

Institution: University of Aberdeen

Unit of Assessment: 17 (Business and Management Studies)

1. Unit context and structure, research and impact strategy

a. Context and structure

The Business School at the University of Aberdeen has been transformed since REF 2014. The quality, quantity and scope of research have all substantially increased, and the three distinct unit of assessment submissions of REF 2014 (UOA 16, Real Estate, submitted with the transport and environment group from the School of Geosciences; UOA 18, Economics; and UOA 19, Accounting, Finance and Business Management) are now combined into this single integrated submission.

The School's strategy is closely aligned with the University of Aberdeen's new strategic vision, *Aberdeen 2040*, and its 1495's historical and foundational purpose to remain "**open to all and dedicated to the pursuit of truth in the service of others**" (REF5a). A core element of our strategy has been accreditation, which we consider essential to the vitality and sustainability of the School and to the enhancement of its international profile. It is bringing research benefits by increasing our engagement with stakeholders and our impact. Initially, we targeted AACSB and EQUIS accreditations as a means of confirming our emphasis on high quality. The School is also targeting discipline-specific accreditations and, in recent years, has received reaccredited status and new accreditations (from the Energy Institute, Chartered Institute of Marketing and Chartered Management Institute). In 2020, the School became a signatory to the United Nations Principles for Responsible Management Education (PRME) to provide future leaders with the skills needed to balance economic and Sustainable Development Goals (SDGs).

In parallel with accreditation and PRME, our strategy has involved a substantial programme of organisational and cultural change to develop a more integrated and interdisciplinary approach to research, teaching and engagement. A key element has been focused staff recruitment to increase capacity and add depth to our research groups. As a result of its successful expansion of teaching and research activities, the School has grown significantly over the last six, and especially in the last four, years. The number of eligible full-time equivalents (FTEs) has increased from 55.8 (39.8 FTEs included in REF2014) in 2014 to 62.85. All are research active, but only 22.65 were in post at the last REF.

The School comprises five disciplinary subject groups: Accountancy (ACC), Business Management (BM), Economics (ECS), Finance (FIN) and Real Estate (RE). Boundaries between the groups are deliberately permeable in research and teaching and in staff recruitment.

The development and support of the vibrant and collegial research environment is a collective responsibility guided by the School's Executive, with primary input from the School's Director of Research (**Montagna**) who also sits on the University's Research Policy Committee (REF5a). She chairs the School Research Committee (**SRC**), which co-ordinates the disciplinary groups' strategic research plans and policies, administers the strategic and equitable use of research funds, arranges a single all-disciplines staff seminar series, oversees co-supervision of PhD students and contributes to the development of interdisciplinary degree programmes. Open Access is promoted by the Committee with the support of the Sir Duncan Rice Library's Scholarly Communications Service. The School's research culture is further enhanced by the work of the School Ethics Officer (SEO) (**Alawattage**, and since 2017 **Sales de Aguiar**), who reviews research projects and advises on issues of research integrity, in line with the University's Research Governance Framework. The SEO sits on the University Committee for Research Ethics and Governance in Arts, Social Science and Business (REF5a).

b. Research and impact strategy

The Business School has a strong research focus at the heart of its mission:

- *Powering change for better businesses and better lives through impactful research addressing global societal challenges.*

This articulates our commitment to research that addresses fundamental societal challenges. We draw these together under the concept of *sustainability*, which includes economic/financial, environmental, societal and institutional elements. The School's research mission and vision reflect three of the priorities in our University's *Aberdeen 2040 (REF5a)* vision:

- Sustainability and Global Challenges
- Interdisciplinary Research
- Partnerships

To implement our institutional strategy and our accreditation programme, we aim to:

- be internationally recognised for leadership in interdisciplinary research on sustainable and socially inclusive transitions;
- be known for capacity building through collaborative innovation with stakeholders in the private and public sector, nationally and internationally;
- become a catalyst for developing new solutions by connecting change-makers, entrepreneurs and strategic thinkers in the world's energy cities;
- provide an inclusive research environment that enables all researchers to achieve their potential;
- enable effective dissemination of and open access to research outcomes and data.

Our **approach** has been to build on traditional disciplinary foci while extending beyond disciplinary boundaries to address interdisciplinary challenges. Thus, we have built critical mass and expertise in high quality disciplinary and interdisciplinary research and knowledge exchange.

We are delivering this long-term and ambitious strategy through:

- attraction and retention of international scholars, who combine research excellence with an enthusiasm to support the School's research capacity-building and enhance its international reputation;
- expansion of an integrated and vibrant PhD programme;
- engagement with public and private stakeholders.

We have strengthened research in areas that address themes in energy, work, health and the global digital economy. These areas align with our institutional interdisciplinary priority themes and with several UN Sustainable Development Goals (SDGs). This has enabled us to engage successfully with the Global Challenges Research Fund (GCRF), the Arts and Humanities Research Council (AHRC), the Economic and Social Research Council (ESRC) and the Newton funding programmes.

By mentoring, brownbag seminars and research workshops, we support staff to publish in top disciplinary and interdisciplinary journals and, through collaborations across disciplines within the school and outside (such as the Hutton Institute), have embedded an interdisciplinary approach to doctoral training. We have facilitated engagement with stakeholders and civil society organisations and, with Aberdeen as the only UK city in the World Energy City Partnership (WECP), we work to connect policymakers and business practitioners in WECP.

The School has a strong track record of achieving impact (Section 4). Our Impact Strategy should be seen in the context of our External Engagement Strategy, which focuses on two main areas: (1) community and business engagement to enhance our local, regional and worldwide research-based connections (such as the Scottish Government, Chamber of Commerce, Institute of Directors, OECD and the Oil and Gas sector); (2) promotion of public understanding of our research ideas and findings through public lectures, Business School Bulletins, Newsletters, Blogs and student placement/employment. In 2018, the School and Business Advisory Board (**BAB**), chaired by an external member, was established to support collaboration with industry and assist with research and course offerings.

The expansion of the Business School has resulted in a more diverse researcher community, with many appointees taking up posts in the UK for the first time. This enhances the international nature of our research portfolio and increases opportunities for networking with colleagues and stakeholders internationally.

The School has been developing a research environment that embeds and supports equality and diversity. It achieved an Athena Swan Bronze Award in 2017 and is using the experience gained to ensure a welcoming and supportive environment for all researchers. This agenda is reflected in our research. For example, **Bender**, **Sales de Aguiar** and **Haque**, have carried out research on the impact of Covid-19 on gender and its implications for the implementation of Athena SWAN in UK Business Schools. **Islam** and **Haque** have obtained funding for a project on the development of post Covid-19 gender policies to end modern slavery and exploitation in the Bangladeshi garment sector and for an assessment of the impact of Covid-19 on corporate accountability for working conditions in global supply chains.

c. Research areas and research centres

Our research is consolidated in four main areas, which reflect our recent research achievements and our portfolio of intellectual contributions:

- Energy and the Environment
- Work, Society and Wellbeing
- Finance, Organisation and Governance
- Real Estate Market Analysis

These thematic areas run through and link the research undertaken by the disciplinary groups and are supported by **research centres**, which also aid our impact and engagement strategy. There are four well-established specialist research centres:

- Aberdeen Centre for Research in Energy Economics and Finance (**ACREEF**);
- Centre for European Labour Market Research (**CELMAR**);
- Centre for Real Estate Research (**CRER**);
- Scottish Experimental Economics Laboratory (**SEEL**).

As part of our **research strategy**, two new interdisciplinary centres will be launched in 2021:

- Centre for Innovation and Entrepreneurship (**CIE**);
- Africa-Asia Centre for Sustainability (**AACS**).

