

<p>Institution: University of Cumbria</p>
<p>Unit of Assessment: 17 – Geography, Environmental Studies and Archaeology</p>
<p>a. Context</p> <p>The unit has a long history of sector engagement through its base at Newton Rigg, Penrith, which became part of the University at its formation in 2007. The National School of Forestry (NSF) was established in 1965, and research has been a major focus of activity since 2002, with a shift having taken place within the assessment period towards an interdisciplinary social sciences focus.</p> <p>The unit's background ensures a firm grounding in applied research, conducted primarily through the NSF and the Centre of Wildlife Conservation (CWC), founded in 2002. The main research themes of the unit within the assessment period were: renewable biofuels; the biology and conservation of biodiversity; forest and woodland management; and rural communities and community development globally, especially in relation to the other research themes listed above. The themes are complex and relate to some of the most pressing issues in the modern world. Research is interdisciplinary and driven forward through the involvement of stakeholder organisations and communities to ensure that impact is generated and developed.</p> <p>There are a number of key end users and beneficiaries for the research of the unit:</p> <ul style="list-style-type: none"> • Woodland/conservation practitioners, including individuals and organisations which manage landscape for economic, social and biodiversity outcomes (e.g. Cumbria Wildlife Trust). • Local communities and community groups (e.g. local renewable energy groups in Cumbria; fishing communities nationally and internationally). • Statutory bodies (such as the Forestry Commission and governmental organisations). • Business and related institutions (e.g. Freshwater Biological Association; Sellafield Nuclear) <p>The main types of impact of the research (both nationally and internationally) are:</p> <ul style="list-style-type: none"> • Impacts on practitioners and professional services, including changes in practice, resources to enhance professional practice and influence on the planning or management of resources. • Impacts on public policy and services, for example through contract research which influences policy and planning decisions, changes to delivery or form of public services; stimulation of policy debate by provision of research evidence; influencing work of NGOs or commercial organisations; improved public understanding of social issues. • Impacts on the environment, including changes to public awareness and behaviours; improved management or conservation of natural resources and environmental risk (effected through practitioners and policy); changed conservation policy and resource management practices; and changes in practices or policies affecting biodiversity.
<p>b. Approach to impact</p> <p>The overarching approach to impact in this area is through developing close links with stakeholder groups, particularly in terms of research collaborations, or in carrying out research for these groups as clients, as well as engaging stakeholders with the results and implications of the research. Relationships are built through contract and other collaborative research, but also by maximising relationships which are already historically established as part of professional skills and training development delivered by the unit via undergraduate and postgraduate courses. Such well-established understanding of the needs of stakeholders and the applied nature of the research ensure that the unit's activities are geared towards impact. This is mirrored in the approach to the development of research projects and programmes, which is typically done in collaboration or consultation with the potential end users of the research, in order to maximise the relevance and likely medium to long term impact of the work. The unit also works to establish new contacts and relationships within the process of planning research activities, for example with the Lake District National Park (LDNP) (WEATHERALL), and, using marine conservation as a specific example, Great barrier Reef Marine Park Authority; Community of Arran Seabed Trust (both SINCLAIR); and Fisheries and Oceans Canada (DEECKE). The unit also supports its staff in achieving impact, by providing opportunities to get involved in established stakeholder engagements, embedding engagement into research support policies and by providing flexibility in use of research and scholarly time to allow staff to undertake related activities. Researchers work closely with dedicated administrative and other support provided by the Faculty External Relations team, to manage knowledge exchange, KTPs and other activities.</p>

Direct engagement with stakeholders and end users is a key method to gain research impact. This was demonstrated during staff-led research partially funded by a UK Energy Research Committee (UKERC) studentship. The research examined barriers to small-scale rural community biomass energy developments in Cumbria. Informal engagement with communities was conducted throughout the project, but specific impact events were also organised in locally accessible locations, allowing users to develop strategies based on research, and directly influencing the community bioenergy project. These events involved a range of stakeholders including housing associations, United Utilities, the LDNP and local committees, with free energy saving light bulbs made available to local participants to encourage attendance. This research has led to a novel method for assessing community value of surroundings (paper in preparation) which is being adopted by LDNP in order to enhance understanding of local issues, exemplifying influence on stakeholder resource management practices. A similar engagement session was organised for local people in Zagori, North West Greece, where another staff led research project supported by a UKERC funded Cumbria PhD is investigating the total economic value of the woodland pasture system. This work is influencing the management of the environmental impact of large numbers of individuals returning to their home villages due to the severe economic downturn. There are plans to use this research as a potential strategy basis for upland UK, through relevance to woodland grant schemes and strategies for maximising benefits from farm payment schemes.

A similar example of engagement is through a research programme linked to another UKERC studentship, which is driven by the implications of Europe's demand for biodiesel. The research examines the economic, social and biodiversity effects of oil palm plantations in Sabah, Borneo, and involved direct interaction with oil palm producers and other key stakeholders in Sabah. The project produced specific reports for producers and other stakeholders. The impact of this work is being extended through engagement with the Roundtable on Sustainable Palm Oil, which will increase the reach of the findings beyond the specific location of the research.

