

**Institution:** University of St Andrews



**Unit of Assessment:** UoA 14: Geography and Environmental Studies

## Section 1. Unit context and structure, research and impact strategy

### Strategic aims and achievements

Research in the School of Geography and Sustainable Development (SGSD) aims to deepen knowledge of environmental and social processes and how they are connected, at multiple temporal and spatial scales.

Our key strategic aims are to:

1. Analyse and provide answers to a range of global challenges of pressing public concern, through the development of innovative theoretical and topical research orientations and methods of dissemination.
2. Promote and use novel staff collaborations that integrate natural and social science and humanities approaches, and that are embedded in and responsive to addressing real world problems.
3. Use and expand the links between Geography and Sustainable Development (SD) in ways that enrich their analytical, critical, and policy-relevant qualities and concerns.
4. Develop constructive and critical approaches to research design and collaboration that are not only theoretically inventive and ethically significant but can also make a real difference on the ground.
5. Nurture an energetic and supportive research environment that values the diversity of staff and their interests.

This strategy links long-standing strengths in glaciology and population and health research (recognised in REF2014, when we were returned to UoA 14 as part of a combined School of Geography and Geosciences) with new and rejuvenated areas of expertise in palaeoecology, international development, and sustainability. Our researchers grapple with global and planetary problems and complexities that are in the public and political spotlight, including climate change, anti-bacterial resistance, biodiversity loss, ethnic inequalities, rapid population change, national and international migration policies, zoonotic disease, rewilding, land and resource exploitation, and, recently, coronavirus geographies and demographics.

As a School, we approach these complex topics through growing and innovative staff collaborations. We also believe that high quality research, meaningful to its creators and valuable to its users, comes in diverse forms. This includes large- and small-grant research projects, multi-actor research and impact initiatives, the individual pursuit of theoretical research, and work with academic and non-academic collaborators. We respect that research is moulded in varying and sometimes challenging circumstances, and strive to value equally a range of ways of designing and delivering research. This ethos accords with the University's tenet that scholarship and qualitative measures of attainment are prime pathways to, and indicators of, world-leading research.

The SGSD's research approach supports our strategic aims in four ways. By: (1) building on the School's core expertise, (2) fostering collaboration, (3) focusing on regionalised communities, and (4) delivering real-world impact. Our research spans and connects natural and social science and humanities approaches within Geography, and our cross-over Geography-SD identity has become central to our aspirations and distinctiveness, both as a School (and how it is regarded internationally) and within the University and its Environmental Sustainability Board (ESB). This broad sensitivity to questions of sustainability –in everyday life as well as research projects –comes with an ethical vision of inquiry through the co-production of knowledge with the non-academic world.

Our research collaborations and outputs have global reach and impact whilst also drawing on a depth of local studies, policy questions, and community issues. Our researchers share concerns with how places and environments are constructed, connected, and stressed. As well as our long-lasting commitment to Scotland, which both shapes and is shaped by international ventures, we work in over 70 locations in the UK and a further 100 worldwide (Figure 1).

Our strategic aims are being realised through:

- 1) Our **re-organisation** as a School of Geography and Sustainable Development in January 2017. This enabled us to think in concerted and creative ways about global challenges and approach questions of inclusion and diversity with research partners, especially in the Global South (Section 2). It has helped to build on our distinctiveness as one of the first geography schools in the UK, and still the only one in Scotland, with a core focus on sustainability. SD sensibilities are becoming fully embedded across the range of our research and impact activity.
- 2) **Staff appointments** (including a desire to end fixed-term contracts), and the creation of a new research group, GOSSIP, in 2016. Since REF2014 our FTE for Category A staff has increased from 18 to 28. New directions in research leadership include 5 professorial appointments (*Benn, Bennett, Kulu, Laurie, Sharp*), 9 new lectureships (*Bolch, Cowton, Hale, Hope, Keenan, Lawson, Okafor-Yarwood, Roucoux, Simpson, Vradis* –5 of them early career), within a vibrant SGSD community of 20 postdoctoral fellows and 47 PhD students. 6 staff (*Demšar, Lawson, McCollum, Reid, Roucoux, White*) have been promoted during the REF period, and 5 recently appointed staff (*Hope, Okafor-Yarwood, Sharp, Simpson, Vradis*), recruited from very competitive applicant fields, are driving our Geography-SD and international development agendas forward with interests in development conflicts, maritime security, migration, political ecology, urban public space, and zoonotic disease. SGSD also provides an intellectual anchor for the University's growing sustainability strategy and ESB (see Institution-Level Environment Statement, ILES, 2.5).
- 3) A **broadening in the scope of research projects** (by area, theme and size), including targeting of grant applications to new initiatives and synergies in particular parts of the world (see 'regionalised clusters' –below; Section 4), and responding to the increasingly 'strategic' and 'blended' (natural science/social science) character of funding calls, especially from UK Research Councils (UKRI). This trajectory is underpinned by traditional values of academic scholarship and a shared commitment to tackling real world problems and offering relevant policy solutions.

Below is evidence of how these aims are being met (for FTE Category A staff):

- **Research productivity and quality:** 600 outputs; over 80% in peer-reviewed journals.
- **Collaborative reach:** over 85% of outputs involving co-authors and collaborators from 200+ places worldwide.
- **Research awards:** an upward trend in research grant awards, totalling £9.33M, spanning 157 research projects.
- **Impact:** a growing proportion of projects (23% of total, encompassing £7.45M) with an explicit impact dimension.
- **Clustered knowledge:** growing regionalised concentrations of research beyond the UK, especially in glacial regions, Europe, Central and South America, and Sub-Saharan Africa (Figure 3).
- **Research income and distribution:** An almost threefold rise in grant applications and research income, now more evenly distributed across SGSD than in REF2014 (making us both more academically diverse and financially resilient).
- **Esteem:** staff hold notable professional leadership and advisory roles within the University, including *Austin, Bennett, Okafor-Yarwood* –ESB, *Clayton* –Strategy Board, and *Laurie* –SFC-GCRF Director. They also do so for national and international

professional bodies and committees, including: *Benn* –UK Government All-Party Parliamentary Group for the Polar Regions, International Thwaites Glacier Collaboration; *Kulu* –Vice-President, European Association for Population Studies, Member of the Expert Advisory Group on Population and Migration at the Scottish Government; *Laurie* – Honorary Secretary, Expeditions and Fieldwork, Council Member and Trustee, Royal Geographical Society; *White* –Chair of Scotland’s United Nations University Regional Centre of Expertise in Education for Sustainable Development: Learning for Sustainability Scotland. Staff have also been the recipients of esteemed awards, including *Ballantyne* – Geological Society Lyell Medal; *Benn* –RSGS Coppock Research Medal and Fellowship; *Okafor-Yarwood* –African Community of Practice Outstanding Achievement Award, Richemont International; *Sharp* –Royal Society of Edinburgh Fellowship; visiting fellowships and professorships, including *Sharp* –Central Otago; and we are the only Geography/Environmental Studies school in the UK with two winners of the RGS-IBG Busk Medal for Social Inclusion –*Laurie, Sharp*.

