

<p>Institution: University of Nottingham</p>
<p>Unit of Assessment: UoA 17 – Geography</p>
<p>a. Context</p> <p>The unit is involved with geographical research across the entire breadth of the discipline, spanning the humanities and social sciences, the natural sciences and engineering, and consequently has an unusually diverse range of impacts. Our impact domains include culture and society, public policy and services, health and welfare, and economy and environment, representing a long term commitment in these areas. This longstanding commitment is reflected in the different career stages of the academic staff associated with our impact case studies, ranging from ECR (Gosling), mid-career (French) and Professors (Daniels, Haines-Young, Leyshon and Thorne) and including inputs from research staff (Potschin).</p> <p>Our impact occurs at a range of scales from local to international, across the breadth of the discipline and has been achieved through a very wide range of collaborations and forms of dissemination. The beneficiaries of our research impact include charities, governmental and non-governmental organisations and businesses (see details in section b). Our impact domains map broadly onto our four research themes: Cultural and Historical Geography; Economic Worlds; Environment and Society, and Geosciences. Our Impact Case Studies (ICS, see section d) reflect this range of activities and audiences and typify our approach to impact. Importantly, the case studies span the full range of activities in the unit.</p> <p>The impact of the Cultural and Historical theme is seen most clearly through its engagement with public and private museums, galleries and major charities (see ICS 5), enhancing heritage presentation and changing approaches to the management of cultural resources. This involves the organisation of major public exhibitions, increasing public engagement and influencing the development of cultural policy. A long term relationship with the Nottingham Contemporary Gallery (opened in 2009), drawing on research on contemporary art and photography, urban geography and globalisation has helped to shape its public programme and fed into exhibitions including ‘Uneven Geographies: Art and Globalisation’ (2010).</p> <p>The Economic Worlds theme has developed impacts on business education, the knowledge economy and the music and fashion industries as well as financial exclusion (see ICS 4). Work on the impact of the Internet on retailing has improved private sector strategy and been reported in local and national media. Research on skills development and the UK economy contributed to the Royal Academy of Engineering’s report ‘Jobs and Growth: the importance of engineering skills to the UK Economy’ (2012, widely reported in national print and broadcast media). Beneficiaries include multinational corporations, higher education institutions and national policy makers, with impacts on practices and professional services.</p> <p>Research from the Environment and Society theme has had a clear impact at the interface between public policy, environment and health, and welfare, specifically improved management of environmental risks, changes in policy affecting biodiversity, and the contribution of research findings to support policy formulation nationally and internationally (see ICS 3). National policy advice is detailed in section b. International examples in the subject area include research on tropical peatlands integrated into the Indonesian government’s REDD+ National Strategy and Regional Strategy documents, expert advice on the geography of emerging infectious diseases contributing to the US Centers for Disease Control and Prevention and the Institute on Science for Global Policy, and work on spatial data infrastructures contributing to policy developments in the European Commission, World Bank and UK, Korean and Saudi Arabian governments.</p> <p>Impacts on the environment, specifically through public policy and policy making, are key areas linked to the work of the Geosciences theme. Members regularly contribute to media debates (see section b). Work with government departments in the UK (DECC, DEFRA) and beyond (Department of Science and Technology in South Africa), with government agencies (e.g. the Environment Agency, the Forestry Commission), with companies such as BP and CEMEX UK has helped to shape both policy and practice. ICS 1 and ICS 2 fall broadly in the Geosciences area, but illustrate the overlap with Environment and Society as they relate science to impacts on the development of national and international policy.</p>

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b. Approach to impact

The School has always valued research impact, as reflected in the case studies arising from across the entire subject area and from staff at grades from ECR to Professor, but until REF had not addressed the issue explicitly. Since the academic year 2009-2010, prompted by the recognition of the increasing importance of the impact agenda, the unit's approach to impact has become increasingly explicit and formalised, building on our long term commitment to research with impact. It is now part of an emerging impact strategy shaped by both the School's and the University's research policies. Our initial Research Impact Strategy was set out in 2011, aiming to facilitate and encourage effective engagement through a number of mechanisms within the unit and the institution. These focus on:

