

Institution: University of Salford

Unit of assessment: C17 Geography, Environmental Studies and Archaeology

A: Context: Research impact in Geography, Environmental Studies and Archaeology at the University of Salford focuses on the sustainability and quality of environments, landscapes and ecosystems, and the development of processes for their management, towards improving quality of life and human health. The main non-academic user groups, beneficiaries or audiences, and main types of impact specifically relevant to Geography, Environmental Studies and Archaeology research at the University of Salford include:

- Communities, governments, planning and environmental authorities, non-departmental public bodies, such as the Environment Agency, Natural England and local authorities in the UK, supporting policies relating to environmental sustainability, biodiversity and their alignment with ecosystem processes and land use, and conservation ecology:
 - Impact is focused on supporting enhanced quality of life for communities through the development and implementation of green infrastructure plans in partnership with local authorities, businesses and communities.
- Communities in China, Kazakhstan, Kyrgyzstan, and across Europe at risk of parasitic infection, national and regional governments and health policy makers in the area of disease control internationally, for example, the World Health Organisation, responsible for developing control programmes for parasitic infection:
 - Impact is developed through improving the public health and quality of life of the communities and the economies of the regions affected, by developing parasite control programmes informed by understanding the effects of landscape structure on their transmission.
- International agencies and policy makers such as the International Atomic Energy Agency and, in the UK, the Environment Agency and Defra, food producers, farmers and rural populations in resource-poor regions of the world, public health policy makers, and consumers internationally:
 - Impact is focused on public health and environmental benefits in the area of understanding and developing mitigation procedures for the transmission of radioactive elements to animals, and mitigating heavy contamination of the environment and arsenic contamination of food.
- Government agencies and policy makers, in the UK and Europe, concerned with the development of transport infrastructure and its impacts on urban and regional development.
 - Impact is focused informing policies on the effects of fixed links, rail franchising and transport infrastructure.
- Hydro-power utilities providers, power and fuel industries, environmental policymakers, state and federal governments in, for example, China, India and Switzerland and inter-governmental bodies, for example the Inter-Governmental Panel on Climate Change:
 - Impact is developed on economies, industry, environments and communities through advising on the conservation and management of glaciers.
- Voluntary sector organisations, community groups, local authorities, archives and newly configured audiences and participants in community archaeology projects:
 - Impact is developed in the area of increasing public access to archaeology and raising awareness of archaeological sites in urban settings across the Greater Manchester area.

The impact described relates to the following research group and research activities:

The Ecosystems and Environment Research Centre (EERC) is an interdisciplinary Research Centre based with the School of Environmental and Life Sciences with over 30 academics and 30 doctoral students which addresses some of the major environmental challenges of the 21st Century including climate change, biodiversity, and health and quality of life. The research submitted to this UoA is integrated within the wider range of activities of the EERC but is focused on three integrated themes: Urban Environmental Change, Landscape Dynamics, and Sediment and Pollution Dynamics. Work outside this group, related to urban archaeology, is conducted in the University's Centre for Applied Archaeology.

Impact template (REF3a)

Urban Environmental Change examines the socio-ecological functioning of urban areas, including the interactions between people and the built and natural environment. Policy-related work on rail and road transport contributes directly to government thinking on transport planning, and community-based urban research influences decision-making in local and regional planning agencies, and supports the active engagement of people in shaping their environment

Landscape Dynamics is concerned with the temporal and spatial dynamics of the Earth's land surface. This research involves the measurement, modelling, and analysis of land surface processes using techniques such as remote sensing of land surface vegetation change. Research contributes to scientific understanding of the nature and impacts of environmental change on the natural and human environment.

Sediment and Pollution Dynamics aims to understand the environmental pathways for pollutants including heavy metals and radionuclides in soils, sediments, waters and foods in the case of arsenic. The research is driven by field-based measurements and sampling using state-of-the-art analytical instruments and contributes to better understanding of the risks associated with pollution transfers in the environment, the development of models for use by regulators and industry, and methods available for mitigation and remediation.

b. Approach to impact: The Unit's approach to interacting with, engaging with or developing relationships with key users, beneficiaries or audiences to develop impact from the research is as follows:

