

**Institution: University of Exeter**

**Unit of Assessment: 17a (Geography and Environmental Studies)**

**a. Context.** Exeter Geography is a research-intensive community with research promoted across six major groups: Environmental Change; Landscape and Ecosystem Dynamics; Geographies of Creativity and Knowledge; Spatial Responsibilities; Natures, Materialities, and Biopolitics; and Environment and Sustainability. Since 2008 our research has had wide-ranging international, national, and regional impact: influencing energy and ecosystem management, and social and welfare policies; improving understanding of environmental risks and change; changing the way organisations respond to issues of social inclusion and justice; and enhancing cultural, creative and educational worlds. This impact has been achieved through engagement with more than 60 major organisations. All our research seeks to maximise its relevance and impact, and has benefitted from >£2.3M of direct funding for co-produced, impacted-orientated research since 2008. Below we use selected examples, from the areas of: **public policy**; the **environment**; **creativity, culture and society**; **economic and commercial** impacts; and **professional and practitioner** services, to demonstrate the reach and significance of our research.

***i. Impacts on public policy:*** Exeter Geography seeks to shape public policy and discourses of energy policy and climate change, and is at the heart of international science and policy initiatives. Uniquely, Exeter Geography has contributed six senior and contributing authors to **all three Working Groups of the IPCC 5<sup>th</sup> Assessment** (2013-2014) – on climate science (LeBrocq, Sitch); impacts and adaptation (Adger, Betts, Adams (PDRF)); and mitigation reports (Mitchell). In addition we were authors on the **IPCC Special Reports** on Renewable Energy (2011; Mitchell) and on Disasters and Extreme Events (2012; Adger, Brown). On energy policy, Mitchell co-authored the 2012 **Global Energy Assessment** that influenced UN processes (wider impacts are discussed in **Case Study #1**); Devine-Wright contributed to the **Government Office of Science Foresight 2008 report on *Energy and the Built Environment***, and the work of Mitchell and the Energy Policy Group has influenced UK energy policy through membership of **DECC's Working Group on Distributed Generation** and **DECC's 2010 Academic Panel for Electricity Market Reform**. Research by Barr formed an important part of the evidence for **DEFRA's 2008 'Framework for Pro-environmental Behaviours'** report (**Case Study #2**). This policy engagement also extends into the climate change arena. Brown is a member of the **Royal Society Policy Working Group** on Climate Change and Human Resilience (from 2013). International work on security dimensions of climate risks has informed policy development, with briefings to **UNICEF Executive Group** on future strategy (2012) and the multi-agency **UN Migration Group** statement on migration and climate change for Rio+20 (Adger, 2012). O'Neill was commissioned by the **Victorian Bushfires Royal Commission** (2010) to analyse emergency response following the 2009 Australian bushfires, and this influenced subsequent policy change in Victoria. Adger advised the **US National Academy of Sciences Committee** on Assessing the Impacts of Climate Change on Social and Political Stress (2012), appeared before the **House of Commons Environment Audit Committee** (2010) on Adapting UK to Climate Change, and was appointed Lead Expert on Foresight report on Migration and Environmental Change, leading to a policy paper for the **European Commission Directorate General** on International Co-operation on migration and climate change (2012).

Important policy contributions have also been made relating to human and animal health and welfare policy through: (i) membership on the **Farm Animal Welfare Committee** (FAWC, Buller) and involvement in authorship of major reports, legislation and codes of practice (see **Case Study #3**); and (ii) membership (Buller) of the 'Evidence Working Group' of **FAWC/DEFRA** which is currently reviewing evidence for farm animal welfare policy and regulation. Hinchliffe is an appointed member (2011-16) of the UK's **Food Standards Agency** (FSA) Social Science Research Committee, and in 2012 co-authored an FSA advice paper on public understandings of health and disease. Hinchliffe also advised the **Animal Health Veterinary Laboratories Agency** knowledge transfer project (2012) on poultry industry engagement with zoonotic diseases and, with Kinsley coordinated a workshop (2013) on using social media in risk identification and communication – presenting to the **General Scientific Advisory Committee** and the FSA's communications and policy team to formulate research and policy on social media. Davies has been appointed to the Home Office's new **Animals in Science Committee** (from 2013- onwards),

with particular responsibilities for outward engagement.

