

Unit-level environment template (REF5b)

Institution: Bath Spa University
Unit of assessment: UoA 14: Geography and Environmental Studies
<p>Section 1. Unit context and structure, research and impact strategy</p> <p>1. Structure and Context</p> <p>Resounding successes of Geography and Environmental Studies research at BSU are our international portfolio, underpinned by major funding and extensive national/international networks which facilitate significant contributions to global debates. Our portfolio deploys scientific, social-scientific, humanities and arts approaches to address societal and environmental challenges, working across traditional boundaries to embrace and pioneer interdisciplinary research.</p> <p>Two key research entities span the unit and link to other scholarly areas: (1) 'Research Centre for Environmental Humanities' (RCEH); and (2) 'Hazard, Risk and Disaster' Research Group (HRD). The unit also contributes to the 'Global Citizenship and Identities' (GCI) Research Group.</p> <p>Significant institutional investment has transformed us from non-submission in REF2014 due to lack of SRR capacity, to a vibrant unit with 13 SRR staff and five honorary research fellows. This unit's interdisciplinarity bridges subject boundaries. Most SRR staff reside in the School of Sciences, in Geography (5), Biology (4), and Sociology (1), with others in the School of Humanities (2) and the School of Creative Industries (1). Our key areas of research expertise are:</p> <ul style="list-style-type: none"> • Conservation ecology (Anderson, Thomas, Thornhill) • Environmental histories/heritages (Johnson, Law, Penrhyn-Jones, Sullivan) • Environmental ethics/philosophy (Hannis, Sullivan) • Environmental visual/performance arts (Law, Penrhyn-Jones) • Geographical pedagogy (Law, Simm) • Global development/sustainability/political ecology (Hannis, Jeffers, Penrhyn-Jones, Sullivan) • Hazard processes and disaster/resilience studies (Gioli, Jeffers, Johnson, Thornhill) • Palaeo-environmental reconstruction/climate change (Jeffers, Law, Pauly, Penrhyn-Jones). <p>Thriving within the context of University-wide research strategies (sections~1.2;1.4) the unit delivers vitality and sustainability through core commitments to research leadership and development of all our people.</p> <p>Re-alignment of Research Centres and Groups since 2014 has successfully developed new interdisciplinary approaches to Global Challenges, and attracted new research-active staff. The unit now develops significant research that primarily sits within the framework of RCEH, one of three University-wide Research Centres established in 2016 (Institutional Environment Statement [IES]:2.3). Jeffers and Hannis are members of the RCEH core management team,</p>

whilst Gioli, Johnson, Penrhyn-Jones, Sullivan and Thornhill are members of its wider steering group.

The [HRD](#) Grouping led by Johnson and synergistically connected with RCEH, brings together understandings of process dynamics and societal policy responses to environmental hazards and disaster risk reduction (DRR). We have particular strengths in India and Kiribati (**ICS UoA14-1 RRS**), and wider work in Dominica, Guatemala, Ireland, and Mexico. HRD amplifies the research of Gioli, Jeffers, Johnson, Penrhyn-Jones, and Thornhill on mountain/estuarine/coastal floods, hurricane impacts, and post-eruption volcanic hazards-resilience.

2. Research Strategy (August 2013-July 2020)

During the assessment period the unit's research strategy was contextualised by the University's 2030 Research Strategy (IES:2.1). Since 2014 we have significantly enhanced the vitality and sustainability of our research environment, via planned goals to:

- 1) **Attract, appoint and develop a strong research leadership team to bring vitality.** The 2014 appointment of Professors Sullivan and Jones (until December 2019) brought established expertise enhancing our research culture and international footprint. Simultaneously Johnson (Reader, 2015-) was empowered to develop leadership expertise, as Research Group director (HRD), School and University research committee member and UoA14 Lead. Training has been delivered via the BSU Researcher Development Programme. Thornhill (Reader, 2020-) manages 4 project staff (1.8FTE) in the 'RESPIRES' (Resilient People, Resilient Ecosystems in Smart Cities) project. Gioli brings prior international development leadership expertise from ICIMOD (The International Centre for Integrated Mountain Development) in Nepal. This combination of existing and developing expertise evidences meaningful investment in the unit's future leadership capacity.
- 2) **Develop active interdisciplinary research groupings.** As detailed in section~1.1, RCEH and HRD bring interdisciplinary focus to global challenges. Vitality is evident in our lecture series which host internal and external speakers, promoting academic cross-fertilisation as well as peer-assessment of emerging research. Our approach is inclusive: since 2016 RCEH has delivered 37 public lectures, involving overseas speakers (e.g. from Australia, France, India, Namibia, South Africa and USA) and unit staff (Hannis, Johnson, Gioli, Sullivan); many lectures are archived on the [RCEH YouTube Channel](#) facilitating wider engagement (n=>2000 views). Similarly, 2018-July 2020, HRD have hosted 5 events (UK, India), with invited speakers from the Universities of Delhi, Exeter, Lincoln, and King's College London. GCI hosted a public workshop on refugee migration.

Interdisciplinary grant proposals reflect the unit's vitality. Since 2016 we have targeted UKRI, GCRF and the Newton Fund. Recent successes include: '[Etosha-Kunene Histories](#)' in Namibia (AHRC-DFG 2020-2023, PI-Sullivan, and 'IXCHEL' (Building understanding of the physical, cultural and socio-economic drivers of risk for strengthening resilience in the Guatemalan cordillera, NERC GCRF 2021-2023, start COVID-19 delayed, CI-Gioli).

- 3) **Increase our research income, as partners with UK/International HEIs.** We have achieved notable success in attracting funding; from GBP346,447 in RAE2008 UoA32 (GBP86,612 per-FTE), to GBP2,199,000 in the current period (GBP240,328 per-FTE) (section~3.1). In addition to listings in section~1.2.2, major UKRI and bilateral grants include:
 - '[Hydrocitizenship](#)' (AHRC 2014-2017, Jones)
 - '[Future Pasts](#)' (AHRC 2014-2019, Sullivan)
 - '[Disrupted Histories, Recovered Pasts](#)' (AHRC-LABEX 2016-2019, Sullivan)

- **'RESPIRES'** (ESRC-CONACYT 2019-2022, Thornhill)

Interdisciplinary and multi-national teams have been fundamental to our funding successes, including Penrhyn-Jones (Australia, India, UK); Johnson (India); Sullivan (France, Germany, Namibia, UK); Gioli (Guatemala, USA) and Thornhill (Mexico, UK). Funding has enhanced the sustainability of the unit, bringing PDRA posts to BSU, e.g. 'Future Pasts' (n=2), 'RESPIRES' (n=3) and fuelled research vitality with our staff being invited participants in national and international networks (section~4.3).

