

Institution: University of Hull

Unit of Assessment: 17 Business and Management Studies

1. Unit context and structure, research and impact strategy

The distinctive contribution of Hull University Business School (HUBS), where our UoA17 researchers are principally based, has long been shaped by our commitment to '*responsible leadership for a complex world*'. This statement captures three fundamental beliefs that underpin our approach to all our activities: the world is increasingly interconnected, and this gives rise to complexity which can be understood and effectively addressed through interdisciplinary and systems approaches; connectivity gives rise to feedback – our actions have consequences for others and ourselves – which compels us to promote responsible behaviours; and a critical and situated understanding of leadership commits us to nurturing and developing leadership potential. In combination with the University's vision of being a *research-led anchor institution for the region*, our commitment to '*responsible leadership for a complex world*' frames our approach to research in business and management studies, and provides continuity through our past, present and future research efforts and achievements.

Reflections on strategy in REF2014

Our current strategy builds on strengths from the earlier strategy (reported in REF2014), particularly in terms of publications of high international standard (GPA \geq 3), external funding, interdisciplinary collaboration and establishment of networks.

Nevertheless:

- We recognise that the previous strategy, involving '36 strategic initiatives', provided breadth but did not afford sufficient depth. Consequently, we have simplified and refocused that agenda.
- Success in enabling our research staff to advance their careers has meant a high turnover in researchers, building on their successes at the University of Hull (UoH), moving (for example) to Russell Group Universities.
- Having a GPA \geq 3 target "without allowing the proportion of teaching-only staff to rise above 25%" (REF2014 submission) was addressed through the UoH's new Academic Careers Framework (see p.9).
- Links between HUBS and the Logistics Institute have strengthened under the latter's Director (**Ramudhin**), who is included in UoA17. These strengthened links have increased research capacity in logistics and supply chain management (e.g., LHOFT project, p.18), and have allowed the UoA17 to embrace wider issues in regional business development (e.g., Greenport Hull project, p.14).
- We recognized that our plan to diversify our doctoral community by introducing a Doctor of Business Administration degree (DBA), as envisaged in REF2014, would dilute both our focus

and resources. While the University has validated the DBA programme, we have suspended its introduction to concentrate on developing our PhD community.

Research context and Faculty and School structure:

Following a 2016 University-wide organisational review, HUBS is now one of three schools within the Faculty of Business, Law and Politics (FBLP). Whilst FBLP's Dean has overall strategic responsibility for research, the Associate Dean (Research) (ADR) is responsible for its development across FBLP.

HUBS comprises five subject groups, whose purpose includes facilitating line and workload management, with subject Heads being responsible for developing and sustaining the research performance of staff and Postgraduate Research (PGR) students in their group. Subject groups are long-standing, having been established specifically to promote collaborative teaching, research and engagement activities in HUBS, both within and beyond the respective disciplines/subjects. Hence, research activity in HUBS does not align blindly with subject groups. Rather, it is organised into research groups, centres and University-wide institutes.

There are eight research groups: **Accounting; Economics; Finance; Logistics; Marketing; Organisational Behaviour and Human Resource Management (OBHRM); Regional and International Business (RIB); and Systems Thinking**. Each group has an appointed Research Lead who is an accomplished and respected researcher (e.g., **Bovis, Scullion, Zaman**). FBLP/HUBS supports two cognate inter/transdisciplinary research centres: the internationally-respected **Centre for Systems Studies (CSS)**; Co-Directors: **Gregory/Midgley**), established in 1992; and the newly-established **Centre for Sustainable Production and Consumption (CSPC)**; Director: **Mishra**). Leads/Directors are members of Faculty Research Committee, research champions for their group/centre, and instrumental in the design and implementation of mission, vision and research strategies in their respective areas. Our lean structure gives Leads/Directors direct access to the ADR without encumbering decision-making with unnecessarily-hierarchical levels, such as a HUBS-level Research Director. This structure allows transparency and timeliness in decision-making, e.g., about resource allocation. Should significant growth in HUBS occur, then such structures may be reappraised, but at present they are serving us well.

Many colleagues' work is aligned with UoH's research Institutes: '**Logistics**'; '**Risk**' (Director: **Williams**); '**Applied Ethics**'; '**Environment and Energy**'; '**Marine and Maritime**'; '**Clinical and Applied Health Research**'; '**Slavery and Emancipation**'; and '**Aura**' (Low carbon technologies) Innovation Centre. There is also engagement with the University's external research partners; e.g., the 'G8 Universities', an international alliance. Beyond these formal organisational structures, researchers often collaborate with colleagues across the University and foster their own national and international links.

FBLP's Business Advisory Group (BAG), comprising senior representatives from business, public and third-sector organisations (e.g.: Company Secretariat Director, ABF; CEO, Humber

LEP), also promotes knowledge exchange and wider engagement. BAG provides scrutiny of direct engagement activities and service development, emphasising the importance of end-user involvement in research when relevant. FBLP's Director of Business Engagement and Enterprise (DBEE) liaises with BAG and its members.

Overall, this structure is designed to enable our researchers to collaborate, as necessary, within their own disciplines and with researchers in other disciplines and, thereby, to respond more effectively to complex challenge-led research priorities and initiatives.

Research strategy alignment and execution

The University's research strategy cascades into FBLP, then into research group strategies, and into individual research plans, ensuring vertical alignment between levels. FBLP's research mission is:

“to undertake innovative research of the highest quality that generates new insights into the functioning of business and economies, political and legal systems. As part of a civic university, we use our knowledge, creativity and expertise to educate and inform in a way that makes a meaningful difference to the lives of people and society, from the local to the global”.

The FBLP Research Strategy was refreshed in 2017 by the Faculty Research Committee, a formal University committee chaired by the ADR with representatives from all FBLP research groups/centres, which manages FBLP research activity. The strategy was developed through a consultation process involving a range of stakeholders, including the FBLP community, external partners engaged through the DBEE/BAG, and the University leadership group. The strategy is reviewed annually to ensure it remains appropriate.

Developing FBLP strategy in this way has resulted in an approach that ensures contextual fit. Discipline-specific agendas reflect the interests of staff and address contemporary issues associated with particular disciplines, while horizontal co-ordination mechanisms ensure connections across research areas (e.g., inter/transdisciplinary collaborations outlined in Section 4). The research strategy is supportive of new areas of focus that address emerging priorities (e.g., **ESRC Covid-19 research**), promoting new initiatives where the business case indicates strong alignment with the strategy (e.g., **CSPC**), and allows us to reach out to cognate areas; hence, researchers based in FBLP's Law School contribute to UoA17 (**Hicks; Whitehouse**).

Common commitments can be discerned from the different research group strategies, including to:

- Conduct impactful research.
- Create opportunities for researchers and associated partners (businesses, public agencies, NGOs, communities, etc.) to collaborate in the creation of practical knowledge.
- Nurture and support a community of researchers.
- Develop a values-driven research environment.

- Sustain and develop local, national and international networks that serve to enhance our research capacities.
- Strategically engage with selected research where we can further our international reputation.
- Maintain and enhance our research environment through generating significant levels of research income and PGR student recruitment.
- Publish high-quality outputs that add value to the above.

These common commitments align research groups while enabling groups to respond to endogenous disciplinary developments. For example, this approach has led to the **Systems Thinking Group** responding to real world complex problems by strengthening its work in applied systems thinking and community operational research. Similarly, these commitments have led the **Accounting and Finance Groups** to focus on the role of accounting and finance in affecting people, business and society, with a particular emphasis on such **contemporary areas of concern as the accountability and governance of business and financial institutions** (respectively) **and the appropriateness of their products**. HRM has focused on the **challenges of leadership, global talent management and managing aging workforces**. These examples are evidenced by REF2021 outputs; e.g., **Gregory and Midgley, Hudson and Zaman, and Flynn and Scullion**. The Centres pursue complementary strategies, acting as platforms for promoting inter/transdisciplinary research in specific areas; e.g., **CSPC** helps to deliver **sustainable and socially-acceptable production and consumption solutions** through transformational research, inter/transdisciplinary exchange of research views, and new business innovation (e.g., **Mishra and Dwivedi's** outputs). Such examples testify to our commitment to '*responsible leadership for a complex world*'.