Another key illustration of the unit's concern for impact is in making research findings available as widely as possible. The unit targets open access outlets for publishing research, such as *PLOS ONE* and *Conservation Evidence*, as well as secondary publishing in practitioner focused publications, such as *Forestry and Timber News*. Whilst this can in some cases reduce citation rates, it has the benefit of providing stakeholder access to the research and therefore provides a route to realise potential impacts by influencing practice and behaviours. However, the unit also undertakes other forms of dissemination, for example the PhD and post-doctoral research modelling the dispersal of grey squirrels (*Sciurus carolinensis*), classed as one of the 100 most dangerous invasive species globally. The work is highly relevant to woodland managers, conservation organisations and pest controllers aiming to limit grey squirrel environmental impact. In order to maximise uptake of the work, a Forestry Commission Information Note has been written which will be made available online (Stevenson et al, 2012). This is an important indicator of the types of relationship held with key stakeholders, as the post-doctoral position of this Early Career Researcher has been funded directly by the Forestry Commission (STEVENSON).

Impact is also obtained through contract and applied interdisciplinary research. A key example is research undertaken for the Mammals Trust UK to examine population viability of the red squirrel on the Solway Plain in Cumbria, using Geographic Information System (GIS) based modelling. The applicability of this research was identified by Jacobs Consultancy and the Scottish Government, who commissioned the unit to model the effects of the proposed Aberdeen Western Periphery Bypass on resident red squirrel populations to establish protocols for managing protected populations. This is an example of impacts on policy and provision of public services, and on improving the management of environmental risk in planning processes.

The unit has also maximised the impact of its research and relationships with stakeholders through a number of KTPs, for example: with the Institute of Chartered Foresters around continuous professional development; with LDNP to develop a toolkit for farmers to reduce their carbon footprint (CONVERY); with Nurture Lakeland to develop more energy efficient holiday properties and a recently initiated KTP investigating a potential role for freshwater mussels for control of eutrophication in nuclear storage ponds at the Sellafield nuclear reprocessing plant.

Connections with stakeholder organisations include members of the unit in the following roles during the assessment period: Chairman of Regional Committee of the Institute of Chartered

Impact template (REF3a)

Foresters; lead of the Illegal Logging and Forest Law Enforcement, Governance and Trade (FLEGT)-Processes Task Force of the International Union of Forest Research Organizations (IUFRO); Chairman of the Clyde Inshore Fisheries Group, Director of the Sustainable Inshore Fisheries Trust, Member of Board of Trustees of the Solway Firth Partnership and Leading the production of an Inshore Fisheries Management Plan for Marine Scotland (SINCLAIR); presentation of research to the United States Congress House Appropriations Committee and Senate Foreign Relations Committee; Co-authoring of declarations tabled at the UN General Assembly; and an invited seminar at Zoological Society of San Diego. Links are also maintained with the Parks Canada and Almaty State Nature Reserve (Kazakhstan) (CONVERY).

Other research undertaken for or with stakeholders includes: a report on snow gum research for the Scottish Forestry Trust; a briefing paper for the Commission for Rural Communities on rural and upland communities (CONVERY); research into benthic sampling techniques for Solway Shellfish Management Authority and research into salmon management for Solway Haaf Netters (SINCLAIR); National Trust commissioned research on Atlantic Oakwood Genetics (SINCLAIR); coordination and leading research into forest food and forest gardens for the Cumbria Forest Food Network; and advisory contribution to the Cumbria Woodlands carbon project (WEATHERALL).

c. Strategy and plans

As described in section b, links with stakeholders are embedded into the research of the unit, and policies are in place to support end user involvement, such as communities and policy makers. The impact strategy is based on maintaining and extending the current methods of engagement and dissemination. The research emphasis has changed towards more interdisciplinary and social science orientated activities during the assessment period. Whilst this is likely to increase the impact of the work, it also means that there has been a relatively short lead time for potential impacts to have been realised, and it is expected that impact will be more clearly demonstrable in the next assessment period. Specific strategic plans for the unit include:

- To consolidate the current engagement and impact practice of the group into a formal impact strategy; this will explicitly address consideration of impact at the research planning stage, and measures to monitor the impact of both previous and future research.
- To utilise the move of the unit to Ambleside, which will co-locate staff from the core unit directly with those from other disciplines involved in environmental issues. Planned investment in new laboratories and other research facilities will also be used in the medium term to incentivise key stakeholders onto campus to enable tangible and permanent academic and end user links to be further developed. This will increase the effectiveness of research bidding and maximise opportunity for knowledge transfer and the development of impact.
- To increase engagement with businesses, enabling the results of research from the unit to bring benefits to key forestry and environmental organisations within and outside of Cumbria. This will enable additional benefits from the research, such as improving management of commercial resources, enhancing corporate social responsibilities and economic benefits.
- To extend the range of dissemination to stakeholders and end users. Whilst this is already a key strategic element, specific research into individual species (e.g. freshwater pearl mussel, *Nautilus*), brown bears, grey/red squirrel) also has wider potential to develop implicit changes in the management of the associated ecosystems. A strategic aim is to gain external funding to develop an online portal for knowledge transfer and user-orientated documentation, linked to open access research (e.g. in the University repository), for use by stakeholders.

d. Relationship to case studies

Case study 1 reflects the impact of interdisciplinary research around bioenergy developments. It exemplifies impacts of the unit's research gained through direct engagement with stakeholders, particularly community engagement.

Case study 2 focuses on the impact of research on the UK foot and mouth disease disaster in 2001, which has been applied more widely to community impacts in other disasters globally. This is an example of impact through influence on policy (risk and disaster management) from the unit's interdisciplinary research approach.