- 4) **Invest in our people.** Our research groups continually invest in the sustainability of our community. We host development sessions (e.g. writing planning, science writing for media, impactful research); generate convivial opportunities for group exchange; facilitate ready access to information (e.g. intranet, email lists); and transparently empower research growth via HEQR funding (GBP20,838: 2016-2020).

In the period 2014-2017 HEQR funds supported the full spectrum of research activity: (i) **outputs**, e.g. data collection, conference presentation, teaching relief for writing (section~2.2.2), and residential writing retreats; (ii) **environment**, e.g. teaching relief for international grant bidding (recipient: Johnson), support for outside speakers; and (iii) **impact**, e.g. public engagement/impact activities and data processing.

Spending in 2018-2020 has targeted environment and impact, delivering early growth in the frequency of HRD events, from 1 (2018-2019) to 5 (+3 deferred owing to COVID-19) (2019-2020).

HEQR funding has been key to the transformation of unit vitality, catalysing external funding associated with pilot data collection (Johnson- underpinned UGC-UKIERI grant success); development of research networks (Johnson- Canada, India, Switzerland, and USA); and co-production of research across the academic community (Law - ['The Last Hurrah'](#) climate change theatre production, which explores ways to bring the experience of living through climate change to theatre audiences.

- 5) **Champion creative research tools in science/social science research.** These have been central in our drive towards interdisciplinarity, expanding the audiences and beneficiaries of our research. For example, Penrhyn-Jones' film ['Timeline'](#) has been screened extensively, including prominent events such as UNCOP22 (2016) (**ICS UoA14-1 RRS**). Similarly, Johnson showcased the 'Pathways to Resilience' film at the International Kullu Dussehra Festival (2018), and the film is hosted by the [Kullu District government website](#) (**ICS UoA14-1 RRS**). Sullivan and Hannis curated the [multimedia exhibition](#) 'Future Pasts: Landscape, Memory and Music in West Namibia' in the UK (Gallery44AD, Bath, 2017) and Namibia (2019) (**ICS UoA14-2 NNC**). Thornhill's 'RESPIRES' work has used participatory video approaches (2020) to develop community understanding of blue spaces.
- 6) **Grow our world leading/internationally excellent outputs.** The unit was not returned to REF2014, which was a turning point for us. Due to strategic research planning there is now a strong research culture in REF2021. In terms of outputs, all SRR staff have generated high-quality outputs, including academic research outputs, consultancy reports, policy briefings and creative products (e.g. films, exhibitions and websites). BSU repository data (allowing for BSU employment commencement) show increased productivity: 2014 (14); 2015 (9); 2016 (21); 2017 (23); 2018 (28); 2019-20 (39). These outputs show our investments have generated a thriving research community.
- 7) **Be a highly reputable research/entrepreneurial partner in UK/global society, influencing policy-practice.** Research-led policy interventions include the provision of expert testimony for a major national review of 'Indigenous/Marginalised Peoples' land

rights in Namibia', led by Namibian NGO the Legal Assistance Centre and supported through the Africa Regional Democracy Fund of the US State Department (Sullivan, **ICS UoA14-2 NNC**). Similarly, a policy briefing to State/District Government across the Indian Himalayan Region, on more effective approaches to community flood resilience (Johnson, **ICS UoA14-1 RRS**).

Additional consultancy includes Johnson's 2016 United Utilities work in partnership with Durham University producing an 'Assessment of Torrent Erosion Impacts on the Flank of Thirlmere Reservoir following Storm Desmond'; offering recommendations for management of road infrastructure risks with further policy influence via Environment Agency geomorphology knowledge-sharing workshops, as part of the Cumbria Strategic Flood Partnership in 2017.

8) **Extend the reach of our research via media platforms.** We have brought impactful knowledge to a larger audience and built a reputation that will advance recruitment of those who wish to work and study with us. For example:

- Hannis: Planning permission for Hinkley Point nuclear power station (BBC TV/ Radio, 2015), and ecosystem services (Swiss TV, 2016)
- Gioli: Water management/climate change in Pakistan (BBC World Radio, 2020)
- Johnson: Flood hazards and management: (i) Somerset Levels (BBC Sunday Politics West, BBC Radio Bristol/Wiltshire, 2014); (ii) Storm Desmond (BBC Radio Cumbria, 2016); and (iii) Kullu District, India (Zee News, 2018)
- Law: Storegga tsunami ([2020 Daily Mail article](#))
- Penrhyn-Jones: Kiribati and climate change (BBC Radio Cymru, 2014).

Beyond traditional platforms, we also use social/web media to showcase our research (e.g. [Instagram](#), [thejournal.ie](#)).

3. Impact Strategy

Our considered approach to generating impact (UK/overseas) is embedded in our 2013-2020 research strategy (section~1.2). We have utilised **HEQR money to support projects with impact outcomes**, particularly those using **interdisciplinary creative tools**.

For example, Johnson's 'Pathways to Resilience' project (**ICS UoA14-1 RRS**) was awarded GBP7,832 in 2018-2019, to generate **participatory** films and host public engagement activities to develop community understanding and inform government policy for disaster risk reduction. This has worked in **partnership** with international HEIs, government agencies, and NGOs.

Similarly, Law's project 'The Last Hurrah' (section~1.2.4) underpinned by his coastal palaeo-environment research, received GBP1,379 and has since evolved into an independent theatre company. Performances have been delivered to UK theatre audiences (n=750, 6 performances) at BSU and beyond (e.g. Arc Stockton, Cornerstone Arts Centre Didcot) as reported in the [media](#). Post-performance feedback explores how the audience understands the play's climate change impact/adaptation story, and how the experience may influence their life behaviour.

In partnership with the University and outside agencies, the unit has also actively used **traditional and social media platforms** to promote its research to bring impactful findings to wide audiences (sections~1.2.2,1.2.8).

Our future (2020-2025) impact plans dovetail with our unit research strategy (section~1.4) and University strategies (*IES:2.4*). Our established experience of interdisciplinary research has highlighted the growing complexity and interconnectedness of global challenges; the need to develop solutions which extend beyond disciplinary perspectives; and the benefit of working with a diversity of stakeholders (local to international) to deliver change in policy and practice. Accordingly we will develop greater impact, **by strengthening our interdisciplinary outlook** by:

- Generating new vitality, working to **increase synergies** between our PGT Environmental Humanities cohort, building pathways for interdisciplinary PGR (section~1.4.1)
- **Investing in the sustainability of interdisciplinary research**; providing tailored mentoring opportunities and facilitating engagement events with broad audiences to explore new research ideas (section~1.4.2)
- **Consolidate existing partnerships** to bring sustainability and agility in our research collaborations (section~1.4.3)
- Enhancing our reach via **open access** publications and data sharing (section~1.4.4).

