core values embedded within Lancaster’s moto, *patet omnibus veritas* (truth lies open to all), underpinned by our membership of the UK Reproducibility Network. As a signatory to the San Francisco Declaration on Research Assessment we advocate responsible use of metrics. Due to our commitment in this area, our UKRI open access compliancy has improved from 55% in 2013/14 to 93% in 2019/20.
- 2.1.10 Commitment to the Concordat to Support Research Integrity, the Concordat on Openness in Animal Research, and our commitment to enhance equality, diversity and inclusion (3.3) drives Lancaster’s culture of research integrity. Annual research integrity reports since 2013-14 are [publically available](#). Staff training and ethical review ensures our research respects the dignity, rights and welfare of participants and that minimises risks to participants, researchers and third parties.

2.2. Impact and engagement

- 2.2.1 Achievement of our strategy to apply ‘our collective intellectual and wider capabilities for economic and societal benefit across regional, national and international dimensions’ was enabled through investment in support structures and facilities (section 4) and changes to our academic promotion and awards criteria (3.1.3). Successes include:
- Increased partnerships with communities, businesses, government departments and other agents of social and economic change and development, working with >620 research partners;
 - Growth in relevant funding (table 2.2);
 - External recognition, such as being named the leading HEI nationally for economic development in the 2016 Higher Education Business and Community Interaction survey.

	REF2014	REF2021
Industry research grant income	£12,002,983	£27,125,801
Higher Education Innovation Funding (HEIF)	£9,328,667	£21,375,199
Impact Acceleration Account (IAA) funding	£600,000	£3,613,000
Knowledge Transfer Partnerships	9 at £966,763	12 at £2,385,056

Table 2.2 Growth in impact-enabling awards

- 2.2.2 As a signatory to the Concordat for Engaging the Public with Research and the Manifesto for Public Engagement, we use HEIF and other external funding (including £83M ESIF during the period) to drive research-led engagement and impact. A 2019 independent impact assessment found £28 of economic benefits were realised per £1 of public funding received by Lancaster.
- 2.2.3 We stimulate research that is responsive and relevant to societal challenges and industry needs, with an emphasis on co-design, co-production and co-delivery. Exemplars include:
- £5M EPSRC [Prosperity Partnership](#) with BT focused on developing and delivering the future digital infrastructure for the UK;

- £33M ESIF [eco-innovation](#) projects enabling the development of new products and services with environmental benefits through 41 PhD and 69 MRes projects designed with small and medium-sized businesses.

2.2.4 IAA funding has supported researchers to further impact through competitive internal awards and enabled work with >250 external partners. The last report submitted to the EPSRC (2017-2020 IAA award) showed 47 of 51 projects funded are continuing post-IAA and leveraging >£8.5M further income, translating to a return of >£10 for every £1 of EPSRC IAA funding. Impacts produced from IAA funding included a significant collaboration with the UK Environment Agency to raise flood awareness and resilience in adults and young people by increasing the reach of digital resources developed from our research data. The work is directly referenced in the 2019 Defra National Flood and Coastal Erosion Risk Management Strategy.

2.2.5 We have built external relationships, generated new research opportunities and encouraged academic engagement by introducing new intellectual property and consultancy policies that offer generous revenue sharing arrangements for all parties. Starting from a low base, we have seen consultancy increase thirty-fold since the new policy launched in 2019.

2.2.6 Our regional context is an important element of our research environment. We were an early signatory to the Civic University Agreement and we work closely with regional Local Enterprise Partnerships, FE Colleges, local authorities, NHS trusts and community and third sector bodies. Lancaster Arts, The Ruskin and our Regional Heritage Centre are examples of high-quality research activities focused on distinctive, regional contexts with global significance.

2.2.7 Our staff participate in a wide range of free public and community engagement events, providing opportunities to learn about, and participate in, research. Activities include public lectures, festivals, and local and national events such as [Campus in the City](#), [Light up Lancaster](#), and [Sex, Bugs & Rock 'n' Roll](#) at Glastonbury.

2.3. Future strategies

2.3.1 The new university strategy, published April 2021, builds on our previous achievements and reaffirms the three pillars of research, engagement and teaching at Lancaster.

2.3.2 The continuity of ambition and reassertion of research intensity will be achieved through supporting and growing interdisciplinary research; increasing and diversifying research income; and improving the quality and reach of our research and impact to achieve 'research that changes practice and thinking'.

2.3.3 We will continue the ongoing development of impactful interfaces between research, enterprise and engagement. In part, this will be realised through the continuation of leadership in prominent, collaborative, interdisciplinary research that addresses societal challenges at regional, national and global levels. This includes our involvement in the flagship [Eden Project North](#) that will bring significant and transformative impact to our local area.

2.3.4 Initial activities on our campuses in Beijing Jiatong University (China), Lancaster University Ghana, Sunway University (Malaysia) and Lancaster University Leipzig (Germany) have focused on teaching, and future strategies will focus on developing research agendas with these partners.

3. People

3.1. Strategic development

3.1.1 We have achieved the aims of our People Strategy to:

- Attract and recruit the best staff nationally and internationally (3.1.2);
- Develop and support staff to fulfil their potential and meet their career aspirations (3.2);
- Retain and reward our staff through recognising their contributions (3.1.2, 3.1.3);
- Promote and secure excellence in leadership and management (3.2.3);
- Create and maintain a progressive, collaborative and healthy working environment (section 3).