Energy and the Environment

This interdisciplinary area is supported by **ACREEF**, which was launched in 2009 under the directorship of **Kemp** and draws on accountancy, economics, finance, management, real estate and broader collaborative networks across the University (such as with engineering, geo-

sciences and law). **ACREEF** provides a focus for high-quality research and makes substantive contributions on energy and environmental issues to academic and policy debates in the UK and worldwide. It is a key contributor to the **National Decommissioning Centre (NDC)**, a GBP38,000,000 partnership between the Oil and Gas Technology Centre (OGTC) and the University of Aberdeen, as part of the Aberdeen City Region Deal (ACRD) (**Abdul-Salem, Kemp, Gronwald**), and to the institutional **Centre for Energy Transition (CET)** (**REF5a**), with collaborations on the decarbonisation of heating systems (**Kiso**) and, more broadly, in the development of its research agenda (**Montagna, Rouaix, Vlassis**).

A key focus of investigation continues to be oil and gas, including financial simulation and econometric modelling of activity levels, the effects of taxation changes and third-party access to infrastructure (**Kemp, Gronwald, Abdul-Sbalem, Jin**). Increasingly, research has expanded to contribute to policy debates on energy transition from oil and gas. Research on the economics of renewable energy addresses issues such as the adoption and design of financial support schemes for renewable energy, capacity market design, emissions trading schemes and markets for carbon offsets and the economics of CO₂ capture and storage (**Kiso, Gronwald, Jin, Rouaix, Swierzbinski**).

This area of research is a clear example of our **impactful achievements** in economic, environmental and institutional sustainability through long-term collaborations with government and industry. Work over an extensive period by **Kemp** and **Kasim** has been influential in the development of UK fiscal policy in the North Sea Continental Shelf. Recent research informed policy on field allowances in the West of Shetland region. **Kemp's** recommendations informed the revised Oil and Gas Authority's (OGA) strategy to include commitments by the UK and Scottish Governments to Net Zero emissions and encouragement of investment in projects that advance the Energy Transition. Their research underpins two of the Impact Case Studies (ICs) for this submission (**REF3**).

Other research has focussed on the incentives behind international environmental policy coordination (**Montagna, Vlassis**). With colleagues in the School of Biological Science, **Phimister** has developed interdisciplinary and transdisciplinary research (funded by GCRF, NERC, the Department for International Development (DfID) and the Newton Fund). Projects explore the interrelationships between access to energy, food production and the governance of common resources in Ethiopia, land and soil degradation, and access to credit, energy, food and water in Sub-Saharan Africa. The GBP1,400,000 interdisciplinary NERC-Newton Funded CONTAIN project, led by the School of Biological Sciences, on how to improve the management of invasive species in Argentina, Brazil and Chile (**Phimister, Abdul-Salam**) is making a direct and substantial contribution towards the UN Sustainable Development target 15.8 to "reduce the impact of invasive alien species" and to "control or eradicate the priority species".

Research in social and environmental accounting (**Islam, Sales de Aguiar, Haque, Whittington, Makerem, Osman**) investigates the importance of, and reasons behind, corporate, social and environmental sustainability accounting and reporting.

Work, Society and Wellbeing

The **Work, Society and Wellbeing** area examines important 21st century public policy challenges. Originating in a long history of labour economics and business management research, work has explored how health and labour markets operate, advancing policy recommendations towards more efficient and equitable outcomes. Research has broadened from its traditional focus on empirical studies to cover theoretical analyses and to address the challenges that global developments pose on the ability of countries to implement independent policies. Researchers in this area benefit from the **Centre for European Labour Market Research (CELMR)**, established in 2000 and directed by **Theodossiou**, which supports high quality and policy-relevant research and the development of national and international networks.

There are three overlapping sub-areas: *Labour Markets*, *Health* and *Industrial Organisation and Technology*.

Projects in the *Labour Markets* sub-area include: inequality and the labour market (**Battu, Bender, Skåtun, Theodossiou**); macroeconomic and labour market effects of globalisation, shocks and austerity policies (**Montagna, Theodossiou**); the incidence, causes and effects of educational mismatch in the labour market (**Battu, Bender, Montagna, Theodossiou**); the impact of firm-specific factors on mismatch and other labour market outcomes (**Bender, Montagna**); and the impact of labour market institutions on labour market outcomes and workers' wellbeing (**Bender, Montagna, Zangelidis**). Funding was received from the European Research Council (FP7) (**Montagna**), NORFACE (**Montagna**) and the ESRC (**Bender, Theodossiou**). Research on corporate accountability and modern slavery within the global supply chain (**Islam, Haque**) received funding from the AHRC and the CPA Australia.

Projects in *Health* include education policies and migrants' wellbeing (**Aoki**); the impact of labour and management practices on workers' health and well-being (**Bender, Montagna, Skåtun, Theodossiou, Zangelidis**), with projects funded by the ESRC (**Bender** and **Theodossiou**) and the ESRC Productivity Research Network (**Montagna**); and biomedical practices in cancer care and the development of a performative understanding of clinical work (**Kazimierczak**). Research at the interface between economics and psychology at both theoretical (**Papi**) and experimental levels (**Bender, Papi, Theodossiou**) contributes to and benefits from the activity of **SEEL**, under the interim co-direction of **Papi** and **Watson** (from the Health Economics Research Unit (HERU)).

Research in this area is impactful. **Zangelidis'** work, with colleagues from HERU, on the uptake of free eye examinations in Scotland, has led to policy change, as reflected in an impact case study (ICS) (**REF3**). Research led by HERU on point-of-care coagulometers has resulted in the National Institute for Health and Care Excellence recommending the technology (**Scotland, Brazelli**) (**REF3**). **Skåtun** co-authored a report for the Scottish Government Health Directorates on the effects of pay restraint on NHS Scotland staff groups. **Montagna's** work on the labour market impact of welfare state policies resulted in her being a member of the *Expert Network on Social Security*, Scottish Parliament Information Centre (SPICe). Her work on the effects of globalisation on labour markets and productivity has resulted in a long-lasting engagement with the Government Economic Service. Testimonies were given to the Economy, Jobs and Fair Work Committee of the Scottish Parliament in an inquiry on the Scottish economic statistics to determine effective delivery and scrutiny of policy (**Montagna**) and on the inclusive growth performance of the Scottish Economy (**Montagna, Zangelidis**).

In a development context, an interdisciplinary team led by **Phimister**, funded as part of the GCRF Equitable Resilience programme, is having direct livelihood benefits in Ethiopia by training and resourcing groups of landless people to undertake new productive activities in beekeeping and livestock management.

The sub-theme of *Industrial Organisation and Technology* has been substantially expanded and strengthened by recent recruitment. Research addresses: the organisation and management of professionals (**Allan**); organisational control, autonomy in retail work and employee participation (**Bilsland**); negotiations and conflict between teams and individuals (**Dowie**); industry decision-making in health and the environment (**Phimister**); workers' use of new technologies (**Hislop**); and the use of technology in risk and security (**Tennakoon**).

Finance, Organisation, and Governance

The sub-area of *Finance* focuses on theoretical and empirical research in *Corporate Finance*, *Asset Pricing* and *Banking*. It has attracted significant external research funding (**Kling**) from the European Research Council (FP7), ESRC, Newton Fund and Maava Foundation.

In *Corporate Finance* (**Gymiah, Da Silva Fernandes, Jiang, Kling, Lee, McCann, Vu**), research focuses on financial constraints from capital market imperfections (**Da Silva Fernandes, Gymiah, McCann**). Research on financial inclusion addresses financial constraints affecting individuals and smaller and medium-sized enterprises (**Kling**). Supported by an ESRC-NSFC project (**Kling**), several research papers have contributed to the literature on improving access to formal financial services. Other streams explore sovereign risks, credit ratings and the role of financial services (**Vu, Jiang**) and behavioural finance (**Hvide**).

In *Asset Pricing*, researchers (**Black, Papadimitriou, Zhao**) explore links between financial markets and the real economy focusing on risk aversion, excess volatility, stock return predictability, asset allocation and insider trading. Recently published work considers the performance of US sector-specific and international mutual funds (**Zhao** with **MacGregor** and **Schulz** from the Real Estate Group). Research is being carried out on the impact of Covid-19 on US stock returns through its impact on supply chains (**Jiang**).

In *Banking*, work is mainly on financial stability (**Da Silva Fernandes, Jiang, Liu**). Current research focuses on green finance, shadow banking in China and financing issues in China's Belt and Road initiative (**Jiang**). Linked to this is work on the collapse of Scottish banks (**Canales**).