These impact strategies are evident in our impact case studies **ICS: UoA14-1 RRS**: Johnson/Penrhyn-Jones, 'Increasing Resilience in Remote Societies facing Interconnected Sustainable Development, Climate Change and Disaster Risk Challenges (India & Kiribati); **ICS UoA14-2 NNC**: Sullivan/Hannis, 'Enhanced Visibility of Marginalised Perspectives and Non-pecuniary Values regarding Land, 'Nature' and 'Natural Capital'.

With respect to:

- 1) **Interdisciplinary approaches**. Johnson's international work on flood resilience draws on science, social-science and humanities methods to develop understandings of floods, heritage and vulnerability. Expertise developed through this work, and through the similarly interdisciplinary 'Hydrocitizenship', 'Future Pasts' and 'Troubled Waters' research projects, mobilises the powerful medium of film to engage diverse audiences, from local communities to government agencies.
- 2) **Participatory methodologies**. Penrhyn-Jones co-produced films with local communities and artists, to understand indigenous relationships to land and allow project objectives to evolve in response to locally-identified priorities (**ICS UoA14-1 RRS**). Similarly, cultural mapping research by Sullivan in Namibia was carried out in collaboration with local institutions (the Sesfontein Conservancy, the Namidaman Traditional Authority) and NGOs (Save the Rhino Trust Namibia) and led by key informants (**ICS UoA14-2 NNC**).
- 3) **Building partnerships**. All case studies were developed through UK and international cross-sector partnerships, including bi-lateral funding (e.g. UK-France; UK-Germany; UK-India). Collaborating **HEIs** include GB Pant National Institute of Himalayan Environment (GBPNIHE), Himachal Pradesh University (HPU), King's College London, Panjab University (PU), SOAS, and Universities of Cologne, Delhi (DU), Edinburgh, Exeter, Manchester, Manitoba (UoM), Paris Ouest Nanterre and Winnipeg (UoW). **Government and public agencies** include the National Museum of Namibia, Himachal Pradesh government (India), Kiribati Culture Centre and Museum, and Kiribati National Library and Archive. **NGOs**

include KiriCAN (Kiribati), Save the Rhino Trust (Namibia). **Local communities** include village Panchayats and Tibetan refugees (India) and the Namidaman Traditional Authority.

- 4) **Use of traditional/social media.** Johnson's Kullu 'Pathways to Resilience' films and DRR policy briefing have been discussed in Indian Newspapers (e.g. Punjab Kesari, The Times of India, The Tribune), Indian TV (Zee News), hosted externally (e.g. UNDRR-PreventionWeb, Zurich Flood-Resilience-Portal) and disseminated by social media. Sullivan's research has regular blog outputs (e.g. [2020 blog](#)) her article in *The Conversation* discussing the poisoning of lions in Namibia reaching >60,000 readers.
- 5) **Open access outputs.** As a unit we use a combination of [ResearchSPace](#), [BathSPAdata](#) (Figshare repository) and BSU/external websites (section~1.4.4) to share research outputs and impact materials. For **ICS UoA14-1 RRS** these include: a 2020 policy brief (>640 views, downloaded in 19 countries), film, academic publications, testimonials and survey responses about the transformative value of research for government agencies, NGOs, local communities and entrepreneurial business. For **ICS UoA14-2 NNC** these include: academic publications, commissioned reports, testimonials from a King and public/policy engagement, and comments books from research exhibitions.

4. Future Research Strategy (August 2020-2025)

Building on accomplishments since 2014, the unit's future strategy aligns with BSU's 2030 plan (IES:2.1) to deliver targeted growth to further our vitality and to sustainably extend the capacity of our established areas of research strength, including transforming HRD into a thriving research centre. At the start of this strategy window we continue to assess the risks and implications of COVID-19, and we are already adapting our research strategy. This withstanding, our future goals are to:

- 1) **Grow our postgraduate community.** Objectives include developing career progression opportunities for our students, diversifying their age profile, and furthering their inclusion in our research activities. Foremost is facilitating PhD funding avenues. In this regard we seek to grow our existing association with the AHRC South, West and Wales Doctoral Training Partnership (SWW-DTP), continue to offer BSU university fee-waiver scholarships, alongside bidding for wider finance (section~1.2.3). Since 2014 these mechanisms have resulted in 1 completion, 1 in corrections and in 2020 we have 5 BSU registered PhD students; so early growth proportionate to supervisory capacity. Herein quality will be maintained by partnering new supervisors with existing experienced Directors of Study, complementing research supervision training via the BSU Researcher Development Programme.

To enhance student experience all doctoral students will be members of our research centres/groups, and will be encouraged to access internal and external funding in support of their research, and to both engage with/present in our research lecture series. We will also facilitate both PGR and PGT (MA in Environmental Humanities) inclusion in our research projects. For example, 'Operation Wallacea' research expeditions to Dominica (Thornhill) bring highly valuable field and publication opportunities.

- 2) **Extend our research capacity and capability.** We seek to increase the number of SRR staff in the next REF, by continuing to expand our staffing and support research activity. Key mechanisms include:
 - **Strategic appointment** linked to our research groups/centres. For example, strengthening HRD, Pauly (2019) and Gioli (2020) bring greater capacity in environmental history and risk in the Himalaya, and Gillmore (October 2020) new capability in radon risk

- **HEQR funding** to seed research activity and public engagement
- **Interdisciplinary mentoring and training** (IES:3.3) affording new opportunities to develop impactful research beyond traditional disciplinary boundaries
- **Developing interdisciplinary connections** with BSU colleagues outside our unit. Early successes include two PhDs (2016-2020) considering Environment-Art and Science-Media. Future opportunities surround the use of film in environmental dialogues to generate public engagement and develop policy positions, building on existing work in India (**ICS UoA14-1 RRS**) and Namibia (**ICS UoA14-2 NNC**). We will also co-host interdisciplinary workshop events, e.g. 'India and Africa Online Days', inviting public, academic and policy-practice delegates, to explore new collaborative research responses to global challenges
- Supporting the **career development** of research/ consultancy-active technical demonstrators (with MPhil and PhD qualifications) via the 'Technician Commitment'

Establishing an **integrated open-access briefing paper series** to widely communicate our research. Our existing contributions include: 'Future Past's' [Working Paper Series](#) (n=10) and [Indian DRR brief](#).

