

A large, light yellow oval graphic with a thin border, containing the text "Living With Environmental Change" and "LWEC".

Living With
Environmental Change
LWEC

Challenges and Opportunities

Dan Osborn

**NERC Strategic Partnerships
RCUK Theme Leader for LWEC**

LWEC Analytical Drivers

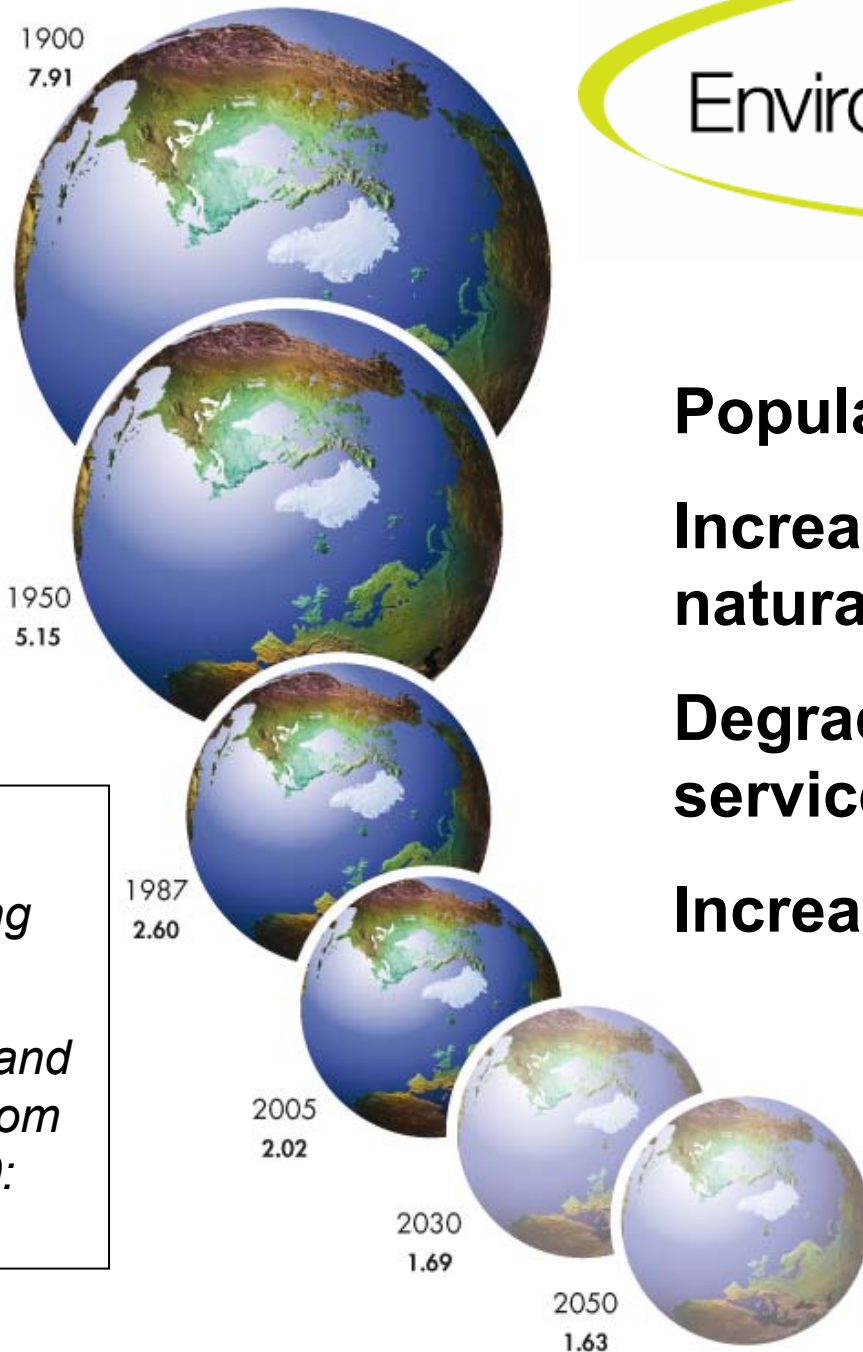
***Stern Review, Millennium
Ecosystem Assessment, IPCC,
Treasury Challenge 5***

**We live in the midst of human-
induced climate and environmental
changes that increasingly pressurise
our natural resources, and so
challenge our social and economic
well-being**

Consequences and Needs

- Water
- Crops
- Health
- Fisheries
- Extreme events
- Infrastructure
- Insecurity
- Energy
- Market failure
- Uncertainty
- Aspirations
- Feared losses
- Resilience
- Security
- Mitigation
- Adaptation
- New technology
- New behaviours
- New policies
- Coherence
- New economics
- More useful predictions
- Firmer evidence

Living With Environmental Change LWEC



GEO-4 2007

“Our Shrinking Earth”

Hectares of land per person from 1900 to 2050:

7.9 to 1.6

Population growth

Increased demand for natural resources

Degradation of ecosystem services

Increased vulnerability

Living With Environmental Change LWEC



Arts & Humanities
Research Council

EPSRC

Engineering and Physical Sciences
Research Council



**NATURAL
ENVIRONMENT
RESEARCH COUNCIL**



Environment
Agency

bbsrc
biotechnology and biological
sciences research council



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



Department for
Transport



Department for Environment
Food and Rural Affairs

E·S·R·C
ECONOMIC
& SOCIAL
RESEARCH
COUNCIL



DFID Department for
International
Development

LWEC Partnership..so far

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

Met Office

TSB

Departments of State, Governments, and 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

Natural England

Scottish Environment Protection Agency

LWEC Partnership..developing

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

Software groups

Departments of State, Governments, and Agencies

Department for Environment, Food and Rural Affairs

Department for International Development

Finance

Department for Communities and Local Government

Department for Transport

Environment Agency

NGOs

Welsh Assembly Government

Scottish Government

International

Re-insurance

Natural England

Scottish Environment Protection Agency

LWEC delivery aims - I

- 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

LWEC delivery aims - II

- 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

Strategic Objectives - I

- 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 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 developing sustainable ecosystem management approaches for safe and secure food production and water supply.

Strategic Objectives - II

- 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, 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 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.**

LWEC Objectives

Objective A **NERC / Defra led**

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

Objective B **NERC / Defra led**

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

Objective C **BBSRC led**

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

LWEC Objectives

Objective D **Scottish Government led**

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

Objective E **EPSRC led**

To make infrastructure, the built environment and transport systems resilient to environmental change

Objective F **ESRC led**

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

Next Generation Science Securing Resilient Ecosystem Services for the Future