Under the sub-area of *Organisation*, research advances social and relational understanding of change at home and at work, including behavioural adaptation and the assimilation of new technologies into working practices. Areas include the management of change on managers' perceptions of job, career and organisation (**Allan**), the utilisation of contingent labour (**Zhang** and **Hislop**), performance management and resourcing strategies (**Boyne**) and how the boundaries of the firm are affected by changes in competitive forces resulting from technological complexity and globalisation (**Montagna**).

One line of research takes an external, "looking in", perspective on the strategic management of organisations, including: the strategy process, innovation, new product performance, spin-offs and new technology (**Canales, Cai, Hu, Meyer, Shi, Zhang**); and technology adoption and diffusion (**Akhtar, Cai, Meyer**). Another takes an internal, "looking out", perspective, including employee engagement and participation (**Bilsland**); technology and work, mobile working, teleworking, knowledge management, artificial intelligence (**Hislop**); and analysis of science and technology and their interrelationship (**Meyer**).

The sub-theme of *Governance* contributes to agency theory, managerial power theory, elites, social networks and disclosure. It covers both private and public sectors. Research examines factors influencing the quality of financial reporting and earnings management (**Whittington, Makerem**). The importance of financial regulations and the interplay between regulation and financial stability are studied in various country settings (**Kling, Jiang**). Other strands study firm policy and corporate governance (**Bayat**), corporate governance and diversification in emerging economies (**Hu**) and the management of university-industry technology transfer (**Meyer, Hvide**).

Influential research has addressed public sector governance, strategy content, performance and improvement in public sector institutions (**Boyne**). Recent work was triggered by the Grenfell disaster and the failure of regulations (**Sales de Aguiar** and **Liu**, supported by a Carnegie Trust grant). Other strands examine accounting, governance and transparency within the public sector (**Paterson, Jackson**).

This area will be expanded by the establishment of the interdisciplinary **Africa-Asia Centre for Sustainability (AACS)**, under **Khan's** leadership, which will undertake multi and trans-disciplinary research to forge new understanding and new ways of addressing critical sustainability and global grand challenges. Planned themes include sustainable entrepreneurship, international knowledge transfer and internationalisation of SMEs, emerging economies' firms' CSR and sustainability practices and global supply chains.

Several strands of research use big data analytics, network technology and operation management techniques (**Khan, Akhtar**). For example, big data analytics has been employed to address grand challenges such as Covid-19 (**Khan**) and the effects of Covid-19 on the renewal of underperforming state-owned enterprises has also been explored (**Khan**).

A fast-expanding theme within this area is entrepreneurship, which includes work on innovation, commercialisation and academic entrepreneurship (**Libaers, Khan, Hvide, Meyer, Shi, Parker, Wu, Zhang**). Research on international entrepreneurship (**Knight, Khan, Wu, Zhang**) includes analysis of “born globals”, international alliances and joint ventures. Work on the economics of entrepreneurship addresses how risk preferences and beliefs affect entrepreneurship selection, performance (**Hvide, Parker**) and finance (**Johan, Hvide, Parker, Wu**).

An interdisciplinary **Centre for Innovation and Entrepreneurship (CIE)** will be established in 2021. It will be a hub for the ecosystem of institutions that encourage entrepreneurship in Scotland and will interact with other Universities to develop teaching and research on entrepreneurship. **CIE** will work closely with **Scale-Up**, the Scottish-wide Entrepreneurship initiative supported by 15 Scottish Universities, in which the School has taken a leading role. Additionally, the School formed a regional University consortium which was awarded one of three winning bids to run a Scale-Up programme in Scotland. Unfortunately, this was cancelled because of Covid-19.

Real Estate Market Analysis

Research in this area is delivered through the **Centre for Real Estate Research (CRER)**, established in 1995. **CRER** supports staff in the development of interdisciplinary activity and seeks to shape the international research agenda in real estate. An important part of the research examines commercial real estate space markets in the context of the economy and financial markets. A long-standing theme is the modelling of commercial property rents, vacancies and the analysis of development in major cities (**MacGregor, Hendershott** (now retired), **Black**).

Another long-standing research theme is the interconnectedness of asset markets, the pricing of real estate securities and performance evaluation of managed funds (**Hoesli, MacGregor, Schulz, Zhao** and **Gronwald**). The most recent work examines US mutual funds, specifically real estate mutual funds and global real estate mutual funds (**MacGregor, Schulz, Zhao**). Other recent work has examined university building programmes and loan funding (**Hutchison** and **McCann**).

A further theme is the analysis of housing markets and the statistical modelling of house prices. **CRER** has provided, since 2012Q2, the quarterly *Aberdeen Housing Market Report*, based on listing and transaction data provided by the Aberdeen Solicitors Property Centre (ASPC). The report was expanded in 2020 and now provides, in addition to quality-controlled prices, information on mark-ups and listing and transaction volumes. Since 2016, **CRER** has advised ASPC on a potential automated valuation service (AVS). **Schulz** and **Wersing** edited a special AVS issue of the *Journal of Property Research*, which will appear in the Summer 2021 issue. AVS in Aberdeen, Berlin and Switzerland are the topic of an ICS (**Hoesli, Schulz, Wersing**) (**REF3**). Expertise in the area has led to expert witness work (**MacGregor**). Other new work in the theme includes Swedish residential auctions (**MacGregor, Wersing**) and the demand for non-negative equity guarantees (**Hutchison, MacGregor**).

The work in these three themes, and the international links in which it has resulted, formed the background to the editing of the *Routledge Companion to Real Estate Investment* by **MacGregor** and **Schulz**.

2. People

a. Staffing strategy

During the first half of the assessment period, REF eligible staff numbers fell by 31% (REF2014 census date to May 2017). This was redressed by a substantial programme of investment that led to an increase in research and impact capacity, strengthening leadership in Accountancy, Finance and Business Management in particular. The recruitment and retention of high calibre researchers is now central to our strategy. Recruitment has enhanced the quantity, quality and range of our research and enabled us to power change through capacity building, leadership in interdisciplinary research and collaborative innovation.

Appointments have included a mix of early career researchers, lecturers, senior lecturers and chairs, both traditional research academics and professionally focused appointments, resulting in a greatly enhanced, diverse and vibrant environment. As part of our strategy to identify and embed best practices from highly rated international Universities, part-time appointments have been made in Business Management, with more appointments planned.

Our recruitment strategy:

- Develops existing areas of strength in line with institutional and School strategies, drawing on and extending our interdisciplinary approach in: (i) health economics and healthcare management in collaboration with the Health Economics Research Unit; (ii) energy transitions and decommissioning, working with the Schools of Engineering, Geosciences and Law; (iii) finance and governance by further investment in staff who address the sustainability agenda highlighted previously.
- Pursues further growth in Business Management to cover all main business school disciplines. Having made important leadership appointments (**Akhtar, Canales, Hislop, Khan, Wu, Zhang**), alongside more junior appointments, during this REF period, we plan further investment in business analytics, finance/fintech and marketing.
- Builds on our strong impact track record to further increase the School's real-world impact. This will benefit from recent appointments (**Akhtar, Khan, Smith, Storm**) of staff with expertise in developing Knowledge Transfer Partnership (KTP), knowledge exchange projects and research-informed executive education programmes to broaden the impact of our activities.

b. Staff development and research support.

Our strategy focuses on raising aspirations, mentoring by experienced researchers and enhancing collaboration. A strong research ethos is embedded in the School's organisation, structures and processes to ensure that staff have the support, time and resources to engage in high quality research.

The School Research Committee (**SRC**) oversees the support of research activities. It meets quarterly, is chaired by the School Director of Research (**Montagna**), and includes Discipline Directors of Research (**Canales, Islam, Kling, Schulz**), the Director of Postgraduate Research (**Paterson**), the Equality and Diversity Research Lead (**Haque**) and the School Ethics Officer (**Sales de Aguiar**).