Achievement of strategic priorities for research and impact

Our research strategy rests on three priorities, with progress towards their achievement supported through the definition of SMART objectives, monitoring and annual review, which is part of the formal annual strategic planning process involving the Dean, ADR and Leads/Directors. These strategic priorities are foci for evidencing achievement.

Strategic priority 1 – To nurture excellent researchers

As should be expected in an institution where research, collaboration and impact are deeply rooted within the culture, there is a strong focus on using resources to enable and support our academics to engage in quality research by:

- appointing early career researchers (ECRs), those aspiring to conduct research and research leads to strategically important areas;
- allocating **40% of a researcher's workload to research**, with additional workload for impact development, PGR supervision and research management activities;

- operating a **workload buyout formula**, associated with external funding, giving additional research time;
- offering a research and impact-based **Sabbatical Leave** programme;
- providing annual **appraisal** and 6-monthly review meetings for all academic staff;
- maintaining a long-standing **mentoring programme**, including for new appointees, involving experienced researchers as mentors;
- running **visiting speaker seminar programmes** organised by Research Groups/Centres, often inviting leading international speakers;
- hosting named **externally-funded annual/biennial lecture series**;
- providing **research training modules and pastoral support** to our PGR community, engaging with external PGR communities and centres;
- **funding research groups** to facilitate subject/disciplinary and other research training, internal seminar programmes and workshops, and other cohesion-building activities;
- offering access to **physical research infrastructure**;
- providing access to **research funds** for early initiatives, impact development, networking, engagement and conference attendance;
- providing **goal-oriented support** to underperforming areas to aid their recovery so that they can provide appropriate contributions to the achievement of our strategy.

Whilst not being exhaustive, this list is indicative of our approaches to nurturing researchers in the production of quality research. Evidence of high-quality research achievements by staff is included under Strategic Priority 3.

Nurturing excellent researchers extends to PGR students, who form a central part of our research community. PGR Regulations and Codes of Practice are prescribed by the Doctoral College, and their implementation is delegated to the HUBS Graduate Research Director (**Flynn**; 0.2 FTE) and the ADR, supported by the Faculty Research, Enterprise and Innovation Office (4.04 FTE in 2020). Such measures are designed to maintain sector-level standards through training and monitoring. Supervisions are capped at six student FTEs per academic, to ensure quality of support (see Section 2).

As an indicative measure of quality, supervisors publish with their PhD students: e.g.: Ahmed (PhD-Finance) with **Azevedo/Guney** (*Journal of Corporate Finance*); Alhendi (PhD-Accounting) with **Rodgers** (*Journal of World Business*); Ross (PhD-Marketing) with **Saxena** (*Annals of Tourism Research*); Trzeciakiewicz (PhD-Economics) with **Bhattarai** (*Economic Modelling*); and Ufua (PhD-Management) with **Midgley** (*European Journal of Operational Research*). Also, our students receive awards e.g.: Al-Shammakhi (PhD-Accounting) 'Best Paper', American Accounting Association, 24th Symposium on Ethics Research (2019); Bungkilo (PhD-Accounting) 'best dissertation', National Research Council of Thailand (2018).

We are committed to ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards stipulated in University and sector policies. Training for researchers is provided through compulsory e-learning courses, e.g., ‘*Research Integrity*’ and ‘*Data Protection and Information Security*’. Before GDPR’s introduction, UoH’s Informational Compliance Officer held workshops to raise awareness and promote compliance. There is a requirement, applicable to all research communities, that ethics approval (and Health and Safety) be obtained before undertaking a research project. For this purpose, the Faculty Ethics Committee, chaired by a senior academic with representation from across FBLP, has delegated responsibility. Grant applications are peer reviewed internally to ensure compliance with University policies. This process also promotes critical thinking about research.

Strategic priority 2 – To contribute to areas of social and intellectual importance

Our approach to strategy alignment and execution ensures staff are empowered to address contemporary issues associated with their disciplines and to respond to emerging opportunities, while connecting to research in other areas. Formally, this takes place through the annual strategic planning process and informally through shared meetings and school networking events. Alongside HUBS’s impact strategy, this has produced a body of research of social and intellectual importance to UKRI and other key external stakeholders. Our REF2021 case study submissions:

- Changing the management of major public projects (**Williams**)
- Using behavioural finance research to improve financial outcomes for consumers (**Hudson**)
- Shaping the policy and practice of employee volunteering and social action (**Cook/Walkley**)
- Public procurement as a strategic tool for environmental protection and sustainable economic growth across the EU (**Bovis**)

are products of this strategy, emerging from combinations of funded and pro bono activities. Further examples include ‘Enhancing work opportunities for older workers’ (**Flynn**); ‘Plastic waste and food supply chain management’ (**Ramudhin/Mishra**); ‘Informing innovative, multi-stakeholder water governance in New Zealand’ (**Midgley**); ‘Socio-economic benefits of a coherent network of marine protected areas in Northern Ireland’ (**Atkins**); ‘Talent management in SMEs’ (**Scullion**); ‘Leadership training and development’ (**Higgs**); and ‘Big data analytics applied to UK food-banks’ (**Hindle/Vidgen**). Funding has also leveraged examples: a Knowledge Transfer Partnership (KTP) with Operation Wallacea and ecologists ‘Developing an impact evaluation methodology and tool for conservation research expeditions’ (**Atkins**); HEIF-funded projects, including ‘Developing online eco-space and measurement tools for enabling social action’ (**Cook/Walkley**) and ‘Unlikely entrepreneurs’ (**Reedy**); and internal Quality-related Research Strategic Priorities Fund (QR-SPF) policy-relevant activity: ‘Understanding social value’ (**Gregory/Atkins/Bovis**), ‘Debt and home loss’ (**Whitehouse**) and ‘Systems thinking to tackle cross-cutting policy issues with the Cabinet Office’ (**Midgley**).

While the research undertaken within the different disciplinary research groups often has social and intellectual value, it is recognised that many large problems require inter/transdisciplinary responses, which our organisational structure is designed to promote. This submission includes many examples of inter/transdisciplinary research undertaken during the REF2021 period. For example, **Atkins, Gregory and Midgley** (CIs) participated in a transdisciplinary project, 'Resource recovery and remediation for alkaline wastes' (NERC/ESRC; £637,777; 2014-19), with Environmental Science (PI) and Geography at UoH, as well as scientists at Leeds, Cardiff, Newcastle, the Open University and industrial partners. The project involved HUBS researchers designing and facilitating a stakeholder workshop, employing scenario planning and systems methodologies. It formed the principal case study for a *European Journal of Operational Research* article.

Given the achievement of impact of social and intellectual importance, it is imperative to leverage research to maximum effect. Hence, FBLP's impact strategy is embedded within its research strategy, and vital resources are channelled to ensure impact. Two senior FBLP appointments were made in 2016, the academic Impact Lead (**Cook**; 0.2 FTE) and the non-academic DBEE. The latter post-holder also promotes FBLP's wider KEF activities. Both roles are complemented by University-level investments, e.g. Research and Innovation Development team. The Impact Lead drives development of impactful research within FBLP by raising awareness, offering training around fostering impact from academic research (e.g., through facilitated workshops, see p.12) and supporting colleagues with impact development. Along with maintaining this Champion role, since 2018, FBLP has provided a ring-fenced budget to which researchers can apply for specific impact activities; workload has been allocated to impact case authors; and impact has been made a core activity during sabbatical leave. HEIF, QR-SPF and KTP funding has also leveraged impactful research. Consequently, FBLP has a broad range of impact case studies to draw upon for REF2021. Post-REF2021, impactful research will continue to be strongly supported within FBLP and the necessary investment to realise it in practice will continue, as it forms a core part of the University's aim of being a research-led anchor institution.