3.1.2 An institutional annual review of planning and resources provides opportunity to make adjustments that reflect new areas of growth through high calibre staff appointments or strategic investments. This has resulted in 45% growth in our research staff (figure 1.1) since REF2014. On average 'Teaching and Research' Staff are allocated 30% workload for research. Our commitment to [reducing the use of fixed-term contracts](#) wherever possible, has had a significant effect since this policy was introduced in 2019 (fig. 3.1). Our [redeployment policy](#) enables us, where possible, to retain the talent, skills and experience of our employees when an individual's post is due to end.

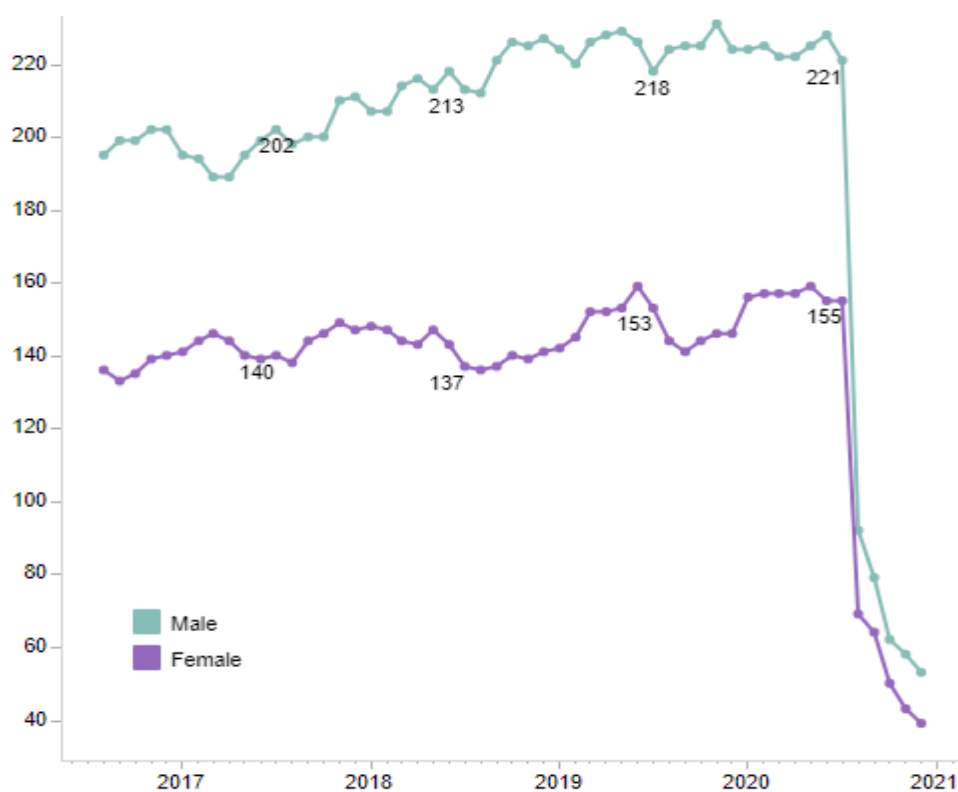


Figure 3.1 Fixed term contracts: Headcount of all research staff by gender

3.1.3 We reward excellence in research, teaching, academic leadership and engagement through [academic promotion](#) recognising differing degrees of emphasis across these criteria at different career levels and stages. Recognising disciplinary differences, evidence of advancement in research comprises the reach and significance of outputs and impacts, including demonstrating very considerable research impacts; research income; management and leadership; mentoring; international recognition; and interdisciplinary work. While female staff are over-represented in promotion applications (average 39.8% of applications over last 6 years compared to 36.4% of the eligible pool) and more likely than men to be successful in their application (42.5% of successful cases), there is ongoing work to ensure continued female success to address the underlying gender inequality in our academic staff population (figures 3.2 and 3.3a).

