

*Valuation of and payments for  
ecosystem services and the green  
economy in the UK*

**Orman 2011: Forests in a Green Economy**

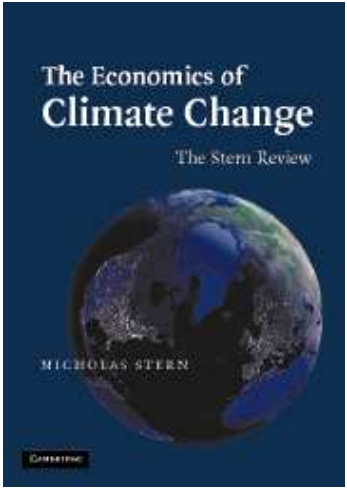
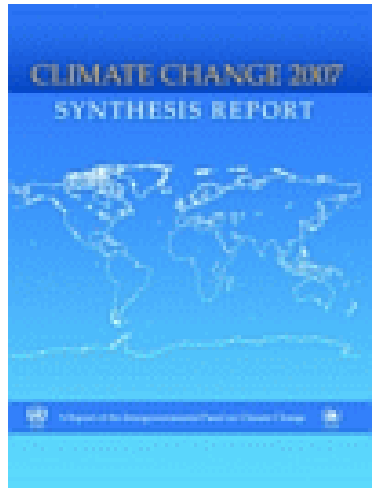
**Kemer, Antalya, Turkey  
11 October 2011**

Dr. Pat Snowdon  
Economics and Climate Change  
Forestry Commission  
Edinburgh EH12 7AT

# **BACKGROUND AND CONCEPTS**



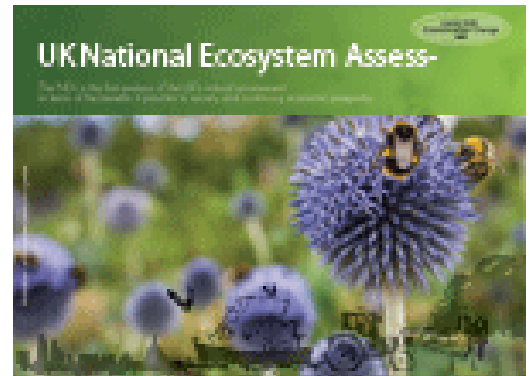
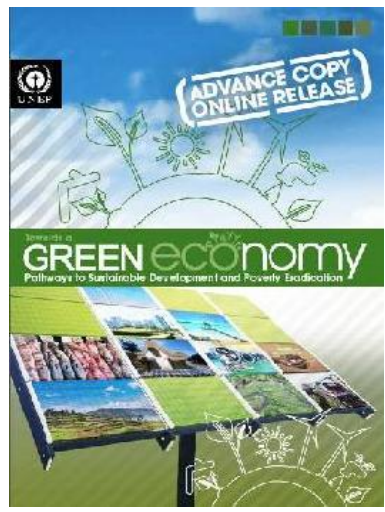
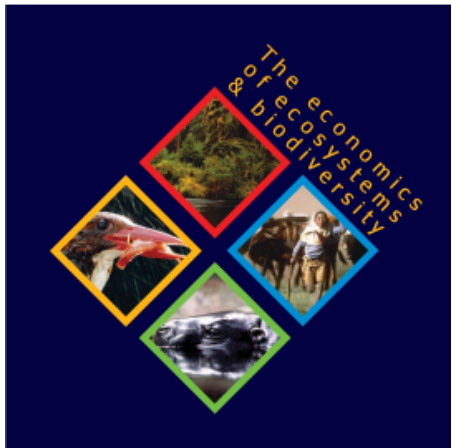
## Millennium Ecosystem Assessment



Climate Change Act 2008



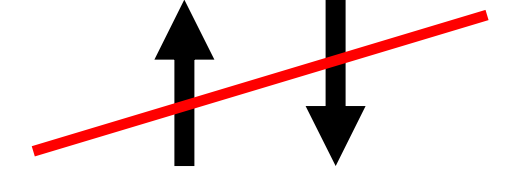
Global financial crisis



## Economy

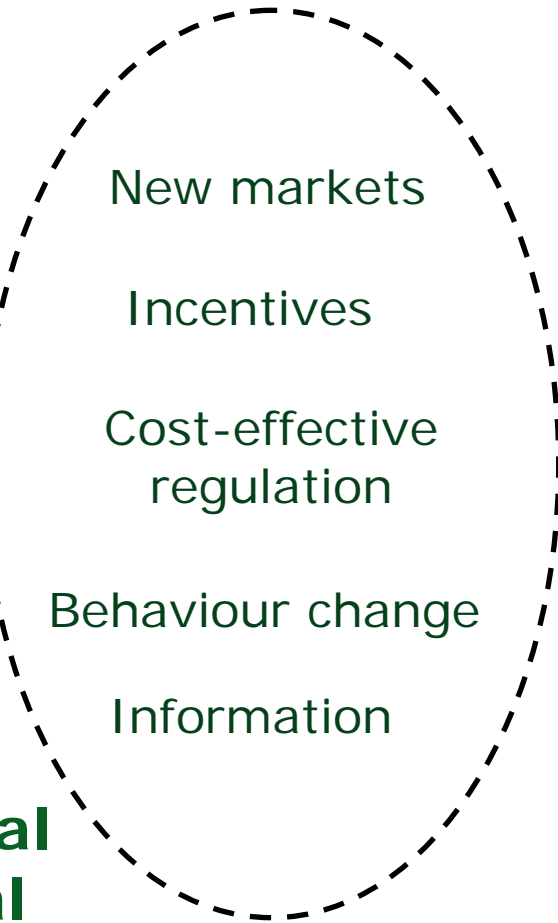
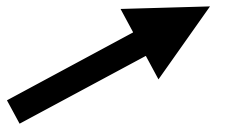