Strategic priority 3 – To enhance the quality of outputs/outcomes

Actions taken in pursuit of Strategic Priority 1 have significantly enhanced the quality and dissemination of outputs/outcomes. Indeed, significant resource has been dedicated to this end. The University pays for Gold Open Access for publications resulting from UKRI-funded projects (e.g., **Gregory** et al, 2020). Copies of other publications are placed in a University repository, permitting Green Open Access.

During the REF2021 period, eligible researchers published 750+ academic journal papers, 100+ book chapters, 30+ authored/edited books and numerous reports. Our 92 submitted publications include articles in **20+ 'world-leading' journals**; the remainder principally in 'internationally excellent-rated' journals. A key feature of these world-leading journals is their

variety. All HUBS research groups published in these journals reflecting the spread of strength of expertise and the ongoing success of the levelling-up strategy highlighted in REF2014. These publications and others receive significant attention, helping to shape the intellectual agenda across the field. Current researchers with 2,000+ Google Scholar citations (31/12/2020) include: **Williams** (10,291); **Higgs** (9,636); **Scullion** (9,479); **Midgley** (6,767); **Rodgers** (3,010); **Atkins** (2,737); **Hudson** (2,578); **Zaman** (2,483).

Alongside numerous regional and national media engagements, and social media postings (e.g., **Shaw**'s logistics-focussed 'tweets'), our researchers publish in 'The Conversation' (e.g., **Andrikopoulos** on 'weaker sterling and UK PLC'; **Bovis** on '2015 Budget'; **Demetis** on 'cybercrime'; **Hindle/Vidgen** on 'food banks'), which disseminates ideas to a broad audience having a Creative Commons License, highlighting our expertise.

Research income capture is recognised as a crucial indicator of research achievement. Recorded external research income for REF2014 was £1,538,467 with a £590,000 target stated for 2015/16. We can report a **near-tripling of reported income to £4,299,395** over 2013/14-2019/20, and an average annual performance of £614,199. This funding improvement partly reflects the effective cascading into FBLP strategy of the increasingly strong institutional strategic-steer towards external income generation, motivating team and individual initiatives, and complementary investment in support infrastructure and facilities (see Section 3). With a (simple linear) trend of +£80,507 pa (2013/14-2019/20), sustained future improvement is a realistic expectation.

Going forward

Recent crises and management of responses (e.g. Covid-19) justifies our enduring commitment to '*responsible leadership for a complex world*' and is consistent with a research agenda informed by UN Sustainable Development Goals and the priorities of UKRI, Department for Business, Energy and Industrial Strategy, and other key external stakeholders. The 'net zero', 'levelling up' and 'place-based' agenda in the UK R&D Roadmap are cases in point.

We recognise two major, interlinked drivers to achieving further step-changes in research performance: '*stakeholder relationships*' enable research to be co-produced to make a difference, and '*funding*' allows more research-and-impact hours to be invested. A deep investment in forging a stakeholder- and community-engaged culture is intended, which will involve training and a commitment to ensuring that high-quality engagement and knowledge exchange are key criteria in the recruitment of leaders, ECRs and others. Increased funding will create time to generate publications and impact; here the workload-buyout formula for external income is key. By supporting PGR students and PDRAs, the next generation of ECRs will emerge. This dovetails with the University's mission to be a research-led anchor institution in the region, and supports our knowledge exchange strategy.

We will continue to develop through focused research groups/centres. The intensification of inter/transdisciplinary research will enhance our capacity to explore emergent issues. Hence, relationships will deepen between groups/centres and UoH institutes: e.g., we will align research more closely with the Logistics Institute, strengthening our research capacity still further. This will help our researchers to revitalize networks to grow synergistic critical mass.

We will raise the quality of our PGR community, and strengthen their progression routes to academic and other competitive careers, by increasing publication rates during and in the three years after their doctorate, including co-authorships with supervisors. We will also create a FBLP Associate Fellow HEA module to complement their research skill acquisition. Both initiatives will help facilitate ECR recruitment.

Our aging researcher profile and gender imbalance (see Section 2) must be addressed, with commitments to target recruitment of ECRs and exceed, for example, our Athena SWANN and AACSB/AMBA accreditations obligations.

2. People

Prioritising our commitment to nurturing excellent researchers ensures that staff and students are at the heart of our strategy. Accordingly, our strategy is designed to attract, motivate and retain excellent researchers, to promote talent, to create opportunities for researchers at all stages of their careers, and to maintain conditions for the growth of world-class research.

Staffing strategy and support

As part of ongoing reviews, and informed by REF2014 and sector-wide institutional changes, we renewed our staffing strategy to provide clearer expectations and support structures.

Academic Career Framework (ACF) and research career development

In 2016, **Haynes** (then-Dean) was the University-lead for ACF development, and FBLP/HUBS established complementary Research Expectations guidance for academic staff. These policies and procedures play a key role in driving research performance, and for targeting support and development measures.

The ACF provides clear guidance for staff about building cases for promotion, preparing for appraisals, identifying skills and developmental needs, and discussing career trajectories with line managers. For managers, it has strategic importance, being used to assess cases for promotion and other aspects of reward and recognition; to inform the identification of skill gaps and developmental needs; for succession planning; and to assist in designing new roles and job descriptions.

The ACF has created parity, clarity and transparency between different academic contributions, by identifying core work 'Domains' and role and performance standards. 'Research

Domain' staff are expected to conduct 'significant research activity leading to internationally excellent outputs'. Line managers evaluate performance on a rolling 5-year basis.

A 'Transition and Development' process is also applied. 'Transition' involves tailored Continuing Professional Development, with time, resources and support to meet goals agreed with line managers. Typically, this process lasts 12 months for those seeking to move into a new domain and 24 months for those within the first two years of their first university appointment.

Researcher numbers

On REF2021 census date there were 41 UoA17 academics (36.6 FTE) in Research Domain, compared to 45 researchers returned to REF2014. Of our 41 researchers, 63% were academics at UoH on the REF2014 census date, including 44% submitted to both REFs. The successful transition to Research Domain of eight academics not submitted to REF2014 is evidence of our nurturing environment. One researcher is an ECR. We offer flexibility in contractual arrangements with seven part-time researchers: e.g. senior researchers also have contracts with University of Alicante and University of Texas, El Paso.

On equality and diversity of our researchers:

- 10% are aged under 40 years, and 24% aged 40-49 years (26% and 38% for REF2014); this age distribution is being addressed e.g.: through the Transition-to-Research process, which includes some appointees in their first posts.
- 37% self-declare BME and 51% white.
- 61% are British with another 12 nationalities represented, reflecting our on-going commitment to global recruitment of excellent researchers.
- 24% are female including an ECR (32% in REF2014). We are addressing gender inequalities: e.g., UoH will improve on our Athena SWAN Bronze award.

A strong commitment to equality and diversity is supported by a requirement that staff take University 'Equality, Diversity and Inclusion' training every three years. UoH requires mixed-gender recruitment panels, and panellists undertake mandatory University training in 'Recruitment and Selection' and 'Unconscious Bias'. Staff on extended absence (e.g., maternity/paternity; sickness) receive a phased return-to-work, including reduced workload, and it is factored into promotions, sabbaticals, Transition-to-Research Domain arrangements, and other decision-making. Supporting equality where staff have disabilities is managed with the staff-member in conjunction with UoH's Disability Officer: e.g., an ECR required office adaptation, specialist equipment and non-research workload relief, and the subject Head monitored the support's effectiveness until the researcher's promotion to a Readership at another university.