- **League tables:** SGSD topped the *Guardian* University Guide 2020 and *Times* Good University Guide 2020 subject rankings for Geography and is 2nd in *The Complete University Guide 2021*, underscoring that we see research and teaching excellence as fundamentally linked.

### Strategic priorities

SGSD has four strategic priorities for the future, with further grant success, strategies for new staff appointments, and the emergence of new and creative research groupings and collaborations key to each:

- 1) To evolve research in **core** areas that distinguish the School internationally, i.e.: (1) glaciology –glacial modelling, remote sensing; (2) palaeoecology –Holocene, tropical and temperate peatlands, origins of biodiversity; (3) critical development geographies – community, environment-health, postcolonial, political ecology; (4) place, health, and well-being –health inequalities; contextual and environmental effects; (5) population processes –demographic change; migration; longitudinal and life-course studies; population and spatial analysis; and (6), sustainability agendas –behaviour change, biodiversity conflict and conservation, public space, maritime security, and green energy.
- 2) To promote world-leading **collaborative research**, developed at the intersections of core research expertise, Geography-SD linkages, and with growing recognition of the importance of GIS, data analytics, and mixed methods. This threefold –Geography-SD, data analytics, mixed methods –priority is an organic element of research group activity and makes the boundaries between them porous. It is also promoted within SGSD through I-Power and BEGIN (see below), and is aligned with strategic funding calls through the SFC-GCRF initiative.
- 3) To nurture our **regionalised clusters** of research and impact expertise (Figure 3) in Central and Latin America (Bolivia, Brazil, Columbia, Ecuador, Guatemala, Mexico, Peru); Sub-Saharan Africa (Cameroon, Democratic Republic of Congo, Ghana, Kenya, Madagascar, Malawi, Nigeria, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe); glacial regions (especially Antarctic, Greenland, High Mountain Asia); and the industrialised West (especially France, Germany, the Netherlands, Nordic countries, Spain, the UK, and USA). We also have a nascent focus on Central Asia. This work lies at the forefront of a research effort that: (a) has a commitment to local communities and ecologies, and to understanding how they are embedded in wider global challenges and drives for change; and (b) thinks carefully and acts scrupulously with regard to how researchers are involved in the way knowledge is produced and communicated, how indigenous agendas can be supported, and how the nurturing of relationships with non-academic partners can effect change and hold dominant actors and institutions to account.

- 4) To **increase impact** by communicating the value of academic research through these partnerships and networks, as demonstrated in SGSD Impact Case Studies on: (a) demographic and migration issues facing Scotland; (b) Blue Carbon and the protection of marine ecosystems; and (c) peatland preservation as a means of counteracting climate change and supporting cultural rejuvenation. Bringing further research projects with an impact dimension to fruition involves nurturing myriad, and sometimes long-standing, collaborations; for example, around One Health approaches in Africa, multi-scale governance and security issues around fisheries in Central and West Africa, El Niño in Peru, and recreational sports and well-being in Scotland (Figure 3 –Section 4).

These priorities are embedded in SGSD conversations and structures, from research colloquia and mentoring platforms to seed corn funding and large grant applications, as well as in fieldwork projects and collaborations. There are vertical and horizontal dimensions to SGSD's management structure, with a system of line management steered through committees matched with collective decision-making and policy discussion at the School's Staff Board and other open forums (recently around School strategy, workload principles, Equality, Diversity, and Inclusivity (EDI; Section 2), and unravelling privilege in research and the curriculum). Strategic planning around staff appointments is based on a desire for researchers with world-leading records in core specialist areas who can also foster new synergies across the School.

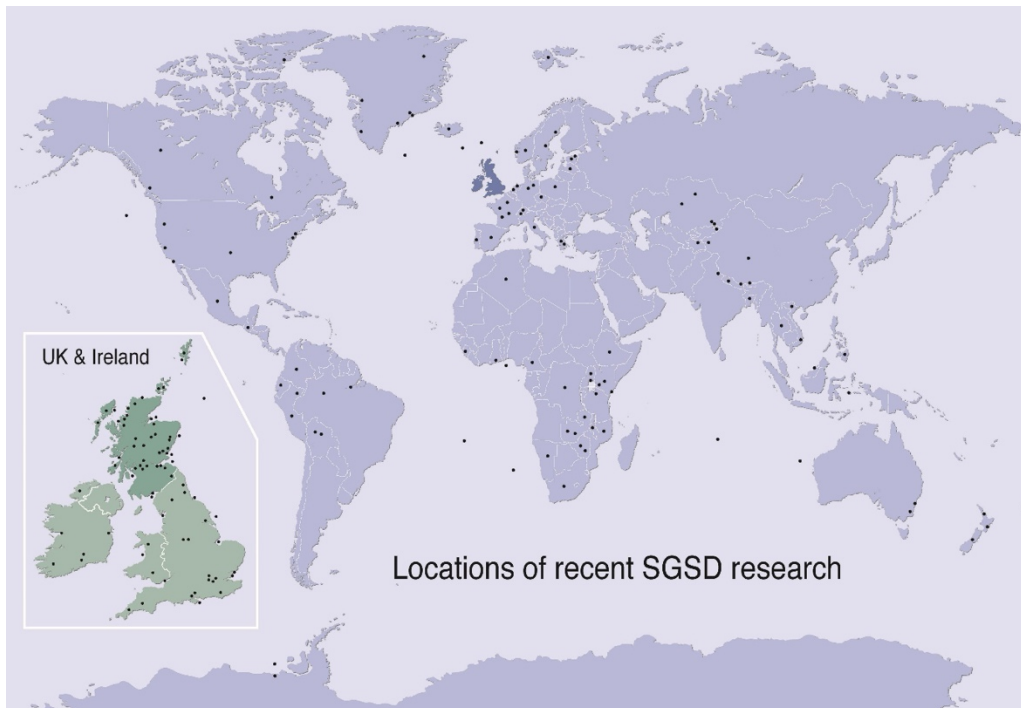


Figure 1: Locations of recent SGSD research (also: Section 4 – Figure 3)

### Research and impact structures and processes

Strategic planning is steered through School committees and research groups, in liaison with the University's Research and Innovation Service (RIS) and Business Development staff (BD). We have a **School Research and Impact Committee (SRIC)**, chaired by the School's Director of Research (DoR) and reporting to the SGSD Management Group (SMG), and the **Staff Board**, meeting c.4 times per semester to enable academic staff and other School representatives to discuss strategy and policy issues. The DoR's membership of the Royal Scottish Geographical Society's Research and Knowledge Exchange (RSGS-RKEC) provides an important line of communication between St Andrews and other Scottish Geography departments. The SRIC is composed of leaders of the School's three research groups (see below), the School's Director of Impact (DoI), Director of Postgraduate Research (DoPGR), the Chair of the School's EDI Committee (EDIC), a member of postdoctoral research community, and the Head of School (HoS). Confidential research matters relating to staff are discussed by the HoS and DoR, and in



consultation, where needed, with members of the SRIC or SMG. A separate Postgraduate Research Committee, chaired by the DoPGR, and composed of staff, research students, and fellows, also reports to the SMG.