- 3) **Sustainably develop our partnerships to respond to national/international priorities.** Via our growing research groups/centres and by consolidating existing partnerships, we enhance our capacity to respond to strategic funding initiatives, e.g. UKRI, GCRF, and Newton Fund. Growing vitality is already evidenced by our new online [HRD research lecture series](#), a COVID-19 adaptation, which extends our international reach. In 2020-2021, 17 events with global speakers are scheduled; the first 10 events (to January 2021) generated: 717 live-session invitees from 32 countries across the Americas, Europe, Asia and Africa; 1,026 [YouTube](#) follow-on views (to February 2021).
- 4) **Support a culture committed to research integrity and open access.** The unit operates within the context of BSU's approach to integrity (IES:2.8.2). We adopt School review processes for risk/ethics assessments and data management plans. All academic staff are trained in information security (including GDPR) and research ethics, supplemented by intranet guidance. We support colleagues to become fellows and chartered members of organisations which require demonstration of continuing professional development (section~4.3).

The unit's strategy for open research is guided by the institutional approach (IES:2.8.1). All staff are offered annual refreshers to maintain understanding of open research requirements. The UoA Leader (Johnson) has responsibility for ensuring colleagues register their outputs on ResearchSPace, enabling library staff to undertake open publication and compliance actions. Consequently, 100% of the unit's submitted journal articles (and 96% of all submitted outputs) are openly accessible.

Going 'above-and-beyond', the unit has:

- Published research datasets via online repositories, where legally/ethically viable. For example, Sullivan and Penrhyn-Jones' AHRC-funded work is shared via the UKRI repository, and Johnson's DRR policy briefing collection has been made available via BathSPAdata (section~1.4.2)
- Published open access book chapters to extend reach, e.g. Gioli's chapter on vulnerability in mountain livelihoods in ['The Hindu Kush Himalayas Assessment'](#) (41,000 downloads)

- Championed open access non-traditional outputs, like our **ICS UoA14-1 RRS and UoA14-2 NNC** films. These bring deeper understanding of our research process and insights.

Section 2. People

1. Staffing Strategy

The unit is returning 13 SRR staff to REF2021, representing significant growth since REF2014 when the unit was not submitted. Of the submitted staff, 8 have been recruited since 2014. These include those within 10 years of their PhD (Anderson, Moore, Pauly and Thornhill) and established researchers (Gioli, Hannis, Penrhyn-Jones and Sullivan). The unit's capacity and capability has thereby grown in size, in interdisciplinary/international expertise (section~1.2.2), in future leadership potential amongst mid-career staff (section~1.2.1) and in research funding and output generation (sections~1.2.3;1.2.6). This success reflects school and unit research/impact strategies (sections~1.2-1.4). We continue to recruit high-quality staff with a research publication track record, grant funding expertise, and a demonstrable record of contributing to policy-practice impact agendas. The majority of SRR staff (92%) are employed on permanent contracts, affording a sustainable platform for career development. Appointments additionally reflect the growth of RCEH and HRD (i.e. Gioli, Hannis, Penrhyn-Jones, Pauly, and Sullivan), the development of our taught postgraduate courses in environmental themes (e.g. Anderson, Pauly, and Thornhill); and staff replacement following retirement and staffing buyout associated with externally funded research (e.g. 'RESPIRES').

2. Staff Development

The unit is committed to the development of all existing and new staff, the career progression of technical demonstrators, and the training of PhD students. Our unit strategy focuses on **mentoring, continual professional development**, and the underpinning of target setting in **staff annual appraisals** (sections~1.2.4;1.4.1;1.4.2).

Mentorship has been at the centre of the unit's growth strategy since 2015. Mentors have training in the role and are experienced staff (Johnson, Sullivan and Thornhill). For example, Johnson has provided a forum to discuss REF research planning, guidance on BSU grant application systems, and integrated new staff into research groups/centres; whilst Sullivan has provided guidance on research grant writing. The unit's three external REF advisors provide further advice on output/ICS development.

Unit staff are encouraged to take part in **researcher development activities**, led by REF UoA Leader (Johnson) assisted by the Research Support Office (RSO: REF Manager, Impact Research Fellow and Researcher Development Manager). Training opportunities have included output prioritisation/planning and impact generation/tracking. Meanwhile the research groupings provide an opportunity for presentation, peer review of draft outputs and grant applications, and bespoke workshop training events led by unit staff (e.g. Law [HRD]: creative engagement with global challenges; Moore [GCI]: journeys in research).

The research performance of staff is formally monitored and recognised through **Annual Staff Development Reviews** (with Line Manager). As a precursor, all staff have access to informal support with mentors, UoA Leader, REF Manager, and RCEH/HRD/GCI Directors to assist evolution of personal research objectives, congruent with unit research and impact strategies.

The unit works in conjunction with the University staff development programme, which operates in line with Vitae RDF (IES:3.2), and with wider school governance in delivering:

- 1) **Support for early stage researchers (ESR)**. All development activities are available to all staff. However, those at the start of their academic careers are encouraged to take part in the Vitae RDF programme, discuss their research plans with a unit mentor, access HEQR

funding to prime research activity, present in our research lecture series to gain feedback, and also participate in team research bids to gain experience. Those new to HE have a 20% teaching reduction.

- 2) **Targeted teaching relief.** This reduces teaching loads in addition to our standard SRR research tariff (180 hours, 11.4% annual workload), releasing further time for grant bidding, output generation and development of impact. In the unit Jeffers (2017) and Johnson (2014, 2017, 2019, 2020) have been recipients. For example Johnson's 72 hours in 2017, was equivalent to c. 25% annual teaching contact. The unit supports all colleagues in the development of their teaching relief plans. Access to funding is open to all and competitive across the university. RCEH also has growing links with the Rachel Carson Center for Environment and Society in Munich, enabling 6-month staff secondments (e.g. Penrhyn-Jones).
- 3) **Support for impact generation.** Further to unit researcher development activities (above), the unit and RSO liaise on strategic distribution of HEQR funding for impact. This has been important in the collection, processing and analysis of impact evidence for our impact case studies. This has included employment of three research assistants in the assembly of materials for BathSPAdata to further our commitment to open access.
- 4) **Support for connecting with business, industry, public or third sector bodies.** HEQR money has enabled unit staff to take part in research funding town halls (e.g. UKRI GCRF, UKIERI) to engage in research policy debates. It has also supported research data collection, performances and grant bidding which connect with a wide array of societal stakeholders, especially with work in Ireland (Jeffers), India (Johnson), and on the 'Last Hurrah' project (Law).
- 5) **Recognition and reward for research success.** The University operates a transparent system for research promotion. Colleagues preparing applications are provided advice by the UoA Leader and RSO before applications are considered by the University Promotion board (Sullivan was a member in 2015-17), leading to two Readerships (Johnson 2015; Thornhill 2020).