Researcher mobility

We aim to provide a stable research environment through the retention of talent, while allowing the degree of staff movement associated with career development and the creation of opportunities for new research initiatives and changing priorities. However, like other Business Schools (UCEA, 2019), we find academic recruitment and turnover an ongoing challenge.

The Dean and subject Heads identify staffing needs. Strengthening key strategic research areas is a major consideration when making appointments (e.g., **Menezes**, OBHRM; capacity building in business psychology), including appointments of ECRs (e.g., **Kumari**, Logistics; a target area for capacity-building), strengthening research leadership (e.g., **Flynn**, OBHRM/GRD; **Zaman**, Accounting), and succession planning (e.g. **Merali** recruited as Director, **CSS**, releasing **Midgley** as ADR; **Mishra** succeeded **Grant** in leading Logistics).

The University holds annual promotion rounds with research performance strongly influencing outcomes. Based on research performance, there have been 15 (2014/15-2019/20) internal promotions e.g.: to Reader (e.g., **Guney**, Finance; **Silles**, Economics); and to Professor (e.g., **Atkins**, Economics; **Cook**, OBHRM). Our post-REF2014 recruits include researchers receiving their first academic appointment, who have subsequently gained promotion e.g.: **Demetis** (Management Systems), PhD awarded in 2008, joined UoH in 2014 after 4 years with a Greek-based IT company, promoted to Senior Lecturer in 2020; and, following 15 years 'supply chain' industry experience, and with Hull MBA and PhD-Management qualifications, **Shaw** (Logistics) was appointed a Lecturer in 2014 and Senior Lecturer in 2019. **Shaw**, **Silles** and **Cook** are female.

On departures, along with retirement (e.g., **Espinosa**), accelerated career progression has been an important factor, including promotional moves to Russell Group universities (e.g., **Akamavi** to Birmingham; **Allen** to Sheffield; **Einarsdottir** to York) and to chairs (e.g., **Papadopoulos** and **Akhtar** to Kent). Departures have included staff who joined UoH as ECRs, who left following promotion offers (e.g., **Ullah** to Nottingham; **Wang** to De Montfort) and senior researchers seeking specific opportunities elsewhere (e.g., **Abbott** to Lancaster; **Jayawardhena** to Surrey; **Mollah** to Sheffield). Such upward trajectories are indicative of our vibrant research culture 'opening doors'. Successful research collaborations with 'leavers' are often maintained (e.g., jointly-authored outputs: **Hindle** with **Vidgen**; **Khalil** with **Ozkan**; **Midgley** with **Nicholson**).

Development support and training

Coordinated development activities and support for all staff pursuing a career in research are available at all career stages, including mentoring, appraisal and training, and consistent with the 'Concordat to Support the Career Development of Researchers'.

Annual Appraisal and Development Reviews with line managers (usually subject Heads or the ADR) allow academic staff to reflect on contributions, career plans, opportunities, and support needed to progress. This is complemented by an independent mentoring scheme, coupling researchers with more senior researchers from their group.

Research development and training is facilitated by the University (e.g.: Research and Innovation Development team and Funding Office; Doctoral College; e-learning), FBLP (e.g.: workshops; writing retreats) and research groups/centres (e.g.: away-days; seminars). Researchers work with their Leads to identify and respond to research-related development needs. For example, with 'Impact', through its Impact Champion, FBLP has facilitated workshops and other training opportunities, e.g.:

- "What is research impact and how can we build it?" (2017; 2018).
- "Identifying colleagues who engage in impact or wish to" (2017; 2018).
- "Enhancing research impact: examples of how colleagues have developed their impact cases" (FBLP Research Forum, 2018).
- "Developing and crafting an impact case, identifying the pathway to impact and evidence" (three linked workshops, 2018/19).

These sessions, in conjunction with internal funding for current and future research impact development and other support activities, underpinned the development of impact cases for REF2021 and ensure a pipeline of 'early-stage' cases post-REF2021. This approach has delivered active training to 30+ researchers and helped generate 15+ impact-related research projects.

Individuals/groups can bid for Faculty research funding to support conference attendance, pump-priming for projects, and impact development. There is a staff development budget to which all can apply and research groups/centres have budgets for development activities.

The University offers QR-GCRF Global Challenges Pump Priming funds: e.g., **Midgley** secured £19,999 for research on using systems thinking in post-conflict nations; **Scullion** received £4,400 for research on employment participation of marginalised groups in India.

FBLP supports research seminar series, involving invited speakers from leading institutions, enabling our research communities to engage with leading-edge thinking. In the REF2021 period, we have held 200+ seminars involving notable UK and international speakers (e.g.: Neary, Oxford; Stark, Manchester; Richardson, Albany; Snowden, ex-IBM). Our researchers deliver presentations, and the series addresses generic skills, e.g.: 'How to publish 4* articles' (Buckley, Leeds); 'Publications from the editorial point of view' (**Hudson**); 'Tips and tricks of writing a successful grant application' (**Mollah**, now Sheffield); 'How to get published and ensure your paper achieves the impact it deserves' (**Scullion**). Seminars are associated with Athena SWAN, e.g.: celebrating International Women's Day. Eminent graduates give seminars: e.g., Sambo, WHO ex-Regional Director for Africa and CSS PhD alumnus, presented 'Leading the fight against Ebola' for UoH's 'Inspired in Hull' series.

HUBS hosts high-profile public lectures supported by private endowments:

- Biennial 'JSG Wilson Lecture' (funded by a family legacy, Bank of Japan and other endowments): e.g., Weale (former member, Monetary Policy Committee, Bank of England).

- Annual 'Mike Jackson Lecture in Systems Thinking' (funded by Honorary Graduate, Dr Andrew Chen): e.g., Senge (MIT Sloan School of Management; founding chair, Society for Organizational Learning) will present 2021's Lecture.

A staff sabbatical leave programme is long-standing, competitive, and achievements are evaluated by FBLP's Leadership Team. During 2013/14-2020/21, 31 sabbatical leaves (normally one trimester) were awarded to UoA17 researchers, 45% to female researchers: e.g., **Whitehouse** used the opportunity to explore 'debt and home loss', conducting ground-breaking empirical research on occupiers in Hull and East Yorkshire; following-on, a funded online survey will be distributed nationally (QR-SPF; £10,000; 2020-21).

ECRs receive 40% research workload allowances, prioritised access to research support, and opportunities for exemption from teaching leadership roles. As a vital means of support, and to integrate them into the research culture, they are assigned a senior mentor from their research group. New teaching receives extra workload allowances, positively impacting the initial year(s) in-post.

Post-Doctoral Research Assistants (PDRAs), typically project-funded, receive University employment contracts, and their supervisors integrate them into their research group. As signatories to the *Concordat to Support Research Integrity*, we support staff on temporary contracts equally with other academics, and offer routes into longer-term appointments when feasible (e.g. **Getor**, recruited to a Greenport Hull project PDRA, progressed to a permanent Logistics Institute PDRA role).

Staff rewards for research

While research performance has greatly influenced promotion decisions, we recognise and reward staff for carrying out research and for achieving impact in other ways too. Alongside automatic research-related workload allowances, a workload buyout policy applies for staff securing external project funding and fellowships. FBLP funding supports research and impact development, and conference attendance (e.g., 112 research conference attendees fully-funded for 2016/17-2019/20, including 70 international). Research achievements are celebrated through UoH/FBLP newsletters/bulletins/emails, and FBLP has introduced a '*Research Achievement Seminar Series*' to highlight successes. UoH has annual celebratory prize-givings, with awards for research-based achievements: e.g., in 2019, **Cook** was 'Excellence in Research' **prize finalist** in recognition of her impact successes, and **Andrews** was 'Excellence in Scholarship' **prize winner** for use in teaching of real-world marketing projects involving commercial partners.