- 1) **Enabling and supporting staff** through: i) Internal monitoring of research project applications (since 2011) to ensure that they have a clear plan for deliverable and evidence-based impacts for readily identifiable non-academic beneficiaries which can be assessed over the timescale of the project and beyond. This process is carried out through the research themes and institutionally supported cross-School organisations such as the Centre for Advanced Studies (CAS, for the Faculties of Social Science and Arts and Humanities) and the Centre for the Environment (CfE, Faculties of Social Science, Science, and Engineering). Both these institutional peer review processes are led by Geographers (Heffernan, CAS; Metcalfe, CfE). ii) Requiring internal research funding applications to provide an explicit statement on impact which forms part of the assessment process. This began in 2009-10 and was strengthened in 2012 when the Guidelines for the Seedcorn Funding scheme were re-drafted to state specifically that applications to nurture the School's 'impact agenda' were positively encouraged. iii) Requiring the research themes to formulate new research strategies in which impact is explicitly acknowledged; iv) Encouraging staff to take advantage of institutional support such media training sessions provided by the University to improve communication skills to a range of audiences and CAS/CfE support.
- 2) **Facilitating knowledge exchange and outreach to diverse audiences** through i) Reorganising the unit's research seminar programme specifically to engage with non-academic groups and potential partners, including local businesses, local and national government, NGOs, museums, galleries and the media. Speakers in 2012-13 included Mary Biddulph (a member of the Geography Education Research Collective working with teachers and students across the UK to develop new approaches to the geography curriculum in schools) and Simon Roberts (one of the leading young photographers in the UK), now an honorary Associate Professor in the unit working with the Cultural and Historical research theme; and ii) Providing substantial and popular contributions to the University's annual open day for the local community ('Mayfest') since they started in 2009 (2-3000 attendees), showcasing Geography in general and the specific research undertaken by the School (<http://www.nottingham.ac.uk/mayfest>). 6th form activity days, relaunched in the School in 2010, have engaged local Geography teachers and their sixth form students in a practical way, with the full range of the unit's research profile.
- 3) **Investing in the future** Investment of c. £10,000 to identify and measure the medium and long-term impacts of research carried out by the unit and best practice.

Delivery of impact is being achieved through:

- 1) **Provision of expert advice.** This is mainly in the area of informing/influencing policy for governments, NGOs and private companies (see section a). Beaverstock has given expert advice on the International Competitiveness of the City of London to the Independent Commission on Banking (2011, cited in 'The Vickers' report, ICB September, 2011) and been a panel member in a discussion 'Who Needs Migrant Workers? Labour Shortages, Immigration and Public Policy' at the House of Lords, 2010. Jackson sits on the Association of Chief Police Officers (ACPO) GI board and provides consultancy input to the MOD. Nathanail has contributed to risk assessment practice (as set out in Statutory Guidance to Part 2A, DEFRA 2012 & incorporation of bioaccessibility into CLEA 1.04 and onwards) and, through participation in the Common Forum on Contaminated Land, influenced the proposed EU Soil Framework Directive. He is a member of DEFRA's National Panel of Experts in Contaminated Land. Metcalfe has continued to contribute to the assessment of air pollution impacts through DEFRA's Air Quality Expert Group. Foody has helped define the methods for remote sensing of land cover changes such as deforestation that are to be used by international programmes (e.g. GOF-C-GOLD, GOFI) in support of major policies such as UN-

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REDD and work for the government of South Africa helped support human capacity development notably in defining a curriculum for Earth observation and priorities for centres of excellence in Higher Education. Work for BP by Aplin, Foody, Mount and Thorne on pipeline hazards has helped inform geohazard monitoring through remote sensing image analysis. Research by McGowan with CEMEX UK (Ltd) and the Nottinghamshire Wildlife Trust (charity), in association with Natural England and the Environment Agency, has helped to determine management strategies at a SSSI close to the University. Other examples of the provision of expert advice include: Environment Agency advisory panels, the World Bank and Mekong River Commission underpinning flood management policy (Thorne) and the Malaysian Palm Oil Board (Steven).

