

Global Biodiversity Sub-Committee (GBSC)

Meeting papers

Links between Ecosystems for Poverty Alleviation (ESPA), Living with Environmental Change (LWEC) and Quantifying and Understanding the Earth System (QUEST)

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Links between Ecosystems for Poverty Alleviation (ESPA), Living with Environmental Change (LWEC) and Quantifying and Understanding the Earth System (QUEST)

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- The linkages between these three initiatives will depend on the research priorities of each and what types of projects are recommended for support. At present ESPA and LWEC are at early stages of development and it is not possible readily to identify many specific linkages. However, from the draft LWEC objectives it appears that A, B and C will provide direct links to ESPA and D perhaps indirectly.
- The programmes are summarised below. QUEST is developing tools that could be used by ESPA and LWEC; and given their respective objectives and geographical scales, much of the potential for linkage and inter-programme benefit is likely to lie in the choice of locations for case studies.

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1. **Ecosystem Services for Poverty Alleviation (ESPA)** is a joint initiative of NERC , ESRC and DfID and support for the full programme is pending. The design phase is focused on:
- environmental science to understand why ecosystems are becoming degraded, and how to reverse this;
 - ecological economics to better value the services;
 - political economy (a combination of economics, law and political science) to ascertain what institutional changes are needed in order to equally distribute the costs and benefits of improved ecosystem management to the poor.

It is proposed that the programme will address major ecosystem services challenges that hamper poverty reduction measures in four regions. Examples of regional challenges include:

- adapting to monsoon variability in South Asia
- equitable delivery of ecosystems services in China
- reducing environmental vulnerability in semi-arid areas of Africa
- securing biological stability in the Amazon and Andes

2 . **Living with Environmental Change (LWEC)** has been developed with the Environment Research Funders' Forum (ERFF) and has various partners from amongst the Research Councils, Government, business and other stakeholders. Not all partners are members of ERFF.

The LWEC objectives are still being finalised. The draft scope of each is:

Objective A

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 well-being and health are ensured through use of sustainable and socially acceptable environmental management approaches and technologies.

Objective B

To assess the links and feedbacks between natural resources, 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 and economic opportunities.

Objective C

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.

Objective D

To protect human and animal health by predicting how diseases, 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.

Objective E

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.

3. **QUEST (Quantifying and Understanding the Earth System)** is a NERC venture but one involving other research councils, government departments and agencies, and other stakeholders at every opportunity. It provides a focal point for UK work, forging collaborations and synergies between worldwide experts in Earth System research and modelling to accelerate development of the next generation of environmental-change models.

It has three main themes.

1. The contemporary carbon cycle and its interactions with climate and atmospheric chemistry.
2. The natural regulation of atmospheric composition on glacial-interglacial and longer time scales.
3. The implications of global environmental changes for the sustainable use of resources.

QUEST projects under the third theme are looking at assessments of climate impacts, taking into account adaptation, on different sectors and ecosystem services in the near future at different scales; mostly global aggregates with some case studies. It is envisaged that when the issues of food security, flooding and health are studied, estimates of the different trade-offs will emerge. There is also work on some state of the art vulnerability assessments and trying to incorporate climatic forcings into marine ecosystem models. A third project is looking at the potential land available for biomass/fuel production and whether this can mitigate climate change. QUEST projects will take a global-scale view and include considering Amazonia and Africa.