

# Ecosystem Services

# Ecosystem services

- ▣ An evolving (bringing out) policy agenda for DEFRA
- ▣ A framework for taking into account the underpinning (maintaining) role of the natural environment to the needs of society and the economy

- ▣ What ecosystem services are and why they are important?
- ▣ Evolving interest nationally and internationally, including emerging government policy
- ▣ Relevance to Local Authority services

## Definition:

*“An **ecosystem** is a dynamic functional unit consisting of all plants and animals (biodiversity) in an area, together with the nonliving, physical components of the environment (water, soil and air) with which they interact.”*

# Services provided by ecosystems

**Provisioning** - timber, food, clean air

**Regulating** - climate, flooding

**Cultural** - health, recreation and tourism

**Supporting** - soil formation, water cycling



Social and economic prosperity



# Nature and health - benefits

There is some evidence that contact with nature can:

- ▣ alleviate stress and **mental health** problems
- ▣ improve **physical health**
- ▣ help **recovery** from illness
- ▣ improve quality of life for **older people**
- ▣ enhance social interaction and improve **community cohesion** (unity)
- ▣ reduce aggression, **violence and crime**
- ▣ improve **children's well-being** into adulthood



# Nature's role in adaptation to climate change



- ▣ Urban environments (water retention (conservation), shade, cooling, pollution control)
- ▣ Flood alleviation
- ▣ Renewable energy (wood fuel)

## Some statistics

- ▣ The cost of global biodiversity decline under a business as usual scenario is estimated at **£14trillion** by 2050 (7% of global GDP)
- ▣ Pollinating insects contribute up to **£440m** to the UK economy every year
- ▣ The creation of a network of Marine Conservation Zones around the UK will provide ecosystem services worth up to **£1.6bn** / year
- ▣ The National Health Service could save over **£2bn** through increased access to greens pace



# Economics and ecosystems



- The natural environment has been degraded, and its services to society compromised, because it is not easy to put a cash value on nature. The full value of the natural environment is not taken into account in cost benefit analysis.
- Wider understanding of the services provided by nature and innovation in economic valuation and accounting is starting to address this.

Understanding of ecosystem services is  
*'challenging the misconception that we must  
choose between the natural environment and  
economic growth'* – (Natural Environment  
White Paper)

# Benefits of the ecosystem services approach

Understanding the full value of the natural environment enables:

- ✓ decisions on the natural environment that do not compromise benefits to society, business and the economy
- ✓ improved delivery of services through better use of the natural environment
- ✓ reduced business risk and increased business opportunity

# **‘The Economics of Ecosystems and Biodiversity’ (TEEB)**

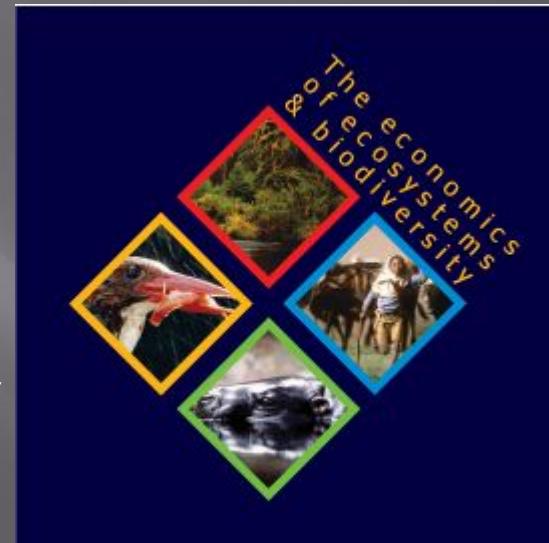
- ▣ A global study initiated by the G8 and hosted by the United Nations
- ▣ Supported by the European Commission and The Department for Environment, Food and Rural Affairs (DEFRA)
- ▣ Focus - the global economic benefit of biodiversity and the cost of its degradation
- ▣ The UN study makes the case for integrating the economic values of biodiversity and ecosystem services in decision making

# TEEB reports

The Economics of Ecosystems and Biodiversity –  
interim report

TEEB reports for:

- Policymakers
- Local and regional policy
- Business
- Citizens



# Increasing recognition

“Will *biodiversity loss* be the next ‘climate change’ for business to deal with?”

Pricewaterhouse | Coopers

BBC’s Panorama (Sept 2010): ‘Britain’s *disappearing wildlife and ecosystem services*’

“Our environment is the *natural foundation* on which our economy is built” Caroline Spelman (The Guardian, July 2010)

‘UN says case for *saving species* more powerful than climate change’ (The Guardian)

‘The NHS needs to make the most of our wonderful, *free natural health service*’ Dr. Michael Dixon, Chairman, NHS Alliance

Global Business of  
**Biodiversity**  
**Symposium** (London,  
July 2010)

# 'Natural Environment White Paper'



- Ecosystem services is the central theme of the DEFRA consultation on the White Paper (August 2010)
- The discussion document focuses on:
  - valuing nature
  - biodiversity, water, air, soil
  - creating a greener economy
  - the 'Big Society'
  - an increasing role for local government

# Local Scale: Community Watershed Management India - Sukhomajri

Grazing and tree felling was compromising a downstream water supply (Chandigarh)

Villagers compensated to shift grazing from watershed hills and apply soil/water conserving practices on farmland

*Payment mechanisms:*

portion of water rights fees

in kind: access to other grazing areas

Siltation fell by 95%, \$200,000 savings

Agricultural productivity increased 500% for wheat, 400% for maize, 30% for milk





# Silvopastoral: Forest Grazing Project Columbia, Costa Rica and Nicaragua

**Goal:** reduce the impact of cattle farming on water quality

Cattle farmers paid to plant trees and live fences  
Increased filtration, reduced runoff  
Co-benefits: carbon sequestration, biodiversity

## Payments

In kind: technical assistance and training  
Annual payment based on land use practice score  
Maximum payment: \$6,000 per farm over 4 years

**Funding:** Carbon and biodiversity offsets  
(compensate)

Facilitated by World Bank, GEF, FAO, in-country intermediaries



# Management Activities to Improve Watershed Health in Central Asia

- ▣ Grazing and Range Management
- ▣ Fire Management and Fuels Treatment
- ▣ Road Construction and Maintenance
- ▣ Restoration of Riparian (coastal) Areas
- ▣ Soil and Water Conservation on Farmland
- ▣ Invasive (undesirable) Species Management  
(Prevention: e.g. weed-free hay)

# Ecosystem services and local authorities

- ▣ Conservation and management of the natural environment
- ▣ Use of the natural environment in delivering services
- ▣ Relevant contexts:
  - Regulatory activity
  - Decisions
  - Service provision
  - Engagement with partners

# Local authority services

- ✓ Health
- ✓ Climate change adaptation
- ✓ Planning and development
- ✓ Integrated land management
- ✓ Management of local authority land
- ✓ Highways and flood alleviation
- ✓ Coastal and water management
- ✓ Economic development

# Web references

- ▣ The Economics of Ecosystems and Biodiversity (TEEB)  
[www.teebweb.org](http://www.teebweb.org)
- ▣ UK National Ecosystem Assessment  
[www.uknea.unep-wcmc.org](http://www.uknea.unep-wcmc.org)

## Reports

- ▣ ‘An Introductory guide to valuing ecosystem services’  
[www.defra.gov.uk](http://www.defra.gov.uk)
- ▣ ‘Delivering a healthy natural environment’  
[www.defra.gov.uk](http://www.defra.gov.uk)
- ▣ ‘No charge? Valuing the natural environment’  
[www.naturalengland.org.uk](http://www.naturalengland.org.uk)