### **Research groups**

The School has three research groups, each with its own lead, budget, and research events and colloquia: **Environmental Change (ECRG)**, **Population and Health (PHRG)**, and **GOSSIP (Geographies of Sustainability, Society, Inequalities and Possibilities)**.

Staff, research students and fellows are associated with at least one research group, but more than a quarter of staff participate in plural groups, something indicative of our fundamentally collaborative approach. Membership is given below by group and primary (and supplementary) affiliation:

**ECRG** –REF1 staff: 12 (3 also in other research groups); PDRAs: 8 (1); PGR: 20 (5)

**PHRG** –REF1 staff 7 (3); PDRA 8 (1); PGR: 15 (10)

**GOSSIP** –REF1 staff: 9 (7); PDRA: 2 (2); PGR: 12 (3)

The aspirations and activities of these groups play a prominent role in SGSD research strategy and the practicalities of how research and impact are designed and delivered. They bring cohesion and consistency to the way research is forged, providing SGSD members with a common reference point for academic engagement, career mentoring, research support, and the development of research ideas and impact initiatives (Sections 2; 4). Since 2013 we have also had a School-level research institute, **I-Power (Institute for Population, Well-being and Environmental Research)**, chaired by the DoR and set up with to meet our strategic aims by promoting research ideas that cut across the research groups and Geography-SD spectrum to reach wider public audiences.

Each SGSD research group has a budget and web page on the School's website, and holds regular seminars with invited speakers (c. 15 seminars per year per group) alongside bi-weekly 'brown bag' seminars that provide academic staff, postdoctoral researchers and PhD students with regular opportunities to discuss research plans and findings. They also organise bespoke methods training and mentoring, and annual strategy and planning Away Days (Section 2).

### **ECRG**

The ECRG examines the causes and consequences of global environmental change and the current climate crisis. The group seeks solutions to key policy and sustainability challenges around climate and issues of environmental management, with a combination of theoretical and field-based approaches. It has undergone significant reorganisation and growth since REF2014, with two professorial appointments and four lectureships to build capacity in glaciology and palaeoecology. Within glaciology, world-leading research is being conducted on modelling glacier dynamics and the impact of iceberg calving on ice sheet stability and sea-level rise. An important new area of glaciological research is cryospheric response to climate change in High Asia, through the application of remote sensing and field techniques. Palaeoecological research focuses on both natural and anthropogenic environmental change, including ecosystem resilience to human disturbance, with an innovative focus on the extent of and threats to tropical peatlands and the assessment and valuation of marine and terrestrial carbon stores.

Activity in this group is shaped by a suite of research and impact priorities and high-profile projects (upon which researchers are either P-Is or Co-Is), including: (1) glaciology – *CALISMO (Calving Laws for Ice Sheet Models, NERC)*; *DOMINOS (Disintegration of Marine Ice Sheets: Novel Optimized Simulations*, which is part of the prestigious International Thwaites Glacier Collaboration) (Section 4); and Glacier Mass Changes in High Mountain Asia (Chinese Academy of Sciences); and (2) palaeoecology – *Valuing Blue Carbon in Scotland's Marine Protected Area Network (NERC)*; *Carbon Storage in Amazonian Peatlands: Distribution and Dynamics (NERC)*;

*Valuing Intact Tropical Peatlands* (Leverhulme); and *Protecting Biodiversity and Sustainable Livelihoods in the Wetlands of Peruvian Amazonia* (British Council).

### **PHRG**

The PHRG is one of the UK's leading centres for spatial population and health research. It deals with population processes and health inequalities at societal and individual levels, chiefly in the Global North, but with an increasing interest in the Global South and in growing liaison with the School of Medicine. The group seeks solutions to key population and policy challenges facing industrialised countries, including increased international migration and social cohesion, residential segregation and housing inequalities, low fertility and partnership instability, and population ageing and health inequalities. It combines demographic, sociological and geographical approaches, and devises innovative applications of computational, statistical and mixed methods to novel population and health data linkages. The group has been strengthened since 2014 by a professorial appointment and three lectureships. PHRG members play a leading role in the ESRC Centre for Population Change (CPC), a joint initiative between the Universities of Southampton, St Andrews and Stirling, and with the Office for National Statistics and National Records of Scotland as partners. The group also hosts ADRC-Scotland, the Census and Administrative Data Longitudinal Studies (CALLS) Hub (until 2018), and the ESRC Centre on Dynamics of Ethnicity (CoDE) (also Section 4).

Activity in this group is currently shaped by the following research and impact priorities and high-profile projects (upon which researchers are either P-Is or Co-Is), encompassing: (1) understanding the causes of low fertility in high-income countries; funded projects include *FertilityTrends – Understanding Recent Fertility Trends in the UK and Improving Methodologies for Fertility Forecasting* (ESRC) and *CPC Fertility Strand – The Impact of Housing Availability on Childbearing Decisions* (ESRC); (2) drivers of European and international migration; funded projects include *MMRP – Mediterranean Migration Research Programme* (DfID, ESRC), and *CPC Migration and Mobilities Strand – International Students* (ESRC); (3) migrant integration (employment, housing and family trajectories), funded projects include *MigrantLife – Understanding Life Trajectories of Immigrants and Their Descendants in Europe and Projecting Future Trends* (ERC); (4) internal migration and residential mobility in high-income countries, funded projects include *CPC Migration and Mobilities Strand – Residential Mobility* (ESRC); and (5) health inequalities and challenges in Sub-Saharan Africa (with the School of Medicine), funded projects include *HATUA – Holistic Approach to Unravel Antibacterial Resistance in East Africa* (MRC).

### **GOSSIP**

Established in 2016, GOSSIP emerged from a series of boundary-crossing conversations between the School's critical human geographers and SD scholars. The acronym flags the group's dialogical orientation, with conversations crossing natural and social science and humanities boundaries and epistemologies. GOSSIP is committed to conceptual debate and research that is grounded in everyday realities of power and inequality and explores new critical agendas and possibilities for development and sustainability. The group uses mixed methods and a wide variety of data and is committed to methodological innovation.

GOSSIP researchers work with various forms of behavioural, decolonial, development, feminist, pedagogic, political, ecology, and postcolonial theory, and in a range of modes including advocacy, artistic, historical, linguistic, participatory and translation. The group shares a common concern with co-producing knowledge and training with overseas and non-academic partners (Impact Strategy; Section 4), and with questioning norms shaping environment-society relationships at all scales, from those of the body and microbe to the international arena. They are also attentive to other ways of 'looking backwards across space and time' in the quest for more hopeful futures. GOSSIP is a key driver of the School's ambition to nurture the interface of Geography and SD, and this aspect of School strategy has been fostered through two professorial appointments and four lectureships.