Stimulating and facilitating exchanges with business, public and third-sector bodies

The FBLP Director of Business Engagement and Enterprise has established an infrastructure to support external stakeholder engagement with knowledge exchange activities. Support since REF2014 has been refocussed to strengthen service. FBLP's Enterprise and Knowledge

Exchange Committee has representation from across FBLP to facilitate implementation of its strategies and foster, e.g., peer-to-peer mentoring and staff development. FBLP's BAG provides insight into direct engagement activities and service development, and a Corporate Partner Scheme enables academics to build relationships with 40+ organisations. Programmes of events and workshops bring the business community to FBLP for knowledge exchange and networking (e.g., bi-monthly Business Breakfast Briefings) and continuing professional development.

Such activity maintains our profile and establishes networks, which facilitates consultancy and contract research, e.g.:

- **Midgley**, presented his systemic intervention methodology to Shell's Board members and Scenarios Group.
- Pocklington School Foundation approached **Gregory** to support their 'vision, mission and values' review through facilitated stakeholder workshops; a *Journal of the Operational Research Society* article was co-authored with the Headmaster (2015). Following a request to HUBS, **Gregory** worked with Piper Crisps using *balanced scorecard*.
- Birdseye approached **Shaw** (with **Ramudhin/Whicker**) to undertake mixed-method research to improve the efficiency of its 'field-to-fork' transport operations (£17,500; 2020).

As an anchor-institution, HUBS plays an active role in the region, working with key institutions such as local authorities, healthcare providers, Humber LEP, Chamber of Commerce, Marketing Humber, and the Institute of Directors. We offer advice, contribute to events and provide training. Such active roles create new opportunities, e.g.:

- **Scullion** founded/chairs the UoH HR Directors Group, a senior stakeholders body contributing to high-level networking and knowledge exchange, with HR directors from 23 leading regional organizations.
- HUBS representation on the 'Holderness Coast Fisheries Local Action Group Committee' led to **Harness** (PI), **Andrews** and **Malfense-Fierro** working on its 'Strategies for lobster fishery development and diversifying marketing opportunities' (European Maritime and Fisheries Fund; £91,000; 2017-20) and follow-on project 'Food tourism, lobster storage and SMART science' (£52,000; 2019-21). Through its 5-year regional strategy, East Riding of Yorkshire Council (ERYC) adopted the recommendations making Bridlington '*Lobster Capital of Europe*', with approximately £100,000 private-sector storage investments following to facilitate market diversification.
- Close relationships were instrumental in **Ramudhin** (£450,000; 2016-2020) leading an ERYC/Hull City Council (HullCC)-funded (RGF) 'Greenport Hull Impact Assessment' working with the local authorities, Siemens-Gamesa and ABP. PDRAs and a PhD-Economics scholarship supported the project.

Seed-corn financial support has leveraged engagement, e.g.:

- Pump-priming and HEIF funds supported **Cook's** work with the Office for Civil Society (DCMS) on employee volunteering, leading to engagement with and impacts on 600+ businesses and third-sector organisations (see Impact Case) and a funding award to **Cook/Walkley** (Office for Civil Society; £250,000; 2018-20; Sheffield-PI) to run their *Enabling Social Action Programme*, working with 100+ local authorities and 700 third-sector organisations.

Our workload buy-out policy is also instrumental, e.g.:

- **Midgley** used Swedish Knowledge Foundation funds (£87,350; 2015-16) to buy-out time to participate in 'systemic innovation' research with Ericsson, ABB and Mälardalen University. Members of Ericsson's Innovation Department engaged in a HUBS-based participative workshop. The Foundation currently supports **Midgley** (£60,000: 2020-22) working with Linnaeus University and Electrolux on 'systems thinking for sustainability'.

Our taught Masters' and AMBA/AACSB-accredited MBA programmes, on which researchers deliver specialist modules, provide access to business and other organisations. For example, **Gregory/Atkins/Bovis's** project (QR-SPF; £10,000, 2020) on 'Understanding social value' benefited from a case study of 'Enviromail', a social enterprise whose creator/owner/CEO is pursuing the MBA. Researchers who teach on the MBA commonly enliven teaching with research-based case studies, which can create new links or opportunities with students and their employers (e.g., **Espinosa** worked with a Romanian school on organisational design). Also, taught programmes introduce students to opportunities for pursuing PhD studies (e.g., Joshi with **Gregory**; MacNamara and Ufua with **Midgley**).

Research student strategy and support

Training and supervision

In partnership with UoH's Doctoral College, and with a view to securing future researchers within HUBS and more widely, we have enhanced PGR provision within FBLP/HUBS; for example, by reviewing the approaches to, and quality of, student research support.

HUBS's Graduate Research Director, an active member of UoH's Doctoral College Committee, has responsibility for implementing University policy within HUBS and oversees our doctoral programmes. A dedicated Faculty office provides support.

Academic supervision comprises, at minimum, a lead and second supervisor or joint supervisors, with annual workload allowances of 60/10 or 35/35 hours per full-time student (reduced for part-time students). The lead supervisor must be in the Research Domain. Each year, students receive a minimum of 12 documented supervisory meetings, a 6-monthly review meeting, and an annual progress meeting.

The mandatory 60-credit Postgraduate Training Scheme (PGTS) provides over-arching and specialist training modules. The Doctoral College delivers over-arching modules, with HUBS

support, and HUBS researchers deliver specialist modules (e.g., **Bhattarai**, Advanced Econometrics). HUBS influences content, e.g.: **Dwivedi** was PGTS's 2014 Periodic Review academic lead, and specialist offerings are managed to meet changing needs. Easter and Summer Schools facilitate part-time student participation, and Postgraduate Certificates and Diplomas in research training are awarded. We facilitate students' participation in the Northern Universities Doctoral Training Programme for specific needs.

HUBS doctoral students attend specialist and over-arching seminar programmes, delivered by experts in their field. Examples of over-arching seminars include 'Writing your PhD thesis and preparation for the viva' (Cuncliffe, Bradford); 'Publishing with your supervisor' (Arroyo-Gomez, Mexico); and 'Research and publication processes in academic journals' (Stark, Manchester).

To promote a sense of community, FBLP hosts monthly social gatherings, attended by students and supervisors. Student-staff Forums are conducted regularly. We hold annual PGR conferences with guest speakers and opportunities for student presentations. A dedicated seminar series allows students to present to the research community.

Our PhD students can apply for HUBS funding for conference attendance: e.g., in 2018/19, 14 students received conference funding, including five for international conference attendance, up to a maximum of £1,500 each, with others receiving funding for data collection software (£1,284) and specialist training (£1,415).

Evidence of research skill attainment by PGR students and/or commitment to further skill attainment is evidenced by publications and awards (see p.5) and employment as funded-project PDRA's: e.g., Bloomfield on **Williams's** ESRC-funded 'Project X'; Joshi on **Merali/Johnson's** Health Foundation-funded project for NHS Wales; Hobbs on **Midgley's** QR-SPF-funded project with the Cabinet Office; Stead (PhD-Economics) appointed to an Institute for Transport Studies, Leeds, PDRA.

Recruitment and community

Alongside nurturing potential within the PGR community, to raise achievements our recruitment strategy focuses on improving student entry quality. Along with adherence to our stipulated minimum entry qualifications (ADR reviews marginal cases), we require prospective supervisors to undertake rigorous online/in-person interviews to evaluate proposals and candidate's preparedness. Completion of a semi-structured questionnaire ensures a robust process. Research groups have an academic leading the process locally.