3. Postgraduate Research Students

Our small scale PGR community is both disciplinary and interdisciplinary. Supervisory arrangements include SRR staff working within and beyond the unit at BSU, and also via external institutions (e.g. Gioli [Edinburgh: Higher Education Commission of Pakistan Scholarship, 2018-] and Sullivan). In all cases PhD students are co-supervised by a director of studies and a second supervisor, with monthly meetings. In the assessment period we have achieved one BSU completion (2015); one in corrections (October 2020, Covid-19 delayed) with a prospect of growth given 4 SRR staff (Hannis, Moore, Sullivan and Thornhill) are supervising 5 BSU registered students in 2020. These are supported via self-funding and BSU fee waivers. More broadly, our approach to PhD recruitment is to publish areas of interest for supervision on our research centre/group webpages, and through listing staff specialisms in the SWW-DTP 2 recruitment round in 2019.

Unit PhD students are integrated into RCEH/HRD/GCI activities to provide research experience, for example through research lecture discussions and paid Research Assistant contracts supporting research data processing and impact evaluation. All are encouraged to take part in the organising of internal and external research discussion events. Furthermore, all access university-wide support and training facilities led by the Graduate School and the Researcher Development team (IES:3.4).

4. Equality and Diversity

Unit SRR staff gender-ratios and nationalities are broadly equivalent to those of the institution (IES:3.5). We demonstrate female leadership, for example our internationally leading professor Sullivan; and submitted unit outputs are 57% female. We span career stages (Professor 8%, Reader 15%, Lecturers/Senior-Lecturers 77%). We deploy university-wide procedures with the unit supporting:

- 1) **Acquisition and maintenance of professional standards.** New colleagues are guided to the UK's Professional Standards Framework for teaching in higher education (FHEA); Simm is a mentor/FHEA assessor/National Teaching Fellow 2020. Many are also fellows and chartered members of respected organisations, which prescribe standards of professional working (section~4.3).
- 2) **Understanding and compliance.** All colleagues complete a range of online learning modules, such as in 'Diversity in the Workplace', 'Unconscious Bias', 'Return to the Workplace', which provide confidence to deal positively with diversity and pandemic risk in the higher education workplace.
- 3) **Recruitment of staff and research students on a merit basis,** according to published appointment characteristics. This is reflected in the sex, age, and nationality diversity of our unit.
- 4) **The university code of practice** in determining SRR status. We have also established a Unit of Assessment Advisory Group (Gioli, Johnson, Sullivan, and Thornhill) from across the unit's subject areas, of mixed sex and seniority, with responsibility for considering output submissions for inclusion in REF2021, ensuring transparency, consistency, accountability and inclusivity.
- 5) **Different working arrangements.** All unit staff and students are permitted to work flexible hours and remotely using Google web systems and VPNs associated with our Cyber Essentials certification.
- 6) **Career pathways of part-time/fixed-term staff.** All have equal access to our research support facilities, such as HEQR funding, mentoring, researcher development programme, line manager appraisals, and research centre/group membership.
- 7) **Staff returning from periods of leave/ill health.** We operate a return to work policy, affording reduced commitments (-20% teaching, 15 weeks), different work locations and replacement cover where circumstances require. We also approach funders (e.g. UGC-UKIERI) for grant flexibility to account for staff on long-term sick leave.
- 8) **Maternity/paternity leave.** We operate according to institutional rules, and as a unit extend the fullest support and flexibility to colleagues with child care responsibilities.
- 9) **Research travel for staff with caring responsibilities/ill health.** Where possible we modify the necessity, type, timing and class of travel where required. We have repeated experience of this in respect of travel to India.
- 10) **Staff with protected characteristics.** We make adjustments, for example, our research materials can be produced in different formats to facilitate wider accessibility. We also have

ramp/lift accessible laboratories, offices and library facilities. We have supportive office seating for those who are pregnant.

- 11) **Wellbeing.** As a unit we champion a supportive team ethos via our research centres/ groups, and we value the physical and mental health of our community. All have access to wider university support services.

Section 3: Income, Infrastructure, and Facilities

1. Unit Income and Funding Strategy

External income attributable to BSU (HESA, REF4b) substantially increased from GBP346,447 in RAE2008 to GBP2,199,000 in the current period. We have secured large, prestigious and bilateral grants, as reflected in our outputs and impact case studies. For example 'total' awards to BSU include:

- **AHRC** (n=9, >GBP2,177,000, (**ICS UoA14-1 RRS and UoA14-2 NNC**))
- **AHRC-DFG** (n=1, GBP320,027)
- **ESRC-CONACYT** (n=1, GBP440,293)
- **Leverhulme Trust** (n=1, GBP27,037, **ICS UoA14-2 NNC**)
- **UGC-UKIERI** (n=1, GBP21,281 **ICS UoA14-1 RRS**)

Prominent UK consultancy contracts include: Heidelberg Cement Group (n=3, GBP6,200 + Euro10,000, ecological restoration); and United Utilities (GBP2,784, mountain sediment systems).

The funding strategy underpinning this success reflects our pivot towards interdisciplinary approaches to global challenges, as embedded in our research/impact strategies (sections~1.2-1.4) and demonstrated in our impact case studies. During the current REF period HEQR funding has primed external research funding growth (section~1.2.3) and network expansion (section~1.2.3), to assemble international and interdisciplinary bid teams (section~1.2.2). Our future research strategy envisages further funding growth in support of PhD students and PDRA employment (section~1.4.1); will continue to invest HEQR in our community (section~1.4.2); and will target emerging funding sources (section~1.4.3) which align with our focus on research which is participatory, partnered and open access, in order to deliver sustainable development and resilience impacts (section~1.3).

2. Organisational Infrastructure

The unit raises staff awareness of the researcher development programme, funding opportunities and internal events. We have been substantial recipients of HEQR funding; sections~1.2.4;1.3;3.3 detail how Johnson, Law and Thornhill have used HEQR for outputs, environment and impact. Additional HEQR investments, bringing wider vitality and forward research sustainability include: (i) Jeffers- public participation in flood risk management schemes in Ireland; (ii) Law- radiocarbon dating; and (iii) Johnson- sediment budget of an upland stream using TLS.

RCEH/HRD/GCI also enriches our research activity, bringing research lectures, discussion groups and platforms for interdisciplinary research bids (section~1.2.2). These activities are

supported by devolved budgets. RCEH annually receives GBP5000 for the public lecture series and conference bursaries for staff and research students. Similarly, HRD runs a funded research lecture series (2018-2019: GBP500; 2019-2020: GBP800). RCEH and HRD have also been central to shaping the interdisciplinary research foci in our impact case studies.