There is organisational and budgetary input from the School Administrative Officer. The Business Development Officer (BDO) from the University's Research and Innovation Directorate attends the committee meetings to share information on research funding schemes and initiatives.

The School's workload model allocates 40% of academic staff's time to research. In addition to teaching commitments, all committee roles are recognised as formal responsibilities within

individual workload allocations. To facilitate research activity, it is School policy that no meetings are held on Fridays.

The School allocates an annual staff personal research allowance for research visits and conference presentations, pump-priming and seed-funding. This can be supplemented by competitive awards from the School Research Committee as well as from the University's Grants Academy and pump-priming funds (**REF5a**). Funding is prioritised for Early Career Researchers (ECRs), and for attendance at high-profile events, such as those funded by the British Accounting and Finance Association, the Institute of Chartered Accountants of Scotland, the British Academy of Management and the Royal Economic Society.

In addition to the formal support systems, informal support is provided through the collegial relationships among staff. The Discipline Directors of Research undertake yearly Research Review Meetings with research-active members of staff and others wishing to transfer to the teaching and research track. These are informal meetings, designed to provide a supportive context in which colleagues can discuss their research achievements and plans.

Thirteen out of 14 submitted ECRs joined the School during this REF period. The School has an official mentoring scheme for ECRs throughout their probation period and an informal mentoring scheme thereafter. The scheme operates partly through annual research review meetings and through formal and informal meetings at the crucial stages of conception, grant application, publication and knowledge exchange development. ECRs are supported through formal reductions in teaching (50% reduction in the first year and 25% in the second year) and through light administrative loads throughout probation.

For those beyond probation, prioritisation of research is facilitated through a sabbatical scheme. The School adheres to the University Policy on Research Leave for Academic Staff, which is designed to enhance the quality and range of research and knowledge exchange. Each researcher is eligible to apply for at least one semester of research leave out of eight. The period is usually one semester but can be one year. In recent years, the following staff have benefited: **Bender and Vlassis** (2020); **MacGregor** (2019); **McCann and Whittington** (2018); **Bender and Montagna** (2017); **Theodossiou** (2016); **Hutchison, Phimister, Schulz, Skatun and Zangelidis** (2015); **Battu, Cai and Mauthner** (2014).

The Research and Innovation Lead (**Islam**) works with University Professional Services Staff in Research and Innovation, the Grants Academy, the Public Engagement for Research Unit, the Public Affairs Unit and the Development Trust to arrange an annual programme of workshops on funding opportunities in research and knowledge exchange (**REF5a**).

Bi-annual School research "Away Days" are used to enable all staff to contribute to the review and development of strategy, to explore and build on existing synergies and to develop new areas of strength. Involvement is also enabled through monthly School Forums.

The School's Research Ethics Officer (**Sales de Aguiar**) supports compliance of grant applications with the University's Research Governance Framework and funders' requirements. She is a member of the Committee for Research Ethics and Governance in Arts, Social Sciences and Business, which oversees ethics training and compliance in these disciplines and works with colleagues on institutional policy and guidance for researchers. This includes ethical approval of research projects and extends to wider research conduct, including data management, data governance and protection, reproducibility, publication ethics and appropriate acknowledgement of researcher contribution (**REF5a**).

The School Seminar Committee, with representatives from all disciplines, organises a weekly external speaker research programme as well as weekly internal brown bag research seminars for informal presentations of work in progress. Whenever appropriate, a small workshop with presentations from internal staff is organised around a keynote external speaker.

The University follows the Concordat to Support the Career Development of Researchers, (UUK/RCUK). Within this context, the School, as part of the wider University, was awarded the HR Excellence in Research badge by the European Commission in recognition of its commitment to improving the working conditions and career development of research staff (**REF5a**).

Professional development of all staff in the School is aided by the University's Grants Academy. Support is provided in grant-writing, strategic career planning, business engagement and entrepreneurship, academic leadership skills and communication of research, encouraging researcher-led interdisciplinary collaborations across schools (**REF5a**).

c. Research students

The School has a vibrant community of PhD Students, with 85 currently registered (Accountancy: 17; Finance: 11; Economics: 32; Management Studies: 21; and Real Estate: 4). This includes students on joint PhD programs with partner institutions, such as Curtin University (AACSB accredited). During the assessment period, 81 students completed their studies.

The School's Postgraduate Research (PGR) Director (**Paterson**) oversees PGR student training, monitoring, progression and welfare, with the wider support of the University's Graduate school (**REF5a**). She chairs the School PGR Committee (**PGRC**), reports to the School Research Committee and has dedicated administrative support. The School has a PhD Examination Officer (**Bracht**) who sits on the **PGRC**. It provides financial support for national and international conference attendance and travel and for training and development.

Our PGR strategy is to recruit and retain high-quality candidates. The current normal entry requirement for PhD study is a postgraduate master's degree (not normally MBA) in a relevant area, showing clear potential for PhD study. Applicants who do not meet this criterion may be accepted onto an MRes programme with a view to transferring to the PhD programme on successful completion of the master's degree.

The School is a member of two ESRC-accredited Doctoral Training Partnerships. Economics research postgraduates are members of the Scottish Graduate Programme in Economics (SGPE) and those in ACC, FIN and BM are members of the Scottish Graduate School of Social Science (SGSSS; Business School link: **Shi**), an ESRC-accredited Doctoral Training Partnership.

The recruitment strategy includes: identifying and nurturing students, with potential to undertake a PhD, from our own master's programmes and from the SGPE, to which we are a major contributor; applying for ESRC studentships through the SGSSS (**Kazmierczak**, 2018); developing CASE studentships with ESRC and the Scottish Government (**Montagna**, 2013, **Montagna** and **Bender** 2014); international collaborations (such as a University-wide strategic initiative with Curtin University (**Gronwald**, **Schulz**); advertising competitive scholarship schemes through the Business School Scholarships and the University's Elphinstone Scholarship Scheme; and advertising PhD research projects on *findaphd.com*.

Every student has two supervisors, with junior staff gaining supervisory experience by being paired with senior mentors. Where appropriate, we facilitate cross-disciplinary supervision within the School, across the University and with outside partners.

During this REF cycle, we have strengthened PGR training through greater coordination and standardisation across disciplines within the School. All PhD supervisors undertake a compulsory University PhD Supervisor Training course.

The School's doctoral training programme is closely aligned with the current ESRC Postgraduate Training and Development Guidelines.

Each student and their supervisors devise an individualised programme of study and training. Compulsory generic training is provided by the central Postgraduate Research School, which oversees PGR provision across the institution (**REF5a**). Students also benefit from the training offered by the SGSSS, which includes a compulsory foundation in a broad range of social science research methods, basic research skills and broader capabilities, such as communication and leadership skills.

Discipline-specific training complements this. As well as directed reading, each student takes one or more master's level courses, normally during their first year. These include advanced methodological training in economic theory and econometrics offered within programmes outside the School (such as the MSc in Financial Mathematics) or by the SGPE. Performance in these courses is one of the criteria for progression at the end of Year 1.

In addition, PhD students working in relevant areas, benefit from the training provision of the **NDC** Doctoral Training Programme. In-house advanced methodological training includes PhD Masterclasses featuring internal and external speakers on topics of interest to students and/or in response to specific needs identified by supervisors. Workshops have ranged from the theory of economic policy (**Abul-Naga, Montagna**), experimental methods such as randomised trials (**Battu**), policy evaluations (**Battu**, HERU staff, Scottish Government and Bank of England economists) to statistical/econometric methods (**Phimister** and honorary members of staff Pouliakas, Molana). An interactive workshop on designing research is run twice a year by **Hvide**.

SGPE and SGSSS hold annual summer schools. In 2015, the School hosted the bi-annual BM Pathway Colloquium; and in 2019, the School hosted the Accounting and Finance Colloquium.

From their second year, students have opportunities to obtain teaching experience by giving guest lectures or running tutorials and seminar groups, for which they receive appropriate training and support.

Supervisors and PGR students complete twice-yearly progress reports and are responsible for reporting any problems to the PGR Director. The School, aligned with University processes, has a procedure to address inadequate progress, overseen by the PGR Director and involving the assessment of progress towards a clear set of targets.