***ii. Impacts on the environment:*** A critical mass of physical and human geography and interdisciplinary research on ecosystem services has promoted direct policy engagement on sustainability and resource conservation. Brown chairs the International Programme Advisory Committee of Ecosystem Services and Poverty Alleviation (ESPA) for **DFID** and **RCUK**, and ESPA-funded research (2013-16) is now focused on coastal ecosystem service provision in Kenya and Mozambique (via **WIOMSA**; Brown, Perry), and the Ganges-Brahmaputra delta (via the **Bangladesh Government**; Adger). Research has also improved environmental practice and enhanced environmental awareness through a range of projects and consultancies, including major contributions to the **DEFRA** soil erosion expert group (Quine, Brazier, on-going since 2008), to **DEFRA** Integrating Water and Agricultural Management Programme workshops (Brazier), and driven changes in national (**DEFRA**) and international (**UNESCO**) policy on agricultural erosion control. This work contributes to **Case Study #4**. Brazier is also scientific advisor to the £4.5M **South West Water** Mires-on-the-Moors project (2009-20), which is delivering innovative ways to reduce water bills via landscape restoration. Work by Meersmans on soil carbon mapping has informed land management policy in Belgium and France (**DGARNE**, Belgium), and research on carbon release due to Arctic climate change (Hartley, 2012-15) is engaging with indigenous peoples, and **Canadian Federal and Local Governments**. Aragao is expert advisor on forest carbon quantification for **NGO Natura**, the **Colombian government**, and **NGO Instituto Centro Vida**, Brazil. His work in Amazonia on the links between climate change, deforestation and fire risk has informed regional policy, and forms the basis of **Case Study #5**. Quine was an invited Lead Author for the **UK National Ecosystem Assessment** (2009-11), and DeSilvey an invited member (2012 onwards) of the Phase 2 expert panel. Charman and Gallego-Sala contributed to the **IUCN** UK Peatland Programme through the publication 'Peatlands and historic environment technical review' (2010), and via stakeholder workshops (2009, 2012) with NGOs, government and conservation practitioners. Charman also edited a **UNEP-GEF** report (2008) on 'Peatlands, biodiversity and climate change' that raised the profile of peatland environments in COP meetings for the **UN Convention on Biodiversity**. Through organisations such as Wetlands International this helped bring wetlands into IPCC greenhouse gas reporting guidelines. Harrison contributed to climate modelling and risk assessments for the **Institute of Actuaries** for the COP15 and COP16 process for the Caribbean States. Sitch and Mercado contributed to the **Royal Society** assessment of air pollution. Harrison heads the Climate Change Expert Group for the **Office for Nuclear Regulation** (2010-present), recommending risk assessment guidelines for companies developing sites such as Hinckley Point, Somerset. Buller reviewed the French rural development plan, through membership of the **French Government's** 2008 Comité d'Evaluation du Plan de Développement Rural National, and Srinivasan worked on animal welfare with US NGO **Farm Forward** to strengthen arguments on national policy and advisory committee issues.

***iii. Impacts on creativity, culture and society:*** Exeter Geography has built on primary research in cultural geography to foster collaborations with multiple creative practitioners, cultural agencies, and environmental heritage and management agencies. Harvey and Thomas's AHRC-funded research on creative practitioners and regional identity has had wide-ranging impact across the South West and beyond, including through: advisory roles with the **SW Regional Development Agency** (2009); with **Devon and Gloucestershire Guilds of Craftsmen** (2011-14); and alongside DeSilvey, Wylie, and Cook through on-going engagement with creative practitioners and policymakers at the **Jurassic Coast World Heritage Site** (2008-14). This impact found expression in the 'Creative Coast' forum (2012) attended by 50+ delegates, and through collaboration with art group Proboscis to develop and install an exhibition, 'Storyweir' (2012), as part of the Cultural Olympiad. DeSilvey's AHRC-funded 'Anticipatory Histories' network (2010-11) engaged the **National Trust** via workshops to explore the cultural impacts of managed retreat. The Trust subsequently ran workshops with senior managers (2012) to take up ideas developed in the network. Wylie acted as a consultant for arts group **Blind Ditch** in developing an exhibition entitled *This City's Centre*, displayed at the **Royal Albert and Memorial Museum**, Exeter (2013). Finally, Davies has worked with three artists: Helen Scalway on developing new collaborative work and a website mapping spaces of postgenomic sciences ([www.micespace.org](http://www.micespace.org)); Rich Pell (**Center for PastNatural History**) on curating mutant mouse models for his collection; and Neal White (**Office of Experiments**) to develop critical institutional responses to changing experimental geographies.