3. Operational and Scholarly Infrastructure

Infrastructure and facilities are drawn from University pools, including library resources; collections relevant to the unit include >400 journal subscriptions, 4000 books and 1200 e-books. Digital collections include ScienceDirect and Academic_Search_Premier. Accordingly, unit research has access to leading international journals, for example: *Ecosystem Services*, *Environmental Science and Policy*, *Geomorphology*, *International Journal of Disaster Risk Reduction*, *Quaternary Science Reviews*, and *Science of the Total Environment*.

These resources are underpinned by a team of librarians providing subject-specific support, research publication management (associated with ResearchSPAcE and BathSPAdata), and writing and learning development skills for PhD students. Other unit relevant facilities include:

- 1) **Newton Park.** The estate with a river, lakes, woodland, gardens, and agricultural fields is an accessible outside laboratory for our community to trial our research methods. For example, Thornhill's ['Bath Spa Observer'](#), a digital mapping platform for citizen science, is based here. Whilst an on-site instrumented landslide has primed Johnson's Terrestrial Laser Scanning of gully morphology dynamics in the Lake District.
- 2) **Media facilities.** Geography researchers have benefitted from BSU's industry-standard TV studios, photography facilities and specialist technicians. For example, Johnson used professional grade audio recording facilities in a film submitted to the AHRC Research in Film Awards 2018 (**ICS UoA14-1 RRS**). Sullivan and Hannis were supported by technicians and equipment in the production of professional quality images for a *Future Pasts* research exhibition (**ICS UoA14-2 NNC**). This interdisciplinary innovation forms an important part of our future research strategy (section~1.4.2).
- 3) **Science laboratories and equipment facilities.** These are important foundations for our research, providing physical, chemical and biological analytical capabilities, all supported by a highly-skilled technician team (3 with PhDs). In particular, the unit benefits from our laboratories, stock apparatus, field tools, and a suite of IT hardware/software. The unit's key areas of capability are:
 - **Audio-visual data capture/field presentation** (cameras, dictaphones, mobile projectors). These have been central to Johnson's recording community knowledge, film production and screening in the Himalayas (outputs and **ICS UoA14-1 RRS**); similarly Penrhyn-Jones in Kiribati (**ICS UoA14-1 RRS**), and Jeffers in Ireland.
 - **Ecological parameters** (traps, feeders, quadrats and nets), **environmental parameters** (monitors for noise, light, air/gas, pH, particulates) and **water, metal, & volatile analysis** (dissolved oxygen and conductivity probes, flow meters [impeller, electromagnetic], atomic absorption spectrometer, gas chromatogram, scanning spectrophotometer) have been deployed by Thornhill in 'RESPiRES', and by Thomas in consultancy.
 - **Hydro-meteorological monitoring** (Automatic Weather Stations, temperature/humidity loggers, anemometers, infiltrometers, dip meters) and **geospatial survey & analysis** (Hardware: Total Stations, Terrestrial Laser Scanner (TLS), differential and handheld GPS, UAV. Software: e.g. ArcGIS). These have been used by Johnson at Newton Park (above), in consultancy work (section~3.1), and in Lake District research (above)

- **Microfossil analysis** (type collections and microscopes) and **soil/sediment analysis** (furnaces/ovens, particle size sieving, soil augers/corers) have been used by Johnson, Law, Thomas, Thornhill for research and consultancy.

As recipients of UKRI WLC (World Class Laboratories) funding in late 2020, we are bringing about transformative change, driven by our future research strategy (section~1.4). This includes creation of new research laboratories, thematically aligned to water, sediment, hazards and digital analysis of geospatial/qualitative data.

4. Cross-Institution Collaborative use of Resources

Staff and postgraduates from Indian and Canadian HEIs (i.e. DU, GBPNIHE, HPU, PU, UoM, UoW) have been central to the success of our research in India, providing: introductions to key stakeholders; translation; assistance in transporting field equipment to remote mountain locations; teams for archive review; venues for hosting international workshops and seminars; the sharing of data including access to libraries; and media engagement. Similarly the unit has hosted Indian colleagues in the UK on four occasions since 2015, most recently as part of the 'HiFlo-DAT' project.

5. Infrastructure Equality and Diversity

The unit adheres to university processes on assessing ethics and risk, standardising these best practice assessments for all. In making access to external research funding equitable, all bids are registered with the RSO for approval, and staff are encouraged to submit their bids to the university's Internal Peer Review College for support. Operational infrastructure is accessible to all via asset collections, subject stores, and according to library rules.

Section 4: Collaboration and Contribution to the Research Base, Economy, and Society

1. Collaboration

The unit facilitates national and international research partnerships by deploying school and institutional schemes, with RSO support, and via external opportunities. A key school/unit initiative was 'Global Scholars', which funded four Indian colleagues (HPU/GBPNIHE) to spend one month in Bath (2014 and 2015). These visits enabled the exploration of funding opportunities, co-presentation at international conferences and the founding of institutional MOUs (2016 [HPU]; 2019 [GBPNIHE] and 2021 [DU]) providing a gateway to further collaboration. One consequent success is the UGC-UKIERI 'HiFlo-DAT' project (section~4.2.1). Similarly with BSU funding Johnson visited Canada, founding relationships with the UoM & UoW. These generated collaborative field campaigns in India, published outputs, and grant bidding. More broadly, unit staff benefit from the Global Academy of Liberal Arts (GALA), a BSU-led global network of creativity and interdisciplinarity (IES:4.2.4). For example, unit postgraduates have used GALA funding to attend events in Canada and Sweden.

Externally, we attend UKRI funding town halls and global engagement events leading to important research outcomes: Thornhill attended the 2016 British Council research links Mexico workshop and this catalysed partnerships now operating in the 'RESPIRES' project (section~4.2.3); Johnson attended the RCUK Delhi workshop in 2017, and this enabled collaborative research bidding in 2019 with other UK attendees (i.e. University of York).

Beyond those already named, we have forged many partnerships in the UK. **Locally** (Bath/Bristol), including Gallery 44AD, where Sullivan/Hannis engaged the public in discussion of landscape, memory and music in west Namibia (**ICS UoA14-2 NNC**); Penrhyn-Jones is a CI

on the AHRC 'Art of Healing in Kashmir' project, which looks at art-based therapies in conflict zones (led by University of the West of England, 2020-2021). **Nationally** we collaborate with many HEIs; for example, Sullivan's research exploring environmental values, with the universities of Edinburgh, Huddersfield, Leicester, Manchester and SOAS (**ICS UoA14-2 NNC**). Gioli is a CI on the 'IXCHEL' NERC GCRF project (led by Edinburgh, 2021-) which is exploring volcanic risk and resilience in the Guatemalan cordillera. A leading example of our UK partnership approach is the AHRC 'Hydrocitizenship' project (Jones, PI (until 2019), and Penrhyn-Jones CI), which investigated the ways in which communities live with their environment in relation to water, in Lee Valley, Bristol, Borth, and Shipley. It involved 28 partners including artists, community groups, NGOs, UK HEIs, local authorities, Environment Agency, and water companies.