All PhD students are required to give at least one presentation a year within the School. These are organised formally as workshops and/or seminars and give students the opportunity to receive feedback, to build confidence and to develop transferable skills. Economics students are required to submit and present a paper at the annual PhD Conference under the auspices of **CELMR**, and are given feedback on their paper and presentation, which contributes to their annual progress report. All PhD students are encouraged to attend and present papers at the staff brown-bag lunchtime workshop and are expected to attend research seminars and staff workshops. By Year 2, students are supported in presenting their work at academic conferences.

d. Equality and diversity

Recent investment in staffing across the School has led to a significant increase in the number of early career researchers and to increased ethnic diversity. On census date, 41.8% of staff declared a Black, Asian and Minority Ethnic (BAME) background, which is significantly higher than the institutional average. Also, 43.3% of submitted staff are lecturers (including the 21% ECRs). Among these, 58% declared a BAME background (71% of ECRs), with many employed at a UK institution for the first time. Therefore, as well as a focus on induction and career development, our support for researchers is also on ensuring an environment that is free of bias of any kind. The University offers unconscious bias training, and we will engage fully with the institutional Race Equality Action Group and resulting plan.

The University has Investors in People status and meets the Athena SWAN bronze standards in its employment practices (**REF5a**). In 2011, the School achieved an Athena SWAN Bronze award, demonstrating its commitment to equality through a wide range of processes in learning and teaching, student and staff recruitment and career progression. The award was successfully renewed in April 2017. It is one of only 22 UK business schools with this award. The School's submission was commended by the Equality Challenge Unit (ECU) panel for its "genuine commitment and honesty" in tackling equality and diversity (E&D). A dedicated Athena SWAN team, co-led by **Dowie** and **Whittington**, works to ensure that the Athena SWAN principles are embedded within the school's activities. The University's E&D team provides support with Athena SWAN actions and submissions.

The School's Equality and Diversity Committee (**EDC**), which includes student representation, has been proactive in organising and supporting a range of events designed to raise awareness on equality and gender issues. The **EDC** is co-chaired by **Whittington**, **Haque** and **Bender**, supported by a dedicated member of the administrative staff. The **EDC** reports to the School's Executive Committee (**SEC**). E&D activities are a key component of the School Annual Plan, and a report on E&D activities is a standing item on the **SEC** Agenda. The School has appointed an E&D Research Champion to the **SRC** (**Haque**). The **EDC** organised a research workshop on gender issues (2019) and publishes a Newsletter.

The **EDC** has formulated an Equality Action Plan (EAP) to establish E&D principles within the School. The EAP includes a progress review, recommendations and a revised action plan to apply for Athena SWAN Silver accreditation (planned for 2023-24). It has seven areas of action: promoting (gender) equality; student recruitment; attainment and progression; staff recruitment and induction; staff career progression; research; flexible working; and communication and governance. Each area has a "Champion" whose role is to achieve the action points by working with colleagues within the School and wider University. The Champions sit on the **EDC** and report progress. Work in support of E&D is formally recognised in our workload model.

While the focus of our E&D work during the assessment period has been on gender, our future strategy is to extend it to all groups protected under the Equalities Act.

3. Income, infrastructure and facilities

a. Research Income

Research income for this unit over the assessment period must be considered against a backdrop of significant staff turnover, restructuring and a large proportion of recently appointed ECRs. Most of the growth in research capacity took place later in the assessment period, and research awards have increased significantly. For 2018/19, the total value of awards recorded for the Business School was 2.5 times that of 2013/14, but it fell for 2019/20 because of Covid-19 restrictions.

In light of the strategy set out in section 1, Research Council funding has increased towards the end of the assessment period, partly reflecting our strategic focus on Official Development Assistance (ODA) and GCRF. Our involvement with the NDC, and collaborative projects with HERU/HSRU and CET are expected to lead to further growth in UK government and industry funding.

Grant acquisition is encouraged, monitored and supported through academic line managers and our Framework of Academic Expectations. Funding opportunities are disseminated through the Grants Academy, which also supports networking and scoping events for complex and challenge-based calls for applications. Development of applications within the School is supported by a BDO and Research Finance Accountants within Research and Innovation, along with a dedicated team that scrutinises contracts with funders, partners and sub-contractors to ensure that complex or international research commitments are delivered successfully (**REF5a**).

Knowledge Exchange and Impact (KTI) at local, national and international levels, through the creation of strategic partnerships, is a key objective of the School, which has an effective **communication** strategy to increase the visibility of research and to disseminate research news and initiatives internally and externally. Our research budget includes an **Impact Development Fund** for pump-priming KTI activities through **Impact Fellowships** and workload incentives. Impact and public engagement activities are supported by the Impact and Knowledge Exchange team within R&I. During the assessment period, **Zangelidis** and **Bracht** received pump-priming funds to develop and demonstrate impact.

Examples of some of the larger grants, from a wide range of public and private sources, are shown below for each research area. Many illustrate collaborations beyond the School, in the University, nationally and internationally.

Energy and the Environment

Demand from industry, government and economic development agencies for **Kemp's** long-term analysis of oil and gas economics and markets is evidenced by repeated annual rounds of funding from a group of oil companies, Scottish Enterprise and Office of Chief Economic Adviser (Scottish Government) for a total of GBP816,400 over this REF period. His collaboration with the School of Engineering underpinned major funding on Capacity Building at Higher Education Institutions in Tanzania in Development of the Oil and Gas Sector, 2015-2018, European Union (EUR2,000,000).

Phimister, Rouaix and **Swierzbinski** received funding for research on energy market design from the Energy Technology Partnership (GBP76,100) (sponsored by the Scottish Funding Council and the University of Aberdeen), to design "auction mechanisms in the energy market".

Over the current REF period, with colleagues in the School of Biological Science, **Phimister** has developed a range of interdisciplinary and transdisciplinary funded projects on:

- reducing land degradation in Ethiopia (part of the GCRF Equitable Resilience programme: RALENTIR, PI: GBP997,500);
- optimising long term management of invasive species affecting biodiversity using adaptive management (NERC-Newton, GBP1,400,000);
- improving organic resource use in rural Ethiopia (IPORE) (ESRC-Nexus, PI: GBP150,000);
- building resilience to drought in Ethiopia's Awassa region (BREAD, NERC-DfID: GBP237,700).

Another project focuses on access to credit, energy, food and water in Sub-Saharan Africa (British Academy, **Phimister, Abdul-Salam**).

In collaboration with the James Hutton Institute, **Abdul-Salam**, developed a work package on the reduction of greenhouse gas emissions in farming within a project on soils and water management funded by the Agriculture and Horticulture Development Board (GBP500,000). A collaboration with the School of Engineering (**Phimister**) led to the Leverhulme Trust Centre for Doctoral Training in Sustainable Production of Chemicals and Materials (GBP1,000,000).

Theodossiou was part of a grant from the 7th Framework Programme, EU (EUR210,000) to examine parasite risk assessment in EU fish production value chains.

Work, Society and Wellbeing

Bender (PI) and **Theodossiou's** research on performance-related pay and stress with co-PIs from Health Psychology, is funded by the ESRC (GBP461,000; 2018-2021).

Montagna's research on the effects of globalisation and the welfare state on labour markets received initial funding from the European Commission FP7 programme as part of a large

consortium (“Welfare, Wealth and Work for Europe” EUR8,500,000 total) and, more recently, from NORFACE as part of their Welfare State Futures programme (**Montagna PI**, EUR850,000).

Theodossiou received funding from the European Commission for developing HEI research capacities for the analysis of informal labour markets in Latin America (LATWORK, EUR970,000).

Islam’s research on slavery has been funded by CPA Australia (GBP34,910, with the Australia National University and University of New South Wales) for a project on regulation of transparency and disclosures on slavery in global supply chains. **Islam** and **Haque** have obtained funding for a project on the development of post Covid-19 gender policy to end modern slavery in the Bangladeshi garment sector (AHRC, GBP139,018) and for a project assessing the impact of Covid-19 on corporate accountability for working conditions within global supply chains (GCRF Covid-19 Response grant, GBP98,214).