Activity in this group is currently shaped by a suite of research and impact priorities and high-profile projects (upon which researchers are either P-Is or Co-Is), including: *Fishing and Farming in the Desert: El Niño Food System Opportunities in the Context Climate Change in Sechura, Peru* (AHRC, SFC-GCRF); *Homes That Care: Exploring Health Smart Homes In Scotland* (RSE); *GoGolf Europe* (EU); *SEEDZ –Social, Economic and Environmental Drivers of Zoonoses in Tanzania*, and *OOHTZ –Operationalizing One Health Interventions in Tanzania* (DfID, BBSRC, ESRC); *Maritime Governance, Safety and Security in the Gulf of Guinea* (UN, One Earth Future); *Whose Crisis? The Global COVID-19 Crisis from the Perspective of Communities in Africa* (AHRC, SFC-GCRF); and *SCALE –Supporting Skills, Competencies and Learning for Engagement in Sustainable Forest Management, Guatemala, Mexico* (GCRF-ODA). Researchers in the group also hold funding from the BA, BBSRC, Carnegie, Leverhulme, MRC, NERC, and the R&A St Andrews.

### ***I-Power and other School-wide research initiatives***

I-Power has an umbrella role to facilitate external speakers, visiting fellows, and lunchtime talks and reading groups, as well as hosting 4–6 high-profile public lectures annually by distinguished international speakers from around the world. The Neil Smith Lecture, established 2013, is integral to our international profile (the lectures have been published in the geography journal *Antipode*) and a similar event, The Simon Pepper, is being established. In 2019–2020, I-Power hosted one of the University's first visiting Global Fellows: a two-month visit by a world-leading climate change scholar, Glen MacDonald, including a series of public lectures and interactions with staff and students.

I-Power has helped to seed corn ideas, and support staff interactions, across SGSD research groups, including: (ECRG-GOSSIP) *Food Security and Health for East Africa* (EPSRC), and (ECRG-GOSSIP) *Gaining Cultural Heritage Status for Urarina Textiles: Peatland Livelihoods and Ecological Conservation in Loreto, Peru* (SFC-GCRF). Further projects make explicit connections between local (Scottish) and international expertise in specific areas, including *Student Mobility and Constitutional Change* (ESRC); *New Residential Mobilities in Scotland* (ESRC); and *Carbon Storage in Intertidal Environments* (NERC).

The Bell Edwards Geographic Data Institute (BEGIN), established in 2018 in part from an alumnus bequest, brings research, skills and support in data analytics to researchers across SGSD. BEGIN currently leads on two projects: *Uncovering the Mechanisms of Migratory Bird Navigation with Big Data Analytics* (Leverhulme); and *Exploring the Effect of Location and Environment on Human Mobility Flows with Big Data Analytics* (ESRC).

Collectively, these research groups and School-wide initiatives have been associated with over 70 research and impact events per year, and in the period 2016–2019 the School hosted 63 female and 93 male external speakers. We strive to increase our profile as a School that links a breadth of environmental, social and sustainability concerns at a high intellectual level with a grounded sense of the importance of impact. Our commitment is to foster rigorous research and realise its transformative potential, in a collegial research environment that encourages personal and collective scholarly endeavour, growth, and connection with others.

### ***Research integrity***

We strive to make our outputs easy to discover and share, both through the SGSD website and Facebook and Twitter platforms, and with all staff having ORCID accounts linked to their research pages. The University's Research Integrity Policy is included in our annually revised Staff Handbook and all research project applications are reviewed by the School's Ethics Committee to ensure that staff and students adhere to the University's principles of good research.

**Impact approach**

Our approach is rooted in a belief that impact comes from an ability to work across theory and practice and build meaningful and durable collaborations. By facilitating research of the highest standard to meet the needs of specific groups and sectors, SGSD has built on its impact accomplishments of REF2014 and embraced University strategy in this area.

Our ICSs demonstrate how academic research, when developed in an environment designed to facilitate engagement with policy makers and community stakeholders, can transform and translate good science and scholarship into tools of considerable political and practical utility and impact. Each ICS illustrates aspects of our approach to impact and its diverse reach, although a considerable amount of the impact of the School's research is of course outside these specific case studies.

Over the current REF period almost all School staff have enabled or been involved in impact initiatives, spawning 36 funded projects (from £2.5K to £2.5M). The SFC-GCRF platform –with 10 SGSD projects, and *Laurie* its current University Director –has been key in developing our impact agenda. Impact initiatives (including *Valuing Tropical Peatlands*; *Malawi's Disaster Management Strategy*; *Free and Open Source Software for Movement Ecology*) foster staff synergies across research groups. Some demonstrate our commitment to Scotland and Fife, including *Blue Carbon Resources: Contributing to Scotland's Climate-Change Policy Goals*, *Rowing the Waves: Fife Coastal Communities*, and *Migration and Constitutional Change in Scotland*. Others are threaded through wider national and international ventures and include *Valuing Intact Tropical Peatlands* and *Changing the Way Government Identifies Small Areas of Need and Distributes Funding in the UK and Beyond*.

As a School, we do not have a one-size-fits-all approach to impact, as both the 'impactful' potential of our research and collaborative nature of our partners and beneficiaries are diverse. Instead, we use a six-pillar approach that encompasses the following (examples in Section 4):

- 1) Effective mass communication using electronic and social media, including interviews on TV news and current affairs programmes, and a prominent online presence (podcasts, blogs, Twitter, Facebook, Instagram).
- 2) Formalised Knowledge Exchange (KE) practices including involvement of professional, dedicated expertise; support staff, for example, at the CPC and Administrative Data Research Network and Centre on Dynamics of Ethnicity, Scotland (ADRC), whose role involves user engagement and research impact; the RSGS-RKEC annual KE fund for postdoctoral researchers.
- 3) Participatory research: e.g., Learning for Sustainability in Scotland, and participatory methods in health prevention and disease understanding in Africa (e.g. HATUA, SEEDZ).
- 4) Engagement with those involved in policy formation: monthly CPC Brown Bag seminar series, work with the Scottish and UK Governments over migration policy and climate change, including the foundation in 2019 of a RSGS-RKEC-led 'Research data base' to provide the policy sector and other research users with a list of expertise and specialisms across Scottish geography units.
- 5) Outreach and training: training local authorities on how to use population statistics; GeoBus; Fife Schools events; and recently the creation of a dedicated Outreach Officer (staff member within SGSD).
- 6) Private sector connections, especially with the energy sector.

**Section 2. People****Staffing strategy and development**

The cornerstone of our staffing strategy is the appointment of outstanding researchers at all levels who can drive and augment the School's existing and emerging strengths and strategic aims (Section 1). The School's overarching objective is to provide staff at all levels with the **time**,



**training, resources** and convivial **intellectual setting** to fulfil their research and impact potential, within a changing and increasingly competitive labour market and funding environment. The School seeks to recruit and nurture individuals and groups to achieve research and impact of the highest quality that is also inclusive, inspires confidence, and strives for innovation within a healthy work environment. This strategy includes the appointment of early career researchers on permanent contracts and encouraging them towards promotion, after a period dominated by senior appointments.