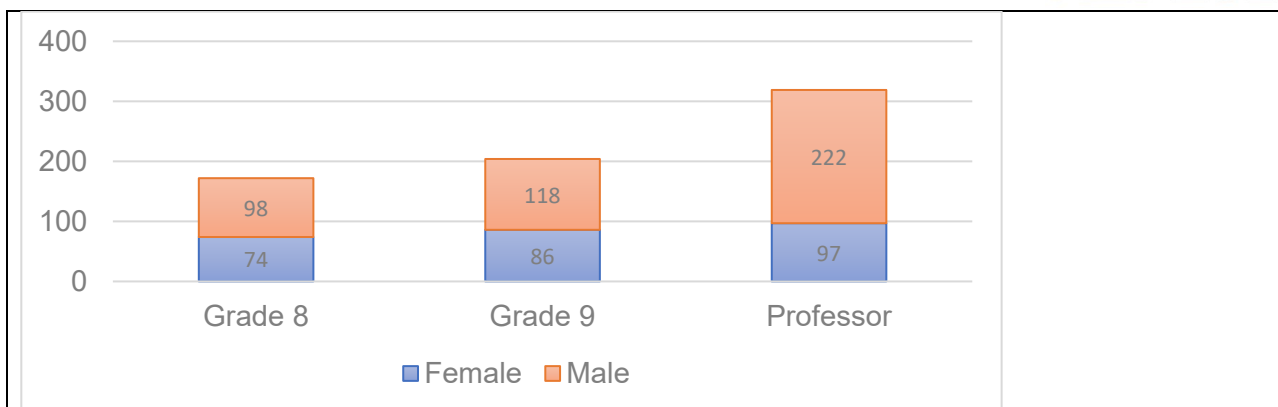


Figure 3.2 Promotion by gender since REF2014

- 3.1.4 Our annual institutional and faculty-level staff awards for excellence and for embodying Lancaster’s values celebrate outstanding contributions. Since 2019 there has been a dedicated Research Impact award, to reward the most innovative of our researchers. It can be awarded to an individual or a team, and combines a monetary award with public recognition at our annual graduation ceremonies.
- 3.1.5 Our suite of people-related policies and procedures includes a policy for sabbatical leave designed to advance the pursuit of scholarship, research and the development of our staff that has resulted in 304 paid sabbaticals since 2016/17. Our [bullying, harassment and sexual misconduct](#) and [safeguarding](#) policies protect and support both our staff and collaborators. Lancaster supports flexible working and has both local informal approvals to assist colleagues manage the varying responsibilities of work and home life, and a more formal mechanism for staff to request temporary or permanent adjustments (38 approved since records began in 2017).
- 3.1.6 Regular staff surveys are used to inform areas for strategic improvements, such as newly constituted working-groups focused on work-life balance and supporting technical staff. Our staff intranet, launched in 2015, continues to improve internal communication (news homepage visited on average 18,700 times per week).
- 3.1.7 Lancaster provides access to a range of professional support tools through an [Employee Assistance Programme](#) and has adopted the [Five Ways to Wellbeing framework](#) to help improve the health and wellbeing of our staff. A dedicated [staff wellbeing website](#) provides a central point of wellbeing resources. We provide an Access to Work Mental Health Support Service for people working and living with mental health difficulties and their employers and have mandatory mental health awareness training for all staff. Staff surveys consistently show that more than 80% of staff feel their wellbeing is valued by the University.
- 3.2. Staff development**
- 3.2.1 Our commitment to the Concordat to Support the Career Development of Researchers empowers continual improvement to equal opportunities for research staff to contribute (3.2.2), develop (3.2.3) and progress (3.1.3), particularly those on fixed term contracts.
- 3.2.2 Our Concordat Implementation Group, recognised through the European HR Excellence in Research award (awarded 2011, renewed successfully at the 8th year review in 2019) and underpinned by a [code of practice](#), sets out the roles and responsibilities of Principal Investigators (PI), research staff and the University. We ensure opportunities for representation throughout our university committee structure.
- 3.2.3 A full range of [support and development programmes](#) are available to our researchers underpinned by an [annual personal development review](#) and the opportunity for [mentoring or coaching](#). All staff are actively encouraged to develop, starting with

'Introduction to Research at Lancaster', which provides key information and advice on processes and procedures. Other programmes include PI development programmes, 'Making Professor' events, writing retreats and Lancaster's flagship 'Bonington Leadership Programme' (48% female) for high-performing staff looking to take the next steps towards senior leadership.

3.2.4 Career skills development for ECRs is delivered through bespoke training; signposting to external organisations; career mentoring and coaching; ECR representation on university committees; reduced teaching loads during probation; and support of the Research Staff Association that supports the career development of contract researchers. Together with Liverpool and Manchester Universities, we are a founding partner in Prosper, a £4.4M collaborative Research England Development project investigating alternative career pathways and development opportunities for post-doctoral researchers with a range of stakeholders including Unilever PLC, IBM and local enterprise partnerships.

3.3. Equality, diversity and inclusion

3.3.1 Significant resource is deployed to analyse and refine our EDI policies and practices, with focal points on improved data and enhancing the staff voice. We are a partner on the EPSRC project [Northern Power Inclusion Matters](#) shaping a community that supports, drives and sustains greater equality for all, including traditionally under-represented groups.

We regularly review and analyse our EDI data (figures 3.3a-c, 3.5) using staff groups to explore key issues, have grown the EDI team, added EDI to the PVC portfolio, and have established a new University Dean for EDI. We have an institutional EDI Committee and EDI Action Group and mandatory EDI staff training requiring renewal every three years.