Finance, Organisation and Governance

The Finance group attracted external research funding for five large projects in the areas of financial stability (**Jiang**) and financial inclusion and sustainability (**Kling**). Funding sources included the Scottish Government, the NSFC (**Jiang**; GBP53,000), and the Newton Fund (**Kling**, GBP380,296). The ESRC-NSFC project (**Kling**) has focussed on the use of technology and regulation to enhance financial inclusion in China’s financial system towards sustainable growth. Insights from this project were disseminated at workshops for the Third Bureau of Supervision of State-owned Assets Supervision and Administration Commission (SASAC) and the China State Shipbuilding Corporation (CSSC).

Hvide is PI of a four-year project funded by the Norwegian Research Council (approximately GBP250,000) on the factors that affect the portfolio choices of individual investors. **Cai** received funding from the National Natural Science Foundation of China (NSFC) for research on network embeddedness and firm innovation strategies (GBP38,000), on dynamic interactive innovation (GBP53,000) and on modelling innovation in an emerging economy (GBP55,890). A KTP project (**Cai**) aimed to bring a unique agile range of web-integrated tracking software to the oil and gas market using strategic business development planning and implementation (GBP127,614).

Real Estate Market Analysis

Work on “An Investigation of Hurdle Rates in the Real Estate Investment Process”, published in 2017, was funded by the Investment Property Forum (IPF, GBP60,000). In 2020, this was one of nine IPF-funded studies that were chosen from the canon of all IPF research publications as being seminal in its potential or actual impact on property investment processes. Several other pieces of research were funded by the Royal Institution of Chartered Surveyors (RICS), including “Bridging the Gap, Private investment in future infrastructure provision” (March 2020, **Hutchison** with collaborators, GBP10,500) and the use of distributed ledgers in real estate (**Liu** with **Duncan** and **Chapman** from Computing Science, GBP10,487). Following the Grenfell Tower fire, work on the governance of building regulations was funded by the Carnegie Trust (**Liu** with **Sales de Aguiar**, GBP9,956).

b. Infrastructure and facilities

The University of Aberdeen supports the Business School through the provision of central administrative services, infrastructure, library services, information technology and student services (**REF5a**). Most of this is delivered through eight Professional Services directorates and the University of Aberdeen Development Trust (the latter incorporating Fund-raising and Alumni Relations). Posts within the following key Professional Services areas are dedicated specifically to the School: Academic Services and Online Education, Digital and Information Services,

Estates and Facilities, External Relations and Marketing, Finance, People, Planning and Research and Innovation.

To accommodate growing staff numbers, part of the School has moved to another building close to its original home. Reflecting its ambition, the University's strategy is to build a state-of-the-art Business School, including a venue allowing the School to take business and community engagement to another level. Funding has been secured through the issue of a bond, and detailed planning is underway with the completion date delayed because of Covid-19 restrictions. The School will also have a city centre presence through the University's planned Marischal project.

The institutional statement covers University-wide facilities (**REF5a**). Here, we consider only some specifics of the Library and IT and the School's own specialist facilities.

The Directorate of Digital and Information Services combines the Library, Special Collections and Museums and Digital Services and is responsible for implementation of new technologies, greater accessibility of information and appropriate training and development. Business School staff benefit from the central Technology Renewal Programme and receive a new computer every three years. The School benefits from central management of the University's wired and wireless networks and server infrastructure.

The School has a dedicated Information Consultant, who is a member of the University's Library team. She liaises with the School and provides a wide range of support and guidance to staff and students.

The School is home to the state-of-the-art **SEEL**, Scotland's first experimental economics laboratory. **SEEL** supports theoretical and experimental research that studies the decisions made by economic agents, both individually and within strategic interactions, with applications to diverse areas such as labour and health economics and markets design. **SEEL** further supports the School's strong link to HERU by enabling novel experimental research to determine incentives and outcomes in health care provision. The interdisciplinary ESRC-funded project on performance-related Pay and Stress (**Bender, Theodossiou**, with the School of Psychology) uses the laboratory to conduct experiments to measure participants' cortisol level responses to performance-pay.

In 2018, the School introduced a new Bloomberg finance laboratory, giving staff and students access to real-time and historical data and analytics on investment decisions. Twenty terminals are in a dedicated laboratory in the University Library, located beside Datastream terminals, enabling the building of datasets of corporate financial and market information. They will be relocated to a dedicated laboratory in the new Business School Building.

c. Approach to enabling impact

The School has a strong track record of achieving impact (Section 4) and its Impact Strategy lies within the context of its External Engagement Strategy, led by the **Director of External Engagement (Hutchison)**, focussing on community, government and business engagement dissemination of research to wider audiences.

The School **BAB** supports the implementation of the School's strategic goals and assists with research and course offerings. The Board has eleven external members, all senior in their industries. Among them, is the Knowledge Transfer Adviser for the North of Scotland, reflecting the School's ambition to greater KTP projects involvement.

Our impact, knowledge exchange and external engagement activities are supported by a dedicated School team of external-facing professional services staff, which comprises the Business Engagement Advisor, the Marketing and Communications Officer, the Partnerships Officer and the Schools Engagement Officer. These roles help raise the profile of the research

expertise within the School and assist in the development of collaborations. This support complements that offered by the central Impact and Knowledge Exchange Team. It runs **Impact Clinics**, led by professional services staff, to support staff who have potential or where their work has emerging impact. There is internal funding available to support impact development, overseen by the University's Impact Officer. The Business Engagement Adviser supports partnership activities with companies, public bodies and not-for-profit organisations. A partnership between the School and the Aberdeen and Grampian Chamber of Commerce underpins a Business Breakfast series attracting expert regional and national speakers on topics ranging from leadership, technology and infrastructure and taxation, to trade and energy transition. Unfortunately, due to Covid-19, several planned activities had to be cancelled in 2020.

Knowledge exchange and impact are embedded in the School's research structures and culture. The School Director of Research (**Montagna**) oversees and implements the KTI elements of the School's Research strategy and operational plan and supports KTI activities.

In 2018, we introduced six-month **Impact Fellowships** that free up 10% of staff workloads for impact activities and are strategically allocated to high impact potential research areas. Two were awarded in 2019 (**Zangelidis**; **Schulz** and **Wersing** - shared) to support impact described in two ICSs (**REF3**).

The **Public Engagement with Research Unit (PERU)** (**REF5a**) has a "Public Engagement Enabling Fund" that supports research-led public engagement by staff and research students and provides details about external sources of funding for such activities. PERU also organises PechaKucha, a popular format that challenges researchers to present their work to a lay audience in 20 minutes, the May Festival and other activities; while the **Public Affairs Unit** assists with developing networks among policy makers within the Scottish Government and Westminster and other public bodies.

d. Open Access

The School is fully committed to open research, on the principle that publicly funded research should be freely accessible and reusable. The University's Open Access policy supports the development of an open research culture and practices, including open access publications and open access to research data (**REF5a**). The policy includes both **Gold** (immediate open access available on publication) and **Green** (self-archiving) routes, the use of which is encouraged. Typically, pre-print versions of outputs are made available through the Aberdeen University Research Archive (AURA).

The School Research Committee has also developed an Open Research policy, encouraging staff to enhance the visibility of their research. All publications are deposited in Pure (which is fully integrated with AURA). The School has a blog within its News and Events page and dissemination is strongly encouraged through publication in public forums such as *The Conversation* (**Bender**, 2017, **Islam**, 2018, 2020). We support publication through our **Working Papers in Economics and Finance Series** edited by **Kiso**; each paper has an ISSN number and is visible in AURA and the Social Science Research Network (SSRN).

Data management and governance is supported through IT and library teams, which advise on the development and implementation of Data Management Plans. Publication of datasets is encouraged, and researchers in the Business School have published datasets on the institutional research portal as well as the UK Data Archive.

The University's and the School's policies, strategies, infrastructure and resources are communicated to all staff on induction and through institutional email circulars, the monthly Business School Forum, annual Research Review Meetings, School research updates, School Away Days and the website.