### ***Time, training and intellectual environment***

Research training is a career-long undertaking, vital to research leadership and publication. New staff are assigned an experienced mentor to help with all aspects of research and teaching, including project design and implementation, publication strategy, research-led teaching initiatives, and postgraduate recruitment and supervision. Such internal personal and professional mentoring and training is augmented by that offered through the University's central training service (ILES, 3.2). The School provides research resources from its yearly operations budget to support staff and postgraduate attendance at conferences and workshops (run by, for example, ESRC, NERC, SAGES, and national and international geography societies), and for assistance with fieldwork and research visits.

Staff can apply for research and impact leave (one semester in eight), and applications encompass funding capture, work on research outputs, research visits to institutions and/or fieldwork, and time to develop collaborations and impact cases studies. On average, two staff are on leave in any given semester. A School Manager (appointed 2017) has assumed a range of administrative tasks formerly undertaken by academic staff, releasing research time.

Delivering impact (Section 4) is integral to School's research ethos and view of staff development. Impact activity is supported by School and University budgets: the former overseen by the DoI, the latter by a University Research Impact Team. Requests for funding are considered on a case-by-case basis, chiefly to organise knowledge exchange events, to employ people to facilitate impact activity, and for equipment and travel for knowledge dissemination and interactions with stakeholders.

All staff have personal research accounts and are further rewarded by receiving 3.5% of overheads into them (the School receives 7% and puts the other half towards PGR scholarships), and £500 into them when they submit, as PI, a full research funding application that is costed over £100K. Since its inception in 2015 more than 20 staff have received this incentive. New non-professorial staff are allocated start-up funds of £5K, or more as commensurate with their needs, to establish their research programme, while new Professorial staff receive a larger fund negotiated with the Master.

These policies help us to achieve our strategic research aims by incentivising and facilitating both individual and collaborative endeavour, and conference and networking initiatives, for junior and established researchers alike. They are augmented by yearly staff annual research meetings with the HoS and DoI and research group Away Days. School and University workshops and advisory meetings regarding planning and preparation of research outputs and impact, and internal (pre-submission) reviewing of research grant application and papers.

We foster a **stimulating intellectual environment** through regular research meetings within our research groups, as well as through I-Power and BEGIN, designed to share research experience, promote research synergies, drive research initiatives, and widen research horizons. Agendas are wide-ranging and meetings include in-house research seminars, 'journal clubs' designed to share new ideas emerging in the literature, presentations by visiting researchers, and roundtable discussions of work in progress on doctoral and postdoctoral research projects. They also offer opportunities to share technical skills and experience in grant applications and research management; chances to develop new research collaborations and disseminate information regarding opportunities for research funding, publication and impact;

and provide space for debate on research and appointment strategy, research infrastructure, succession planning, and the award of Honorary positions and fellowships.

Postdoctoral research staff (PDRA) play a valued and integral role in research seminars, journal clubs, and research Away Days, and a PDRA representative sits on the SRIC. Over the REF2021 period we have had 36 PDRA's (currently 28), some working on specific projects who have been supported to achieve subsequent career success (e.g. Lecturer), with others remaining as valuable long-term members of SGSD, working on a succession of projects and becoming P-Is in their own right. To support the career development of this category of research staff, SGSD has used the opportunity given by the recent opening of the academic promotion process to research staff to support the application for promotion for two of these longer-term research fellows, one of which was successful. Additionally, to support the career development of postdoctoral research staff and facilitate the transition between PhD towards an independent research career, the School has organised internally targeted career development sessions with more experienced members of staff of the School.

Postgraduate training and administration are managed by the School Postgraduate Research Committee, which comprises elected postgraduate representatives and academic staff representatives. Four times per year research students convene a *Postgraduate Forum*, to discuss postgraduate issues, and to organise an annual postgraduate conference and social events, which are well attended by academic staff. All research students have at least two supervisors within the School responsible for overseeing research planning and progress, with fortnightly mentoring of first-year research students. We run a buddy system, pairing up senior PhD students with freshers, to further aid their integration into the School.

Progress is formally monitored through an annual review for which PhD students prepare a presentation and progress report. The presentation is delivered at the annual PGR conference which is followed by the formal review meeting with members of the PGR Committee. The organisation of the PGR conference is led by PGR students (supported by the School) and the event is an important opportunity for students to review and share their work and receive constructive feedback.

Research students are likewise an integral part of our research community, and since 2014 research student numbers have increased to 40 registered PhD students (an increase from 34 in 2014), or about 1.3 PhD students per academic staff member at any one time. The number of annual PhD new starts has been steady, from 45 in 2013–14 to 43 in 2017–18, and we continue to think about ways of increasing our PhD numbers while retaining our commitment to recruit and train the highest quality researchers. Of the registered PhD students, over 60% are from outside the UK. Of these, approximately 50% are from EU countries (Croatia, Czech Republic, Denmark, France, Germany, Greece Poland, Romania, The Netherlands and Slovenia) and 50% from elsewhere overseas (including Middle East, Indian Subcontinent, Africa, East Asia and North America).

In the 2019–20 academic year, PGR funding came about equally from internal funding and external sources, with just one self-funded student. Funding sources include UKRI via the Scottish Graduate School of Social Sciences (ESRC), SUPER and IAPETUS (NERC) DTPs (currently, 12 students receive UKRI funding); the SAGES collective; the China Scholarship Council; National Science Foundation and Overseas governments (ILES, 2.5). The School is a partner for PhD training with the Max Planck Institute for Demographic Research (6 students, 2017–2022). The School and the University's Postgraduate College, St Leonard's, also fund studentships with matched funding being prioritised. In 2019 the School invested in two fully funded PhD studentships, open to international competition. Overall, the School has seen an increase in funding for PGRs by 25% between 2013 and 2020 (c. £409,000 to £507,000), with a concurrent increase in the funding per student from external sources over this period. A third of PGR funding arrangements involve partnerships between the School/University and external sources, demonstrating the School's high level of engagement with match-funding initiatives.

All research students are required to undertake generic and research-specific training. We follow the Vitae Research Development Framework to monitor and plan appropriate training as an ongoing element of supervision and review. The University's GRADskills programme runs induction events, workshops, and courses on study and presentation skills, maths and statistics, professional skills (such as fundraising, marketing, public speaking, staging events, interviews, and time management), transferable skills and careers. Our students have free access to, and make use of, in-session English Language support provided by English Language Teaching unit of the University and are able to audit 5000-level research methods modules delivered by the School (and accredited by UKRI for +1 training).