- Developing and implementing green infrastructure plans in partnership with local authorities, businesses and communities, by supporting the development of biodiversity opportunity areas in partnership with planning authorities throughout planning stages:
 - *Impact Case Study*
- Showing how parasite control programmes must account for the effects of landscape structure on parasitic disease transmission by working with relevant governments to implement the use of remote sensing for spatial modelling of landscape change in relation to disease epidemiology, mapping regions with high disease risk, and developing predictive modelling techniques for transmission control:
 - *Impact Case Study*
- Understanding and developing models for the transmission of radioactive elements to animals and assessing heavy metal contamination of the environment and food by the development of environmental management policies and processes for the nuclear sector, environmental agencies and public health organisations internationally, with a focus on environmental contaminants, coastal, river and lake interface ecosystems, and the food chain transfer of contaminants:
 - **Evidence:** [Non lethal-methods in radioecology](#), [Mersey Gateway Research Programme](#)
- Demonstrating that light rail systems can secure substantial modal switch from cars and help create more sustainable urban development, and that privatised railways can grow passenger traffic even during economic recession by improving transport and spatial development processes for new transport infrastructure and technology.
 - **Evidence:** [Bus innovation debate](#)
- Advising on the conservation and management of glaciers by leveraging industry investment in relation to glacier melt and its impact on water supply, through developing effective mechanisms for industry to meet legal obligations in relation to climate change, and aiming to reduce overheads and penalties in relation to their environmental management processes:
 - **Evidence:** [FP7 High Noon project](#)
- Increasing public access to archaeology and raising awareness of archaeological sites in urban settings across the Greater Manchester area by involving people in community excavations in partnership with and funded by the Association of Greater Manchester Authorities (AGMA), voluntary sector organisations, NDPBs such as English Heritage, and the communities of Greater Manchester:
 - **Evidence:** [Dig Greater Manchester](#), [Greater Manchester Archaeological Unit](#)

Impact template (REF3a)

Staff within the Unit, from early career researchers to established research colleagues, were specifically supported and enabled to achieve impact from their research through the following initiatives:

- Working with public sector organisations to engage people with research, for example, the [Manchester Science Festival](#), [Workers Education Association](#), and [Salford and Shanghai Schools School Climate Change Project](#);
- Representation on expert panels, for example the [International Atomic Energy Agency](#);
- Developing Knowledge Transfer Partnerships;
- Fee waivers in key areas of research;
- Workload allocation, allowing dedicated time to pursue impactful research
- The application of discretionary funding to enable staff to capitalise on opportunities to generate or enhance impact, to precipitate additional impact, or evaluate research for impact.

The unit made use of institutional facilities, expertise or resources in undertaking these activities through:

- Promotion and development of impact through the [Salford Impact](#) initiative;
 - Salford Impact Advisory Group with cross-University representation to build momentum and develop excellence in evidencing impact;
 - Impact Fund to support researchers in generating impact;
 - Vice Chancellor's Research Excellence Award celebrating excellent research impact;
- Embedding impact in funding bids;
- Early Career Researcher training in impact;
- Sabbatical scheme with a key focus on generating impact.

c. Strategy and plans: The work of the group is supported by the University of Salford's outstanding reputation for research in partnership with local communities, government organisations and international agencies. The University has developed an institutional approach to support its focus on evidencing and promoting its impact through [Salford Impact](#) with the aim of evidencing, developing and celebrating the transformational impact of its research. Geography, Environmental Studies and Archaeology research at the University of Salford exemplifies Salford Impact in its current and future research practice. Future plans will focus on contribution to initiatives aimed at addressing some of the major environmental challenges of the 21st Century. Five recent staff appointments have secured this plan by boosting research impact potential, particularly in the areas of environmental pollution and human health (Lin, Mondal, Wood) and urban environmental sustainability and planning (Adams, Hardman).

d. Relationship to case studies

Case Study 1: [Socio-ecological systems: natural assets and people](#) exemplifies and has informed the development of the Unit's approach to impact through bringing together social, economic and environmental considerations, influencing decision makers and supporting communities to realise their aspirations for well managed and accessible environments.

Case Study 2: [Impact of landscape structure and intervention on the transmission of parasitic infection](#) exemplifies and has informed the development of the Unit's approach to impact through improvements in human health related to better environmental management developed through cross-disciplinary collaborative research impacting directly on communities and leading to the development of predictive management tools for disease control.