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

a. Research collaborations, networks and fellowships

Academic networks are crucial for the sharing of information and combining expertise in joint research projects. Researchers across disciplines have extensive national and international networks of collaborators as well as collaborations within the School. This is evident in the publications submitted. Only some of these extensive formal and informal, institutional, group and individual collaborations and networks are presented below.

Energy and the Environment

ACREEF's links with the University of Stavanger have resulted in jointly-authored publications, with others in progress. Professor Osmundsen from Stavanger has recently visited us twice (2018, 2019) and delivered lectures to staff and students. Given the highly impactful nature of its research, **ACREEF**'s primary networks are with user communities, as described in the following section.

An international research network supports the interdisciplinary work of **Phimister**. Collaborations with partners in Africa (Hawassa University (Ethiopia), International Water Management Institute (IWMI, Ethiopia), Southern Agricultural Research Institute (Ethiopia), Kwame Nkrumah University of Science and Technology (Ghana) and Makerere University (Uganda)) has led to six externally funded projects (ranging from GBP30,000 to GBP1,000,000) during this REF period. He also has extensive collaborations with South American institutions, as part of the NERC-Newton Funded CONTAIN project led by the School of Biological Sciences, which have led to five interdisciplinary research papers published in environmental and ecological science journals during this REF period.

Gronwald's collaborations with Beat Hintermann (University of Basel) and with Ngo Van Long (McGill University, Canada) both led to articles in *Environmental and Resource Economics*. **Kiso**'s collaboration with Ron Chan (University of Manchester) and Yosuke Arino (Institute for Global Environmental Strategies, Japan) and **Jin**'s with Nathan Balke (Southern Methodist University) and Mine Yücel (Federal Reserve Bank of Dallas) also led to publications.

Paterson arranges Accounting for Society and the Environment (ASE) annual one-day conferences that attract international participants. ASE has received regular funding and support from the Chartered Institute of Management Accountants (CIMA). As these events align with ASE focus areas, she was asked to act as lead co-editor in two special issues in *Critical Perspectives on Accounting* and *British Accounting Review*. Both the ASE network and the special issues have attracted international participants from around the globe.

Work, Society and Well-being

Members in this area have coordinated multiple pan-European projects on labour, health and well-being and the effects of globalisation. **Montagna**'s research on the interaction between globalisation and policy in determining labour market outcomes has led to collaborations with Holger Görg (Kiel Institute of the World Economy), Fredrik Sjöholm (Lund University) and the Osterreichisches Institut für Wirtschaftsforschung Verein (WIFO) that have underpinned funding from the European Commission FP7 programme "Welfare, Wealth and Work for Europe" (EUR8,500,000 total) and the NORFACE Welfare State Futures programme (**Montagna PI**, EUR850,000).

Bender is currently collaborating with Cynthia Bansak (St Lawrence University) and Mike Coon (University of Tampa) on the political economy of highly skilled workers. A paper is forthcoming in the *Handbook of Labor, Human Resources and Population Economics*, with more work in progress. He also collaborates on educational mismatch with John Heywood (UW-Milwaukee) and Kristen Roche (Mount Mary University).

Papi has collaborated with Gerasimou (St Andrews) on bounded rationality research (with a publication in the *European Economic Review*) and with Mittone (Trento) investigating the economics of nudging (with articles appearing in *Theory and Decision* and *Judgment and Decision Making*).

In his research on corporate accountability in modern slavery and workers' rights, **Islam** has collaborated with Justine Nolan (Deputy Director, Australian Human Rights Centre, UNSW) and Jolyon Ford (ANU) and has attracted grants from Certified Practising Accountants (CPA) Australia. He expanded his network and collaborations by undertaking the guest editor role in the *British Accounting Review's* special issue on Modern Slavery and the Accounting Profession (with Professor Roger Burritt, ANU and Dr Katherine Christ, UNISA).

More recently, **Islam** (with **Haque**) expanded global collaborations with the sociology scholars, Abbott (University of Aberdeen Centre for Global Development) and Akhter (University of Dhaka) and a non-academic partner (Traidcraft Exchange NGO) on "The Impact of Covid-19 on Modern Slavery within the Global Supply Chains", resulting in AHRC and GCRF research grants (GBP237,232). **Islam's** work on corporate accountability and workers' rights within global supply chains, through global collaborations (with Patten, Illinois State University; van Staden, AUT; Deegan, UTAS) has resulted in papers in high-impact journals including *Accounting, Organisation and Society* and *Journal of Business Ethics*.

Finance, Organisation and Governance

Involvement in networks is extensive. For example, **Canales** chairs the Strategy Process IG from the Strategic Management Society; **Zhang** co-chairs the International Business and International Management Special Interest Group at the British Academy of Management.

Collaborations with significant research output or funding include Harvard University (Sikochi, **Gyimah**), University of Chicago (Meling, Mogstad; **Hvide**), Stanford University (Oyer, **Hvide**), Monash University (Becker, **Hvide**), Beijing University of Technology (Zeng, **Jiang**) and Chongqing University (Yao, **Jiang**). Formal networks with Nankai University (Tian, **Kling**) and Zhejiang University (Luo, **Kling**) have attracted research funding from the Newton Fund (GBP323,000, at the School of Oriental and African Studies).

Chen is participating in a Horizon 2020 project (2020-2023) on cultural tourism, funded (EUR3,000,000) by the European Commission and including universities from fifteen countries. **Zhang** has a GBP10,000 Skills Acquisition Award from the British Academy Research Committee to examine "Acquisition of Quantitative Skills Research Awards".

In addition to academic collaborations, there are collaborations with policy-makers, NGOs and other stakeholders, including the Bank of England (Blasi, **Kling**), Central Bank of Ireland (Zekaite, **Da Silva Fernandes**), International Monetary Fund, Washington, D.C. (Turk-Ariss, **Klein**), and Standard Life UK (Murray, **McCann**).

Real Estate Market Analysis

Members are involved in all of the important national organisations (such as the RICS, the Society of Property Researchers and the IPF) and international organisations (such as the European Real Estate Society (ERES), the American Real Estate Society (ARES), and the American Real Estate and Urban Economics Association (AREUEA)). They regularly present at conferences.

MacGregor edits the *Journal of Property Research*, and members of the group are on the editorial boards or review for the key field journals. **Hoesli** is a board member and past president of the International Real Estate Society (IRES) and the ERES. He is a recipient of the IRES Service Award (2020) and member of the Research Committee of the European Public Real Estate Association (EPRA). **MacGregor** is Past Executive Director of ERES. **Hoesli** and

MacGregor are Fellows of the Weimer School of Advanced Studies in Real Estate and Land Economics in Florida. **MacGregor** is a Life Fellow of the Society of Property Researchers.

This networking has led to many national and international collaborations and numerous joint authorships and funding awards as well as the recent publication of the *Routledge Companion to Real Estate Investment* edited by **MacGregor** and **Schulz** (with Green from the University of Southern California). **MacGregor** has published extensively with Hendershott (formerly of Ohio State and Aberdeen), **Hoesli** (Geneva and Aberdeen), **Lizieri** (Cambridge) and **Schwann** (Melbourne).

Hutchison, MacGregor, Schulz and **Zhao** worked with colleagues at Cambridge on the IPF-funded hurdle rates. **Hutchison** has undertaken several collaborations with staff from Ulster University, including a report for the RICS (2020) on “Bridging the Gap, Private investment in future infrastructure provision”; and, with Koblyakova (Nottingham Trent University), Tiwari (University of Melbourne) and collaborators in Australia and Japan, has published three articles on mortgage demand and housing bubbles. **Schulz** and **Wersing** have long-term collaborations with Kolbe and Werwatz (TU Berlin) and have published extensively with them.

b. Relationships with key research users, beneficiaries and audiences

The School has a strong track record of relationships with research users, beneficiaries and other audiences, reflecting our drive to ensure that our research is relevant and addresses societal needs.

