

Environmental Degradation and Land Use Change

Deterioration of the physical environment and changes in land use and management are resulting in a loss in quality of the water, soil and atmosphere, compromising essential habitats and ecosystems.

The physical environment is degrading and the way that we use and manage land is changing, driven by various factors including population growth, urbanisation, and consumption of resources. Land use changes including the spread of intensive agriculture, deforestation and development, have led to a range of impacts around the world including soil erosion, desertification, and loss of habitat for biodiversity and ecosystems. Pollution, particularly from industry, transport and farming, results in major adverse impacts on air, water and soil quality. The deterioration of oceans due to acidification and over fishing is a serious concern, while bodies of fresh water are also under growing pressure.

Many of the critical planetary processes supporting life on earth have limits to their safe functioning, and yet some have exceeded this point, including the phosphorous and nitrogen cycles, land use change, biosphere integrity and climate stability^{2,4}.

A more sustainably managed environment would generate societal and economic benefits. Healthier landscapes and ecosystems provide resilience, improve human health and well-being and maintain biodiversity. A long term view on natural resource management may boost productivity and will reverse degradation.

Challenges

- ★ Can environmental degradation be reversed without compromising economic growth, in the context of a changing climate and growing population?
- ★ Will society be able to reduce levels of pollution to safe levels without compromising on the productivity of key sectors like farming or industry?
- ★ How can farming reduce its impacts while meeting rising food demand and coping with water scarcity?



Key Facts:

- 1. Oceans have become more acidic since the Industrial Revolution, falling to 8.1 pH from 8.2 pH, threatening calcifying organisms vital to ocean food web stability¹.**
- 2. Some 2.2 million tonnes of UK topsoil are lost annually, costing farmers £9 million a year in lost production⁵.**
- 3. Currently 12% of the earth's ice-free land surface is used for crops; to maintain the provision of natural ecosystems this should not exceed 15%^{1,2}.**
- 4. Some 20 million tonnes of phosphorous is mined annually worldwide, 80% of which goes into fertilisers and pollutes the environment¹.**
- 5. Arid and semi-arid areas, home to two billion people, cover around 40% of the earth's surface and are expanding, with a further 135 million at risk³.**
- 6. The economic cost of soil erosion in Europe alone, is estimated at £46 per hectare of lost agricultural productivity¹.**