2) **Establishing and maintaining collaborations** with a wide range of organisations, cultural, commercial and political to continue to contribute to critical debates and enhance policy and practice. In addition to examples in section a, research on the Silk Road (Heffernan, AHRC funded) has influenced exhibitions at the Nottingham Castle Museum, the Lyons Textile Museum and the Chinese National Museum of Silk. There are other links with national and local museums (e.g. the Science Museum, Derby Museum and Art Gallery), the National Trust and the Opwall Trust (Field, since 2004). Priestnall's work on digital modelling has resulted in three installations in the Wordsworth Trust gallery since 2009 and is currently informing the digital strategy for the Keswick Museum and Nottingham Castle Museum. The relationship with Nottingham Contemporary (since 2008, see section a), dates to before the opening of the gallery building; Vasudevan is a member of their academic steering group which plays a key role in developing the public programme and in fostering effective links between researchers and other stakeholders. Industrial linkages are particularly strong through our participation in the Nottingham Geospatial Institute working with SciSys Ltd., Envitia, 1Spatial and Lockheed Martin. The companies Argans Ltd, DMCii and Optech are members of the steering group committee for a NERC Earth Observation Technology Cluster (led by Aplin). Mount's East Midlands Innovation Fellowship (2008-09) engaged SMEs in the East Midlands Region in the development and testing of prototype GIS toolkits for space-time change analysis. In relation to the UK recording industry, Leyshon moderated a workshop on 'Keeping Studios Alive' for the Audio Engineering Society (AES) and the Association of Professional Engineers at the 218th AES Convention in London, 2010.

3) **Reaching out to diverse audiences** including engagement with amateur groups, local and national media and effective use of podcasts and blogs to ensure effective dissemination beyond academia. Studies of cultural responses to climate change (Endfield and Morris, AHRC and British Academy funding) built on partnerships with the Royal Meteorological Society and the RGS-IBG, have developed important links with amateur meteorology groups. AHRC funded work on public engagement with weather has resulted in public facing outputs including an audio walk for the 'Discovering Britain' RGS-IBG series which featured on BBC Radio Nottingham and BBC Cumbria. Specific examples of media activity include contributions to BBC Radio 4's 'The Long View' on forest land sales (2011) and tree diseases (2012) (Watkins), Radio 4's 'Costing the Earth' and Rossiya 24 (Russian TV) (2013) on work on Lake Baikal (Swann and McGowan), BBC4 and BBC2 'Britain goes Camping' (2010) (Matless), Sky News (Nathanail, 2012), BBC Radio Nottingham (various topics and staff e.g. Jones, Metcalfe, Jackson, Gosling), BBC1 East Midlands Today (2011 and 2013) on weather events (Gosling), BBC World News TV "Impact" programme (2011) on flooding (Gosling), contributions to The Guardian, June and November 2011 on squatting and alternative housing (Vasudevan). The 'Geog On' podcast collection topped the iTunes U Science chart in 2012 (<http://tinyurl.com/mw99bt8>).

4) Making honorary **appointments of non-academics for whom our research is relevant and important**, including: Paul Bardos, managing director of r3 Environmental Technology Ltd (specialising in waste management and contaminated land), David Schell founder of the Open Geospatial Consortium, Andrew Simon (USDA, now Carno-Entrix), David Biedenham (US ACE, now consultant) (at Professorial level); Oliver Harmer of the Environment Agency (formerly Halcrow UK); Kevin Skinner, principal geomorphologist at Atkins Global and James Corah, Deputy Head of Ethical and Responsible Development at CCLA Investment Management.