The School's PGR Committee runs an annual session where staff work with students on their CVs, with presentations from the PGR advisor from the Careers Centre. In January 2019 we introduced a series of 'Lunch & Learn' monthly events for PGR students and postdocs which provide generic training in an informal setting. Topics are varied, frequently in response to requests from, and led by, PGR students themselves, including 'Academic Pathways –PhD and beyond', 'Managing your supervisor', 'What to do when things go wrong', and 'Publishing in Geography and SD'. Bespoke training models on, for example, laboratory practice, IT, geoinformatics, cartography, are provided by the School, through DTP-supported residential training courses, or, where necessary, external training. Research students are also required to develop teaching experience (and complete the necessary training courses), to give research seminars, and are encouraged and supported to publish at least one paper before thesis submission and to present research at international conferences.

All students are provided with a Research Training and Conference Fund (£750 per annum as standard) and are also able to apply as necessary for additional funding from the School PGR professional development fund. We provide all PGR students with computers and related equipment, whether based in one of our three PGR rooms or working from home (as many are during the pandemic). We encourage and foster a sense of community amongst our research students through the annual conference and dinner, participation in School activities, and involvement in training and social events.

The results of our supportive environment, effective training, high quality supervision and good management of PGR are reflected in our completion rates: of the 2011–2015 cohorts (who would be expected to have completed by 2020), 79.4% have successfully graduated with doctoral degrees. Our PGR graduates progress to a range of careers including in public and civil service (e.g. Public Health England, National Records of Scotland), to academic posts in the UK (including Edinburgh, UCL and Sussex universities) and overseas, and to a range of commercial companies.

### ***Equality, Diversity and Inclusivity***

The School was awarded Athena SWAN Bronze status in October 2019, recognising our achievements during the REF period as well as our ambitious action plans for the further promotion of EDI. The University's excellence in this area is recognised by an institutional Athena Swan Bronze Award and a European Commission HR Excellence Award. The University actively promotes our Stonewall membership and LGBT charter mark, as well as Women in Science networking events. The School aims to achieve a gender-balanced staffing profile at all levels of management and responsibility, as well as to increase the proportion of staff from underrepresented groups. We advertise posts widely in order to attract candidates from different backgrounds, include male and female contacts on all adverts and, in line with University policy, have banned single sex shortlists. We actively encourage female colleagues to apply for promotion (4 of 6 staff promoted during the REF period have been female), but there remains a gender imbalance at senior levels. We provide opportunities for staff development by participating in University-wide mentoring schemes (ILES, 3.2). We also have a School-internal mentoring scheme, encouraged and overseen by the HoS, and there is an informal WhatsApp group connecting female members of staff. Since 2017, 11 staff have requested a mentor (6 female and 5 male).

We have undertaken two staff surveys (2018 and 2020) as part of the Athena SWAN application process, and identified several areas for improvement. One is our workload allocation model (completed in April 2018, after extensive staff consultation). This model aims to limit teaching and service activity to maximum of 60% of staff time in order to facilitate research activity, and increase transparency in work allocation. The School's main administrative posts (Head of School and 7 Directorships) are rotated every three years as part of our staff development strategy, to furnish possibilities for promotion, as well equality and diversity, and widen experience. We provide for reduced teaching loads for new starts and returners from maternity/shared parental/carer's leave. The School holds all meetings and research seminars in core hours, and we offer family-friendly social activities –which include PGR students –to provide an intellectually stimulating as well as friendly work environment. We provide opportunities for flexible working and all research staff are encouraged to dedicate one day per week to research.

We have initiated work on 'unravelling privilege', in response to the Black Lives Matter movement, and have established a group connected to EDIC to monitor this in research and teaching. We anticipate giving this increasing attention in coming months and years across all areas of research.

During the pandemic, we have kept in continuous contact with staff working from home, and made numerous adjustments to workload to counter the impact of the pandemic on research and teaching, including provision of IT equipment to facilitate home-working. Three staff (all female) received funding of £25–45k from the SFC-funded initiative to restart research that had been particularly affected by the pandemic and consequent lockdown. So far, 22 out of 47 PhD students have been granted extensions to mitigate the effects of the pandemic on their work.

### **Section 3. Income, infrastructure, and facilities**

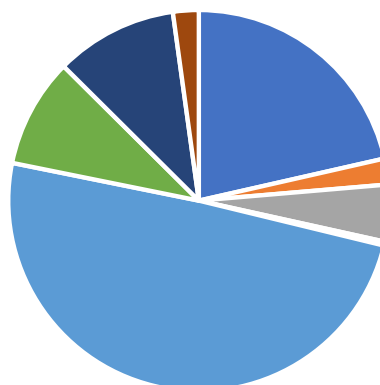
#### **Income:**

SGSD secured £9.33M in research grant awards during this REF period. These amounts have been secured from a total of £44.55M in grant applications, with an upward growth trend in applications, and an application: award success ratio of 44% (roughly 10% higher than the University average). Most of these awards are for FEC-costed research projects and centre/institute affiliations; a few are for fellowships. Around two-thirds (£5.84M) of awards have been geared to core and collaborative projects, and around one third (£3.49M) explicitly to impact case studies (a greater proportion, £7.45M, to impact activity more generally). Of 43 live projects, 16 are in the £100K+ bracket, and 22 in the <£50K bracket, demonstrating our strategic aim of broadening our award base by type and size. Over the past decade, the School's grant application strategy and pattern of success has shifted away from an era dominated by substantial grant income based on a small number of research areas (especially population and housing, where application success rates were very high). Several of the staff involved in that activity have since left St Andrews or retired. Grant projects are now more evenly distributed across staff, with an increasing number of awards involving the pooling of staff and research group expertise.

FTE Category A staff have secured 120 awards totalling £8.72M, and with average of £300K per member of staff, and an average of 0.59 projects per staff per year.

Research awards by source are broken down and presented in Figure 2 and Table 1 (which includes the component with impact).





- EUROPEAN UNION
- EUROPEAN UNION - OTHER
- OTHER OVERSEAS
- OTHER SOURCES
- RESEARCH COUNCILS
- UK CHARITABLE BODIES
- UK GOV'N'T/HEALTH/LOCAL AUTH
- UK INDUSTRY/COMMERCE/PUBLIC

**Figure 2 Research awards by source**

Source	Total value (£)	N	Portion £ with Impact	N with impact*
UK Research Councils	4.6M	38	3.78M	8
EU	2.2M	8	1.99M	4
UK Gov/Health/Local Authority	968k	47	851k	23
UK Charitable Bodies	865k	37	572k	28
Other Overseas/Other	480k	22	58k	4
Industry and Commerce	203k	5	201k	5
<i>Total</i>	9.32M		7.46M	
*Projects often have more than one funder				

**Table 1 Amounts for research awards and those with impact**

The income totals for the three research groups are:

- **ECRG:** £3.75M
- **PHRG:** £3.35M
- **GOSSIP:** £1.36M

There have been notable climbs in awards across the School from UKRI (nearly 30% rise since REF2014, especially MRC and NERC), and the EU (fourfold rise) and EU –other (100% rise).