2. Contribution via International Research

The diversity of the unit's research brings together a wide audience, generalised as HEIs, local communities and businesses, NGOs, and government agencies. These are engaged as co-producers and/or research beneficiaries, resulting in evolved understanding, informed policy and practice and economic entrepreneurship. These contributions are exemplified by our multi-continental research portfolio centred on India, Kiribati, Mexico and Namibia.

- 1) **India.** 'HiFlo-DAT' (Johnson, Jeffers, 2018-2020) is a bi-lateral partnership, funded by the University Grants Commission (UGC) India (to DU), and UK India Education and Research Initiative (UKIERI) (to BSU). Building on existing HEQR archive work, a new documentary database compiles details of historical flood occurrence, impact and societal response in the Kullu District. This, the most extensive record in existence for the district (1846-2020, >100 events) is assisting government agencies (i.e. Himachal Pradesh State Disaster Management Authority [HPSDMA], Kullu District Disaster Management Authority [DDMA]) to improve their assessment of flood risk and management, by substantially updating the Himachal Pradesh State Risk Atlas. This will enable development projects to be more attuned to the diversity of flood causation mechanisms and flood risk locations. From this, more appropriate land use, infrastructure design and construction standards can be mandated. This has the capacity to reduce disaster loss impacts and costs in the region. More broadly, by including UK and Indian postgraduates the project develops the skills and knowledge of the next generation of researchers, bringing sustainability to the discipline.

Also in the Kullu District, in partnership with international HEIs (GBPNIHE, HPU, UoM, UoW), government agencies (HPSDMA, DDMA), NGOs and the local community (indigenous and marginalised Tibetan exiles), Johnson is undertaking interdisciplinary research (HEQR funded) for improving resilience to disaster risk. Participatory engagement using the Hindi language 'Pathways to Resilience' film has been central, including:

- Village community workshops with >200 people (5-27% village populations) comprising village council (panchayat) officials, local businesses, teachers, school children, women's groups, and Tibetan refugees (2018)
- Stakeholder workshops (i.e. government agencies, NGOs, HEIs) in Kullu, Delhi and Shimla with >100 people (2018 & 2019)
- Kullu International Dussehra Festival, a religious/trade gathering, with 65 public engagements, and TV/print media coverage of the research (e.g. Zee News, Punjab Kesari, Amar Ujala) (2018)
- Web/social media engagement (February 2019-), Film plays (Vimeo: 1038; YouTube: 27,474).

These exchanges have enabled local communities to reconnect with their understanding of flood history and vulnerability, and also linked government agencies to local community sustainable development aspirations and local hazard/disaster knowledge. Analyses are summarised in open access outputs, i.e. Current Science (August 2019) and a BSU-GBPNiHE Policy Brief (June 2020). The latter has offered recommendations for improved disaster governance and risk management planning; being widely distributed (e.g. UNDRR PreventionWeb, and accessed in 19 nations) and commented upon (e.g. The Times of India, The Tribune and Punjab Kesari newspapers). Bringing wider reach, a webinar (August 2020; COVID-19 delayed) enabled policy discussion with 4 (of 12) State governments across the Indian Himalayas, and 7 (of 12) District governments in Himachal Pradesh. Funding applications (i.e. UKRI GCRF 2019, British Academy 2020) have sought to extend this research.

- 2) **Kiribati.** Penrhyn-Jones' interdisciplinary research on Kiribati (2015-2019) developed over two AHRC-funded research projects and two AHRC/ESRC impact projects. These were strongly participatory, with research agendas informed by local community needs and aspirations. In particular, through the documentary film 'Troubled Waters' (2015), initial key findings (2015-16) indicated: (i) understanding climate change means engaging indigenous relationships to land and water, and (ii) although climate change poses an existential threat, other environmental issues are also important to communities' sustainable development. In response, further work (2016-2018) involved commissioning a local artist/teacher/heritage expert to celebrate indigenous knowledge in a collaborative film ('Timeline', 2017). Through the filmmaking process, a diverse community were interviewed and engaged with, including a local pastor; a journalist; an artist and heritage expert; two former presidents; and members of the local community. The film amplified Kiribati perspectives on the current and projected effects of climate change on their lives. The films also provided a global advocacy tool, being screened at three UN Climate Change conferences (2016-2018) amongst others.

The team also resourced and co-worked with a local environmental organisation (KiriCAN) addressing local priorities through community engagement. Given poor quality urban sanitation, water supply and hygiene, which manifests in higher under-five mortality and endemic communicable diseases, communities chose to tackle waste as a development priority. KiriCAN purchased rubbish trucks and trained volunteers, reporting that this initiative offered local communities an enhanced belief in their own efficacy in solving problems, and raised women's voice in public policy and implementation.

In addition the project focused on enhancing governance capacity amongst Kiribati heritage professionals. This included potential strategies for collections in a post-displacement future due to climate change. The project engaged with the national archive and museum in Kiribati, interviewing cultural sector workers, government ministers, and officers. It also organised a reciprocal exchange visit for a cultural expert from Kiribati to visit UK museums.

Based on this collaboration, Penrhyn-Jones authored a case study for mobilising indigenous knowledge, with the AHRC showcasing this work as an interdisciplinary contribution to environmental challenges in developing countries. As a unit we are adopting this best practice in our forward strategic development of interdisciplinary research/impact development (sections~1.3;1.4).

- 3) **Mexico.** Thornhill's ESRC-CONACYT 'RESPIRES' project (2019-2022) is a partnership with the Autonomous Metropolitan University (UAM), National Autonomous University of Mexico (UNAM), Ecosur in Mexico, Scotland's Rural College and University of Huddersfield. It investigates how Smart Cities can implement initiatives to improve social and ecological resilience around local water ecosystems, in Bristol and Mexico City. This includes: ecological studies on primary producers/invertebrates across 30+ sites; investigation of people's perceptions of their local 'blue spaces' across 16 organisations

focussing on Knowle West and Easton (Bristol), and 3 municipalities in Mexico (Iztapalapa, Magdalena Contreras, Xochimilco); identification of 'smart' monitoring tools; and recommendations to policy-practice organisations (e.g. Bristol City Council and Sistema de Aguas de la Ciudad de México) on approaches to protect natural resources.