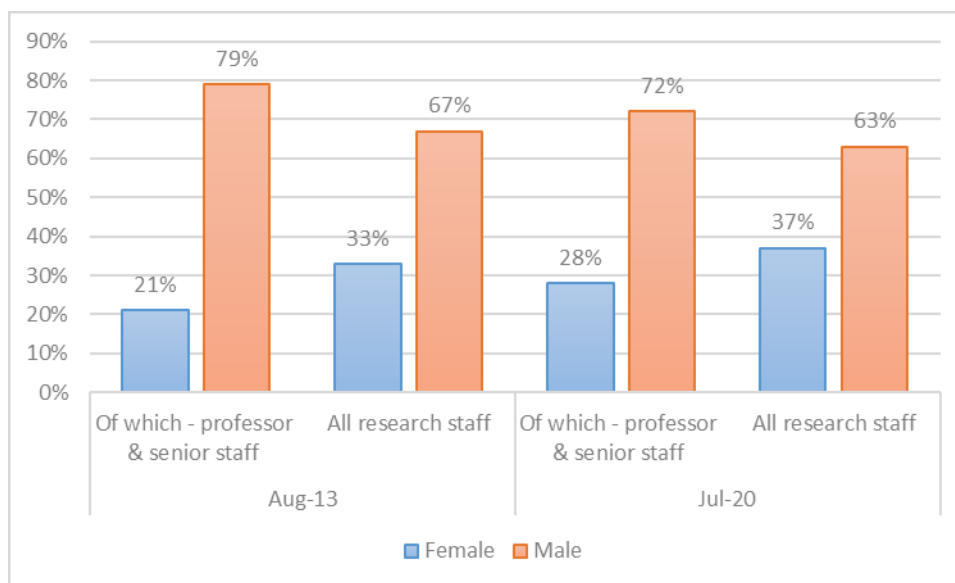


Figure 3.3a Gender comparison between REF2014 and REF2021

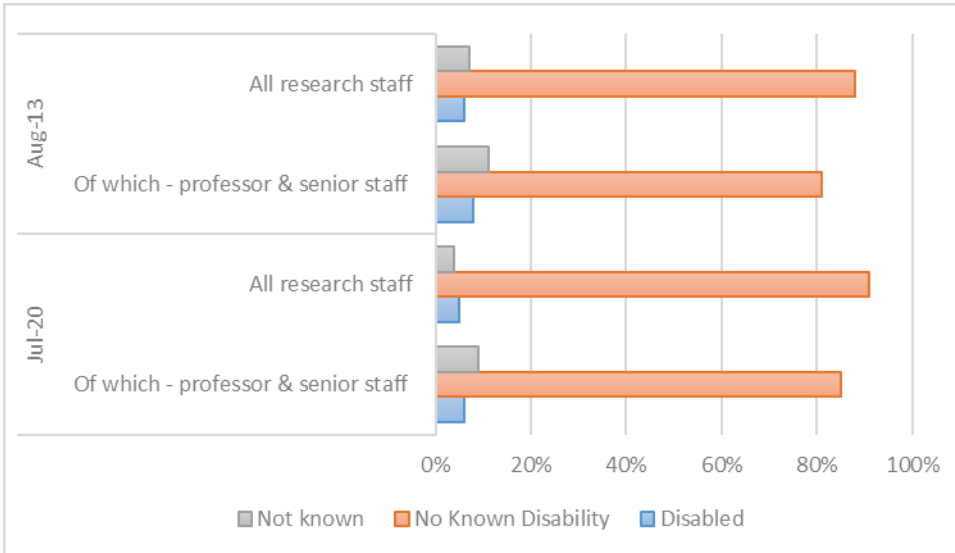


Figure 3.3b Disability comparison between REF2014 and REF2021

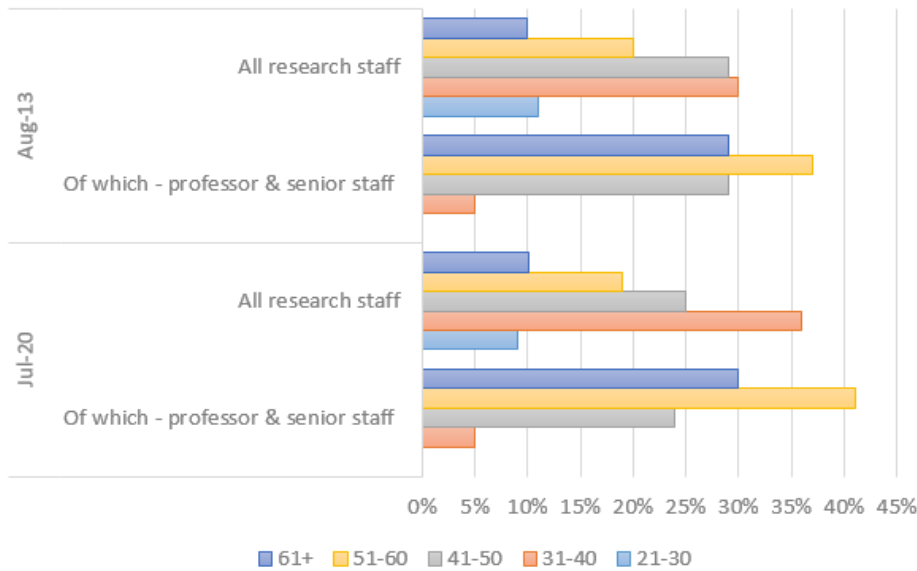


Figure 3.3c Age comparison between REF2014 and REF2021

3.3.2 To tackle gender inequalities, including in promotion (figure 3.1), recruitment (figure 3.4) and to address our gender pay gap, we established an Athena SWAN Institutional Self-Assessment Team and a Gender Pay Gap Task Group. These groups published institutional action plans to drive inclusive practices including, a new recruitment toolkit designed to reduce bias; expansion of committee representation; revised progression route framework; and targets to increase the percentage of female staff applicants for jobs and promotion. As a result, our institutional Athena SWAN bronze award, held since 2008, was renewed in 2020 and we have seen a reduction in our mean hourly gender pay gap from 27.7% in 2017 to 25.89% in 2020.