Our PGR community is large and vibrant, with 225.4 FTE PhD completions over the period 2013/14-2019/20. This corresponds to an average 32.2/year for REF2021, signalling a step-change from 17/year for REF2014. This has been achieved with full-time submissions within 4 years at 58% (14/24) in 2019/20 (a Covid-19-impacted year) compared to 70% in 2012 and 38% in 2008. A PGR population of 115 (49% female) was recorded on 1/12/19, including 28 part-time (54% female).

A 2020 survey of 208 HUBS PGR students awarded their thesis during the REF2021 period found the sample ethnically diverse, including 40 Arab students, 66 Asian/other-Asian, 24 black, 16 Chinese and 24 white.

While strategic reliance on UoH/FBLP/HUBS PhD scholarships for general recruitment purposes has reduced since REF2014 (when 56 awarded), at least two full scholarships have been competitively awarded annually to support HUBS doctoral students over 2013/14-2019/20, including as part of University clusters, e.g.: funding for a PhD transdisciplinary cluster (four PhD scholarships and one PDRA) was awarded to **CSS (Merali)** on 'Resilience of socio-economic systems' with Law, Politics, Ethics and Health; Criminology-led cluster on 'Public safety' includes **CSS** PhD scholarship (**Demetis/Merali**); single scholarships on 'Complex systems and information sharing in innovation' and 'Sustainable supply chains in developing countries: Is it possible? A case study of India' (**Dwivedi/Merali**).

Other PhD scholarships have been secured, e.g.: Defence Science and Technology Laboratory (Dstl) on 'Risk and complex project management' (**Williams/Merali/Bovis**); International Futures Forum on 'Systems and futures thinking' (**Midgley**); and HullCC (RGF) on 'Economic impact assessment' (**Atkins/Nolan**).

3. Income, infrastructure and facilities

Research income

Research income generation is a key element of our research strategy. It aligns our research to the priorities of key stakeholders (e.g. UKRI), provides vital resource to nurture and grow our research community, and enables the UoA to contribute significantly to UoH's income targets. UoH's strategic-steer cascades into FBLP policy and informs the design of our organisational and incentive structures (e.g., workload buyout).

Research income has been sustained at a high level over the REF2021 period relative to REF2014, reflecting a step-change in performance (see p.8). During 2013/14-2019/20, 21 current researchers and 15 recently-exited researchers have been PIs on externally-funded projects, with others being CIs, researching independently or collaboratively across UoH and/or with national/international partners. There is strength across the UoA, with all groups/centres reporting multiple awards. Funding has been received from more than 50 different sponsors, including:

- **EU/International:** e.g., Framework 7 (**Li**); Horizon 2020 (**Bovis**); Erasmus+ (**Correia**); European Social Fund (**Flynn**); Daiwa Anglo Japanese Foundation (**Abbott**); Institute of Environmental Science and Research, NZ (**Midgley**); Swedish Knowledge Foundation (**Rodgers**); Swiss National Science Foundation (**Pearson**).
- **UK Research Councils:** e.g., BBSRC (**Mishra**); EPSRC (**Ramudhin**); ESRC (**Cook/Walkley**); NERC (**Atkins**).
- **National:** e.g., British Academy (**Reedy**); British Council (**Dwivedi**).

- **Government:** e.g., Department for Business, Innovation and Skills (**Johnson**); Department of Digital, Cultural, Media and Sport (**Cook**); Dstl (**Williams/Merali/Bovis**); Ministry of Defence (**Ramudhin**); Welsh Audit Office (**Merali**); HullCC (**Atkins**); ERYC (**Midgley**).
- **Public/third-sector:** e.g., National Consumer Council (**Bovis**); Yorkshire Wildlife Trust (**Atkins**).
- **private sector:** e.g., British Telecom (**Merali**); Siemens-Gamesa (**Ramudhin**).

Particular areas of achievement have involved research allied to Institutes, especially Logistics and Risk, and research centres. **Logistics Institute** examples include:

- Innovate UK (£419,717; 2016-2018), Collaborative and Adaptive Integrated Transport Across Land and Sea (CAPITAL).
- Innovate UK (£646,515; 2017-2020), Liverpool-Humber Optimisation of Freight Transport (LHOFT).

A feature of Logistics projects is close business collaboration, promoting impact, e.g.:

- Emanating from a transdisciplinary chemistry-led project, 'Evolving a Circular Plastics Economy' (EPSRC-PRIF; £939,631; 2019-20), **Ramudhin, Mishra, Kumari** and **Saxena** collaborate with Morrisons PLC on 'A decision support system (DSS) for tracking, reporting and visualising plastic waste'; Morrisons co-designed the project to ensure their priorities steered research. Morrisons intends adopting the DSS.
- **Ramudhin's** Innovate UK SBRI FOAK-funded (£347,000; 2019-20) development of the NR+ platform, the first digital platform for rail freight planning, received the Rail Industry Association 2020 Innovation award with the RSSB-funded (£172,326 with Frazer-Nash consultants; 2020-21) REPAIR module for predicting rail delays using machine learning.

Such successes enabled **Ramudhin** to build research capacity and develop collaborations with Logistics and other research groups. **Risk Institute** examples include:

- ESRC (£1,001,783; 2019-2021), 'Improving project delivery (Project X)'.
- Project Management Institute (£38,609; 2017-2019), 'Project governance: From data to recommendations'.

Williams's involvement with UK government officials, the joint UK Treasury/Cabinet Office (IPA) and an ESRC grant (with other universities) built research capacity, particularly with new researchers with improved diversity, including PDRAs and a Hull PhD opportunity, and generated **Williams's** impact case study.

Turning to research centres, **CSPC's** successes include:

- BBSRC (£7,035,021; 2017-2021; Cambridge-PI), Transforming India's Green Revolution by Research and Empowerment for Sustainable food Supplies.

- Science and Technology Facilities Council (£978,015; 2020-2024; Sheffield-PI), STFC Food Network+ Extension.

The first is a Global Challenges Research Fund project.

CSS researchers have secured funding for systems research applied to a range of areas reflecting external stakeholder priorities (e.g.: health; agriculture; environment: community operational research). Examples include:

- **Merali** and **Johnson** (now Sheffield Hallam) received Health Foundation funding (£575,459; 2014-2022) for an 'Evaluation of the 1000 Lives Patient Flow Programme'; employing a PDRA and working with external consultants. **Merali** will disseminate findings in the context of the Welsh Government's Future Generations Act.
- **Merali** is CI on a cross-faculty programme "Reducing Inequalities in Cancer Outcomes in Yorkshire: Realising our potential for innovation in Diagnosis, Patient Management, Survivorship and Palliative Care Research" (Yorkshire Cancer Research Fund; £2,579,088; 2017-2022); a critical research area of local and global import.
- **Midgley** worked with Texas A&M on voluntary stewardship of antimicrobials used in agriculture in a USDA-funded project (£67,140; 2017-2021); antimicrobial resistance is a global research priority.

Individual researchers also leverage external income to promote their research:

- **Bhattarai** collaborated with Beacon Hill Institute, Suffolk University researchers on a National Center for Policy Analysis-funded project (£75,000 sub-contract; 2014-17). Having an international reputation in the methodology, **Bhattarai** led modelling/analysis of tax plan debates in the US presidential election; policy-oriented outputs followed (e.g., *Economic Modelling*, 2018).
- **Correia** holds an Erasmus+ Key Action 2 grant (€43,107; 2018-2021) on 'Sustainable tourism: Training for tomorrow', aiming to build Protected Area stakeholders' capacity and develop European standards for sustainable tourism training. **Correia** collaborates with Hasselt University and agencies representing European Protected Areas, and to-date has published a training needs report and open access learning platform, and launches a 'Recommendations report' for policy-makers in 2021.