- 4) **Namibia.** Building on 25+ years of field and archival research in Namibia, two recent AHRC projects are: (i) 'Future Pasts' (2014-2019) (Sullivan, Hannis, and a consortium of UK academics [Edinburgh, SOAS] with Namibian partners [National Museum, Gobabeb Research and Training Centre and Save the Rhino Trust]); and (ii) 'Disrupted Histories, Recovered Pasts' (2016-2019) (Sullivan, University of Huddersfield, CNRS: Université Paris Ouest Nanterre La Défense, Unité de Recherche Migrations et Société-URMIS). These projects bring new insights into the land rights of indigenous and marginalised communities in Namibia, particularly regarding historical displacements of Damara/!Nūkhoen and !Ukun peoples.

As follow-on, a 2019 review funded by the US State Department Africa Regional Democracy Fund, in partnership with Namibia's Legal Assistance Centre, positions these findings to inform and advise Namibian government policy. Also stemming from this research, a charitable trust (the Future Pasts Trust) is being established to bring direct benefit to local communities, specifically to raise funds to support Khoe (Dama-!Ukun-Nama) cultural heritage continuation and vitalisation in Sesfontein settlement and Sesfontein Conservancy.

Most recently an AHRC-DFG project (2020-2023), including Sullivan (UK PI) in partnership with the Universities of Cologne and Namibia, is exploring how biodiversity conservation comes to terms with historical-colonial constructions of nature.

3. Wider Contributions

We make substantial contributions nationally and internationally. Key activities, indicative of academic esteem include:

- 1) **UK Parliamentary briefing.** Hannis was invited to the House of Commons to brief Caroline Lucas MP on biodiversity offsetting (2014) with more recent contributions by Hannis and Sullivan in a [UK Parliament Briefing](#) on 'Net Gain'.
- 2) **Journal editorship.** Prominent publications include: Political Geography (Sullivan, Editorial Board, 2018-); Freshwater Science (Thornhill, Associate Editor, 2017-2019); and Journal of Mountain Science (Johnson, Scientific Editor, 2015-). Others include: Ecological Solutions & Evidence (Thornhill, Associate Editor, 2019-); Journal of Extreme Events (Jeffers, Guest Editor, 2017); Journal of Geography in Higher Education (Simm, Editorial Board 2018-); Open Quaternary (Law, Editor in Chief, 2014-).
- 3) **Research council/NGO committees.** Sullivan (2020-2023) serves the AHRC peer review college as an 'academic' and 'international' reviewer. Sullivan (2018-) is also a member of the International Union for the Conservation of Nature's (IUCN) Commission on Environmental, Economic and Social Policy (CEESP). In 2019 Penrhyn-Jones was a member of the UKRI-GCRF panel and represented the AHRC in 'The Changing Canadian Arctic' meetings.
- 4) **Fellowship/Chartership.** Recognising career expertise, maintenance of professional standards and a commitment to CPD. **Fellowships:** FHEA/SFHEA (Hannis, Jeffers, Law, Moore, Simm, Sullivan, Thomas, Thornhill); FRAI (Sullivan); FRGS (Gioli, Jeffers, Johnson, Simm, Sullivan); FGS (Johnson, Thomas). **Chartership/Associates:** AcIFA (Law); CBiol (Thomas); CGeog (Johnson, Simm); CGeol (Johnson); MCIEEM (Thornhill).

- 5) **Awards.** Penrhyn-Jones won a Best Practice Research award in 2017 (BAFTSS) for the film 'Timeline' and shortlistings for AHRC Research in Film awards (2016, 2017). She was also nominated by UKRI to be a female role model for research into the environment as part of the 2019 International Women's Day campaign. Thomas' work on quarry biodiversity won an International Quarry Life Award in Prague in 2014, with the prize money supporting a BSU scholarship for international biodiversity research.
- 6) **Keynotes, invited international talks and conference/workshop organisation.**
- **International keynotes:** 7 for Sullivan (Finland, Norway and UK; e.g. Finnish Society of Development Research, NERC-funded Valuing Nature Programme), 4 for Johnson (India, e.g. International Geographical Union).
 - **Invited international talks**
 - Gioli: India (UNESCO); Italy (Italian Ministry of Foreign Affairs and International Cooperation)
 - Hannis & Sullivan: Canada (University of Toronto); France (École Normale Supérieure); Germany (Hamburg University); Sweden (Swedish National Council for Nuclear Waste)
 - Jeffers: Australia (University of the Sunshine Coast); Germany (Bielefeld University); USA (Rutgers University)
 - Johnson: Canada (UoM); India (DU, GBPNIHE, HPU, IISER-Mohali, PU); Switzerland (University of Geneva)
 - Penrhyn-Jones: Sweden (Museum of World Culture).
 - **Conference/session organisation**
 - Jeffers: Conference of Irish Geographers session convenor (University College Cork, 2017); MaGrann Research Symposium (Rutgers University, 2016)
 - Johnson: *HiFlo-DAT* workshop (DU, 2018 and 2019); DRR webinar (2020)
 - Simm: RGS-IBG annual conference session convenor/invited chair (2014-2018)
 - Sullivan: 5th Southern Deserts Conference (University of Western Australia, 2018); External advisory board member, Environmental Justice 2019, University of East Anglia).
- 7) **Refereeing journal publications.** Gioli, Hannis, Jeffers, Johnson, Law, Simm, Sullivan and Thornhill have supported >66 journals, for publishers including: Cambridge, Elsevier, ICE, Oxford Academic, Sage, Springer, Taylor and Francis, and Wiley.
- 8) **Grant reviews.** Sullivan provides expert reviews for high profile organisations, for example: UKRI- Future Leaders Fellowship Grant (2019, 2020); ESRC- Major research grant (2018); FORMAS- Swedish Research Council for Sustainable Development, Humanities and Social Sciences (2018); RCUK-GCRF Foundations Award Call in Global Agricultural and Food Systems Research (2016). Others are developing this expertise including: Gioli (United Institute of Peace), Law (AHRC Climate Resilience Programme 2020), Penrhyn-Jones (ESRC, GCRF) and Thornhill (Swiss National Sciences Foundation).

- 9) **External association roles.** Gioli is a steering committee member for a British Antarctic Survey assessment of climate change impacts on water resources in the Upper Indus Basin (2020); Law is a member of the ClfA/UAK Accreditation Panel for Archaeology Degree Programmes (2019-); Simm was the RGS-IBG HERG Committee Member & Treasurer, 2014-2018, and Thornhill is a member of the British Ecological Society Publications Committee (2018-).
- 10) **PhD examination.** Sullivan contributes to this development of the academy, and has been external examiner for 10 candidates since 2017 in the UK, Norway, Netherlands and Finland.
- 11) **International tenure review/appointment panel.** Sullivan has served such panels 5 times (2015-2020) in Canada, Norway, South Africa, UK, and USA.