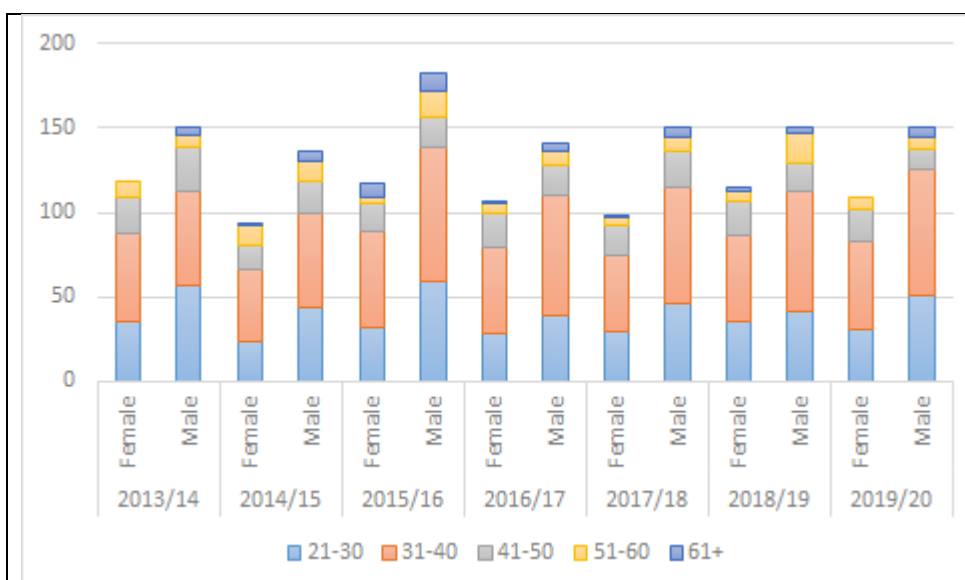


Figure 3.4 Recruitment of researchers by age profile and gender

3.3.3 We are members of the Disability Confident Scheme and the Stonewall Global Diversity Champions programme and display these affiliations on job adverts to attract the most talented and diverse candidate pools. Despite a lack of diversity in the local area, Lancaster’s number of BAME staff is above national average (15.7% against 14.5% HESA 2018-19) however, BAME UK nationals are lower (7.5% against 10.1% HESA 2018-29). We will join the Race Equality Charter in April 2021 and our Strategic Race Advisory Group will lead an action plan to oversee an increase in BAME staff numbers, applications for roles and promotions.

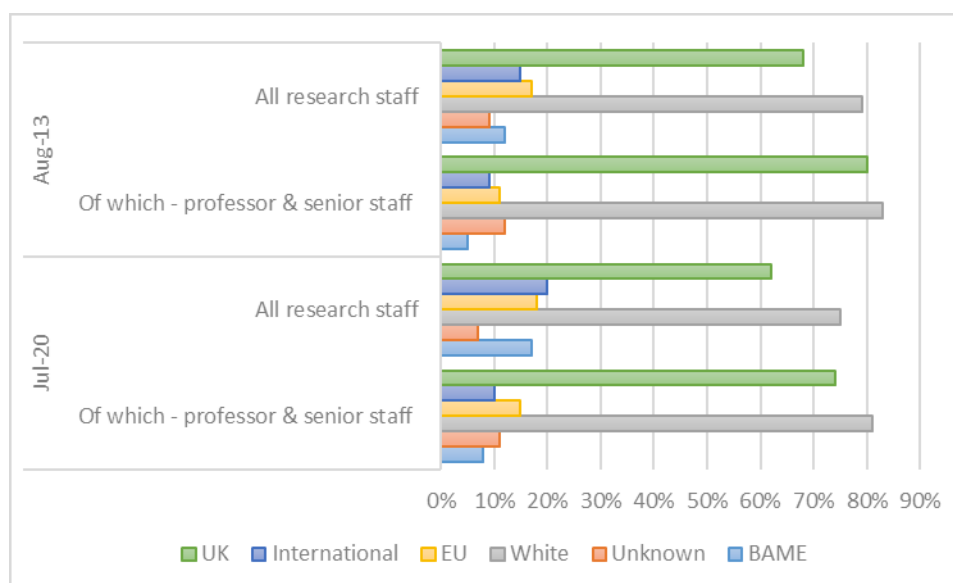


Figure 3.5 Ethnicity comparison between REF2014 and REF2021

3.3.4 We operate a devolved EDI culture where departments are encouraged to be creative and adaptive when implementing policy and solutions suitable for their disciplines (see unit statements). We encourage departments to seek recognition for their own commitments to advancing equality and half hold an Athena SWAN award (11 bronze, 2 silver). Our silver Athena SWAN award holders serve as peer mentors for others applying for their first awards.

3.3.5 Our approach builds strong commitment and engagement and enables the institution to listen to the staff voice and has led to several initiatives derived from across our

community. These have spread more widely, encouraging learning from area-to-area and supporting the enhancement of an institutional framework. Institutional actions to be explored include, extending FHM's career-bridging scheme across Lancaster; extending the pilot of advertising 'returner posts' in STEMM and other under-represented subjects; and extending FST's practice of offering academic returners a reduced and managed workload for the first year.

3.3.6 An Equality Impact Assessment (EIA) was completed for our REF2021 Code of Practice, refreshed throughout the preparations and following submission. REF-specific EDI training was provided for all decision-making staff to ensure EDI considerations were integrated into all aspects of our preparations and through our REF committees.

3.4. Postgraduate research students (PGRs)

3.4.1 Lancaster has seen significant growth in PGR numbers of 15% since 2013-14 (figure 1.1). They are supported by our institutional Doctoral Academy, faculties, departments, and colleges. This has seen our graduates progressing to careers in higher education, public and private sector organisations.

3.4.2 The Doctoral Academy works across the institution to offer high quality training opportunities and personal support. Each department has an academic Director of Postgraduate Research studies. They serve on related committees and as representatives within our Doctoral Academy to share best practice and provide advice on training opportunities amongst supervisors and administrators to optimise the PGR experience.