Reflecting responsiveness to urgent calls, our researchers secured Covid-19-related ESRC awards:

- **Cook/Walkley** (£382,000; May-2020-21; Sheffield-PI) 'Mobilising volunteers during Covid-19', building on collaborative research (see Impact case study).

- **Perez-Sebastian** (£39,461; November-2020-21) 'Economic linkages of Covid-19 across UK regions and sectors'.

Research infrastructure and facilities

The development of research infrastructure, working spaces and research resources is designed with a researcher-centric perspective.

HUBS, along with the Logistics and Risk Institutes, is located in three linked buildings. The buildings offer individual academic staff offices, meeting, seminar and teaching rooms, and Faculty-level offices. HUBS houses the **Management Learning Laboratory**, with advanced ICT and breakout rooms, used for technical meetings/workshops (e.g., stakeholder workshop involving breakout-group modelling exercises for **Atkins/Gregory's** EU-FP7 'Devotes' project). HUBS houses a **Bloomberg suite** (12 terminals) offering business/finance data to support our research communities: e.g., **Andrikopoulos**, 2019, *Finance Research Letters* article used Bloomberg data. **Logistics Institute** has state-of-the-art facilities, including conference provision. Faculty offices are dedicated to research and PGR student support; experienced professional services teams address enquiries and provide support for research degrees, events, grant applications and ethics approvals, and generate performance data. These services complement University services in Research and Innovation (named individuals support HUBS), Finance (e.g., pre/post-award), HR (e.g., PDRA recruitment) and Marketing and Communications (e.g., website development) and the Doctoral College.

University investments have targeted research infrastructure and core support staff. Investment in Institutes has significantly enhanced activity (Logistics, established 2008, and Risk, established 2016, are directly cognate with HUBS). Investment e.g., in expanding specialist teams in the University's Research and Innovation Office and in the 'GRANTfinder' (online information) subscription, facilitates sustained growth in research income.

The University Library offers state-of-the-art provision, on-campus and remotely. Specific research support includes print/digital library and archival collections, access to secondary data and interlibrary loans; search tools; PGR study spaces; management of the 'Worktribe' digital repository and research information system; and advice/training for our research communities on literature search and information management.

UoH's IT provision has been enhanced by the 'Digital Campus' programme and investment in high performance computing ('Viper'). HUBS's representation on the working party established to agree Viper's specification ensured that it met UoA17's requirements. Viper is available to our research communities: e.g., **Ramudhin's** CAPITAL and LHOFT projects' big data modelling/analytics undertaken by PDRAs; and Bagazi's (PhD-Economics) Saudi labour market research (with **Nolan**).

Researchers' IT equipment is replaced every 5 years, while our PGR students are loaned laptops and have access to dedicated desktop computer suites, normally open 24/7. Software

products required by researchers are available to our research communities (e.g., NVivo, SPSS, Stata, Eviews, Endnote, RefWorks, Compustat, DataStream-Advanced), with other specialist software purchases subject to approval. Photocopying, telephone and recording/transcription facilities are available to staff and PGR students; the latter subject to reasonable use restrictions.

Given specific needs of some researchers and our commitment to responsible resource use, where possible we look to collaborate with partners to maximise use of facilities and expertise: e.g., engagement with the Northern Advanced Research Training Initiative advances research capacity and impact among PGR students and ECRs.

4. Collaboration and contribution to the research base, economy and society

Our published output profile may be taken as a simple indicator of collaborative relationships: 50% of outputs submitted to REF2021 are co-authored with UK researchers outside UoH, and 47% with international collaborators (43% and 46%, REF2014). Collaborative activity goes beyond publishing, as evidenced below.

Research collaborations, networks and partnerships

Key mechanisms have been established through which collaborations, networks and partnerships are organised. University Institutes are instrumental, and FBLP/HUBS's centres, which exist to advance inter/transdisciplinary research, play a distinctive role. Individual researchers also engage in their own project-oriented collaborations.

Research collaborations through University Institutes

There are strong collaborative links between the University's research institutes and UoA17 researchers. A prime example of this is the Logistics Institute and, mainly though not exclusively, HUBS logistics/supply chain researchers. For example:

- **Mishra** collaborates with **Ramudhin** on LHOFT and CAPITAL projects with Nestle, Zipabout, Unipart Logistics, Unilever, Oxford Rail Strategies, ABP, DB Cargo, and Heinz to develop sustainable transport systems.
- The multidisciplinary EU MCSA-RISE project (€1,100,000; 2018-2022), 'Integration of global and local agri-food supply chains towards sustainable food security' involves **Ramudhin**, **Atkins**, **Gregory**, **Mishra** and **Saxena** with national and international partners.

Atkins collaborates with the Energy and Environment Institute on an interdisciplinary strategic THYME-funded project on climate change flood mitigation measures in UK agriculture. **Allen** and **Reedy** worked with the Institute of Applied Ethics (e.g., **Reedy** on the future of work). **Pearson** works with Richardson ('**Slavery and Emancipation**') on slavery. **Bovis** and **Merali** collaborated with **Williams** and Bloomfield (Risk Institute) on a Dstl-funded project (£98,000) on 'Risk and complex project management'. Aura, in which **Williams** had a risk leadership role, facilitates collaborations with academics and industry in offshore renewables research; e.g., **Shaw** is

working on 'Black Grass' and 'Geothermal' projects, each £50,000, targeting Humber-based SMEs seeking to enhance productivity and competitiveness through low carbon research and innovation.

Research collaborations through Centres

CSS and **CSPC** are forums for collaboration between disciplines and between academics and practitioners. This is achieved through seminars/workshops, access to research and practitioner networks, establishing PGR communities, and promoting externally-funded project activity, which typically require inter/transdisciplinary approaches (see Section 3).

Mishra's research for **CSPC** on sustainable supply chains underpins his collaborations with IfM's Centre for International Manufacturing and Cambridge Global Food Security, both Cambridge University; Circular Food Forum, Brunel University; Bogor Agricultural University, Indonesia; Indian Institute of Technology, Delhi; Chulalongkorn University, Thailand; and Punjab Agricultural University, India.

CSS has a critical mass of specialists in systems thinking. Its diverse expertise in this inter/transdisciplinary field underpins its variety of work with local and central government, business and third-sector. CSS was chosen for the Chartered Association of Business Schools' 2018 video on business schools' contributions to society. It has high visibility in international systems thinking, and UK and international community operational research communities e.g., CSS member Emeritus Professor Mike Jackson OBE was awarded the Operational Research Society's Beale Medal in 2017. Since 2014, three CSS members have been Presidents of the International Society for the Systems Sciences (ISSS). Giving one research example: **Midgley** with a PDRA (QR-SPF; £20,000) engaged in knowledge exchange with the Cabinet Office on the use of systems thinking to tackle cross-cutting policy issues. This, now, informs a large reform initiative across Government, raising CSS's profile and creating further opportunities; e.g., a NERC CASE PhD studentship has been advertised, with the potential PGR researcher to be placed in Defra, helping to develop a new systems methodology for land-use policy-making; and discussions with the Home Office have begun on potential collaboration on cybersecurity. Since 2014, CSS's 12 Visiting Professors and Fellows (e.g., Lowe, Dstl) have partnered staff in funding bids (e.g. Lewis), co-authored papers (e.g., Rajagopalan), given seminars and enriched the research environment through engagements in research discussions.

National and international research networks and collaborations of individual researchers

The many examples throughout this submission evidence HUBS's collaboration at national and international levels. To give one additional example:

- **Andrikopoulos**, a mid-career researcher in Finance, collaborates with researchers at seven UK universities, Massachusetts-Amherst (US), Vaasa (Finland), Central University of Finance and Economics (China), Athens' University of Economics and Business and University of

Athens. These collaborations have generated jointly-authored papers, including seven articles in internationally-rated journals during REF2021.