Research council income by research group:

- **ECRG:** £2.14M
- **PHRG:** £1.39M
- **GOSSIP:** £803K

Research council funder by % of total number of awards and projects:

- **NERC:** 40% by awards, 23% by project
- **ESRC:** 39% by awards, 53% by project.

The three top award amounts –of £1.95M (ERC), £1.92M (NERC) and £1.8M (ESRC) – account for 60% of total awards. However, the £173K awarded for 10 SFC-GCRF projects, and involving researchers in all three research groups, is no less significant, as it reflects the School's valuing of the diversity of research activity.

NERC and Leverhulme awards have played significant roles in advancing ECRG core areas of glaciology, tropical ecology, and GIS/remote sensing.

PHRG researchers (REF1 and REF2) have held all three levels of European Research Council Award (Starting, Consolidator, and Advanced).

The School's emerging group, GOSSIP, has proved adept at both securing smaller awards from a wide range of funders, and using them as a platform for applying for larger grants, particularly in the cross-over Geography-SD nexus.

The School's participation in the Global Challenges Forum (ILES, 2.3), totalling 9 projects involving current staff, has been significant in fostering School-wide synergies, collaborations within and beyond the University, and an important small grant platform from which for large grant applications have been made and awards secured, particularly to UKRI and UK Gov (see Figure 3).

#### **Infrastructure and facilities:**

Academic and support staff offices, computing facilities and laboratories, and core teaching and research spaces connected to SGSD have been spread across adjacent buildings in the old part of the University. Having a clearly identifiable School hub was deemed a priority in 2017 and is now being realised: the School will be united in one recently refurbished building from 2021. This will be a major boon to our research and teaching environment. Most research students and postdoctoral researchers will also share the same buildings and facilities.

SGSD is supported by six administrative staff and two technicians, including a dedicated Grade 3 technician who oversees laboratory work. Laboratory facilities consist of a primary sampling and sedimentology room and two rooms containing the School's analytical equipment. The dominant research themes in the lab are: (1) understanding the burial and storage of carbon in marine sediments and terrestrial peats (especially tropical peatlands); (2) understanding the long-term evolution of environments and ecosystems; and (3), developing the use of tephra layers as records of past environmental conditions.

SGSD has a full range of equipment for field survey (including time-lapse cameras, drones, and automatic weather stations); the collection of samples (from ice, peat, freshwater and marine sediment); laboratory analysis (particle size, Carbon, Nitrogen, organic and inorganic matter, water quality, light microscopy); and data analysis (GIS and Remote Sensing licences).

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

#### **Collaborations, networks and partnerships**

Much of our research is designed and delivered through collaborations, networks, and partnerships. Collaborative thinking and practice come in three main modes: (1) community/partnership, (2) organisational/policy, and (3) institutional/university. Each mode is valued both for what it brings to the School's research environment, and for what it offers research users and beneficiaries (ILES, 2.8). Each traverses our core research and impact agendas, as well as the strategic priority flagged in Section 1 as 'collaborative research.' Collaboration is also integral to our 'regionalised clusters' of work (see Figure 3).

While the different styles of research collaboration and data sharing identified below are by no means exclusive to their associated research group, the following characterisation, by research

group, helps to explain how both core and impact-oriented research within those groups is undertaken (see Section 1 –Research groups):

- **ECRG** is recognised for its scientific collaborations with various university, governmental, and non-governmental consortia, including: the International Thwaites Glacier Collaboration (5 UK and USA partners); the Centre for Scientific Computing, Finland; the Institute of Tibetan Plateau Research, China; the Instituto de Investigaciones de la Amazonia Peruana, Peru; the UN World Conservation Monitoring Centre; the Swiss National Science Foundation (7 European partners); the European Space Agency; and the British Antarctic Survey (Figure 3).
- **PHRG** is recognised for its centre- and project-oriented collaborations and consortia with various funders and institutions, including: CPC (3 UK universities); ADRC-Scotland, and CALLS (4 UK universities); CoDE (5 UK universities), and also MMRP (8 European universities) and IMPRS-PHDS –International Max Planck Research School for Population, Health and Data Science (8 European and North American universities) (Figure 3).
- **GOSSIP** is recognised for nurturing ethical partnerships and projects of knowledge co-production within the UK and internationally, and for modelling best practice and offering advice to the University in connection with its Global and Diverse St Andrews agendas. GOSSIP researchers are leaders and specialists in socially inclusionary and participatory research in diverse locations, with multiple partners, and through fieldwork, training, and co-publication. Notable clusters and programmes of collaborative research revolve around Central and South America (5 inter-university collaborations) and Sub-Saharan Africa (c. 30 collaborations). Details in Figure 3: SEEDZ; El Niño in Northern Peru; Mapping Community Development; Environmental Justice.

In total, SGSD researchers are involved in over 200 collaborations with co-researchers, co-authors, and academic and non-academics institutions and partners. Almost all grant awards involve collaboration and/or networks of engagement, and our ethical commitment to co-partnered knowledge production and exchange is captured in the author lists of diverse outputs, ranging from peer-reviewed articles to advisory and community reports.

A growing number of grant applications involve more than one member of SGSD staff and, in both their UK-based and international work, all research groups collaborate with researchers from across the University (in the Schools of Art History, Biology, Earth and Environmental Sciences, Modern Languages, Management, Medicine, International Relations, and Philosophical, Anthropological and Film Studies). SGSD also has close connections with University-wide organisations (especially the Scottish Oceans Institute and ESB).

Figure 3 gives a snapshot of the international scope and diversity of our collaborations, funders, networks and partners, and a sense of how they relate to our main ‘regionalised clusters’ of research beyond the UK. It also illustrates how our research and impact strategies are embedded in, and realised through, initiatives that reach across Geography’s physical and social science and humanities spectrum, link Geography and SD, and foster collaborations of broader interdisciplinary scope. The legend gives the prime methodological orientation or nexus of the activity selected, although in almost all cases there is some cross-over between areas within SGSD and some element of wider interdisciplinary. Some of the examples are project-based, institute-centred or funder-specific, whereas others refer to longer programmes of research in specific areas. In all cases, the regionalised (and in most cases field-based) focus of the research and impact is key to nurturing partnerships with overseas co-workers, and to developing data, understandings and methods that make a real difference on the ground.