3.4.3 Each PGR is assigned two supervisors and, if desired, an independent mentor. Since REF2014, we have instigated an online portal to record progress, supervisory meetings and upload associated documents. These are corroborated by a supervisor and ensure meetings take place at least every 28 days.

4. Income, infrastructure and facilities

4.1. Income

4.1.1 Lancaster has significantly increased research income since REF2014 (figure 4.1). Sustained growth was achieved by investment in our academic staff (3.2.1), supportive infrastructure (4.2) and facilities (4.3). Despite continual advancement, achievement of the strategic target of £45M by 2020 was disrupted due to Covid-19 (fig. 4.1 2019/20). We have also seen a significant growth in our in-kind income from £19.3M (REF2014) to £38M (REF2021).

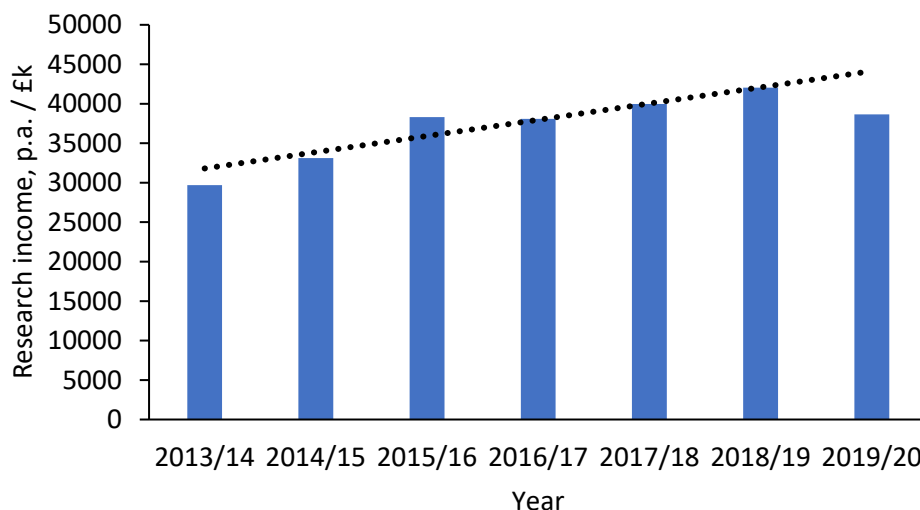


Figure 4.1 Research income

4.1.2 We have seen growth in income across the institution (see unit statements) and maintained a similar funder profile despite the significant increase (figure 4.2). Through periodic departmental research reviews and the work of our research development team (4.2.5) we have ensured that support for grant applications is inclusive. Our male/female PI split for awards in 2019/20 was 62/38% in line with the gender profile (figure 3.3a).

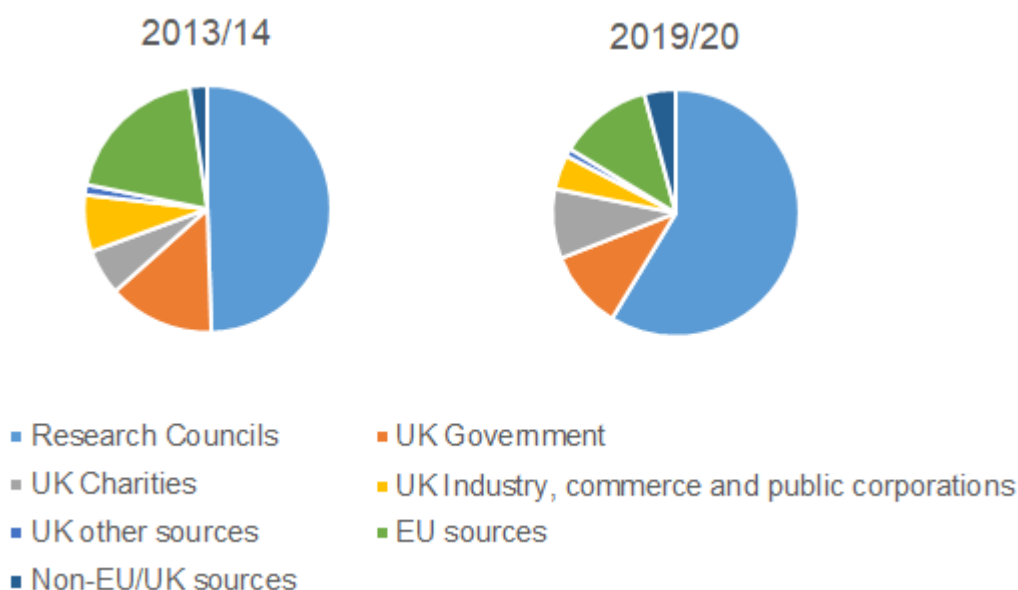


Figure 4.2 Research income by funder

4.1.3 University investment of £5.4M contributed to considerable success in awards (£65M) for funded, often interdisciplinary, doctoral training centres, including:

- AHRC North West Consortium – with HEIs across the Northwest and partners including BBC, MOSI and TATE Liverpool;
- ENVISION and STARS – NERC funded to develop leaders in environmental and soil sciences;
- EPSRC HighWire – a creative fusion between computer science, management and design;
- ESRC North West Social Science Doctoral Training Partnership;
- Material Social Futures – a cross-Research Institutes Leverhulme-funded programme focused on the environmental, sustainability and social behaviour impacts of new materials development;

- STOR-i – EPSRC-funded statistics and operational research with industrial partners including BT, Met Office, National Nuclear Laboratory, Royal Mail and Tesco;
- STFC funded Lancaster Physics DTP and Cockcroft Institute DTP.