c. Strategy and plans

Research with impact is now embedded within the unit's research ethos and a clear goal in current planning (section b) and future strategy. The strategy is to build impact across the full range of the discipline and at a range of spatial scales, drawing on the skills of all of the unit's staff (academic,

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technical and administrative). The more effective dissemination of best practice in relation to impact within the unit (e.g. a film resulting from Daniels' AHRC Impact Fellowship) and the development of a marketing and communications strategy are short term goals. The unit has contributed to the funding of a faculty marketing manager. In the medium term, we shall exploit the recent (August 2013) appointment of a Faculty of Social Science Director of Research to develop strategies and plans across the faculty to support and enable impact from our research, maximising its reach and significance and monitoring its long term effectiveness. This faculty support will also include training for PGRs so that they engage effectively with the impact agenda, building on the increasing importance of engagement of external organisations in PGR training (traditionally through CASE and CDA studentships and co-funding by partner organisations, but increasingly through their involvement in Doctoral Training Centres (e.g. HORIZON)). This will be linked to increasing recognition and reward for effective impact within the unit. At the institutional level, the engagement with the University's research and knowledge transfer priority areas develops the strategy to maximise the visibility and impact of our research. CAS is one of these priority areas and the unit part funds CAS to support the impact agenda. In July 2013, the University established a new Knowledge Exchange (KE) Framework building on existing, successful KE mechanisms and bringing forward new priorities to increase effective external engagement, income generation and impact. The KE Framework is governed by the University's KE Board and through Faculty and School Directors of Research and Teaching, with support from the Business Engagement and Innovation Services Department. Running through to 2018, the unit's strategy will be embedded in this Framework, focusing on enabling, engaging, delivering and having a global reach.

d. Relationship to case studies

The Impact Case Studies (ICS) represent research with wide ranging reach and significance. Although not selected to be so, they reveal the unit's impact across all areas of the unit's research and highlight the variety of external, non-HEI beneficiaries with which the School engages. Each case study reflects our approach to impact and impact strategy.

ICS 1 (based on research by Thorne) exemplifies the unit's approach of **providing expert advice** in developing comprehensive, integrated assessments of future flood and coastal erosion risks. The Flood Foresight Project, in which the School is a key partner, has directly informed UK government policy and underpinned progress towards sustainable integrated flood risk management (IFRM) that emphasises the need to work with natural processes. The impact of this work is now extending overseas, notably to China and Australia.

ICS 2 (based on research by Gosling) this work by an ECR shows how **expert advice** in the development of a new methodology to inform and facilitate EU negotiations at the 17th United Nations Climate Change Conference of the Parties in Durban, South Africa in December 2011 which resulted in 'The Durban Platform for Enhanced Action'. This was a significant outcome in the context of complex negotiations.

ICS 3 (based on research by Haines-Young and Potschin) shows how a conceptual 'cascade' model formulated within the unit to describe how ecosystem services link nature to economic and social well-being was adopted by DEFRA for its 2010 Action Plan, the Joint Nature Conservation Committee for its conservation planning programme, and the United Nations Environment Programme to secure a green economy through ecosystem management. This exemplifies impact on both policy and practice through **expert advice** and **establishing and maintaining collaborations**.

ICS 4 (based on research by Leyshon and French) shows how research on the uneven geographies of UK bank and building society closure provided **expert advice** feeding into political debates about financial exclusion and ultimately influenced government policy towards a more geographically targeted allocation of support aimed at increasing access to affordable credit.

ICS 5 (based on research by Daniels) illustrates the unit's effectiveness in producing cultural artefacts and in changing the aspirations and practices of cultural organisations through **establishing and maintaining collaborations** and **reaching out to diverse audiences**. The 2009-10 exhibition *Picturing Britain: Paul Sandby*, was shown initially at the Nottingham Castle Museum and Art Gallery and subsequently at the National Gallery of Scotland in Edinburgh and the Royal Academy in London. The exhibition in Nottingham had a major impact on the exhibition and collections policy of Nottingham Castle Museum and Art Gallery.