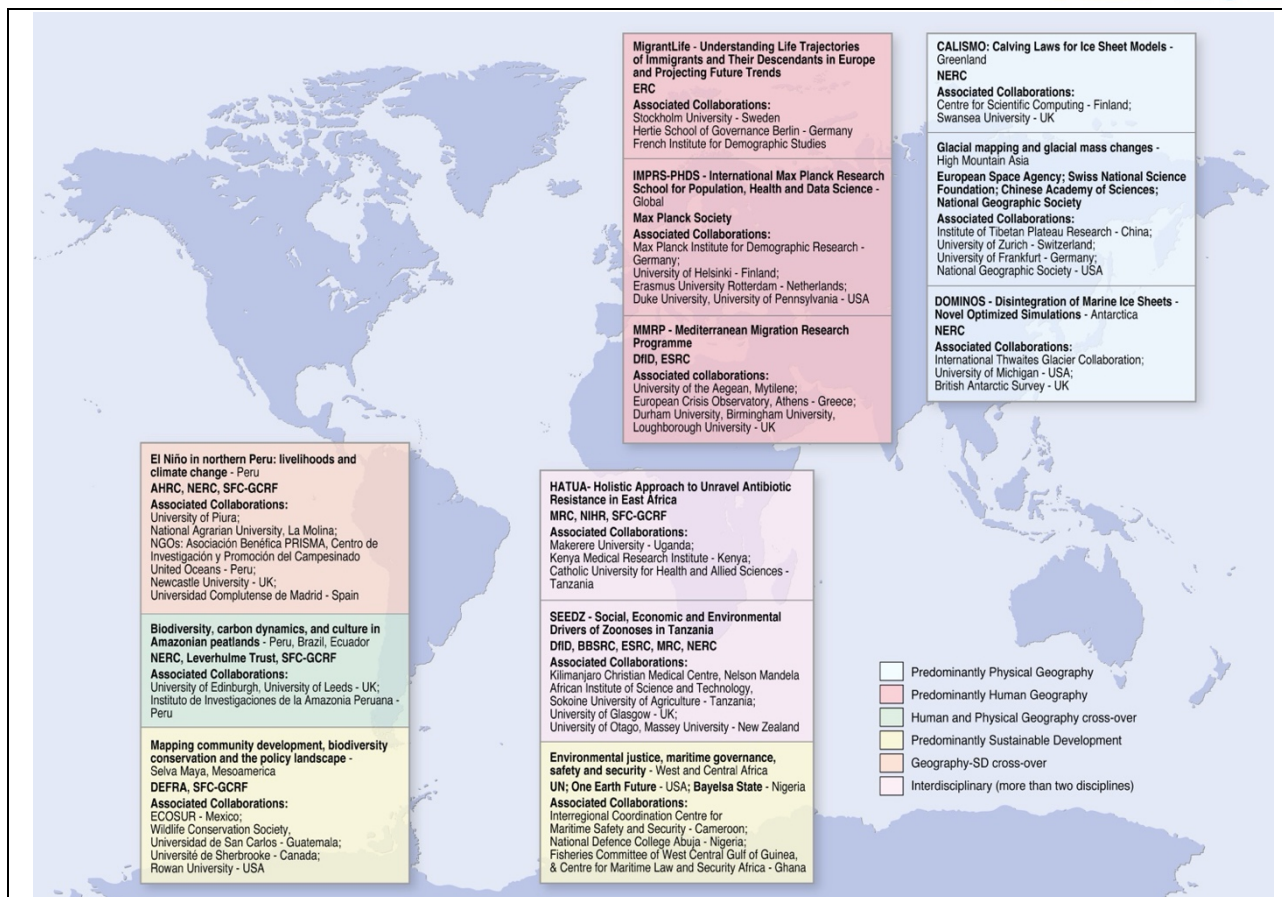


Figure 3: SGSD collaborations and their relationship with research and impact strategy.

### Contribution to the research base

The School's contributions to the research base have not only encompassed a wide range of disciplines but have also been interdisciplinary, international, and advisory. Geography is our main disciplinary anchor and we make significant contributions to its national and international functioning through: (1) learned society committee leadership and membership positions; for example, *Clayton* –RSGS, *Laurie* –RGS (Section 1: Esteem); Chairs, RGS-IBG Research Groups: *Finney* –Population Geography, *Hope* –Development Geography, *Kesby* –Participatory Geographies; (2) journal editorships and associate editorships: *Demšar* –*International Journal of Geographical Information Science*; *Sharp*, *Vradis* –*Political Geography*; *Kulu* –Population Studies; *Laurie* –*Progress in Human Geography*; *Clayton* and *Warren* –*Scottish Geographical Journal*; and (3) major conference organisation: *Bennett* –Chair of the Scientific Programme Committee of INQUA 2019. Furthermore, SGSD staff have convened 50+ conferences, workshops, or conference sessions within the annual conferences of the AAG, AGU, EGU, IGC, RGS-IBG, and other Geography-affiliated professional organisations. They have presented 200+ conference papers, of which over 50 were invited, keynote, or plenary presentations.

Staff hold similar roles in broader arenas, including *Kulu*, *White* (Section 1: Esteem); *Demšar* – Co-chair, International Cartographic Association Commission on Visual Analytics; *Okafor-Yarwood* –One Earth Future Foundation Stable Seas Report; *Austin* –NERC Research Council Peer Review College; and *Sharp* –Faculty Expert, Global Health Board, MRC, and Member, Sustainable Futures in Africa Network.

### Contributions to economy and society

#### Public engagement

Public engagement is a critical part of our academic remit, as determines how our work is seen, disseminated and used in the wider world. For example, research on the issue of migration and



constitutional change has contributed significantly to public and policy debates in both the 2014 Scottish Independence and 2016 EU referenda. Public engagement included dissemination of research findings through the popular media (e.g. BBC Sunday Politics, BBC at Nine, *Guardian* Live Chat), in public debate (including Edinburgh Festival of Politics, David Hume Institute, Spring seminar: The Politicians and Professionals series), and public-facing outputs (e.g. *ESRC Society Today* magazine, *The Conversation*). Community commitment is exemplified by 'Rowing the Waves', a project that draws attention the historical, cultural, and economic value of coastal rowing to Scotland and the UK, and seeks to promote the sport, and harness its relevance to marine recreation policies and place marketing. The project has produced an adaptive rowing guide (co-produced with St Andrews Coastal Rowing Club), a strategy for the curation of British rowing histories, and two short films, as a means of drawing policymakers and stakeholders to a user forum.

#### *Private sector*

Impact in the private sector stems primarily from research connections to the energy sector. Key user groups and beneficiaries in this regard include the National Grid, Electricity North West and EDF (collaboration over long-term flood maps), Renewable World (NGO), and NHS and Fife Council (as part of our formal membership of the Fife Environmental Partnership). Recent SFC-GCRF funded work in Malawi engages directly with the Rocky Mountain Institute in co-creating an energy use map.

#### *Government and civil service*

Civil servants and policy officials have used our research into the demography of Scotland and the UK, the global effects of climate change and marine planning, policy development, and resource allocation. For example, our research has informed Scottish immigration policies in the context of the UK leaving the EU (Expert Advisory Group on Migration and Population). Glacial research based in SGSD has been used by the Scottish Government in their 2019 National Arctic Strategy, and our research has directly influenced IPCC assessments and Westminster All-Party Committee discussions of ice sheets and sea level rise modelling.

Overall, it is the quality and effectiveness of our collaborations and networks, and how they build bridges with academic and non-academic research partners, rather than their size or scope, that matters most to us. Collaboration is central to we do, and it often outlives the time-limited nature of the funding that supports it.