Within Energy and the Environment, **Kemp** has been a consultant on petroleum contracts and legislation to many governments, the World Bank and the United Nations and was a member of the Council of Economic Advisers to the First Minister of the Scottish Government until 2011. He is a member of the Scottish Energy Advisory Board to the Scottish Government and the Editorial Advisory Board of *World Oil*. Other examples of his high level of engagement during this REF period include membership of the Scottish Government’s Oil and Gas Expert Commission (2013-2014); his appointment by the New Zealand government to serve on its Petroleum Resource Allocation Advisory Group (2015); and his service as an expert witness to the Scottish Parliament on several occasions. In recognition of these activities, **Kemp** was presented with the Lifetime Achievement Award and induction into the Hall of Fame at the *Press and Journal Gold Awards* (2015).

Within Work, Society and Well-being, **Montagna** was the Director of the Scottish Institute for Research in Economics (SIRE)/Scottish Government Policy Forum and has had a long-lasting engagement with the Scottish Government Economic Service, which has led to a recent ESRC-Scottish Government collaborative scholarship. **Skåtun**’s research (Section 1) has influenced policymakers in the US Congress and Senate. **Montagna, Skåtun** and **Zangelidis** sit on the Scottish Economic Society Council.

Canales has played a lead role in the creation of Scale-Up Scotland, and the School won one of three places for a country-wide Entrepreneurship Programme competing with all 15 Scottish Universities. Though the programme was cancelled due to Covid-19, he took a leading role in the consortium to ensure that the programme could meet the needs of entrepreneurship education.

In Finance, Organisation and Governance, an ESRC-NSFC (Newton Fund)-funded project on financial inclusion in China, led by **Kling**, has benefited from Co-Is involvement in policy-making in China (Dr Xinxiang Wen, Secretary General of the Monetary Policy Committee of the People’s Bank of China). A workshop for delegates from the Third Bureau of Supervision of SASAC was organised to discuss research findings (corporate governance). Research on green finance (**Jiang, Kling**) has benefited from collaborations with Moody’s and the UN Environment Programme (UNEP).

In Real Estate Market Analysis, the group is actively involved in providing policy-relevant research for the property professions and government. The study *An Investigation of Hurdle Rates in the Real Estate Investment Process* (**Hutchison, MacGregor** and **Schulz** with **Zhao** from Finance) for the IPF (**3a**) is an example of the wider contribution of the Real Estate group. In 2020, this was one of nine IPF-funded studies that were chosen from the canon of all IPF research publications as seminal in its potential or actual impact on property investment processes.

Another clear example of a wider contribution is the group's research on the methodology of house price indices and automated valuation services (AVSs), which helps to improve transparency in housing markets (**Hoesli, Schulz, Wersing**). Based on this work, AVSs have been implemented in Switzerland and Berlin, and advice has been provided in Aberdeen (ICSy). The quarterly *Aberdeen Housing Market Report* (AHMR) is compiled by the **CRER** using data from the ASPC. The AHMR was also a topic at the Workshop on Local Governance in Scotland and Malaysia held in 2017 in Aberdeen, which brought together nearly 50 academics and policymakers.

c. **Wider activities and contributions to the research base, economy and society**

Much of our research contribution and collaboration is aligned with UN SDGs (1, 2, 4, 5, 8, 10, 13 and 15). We particularly encourage engagement activities with the Scottish Government, local councils and their economic development offices, local businesses, Scottish Chambers of Commerce and the Scottish Parliament. For example, the School was heavily involved in the development and application of the Aberdeen City Region Deal (ACRD), funded by UK, Scottish and local governments (**MacGregor**). Subsequently, staff have been involved in work for the NDC as part of the ACRD (**Kemp, Gronwald**).

The School has been central to the development of Scottish-wide enterprise activities and in supporting local activities. It has recruited researchers who develop quality research in entrepreneurship (**Johan, Knight, Libaers, Wu**); knowledge transfer expertise (**Smith, Storm**) to interact with the Scottish entrepreneurship community; and leaders of entrepreneurial education as honorary professors (**McEwan**, from Elevator; **Yule**, long standing member of the energy industry and past chairman of the Aberdeen Chamber of Commerce) who have joined the School's **BAB** and give lectures to students and the wider entrepreneurial ecosystem. This strategy underpins the new **Centre for Entrepreneurship Research**.

Across the School, academic staff proactively pursue public engagement opportunities to share insights from research. Examples include **Allan** (on mission and employee engagement), **Islam** (contributions to "The Conversation"); **Hislop** (blog posts on climate change and technology), and **Montagna** (posting on the impact of coronavirus on society). The School's research has featured in 85 policy documents over the last 5-year period. Examples include **Skåtun**'s work with the Scottish government's Health Directorate and the interdisciplinary research by **Hutchison** in collaboration with the Law School on how countries manage land ownership, which informed the work of the Scottish Land Commission. **Hvide**'s work commercialisation of academic research has been featured in *Science*, *The Wall Street Journal* and *The New York Times*.

Members of the School are extensively involved in academic journal editorial activities. Examples include:

Editorships

- **MacGregor** is editor of the *Journal of Property Research*;
- **Montagna** and **Skåtun** are Joint Managing Editors of the *Scottish Journal of Political Economy*;
- **Bender** is Associate Editor of the *British Journal of Industrial Relations*;
- **Hislop** is Associate Editor of *Work Employment and Society*;

- **Zhang** is Associate Editor of the *European Management Journal*;
- **Papadimitriou** and **Kling** were Associate Editors for the *European Journal of Finance*;
- **Islam** is the chief guest editor role for the *British Accounting Review*'s special issue on Modern Slavery and Accounting Profession;
- **Paterson** is the chief guest editor in *Critical Perspectives on Accounting* and the *British Accounting Review*, issues on social impact accountability and transparency issues.

Editorial Board memberships

- **Akhtar** for *Quantitative Risk Management*;
- **Canales** for *Journal of Management*, *Long Range Planning* and *Journal of Management Studies*;
- **Hutchison** for the *Journal of Property Research*, *Journal of Property Investment and Finance*, *Journal of European Real Estate Research*;
- **Islam** for *Accounting, Auditing & Accountability Journal*;
- **Johan** for the *British Journal of Management* and *Venture Capital*;
- **Kling** for the *Asia Pacific Business Review*;
- **MacGregor** for the *Journal of Property Investment and Finance*, the *Journal of Real Estate Research*, the *Journal of European Real Estate Research* and the *International Real Estate Review*;
- **Schulz** for the *Journal of Property Research and Computational Statistics*;
- **Zhang** for *Frontiers of Business Research in China*.

Some illustrations of wider activities and contributions are:

- **Montagna** and **Phimister** provided the Angolan Ministry of Finance with macroeconomic modelling advice and debt sustainability analysis.
- **Kling** was a member of the Socio-Economic Risk Panel, convened by the European Science Foundation, which conducts reviews for the AXA Research Fund, l'Agence Nationale de la Recherche and other international funding bodies.
- Staff have provided written submissions and given evidence to Scottish Parliamentary Committees, such as the Economy, Jobs and Fair Work Committee's enquiry on Economic Data (**Montagna**) and The State of the Scottish Economy (**Montagna** and **Zangelidis**).
- **Islam** is a member of the European Accounting Association (EAA) Scientific Committee responsible for Social and Environmental Accounting and Ethical Issues in Accounting (2018-2021).
- **Islam** made two parliamentary submissions (one on modern slavery and another on SDGs) to the Australian parliament. His industry research report (with Nolan and Ford) on regulating transparency and disclosure on modern slavery was published by CPA Australia (2019).
- **Islam's** and **Haque's** research (with Deegan) was highly relevant in identifying the vulnerability of clothing workers during the Covid-19 pandemic and attracted media attention (Conversation, 2020).
- **Islam** also published a professional article for the International Federation of Accountants (IFAC), highlighting public accountants' due diligence in creating SDG transparency and accountability (IFAC, 2021).
- **MacGregor** was an expert witness in two important property valuation cases, most recently in the Upper Tribunal (Lands Chamber).
- **Zhang** is an Advisory Board Member of the Guangdong Leadership Empowerment and Organisation Development (LEO) Research Society (2019-present).