**iv. Economic and commercial impacts:** Anderson and Brazier secured **Technology Strategy Board** funding (2012-14) to partner micro-SME **QuestUAV** and **South West Water** to develop unmanned aerial vehicle technology to map hidden upland water stores. Aalto is collaborating with **SyQwest Inc.** and **Chesapeake Technology Inc.** to develop novel technologies for sub-bottom shallow water stratigraphic imaging. Thomas has co-developed (2012-13) an innovative application for e-publishing, working with digital company **Bow Software**, and with Harvey worked with **PVA Media** digital media artists, in work for **Arts Council England** (2010). In the area of energy policy, Devine-Wright advises Irish electricity company **EirGrid** on their community engagement policies; advises (since 2013) a consortium of European transmission network companies **ENTSO-E**; and Mitchell is a member of the **Balancing and Settlement Code** that oversees UK electricity market rules. Barr designed and co-produced a mobile application to promote and inform consumers about low-carbon travel options with key UK travel industry stakeholders (**Virgin Trains, Snowcarbon, Loco2, Seat 61, Travel Foundation, Green Traveller**) (see **Case Study #2**).

**v. Impacts on practitioners and professional services:** As part of an ESF-funded 'climate to landscape' project, Leyshon, C is an advisory member of nature conservation partnership 'Linking the Lizard' (2009 onwards; with **National Trust, Natural England, Cornwall AONB, Cornwall Wildlife Trust, NFU, Cornwall Council**) aimed at maintaining networks between the social sciences and the nature conservation sector. Through **Volunteer Cornwall** (2010 onwards), Leyshon M and Leyshon C, have co-developed community approaches to local environmental issues, and Leyshon M has engaged for 15 years (since 1998) with the **Somerset Rural Youth Project** and **Somerset CC**. This work has changed practices in this area and informed (since 2006) **National Youth Agency** policy. Cook has promoted thinking on geographically-informed and ethically-aware consumption through his Follow-the-Things project, contributing innovative directions for the **National Curriculum for Geography** (see **Case Study #6**). Work on social responsibility and local governance (Cloke) has included engagement with the **European Commission** and >300 European **third sector faith-based organizations**, to co-produce a workbook (2009) on "how to be a more influential organisation". Project staff advised homelessness organisations in Bristol, Brighton and Exeter, and provided input to local authority responses to the **Localism Bill**. Through Gill's ESRC funded research (2012) a handbook of strategies for **UK and US asylum support groups** was circulated to over 2500 organisations. User feedback indicated high rates of implementation, leading the ESRC to award an 'outstanding' evaluation of this impact-focussed project.

**b. Approach to impact.** Our approach has been to forge new relationships both with and between knowledge-users in order to deliver tangible and timely outputs which enhance the development of evidence-based policy and operational change. Our engagements have spanned regional and international scales, and operated across organisations, communities, and individuals. The examples in Section A (above) provide testament to the scale and scope of this engagement over the REF period. Our impact portfolio has arisen as a direct result of our linked research-impact strategies that: (i) encourage all staff to identify and develop links with beneficiaries (now embedded in the annual Performance and Development Review); (ii) have sought to appoint high-quality staff through the University's Science and Social Science Strategies, whose research has strong impact potential; (iii) by financially supporting and providing time for impactful research; and (iv) by rigorous internal reviewing of impact plans that draw on staff experience from the RCUK review colleges. One AHRC project, 'Situating Craft Guilds in the Creative Economy' (Thomas), has been singled out for the quality of its impact plan, and is now used to train the AHRC College.