4.2. Infrastructure

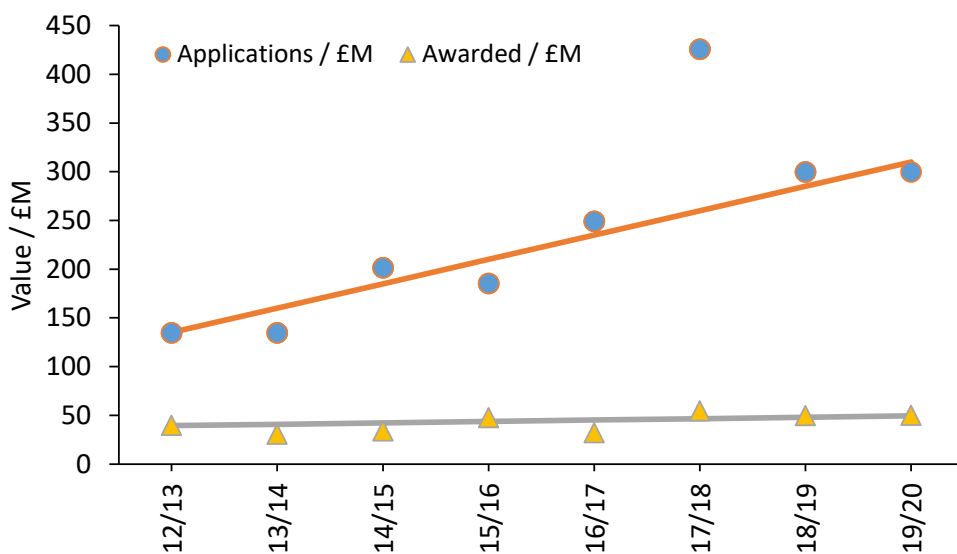
4.2.1 Our researchers are professionally supported through central services such as Research and Enterprise Services (RES), Human Resources, Communications and Marketing, Information Systems Services and the Library.

4.2.2 RES provides central leadership and co-ordination of research, impact, enterprise and engagement support. RES has expanded significantly since REF2014 through reorganisation of faculty-based professional service staff and investment in additional posts. The success of this approach can be seen in the increase of grant applications and support of significantly increased awarded grants (figure 4.3). Our strategic approach to increase large grants has seen a 270% increase in >£1M awards since REF2014.

4.2.3 New RES posts include an Associate Director for Research Services, a Head of Research Quality and Policy, three Impact Development Managers, three Impact Support Officers and four Senior Research Development Managers. The latter maintain close relationships with major funders and support strategically important applications.

- 4.2.4 RES support for researchers includes:
- Pre-award proposal development and costing;
 - Post-award administration (finance, contracts, ethics and clinical sponsorship);
 - Impact development;
 - Research commercialisation;
 - Consultancy;
 - Entrepreneurial training for staff and students.

4.2.5 The pre-award development team proactively identify funding opportunities and provide dedicated support for developing proposals (interpreting funder guidance, budget suitability, partner liaison, internal approval and submission). The team is centrally-managed but locally-deployed to target disciplinary support to staff.



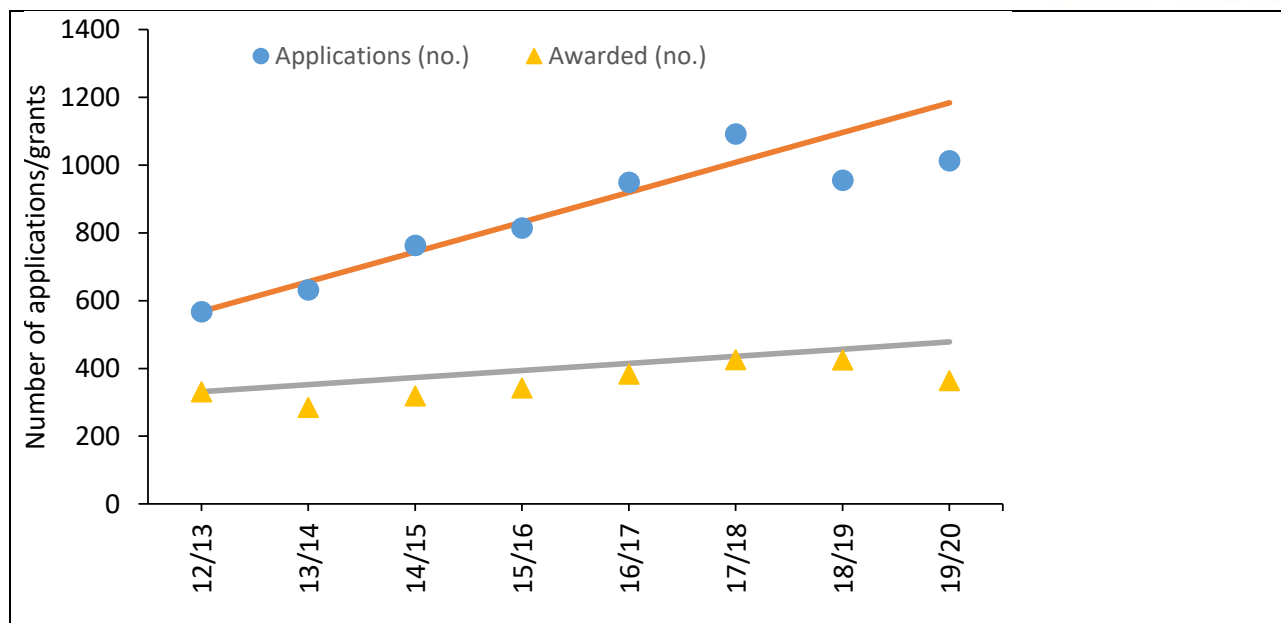


Figure 4.3 Growth in applications and awards (value/number)