Engagement with key research users, beneficiaries and audiences

Engagement with key users, beneficiaries and audiences enriches our research environment and ensures our research is relevant and responsive to external priorities and initiatives. This is demonstrated in the Impact Case Studies, so here we highlight additional examples of work that reflect our status as an anchor-institution and significant contributor in forums, involving governmental and other bodies, that shape responses, policies and regulations on emerging issues.

Regional level

- **Bovis's** research on EU regional development funds has been instrumental to Softmat Ltd, a start-up company to which he has been appointed Chairman, in securing Innovate UK SMART 'Proof of Concept' and 'Development of Prototype' funding.
- **Demetis**, an information management security specialist, informs his research and impact by engaging with: Humberside Police's Cybercrime Team, e.g., gaining empirical data on online child exploitation to support PhD research and providing wider advice; and Humber Business Resilience Forum, as Vice-Chair, through the latter's Board and public events reaching local businesses (e.g., Agenda Screening Services, Barclays Bank, C4DI, Clugston, PWC, Rollits, Rix).
- **Midgley** provided systems thinking support for 'Active Withernsea' (ERYC; £65,000), a project seeking to improve levels of physical activity through volunteer-facilitated community development; contributing to the evidence base for an innovative approach to UK public health facilitated by Sport England.
- **Williams** was involved in human factors applications (contributing to Psychology impact case) including Organisational Stress Risk Analyses for companies such as Centrica and the SPOWTT project, investigating human factors effects on offshore wind technician work with Siemens-Gamesa and service ship co-ordinators.

National level

- **Bovis** has been Advisor to the House of Lords Committee on International Trade.
- **Hudson** is a member of the Executive Board, British Accounting and Finance Association Financial Markets and Institutions Special Interest Group, supported by Chartered Banker Institute and Chartered Institute of Securities and Investment, with connections to the Bank of England and other key research users.
- **Swaray** is an Expert Reviewer for UK Research and Innovation Future Leaders Fellowships Peer Review College.

International level

- **Bovis**, based on knowledge transfer and industry engagement, has been Lead Advisor to: Republic of Cyprus on oil and hydrocarbons sector regulation; EU DG Growth on the regulation and structure of waste sector utilities in EU Members; EU DG Market on the regulation and structure of water utilities in EU Members States; Lithuanian Government on structuring and financing public-private partnerships; Chinese Government and EU Commission on public sector and utilities procurement reforms in China. He was OECD's Lead Assessor for its assurance and risk audit function of economic activities.
- **Hudson** was the UK Actuarial Professions' representative overseeing a major project on aging population effects on asset values, based at the University of Waterloo, Canada (2017/18).
- **Merali** is an Expert on Complex Systems for the EU; and Board Member, UNESCO's 'UniTwin on Complex Systems' and 'Complex Systems Digital Campus'.
- **Perez-Sebastian** addressed: IMF's Institute of Capacity Development in 2018, involving staff who deliver courses to government officials worldwide on growth/development promotion mechanisms; and a 2019 policy meeting organised by his World Bank-based co-author informing Brazil's Ministry of Economy, Energy Planning Agency, and National Regulator about their research.
- **Swaray** is an international external examiner for the African Economic Research Consortium's Collaborative PhD in Economics for Sub-Saharan Africa.

Our researchers make significant contributions to associations, bodies and societies that represent and promote professional disciplines, e.g.: **Scullion** has contributed to the sustainability of HRM by developing the Global Talent Management research network e.g., through founding and chairing the European Institute for the Advanced Study of Management Talent Management workshop. He has established a formal research collaboration agreement between UoH and the Indian Institute of Management Kozidhode (5th ranked in India), developing inter-institutional staff mobility, jointly-publishing (on SMEs, and female careers in India) and instigating research on 'Talent in grass-roots and voluntary organisations'.

As indicators of wider influence, contributions to and recognition by the research community, our current researchers have been highly successful:

- **Journal Editorships, Editorial Board membership and special issues:** Editor-in-Chief roles: *European Procurement and Public-Private Partnerships Law Review* (**Bovis**); *Systems Research and Behavioral Science* (**Gregory**).

Other substantial journal editorial roles: *Systemic Practice and Action Research*, and *International Journal of Applied Systemic Studies* (**Midgley**); *Journal of Economic Assymetries* (**Bhattarai**); *International Review of Financial Analysis*, and *Finance Research Letters* (**Li**); *Review of Behavioral Finance*, and *British Actuarial Journal* (**Hudson**); *Journal of Information Systems Security* (**Demetis**); *International Journal of Social Economics* (**Swaray**).

Holding 35+ memberships of journal editorial boards including: *Human Resource Management Review* (**Scullion**); *Organization Studies* (**Reedy**); *Psychology and Marketing* (**Shabbir**).

Guest (co-)editors of special issues, e.g.: *Journal of Database Management* on 'Managing Information Security Risks in Digital Business' (**Demetis**); *European Journal of Operational Research* on 'Community Operational Research' (**Midgley**); *Production Planning and Control* on 'Knowledge management practice for effective operations in SMEs' (**Mishra**).

- **Hosting international conferences:** Academy of Marketing 2017 (Theme - '*Freedom through Marketing, or how Marketing can be used to counter oppression, injustice and inequalities*' reflecting our distinctiveness; 450 delegates) co-chaired by **Shabbir**; World Marketing Summit 2019 chaired by **Shabbir** (Kotler's keynote was his first in the UK in over a decade); PROLOG 2018 (**Ramudhin**).

Organising/(co-)chairing conference streams: **Gregory** co-chaired WOSC 2017 'Democracy, Transparency and Social Dynamics' stream, and 'Problem Structuring' streams at OR56(2014) and OR58(2016); and **Midgley/Hindle** organised 'Systems Thinking' streams at OR60(2018) and OR61(2019) (both with **Espinosa**) and OR62(2020) (with Dstl researchers). The OR60 stream was the largest in the Operational Research Society's history.

Participation in numerous international conference organising committees, e.g., **Midgley** - on 18 international systems science conference organising committees since 2014.

- **Selected major contributions to learned societies and organisations, and awards include:** **Andrikopoulos** – Associate Fellow, CRETA, Warwick University; **Bovis** – Royal Society Life Fellow; **Higgs** – Founding Fellow, Leadership Trust; and Honorary Fellow, Institute of Employment Studies; **Midgley** – Academician, International Academy for Systems and Cybernetic Sciences, and ISSS President (2014); **Whitehouse** – Fellow, Cambridge Centre for Property Law; **Williams** – REF2014 and REF2021 Business and Management Studies Panellist.
- **Visiting/Adjunct professorships:** **Higgs** – Erasmus, Henley; **Midgley** – Linnaeus, Mälardalen, Queensland, Wellington, Canterbury; **Scullion** – Indian Institute of Management, ESCP Berlin, Kent.
- **Grant committees:** e.g.: **Atkins** - UKRI 'Sustainable Management of UK Marine Resources' programme 'Strategic Advisory Group'; **Higgs** - Serra Hunter awards committee, University of Barcelona; **Midgley** - Review Board of the British Council Newton Fund and College of Assessors of the Ministry of Business, Innovation and Employment, NZ; **Williams** - Project Management Institute Academic Members' Advisory Group.

Reviewing applications for grant bodies, e.g.: ESRC; British Council; Newton Fund; British Academy; Leverhulme; Institute of Chartered Accountants of England and Wales; Medical Research Council; National Institute of Health Research; European Research Council; European Science Foundation; Spanish Agency of Evaluation; Canadian Social Sciences Research Council; Irish Research Council.

