



LIVING WITH ENVIRONMENTAL CHANGE

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2007-2017 A major interdisciplinary research and policy partnership to tackle environmental change.

Living With
Environmental Change
LWEC



THE CHALLENGE



Human welfare, economic growth and the environment are interdependent because the environment's ecosystems provide societies everywhere with valuable services such as food, clean water, fresh air and energy. Ecosystems also serve us by protecting us from floods, droughts and disease, and by giving us healthy soils and cycling nutrients.

Global economic growth, population growth, and increasing consumption, most notably world-wide fossil-fuel demand, are driving environmental change and increasing pressure on these systems and services. The Millennium Ecosystem Assessment estimated that 60-70 percent of the world's ecosystem services are being degraded or used unsustainably and that without action extinction rates will accelerate. Such pressures on the environment are putting the sustainability of economic growth and human welfare at risk.

HM Treasury has identified these issues as one of the five key challenges that all the countries of the UK must address in the next decade. Two recent reports support this concern: the Intergovernmental Panel on Climate Change Fourth Assessment and the Stern Review on the economic impacts of climate change. There is an urgent need to prepare for climate and environmental change. This need will be addressed by conducting the interdisciplinary research and designing the tools and solutions to enable evidence-based mitigation and adaptation choices that are consistent with the five shared principles of sustainable development¹.

¹ www.sustainable-development.gov.uk/what/principles.htm
http://new.wales.gov.uk/topics/environmentcountryside/epq/Envstratforwales/About_the_strategy/?lang=en
www.scotland.gov.uk/About/purposestratobjjs

Research solutions

The Living With Environmental Change (LWEC) programme, represents an unprecedented partnership spanning research councils, government and business. The programme connects world-leading natural, engineering, economic, social, medical, cultural, arts, and humanities researchers with policy makers, business, the public, and other key stakeholders. The partnership will help ensure the UK provides international leadership and solutions to the challenges during this crucial period, as well as helping position the economies of all the countries of the UK to capitalise on emerging opportunities.

Expected outputs

Living With Environmental Change will speed the development of the interdisciplinary evidence base, tools and processes that are needed to inform public and policy debates and people's choices about mitigation, management and adaptation options and opportunities.

The ten year programme, designed by all partners, aims to provide decision makers with the best information to effectively manage and protect vital ecosystem services on the time and space scales on which the economy is managed. It will aim to strengthen the evidence base for policy, not least by addressing the uncertainties that remain about the impacts of climate change and the links between natural capital and human well-being. It will communicate with all stakeholders and work to enhance people's skills and knowledge so that they can better comprehend change and its associated uncertainties. This will help people in all walks of life make better decisions and life choices and create increased opportunities for the development of individuals and the economy overall.

Through interdisciplinary research activities, knowledge exchange actions and training opportunities *Living With Environmental Change* aims to deliver:

- whole-system assessments and risk-based predictions of environmental change and the effects on ecosystem services, economies and communities on local-to-regional, and seasonal-to-decadal time scales,
- integrated analyses of the potential economic, social and environmental costs, benefits and impacts of different mitigation and adaptation responses,
- guidance for more effective sustainable management of ecosystem services, as a foundation for resilient economic development and social progress,
- new technology and infrastructure solutions in the management of environmental change,
- a more research-informed dialogue and debate about the environmental challenges and choices that we face and their economic and social consequences.

Objectives

The LWEC partners have agreed that the following strategic objectives will inform progress towards the design of the programmes of work that will make up LWEC:

- **To predict the impacts of climate change, mitigate or adapt to these and manage extreme events better**

To build effective mitigation, adaptation and resilience to climate change, including preparedness for changes to the intensity and frequency of extreme events, so that human health, well-being, and a healthy natural environment are ensured through use of sustainable and socially acceptable environmental management approaches and technologies.

- **To manage ecosystems for human well-being and protect the natural environment as the environment changes**

To assess the links and feedbacks between the natural environment, ecosystem services and human well-being; how these might continue to develop within environmental limits in the face of major environmental change; and how decision-making and local and national planning can take account of these links and feedbacks to help in the development of new social, environmental and economic opportunities.

- **To promote human well-being, alleviate poverty and minimise waste by ensuring a sustainable supply of food and water**

To promote human well-being, alleviate poverty and minimise waste by developing sustainable ecosystem management approaches for safe and secure food production and water supply.

- **To protect human, plant and animal health from diseases, pests, and environmental hazards**

To protect human, plant and animal health by predicting how diseases, pests, hazards and other environmental factors will alter under forthcoming environmental change scenarios, assessing which sectors of society are most at risk and determining what management actions need to be taken.

- **To make infrastructure and its associated systems more resilient to environmental change, less carbon intensive and more socially acceptable**

To make infrastructure, the built environment and transport systems resilient to environmental change and develop more sustainable, less energy-intensive systems and approaches that are socially acceptable, economically advantageous and more environmentally harmonious.

- **To help people from different cultural and social backgrounds respond to a changing environment**

To work with the diverse communities of the UK to understand how, on the basis of our various cultural backgrounds and belief systems, we live with our environment at present, how this is likely to alter as the environment changes, and how we might use this knowledge to develop thriving, cohesive and informed communities.

How will this be done?

The *Living With Environmental Change* partnership will build and implement a research strategy based on the policy needs of each of the countries of the UK and their world-leading strengths in both research and policy development.

LWEC's strategy will acknowledge the need for dialogue and engagement with a full range of national and international stakeholders, including business, government, NGOs and wider publics, at all stages of the research process. LWEC will enhance research capacity and the national skills base in key areas. Strong knowledge exchange activities will ensure LWEC's impact on policy and practice and help illustrate how people's views can be taken into account in the management of environmental resources. It will also seek to show how they might adapt their behaviours through use of tools, such as incentives and modern forms of regulation, and develop innovative approaches to managing the environment they are responsible for.

Who is involved so far?

The UK's main funders of environmental research have joined forces, through the Environment Research Funders' Forum, to develop and implement the *Living With Environmental Change* programme in an international context.

→ Research Councils UK

Natural Environment Research Council
Economic and Social Research Council
Engineering and Physical Sciences Research Council
Biotechnology and Biological Sciences Research Council
Medical Research Council
Arts and Humanities Research Council

→ Departments of State, Governments and related agencies

Department for Environment, Food and Rural Affairs
Department for International Development
Department for Communities and Local Government
Department for Transport
Environment Agency
Welsh Assembly Government
Scottish Government
Local Government Association
Scottish Environment Protection Agency
Natural England
Met Office

Timing and Opportunities for Research

The LWEC Partnership will run for ten years from 2007. Emerging opportunities, which have been developed with policy partners, have been announced: www.lwec.org.uk

LWEC is being co-designed with the Research Councils' Energy Programme, with which there are strong complementarities and co-dependencies.

Produced on behalf of the LWEC Partnership.



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