4.2.6 Lancaster’s communications team provides training and connects researchers with general audiences (media, social media and internal communications) to extend the reach of their work. In-house facilities include a TV (Globelynx) and radio (ISDN) studio and a response team focussed on connecting researchers with breaking news. We have the most frequently-used Globelynx studio of any UK University. In 2019-20, Lancaster’s researchers reached a global audience of >313M through 375 TV interviews, >185M through 374 radio interviews and >155M through 8,650 print/online articles. Of 85 institutions using The Conversation in 2019-20, we ranked in the top ten for articles published with >4.5M reads.

4.2.7 Our Library collaborates with researchers to actualise open research. They deliver open access services to maximise visibility and impact, including managing our [institutional repository](#). They facilitate the management, sharing, archiving and preservation of research data to meet FAIR principles (findable, accessible, interoperable, reusable). And drive impact and future collaboration via citation and altmetric analysis. The library is well engaged externally in future developments around scholarly communications, and its Data Conversations programme has been adopted by other HEIs internationally.

4.3. Facilities

4.3.1 We have invested >£170M from multiple funding streams in research infrastructure since REF2014. Our commitment to providing world-class facilities for research, teaching and engagement is demonstrated by plans to spend a similar amount over the next 5 years.

4.3.2 Examples of our institutional research investments include:

- £41M Health Innovation Campus (HIC): a national facility for innovation in healthcare comprising 8,000m² of academic and innovation space and business accommodation;
- £20M in our library, including dedicated PGR/staff research space, a Digital Scholarship Lab and Open Research Lab and ESRC-funded SafePod for accessing highly-sensitive data;
- £8M for the Whitehouse Ruskin Collection – the largest collection of Ruskin’s works in the world purchased with financial support from a coalition of funders including the Heritage Lottery Fund;
- >£1.75M in secure data science infrastructure and >£1.5M in additive manufacturing facilities that led to £1.5M Secure Digitalisation University Enterprise Zone awarded by Research England.

4.3.3 Facilities supported by disciplinary investments include:

- £25M in extensive academic and collaboration spaces for our Management School;
- £28M in Chemistry including >£11M apparatus, laboratory and office space co-designed with industrial partners to embed impact and collaboration;
- £15M in Physics, including a suite of ultra-low noise laboratories providing the most advanced environments in the world to research quantum technologies;
- £12M in a new Engineering building to accommodate expansion and research specialisms including chemical engineering, particle accelerator technology and National Nuclear User Facilities;
- £5.7M in LICA (part of £13M [Beyond Imagination](#) Expanding Excellence in England Research England project) for new modular CAD studios, a new design and architecture workshop and visualisation laboratory.

4.3.4 We also carry out world-leading research in the field throughout the world. This includes ecological research in Jari in the Brazilian Amazon since 2003 and imaging the radiation from nuclear reactors in Slovenia. We collaborate with universities, government departments, national laboratories and research institutes all over the world, for example, the Yayasan Sabah Group (Sabah Foundation) in Malaysia that manage one million hectares of tropical forest and three field stations in Borneo and, with government departments and arm's-length bodies like the Environment Agency on the impact of land management interventions.

4.3.5 Our researchers are involved in the ATLAS project at the Large Hadron Collider at CERN and contributed to the discovery of the Higgs Boson. Our particle physicists are carrying out award-winning experiments on neutrinos at JPARC and Fermilab. This was awarded the 2016 Breakthrough Prize for the discovery of neutrino oscillations. Lancaster leads the Cockcroft Institute for Accelerator Science and Technology, a STFC collaboration between the universities of Lancaster, Liverpool, Manchester and Strathclyde.

4.3.6 To support our impact and engagement agenda we actively engage with Lancaster city. We have established a cultural partnership with Lancaster's Dukes Theatre and opened a new academic space at Lancaster Castle to enhance research via dedicated seminars, particularly those relevant to local heritage. We have grown research in health and medicine since REF2014 and are enabling this by establishing a [joint research office](#) with our local NHS trust.

4.3.7 In addition, Lancaster provides co-location of >50 organisations from sectors related to health, digital, cyber-security, clean growth, quantum technologies and smart materials in dedicated office/laboratory spaces embedded in academic departments. The focus of these facilities is to welcome innovative organisations of all sizes from the global community with the ability to grow and contribute to cutting-edge research. The physical proximity enabled by co-location supports collaborative research (funded via the Research Councils or InnovateUK), research focussed student or postgraduate placements and Lancaster graduate recruitment to these organisations. The opening of the HIC (4.3.2) will further enhance these research collaborations; key successes already include Quantum Base (Quantum Security), LiNa Energy (Battery Technology) and Yordas Group (Environmental Regulatory Services).