The result of these approaches has been expanded user engagement across the research life cycle that includes: joint project development, PhD supervision, jointly produced outputs, and impact events. These engagements have employed wide-ranging media, from web forum such as, Follow-the-Things, through community debates to international level policy documents and advice. Evidence of the success of these approaches includes an impressive RCUK CASE and Collaborative Doctoral Awards studentship portfolio (11 AHRC; 3 NERC; 9 ESRC) and > £100K of funding for impact activity on RCUK grants. In many cases clear pathways are evident where research has led to impact activity and, in turn, investment from beneficiaries. These interactions have occurred across regional, national and international scales, as the following examples show:

- At the regional scale, Harvey and Thomas's AHRC research (2007-2010) with cultural economy organisations and professionals generated new networks and relationships within the South West,

including through the *Creative Coasts Forum*, and led to three AHRC CDA PhD studentships.

- At the national scale, on-going research by Brazier (NERC/TSB funded) has resulted in an invitation by NERC to develop a funded programme of Catchment Management Knowledge Transfer to the Water Industry (with water companies and OfWat, 2012-14) and participation in Future Water 2012 and 2013 workshops with the Water Industry and Government. The impact of this work has been recognised in three recent awards to Brazier and Anderson: the Environment Award at the **Utility Awards 2012**; Overall Winners in the **Pennon Environmental Awards 2012**; and the **CIWEM Living Wetlands Award 2013**.
- At the international scale, research by Aragao in the Amazon Basin on drought and fire has led to new collaborative funding, from NERC and Sao Paulo State Research Council, to work with Acre State Government's Institute for Climate Change to support policy makers in analysing and understanding the interactions between climate, ecosystems and human health in Amazonia.

**c. Strategy and plans.** Exeter Geography is committed to continuing to embed impact as a key dimension of research and to maximising impact opportunities through our support mechanisms. To achieve this we are putting strategies in place: (i) we will increase the emphasis placed on research-linked impact activity within the annual Performance and Development Review to identify impact opportunities; (ii) we will initiate a programme of annual impact review meetings (from 2013) under the guidance of the Geography Research Committee, the aim being to identify priority areas with impact potential arising from research, consultancy and policy advice activity, and to consider how best to support these; (iii) we will integrate meaningful time commitments in workload modelling to support activities that will generate impact where these are not already supported through grants or other funding sources; and (iv) we will make available funds to pump-prime impact activities through Departmental research funds. In addition, we will use these in-house activities to identify appropriate bids for more significant support through the University's Link Fund, Strategic Development Fund and HEIF Open Innovation Fund. Recent examples include support for work with: South West Water and Exmoor National Park (£15k to Anderson et al. 2012); Devon Wildlife Trust (£60k to Brazier et al. 2012) to understand hydrology and carbon dynamics of unimproved grasslands; the Met Office (£7k to Jones et al. 2012) for automated pollen monitoring; and Bow Software (£10K to Thomas 2013) to commercialise an e-biography platform. These projects are seen as having high future impact potential, and have already drawn down funding from external agencies (e.g., £150k from EA and SWW to Brazier/Anderson). NERC Impact Accelerator funding (£170k) is also being used to enhance the impact of our NERC research including new initiatives on restoration ecology, and on climate change and health. We will also continue to work closely with: the University Research and Knowledge Transfer team who support impact delivery, and the training of staff in this; the College Research and Finance Team who provide support in costing research to accommodate financial and in-kind project partner contributions; and the University's Policy, Impact, and Performance Team, to share best practice.

**d. Relationship to case studies.** Our case studies reflect the diversity of impact arising from our research and show evidence of impact from across a spectrum of the user communities with whom we engage. **CS1: *Driving innovation and transformation in energy policy***...provides evidence of the links between research, advice, and policy adoption in the context of energy policy. **CS2: *Social Marketing for Sustainability***...provides evidence of how different strands of research and commercial organisation engagement have informed product development and public debate. **CS3: *Shaping the contemporary biopolitics of food production*** provides evidence of how research on pasture biodiversity management, food quality, and farm animal welfare has changed environmental policy. **CS4: *Use of soil erosion and soil quality research***...provides evidence for the integration of research expertise on soil erosion, soil quality, and diffuse pollution to inform policy and agricultural land management. **CS5: *Tropical Forest Management***...provides evidence of clear links between funded research and international partner engagement that underpinned modified fire policies in Brazilian rainforests and developed new methodologies within the United Nations REDD programme. **CS6: *Follow The Things***'...provides evidence of the links between academic research and education curriculum development in relation to social relations of international trade.