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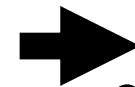


## Ecosystems

Natural capital



## GREEN ECONOMY



healthy environment underpinning socio-economic well-being

“bottom line” - ecosystems have real values

## Climate Change

- Climate Change Act
- Renewable Energy Strategy
- Carbon Plan (March 2011)

HM Government

## Carbon Plan



## Green economy

 HM Government

Enabling the Transition  
to a Green Economy:  
Government and business  
working together



## Land-use & environment

- Forestry grants, tax advantages
- Natural Environment White Paper 2011



## Expenditure

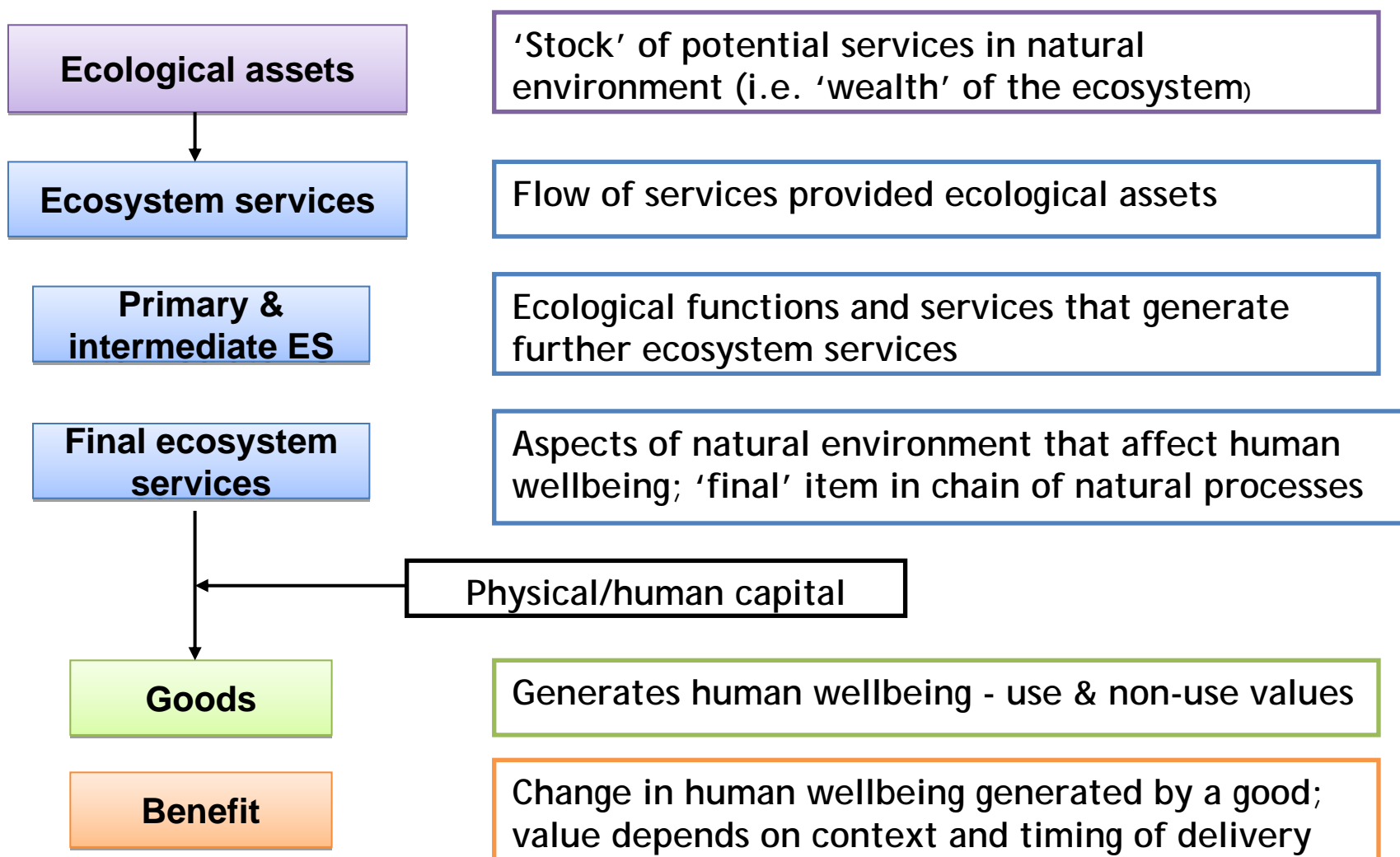
- Fiscal pressures



## Devolved to England, Scotland & Wales

- major changes, particularly since 1980s
- broader objectives, increasing focus on non-market goods & services
- initial focus on valuation – but often notional for woodland owners
- becoming worthwhile (e.g. regulations, cost-effectiveness) to make payments to woodland owners







# VALUATION

### GB FORESTRY - ANNUAL VALUES (Euro millions)

<b>Region</b>	Recreation	Landscape	Biodiversity	Carbon*	<b>Total</b>
England	410	144	421 (516)	273	<b>1248</b>
Scotland	29	22	22 (255)	262	<b>335</b>
Wales	16	8	5 (85)	55	<b>84</b>
<b>GB</b>	<b>456</b>	<b>174</b>	<b>448 (856)</b>	<b>589</b>	<b>1667</b>

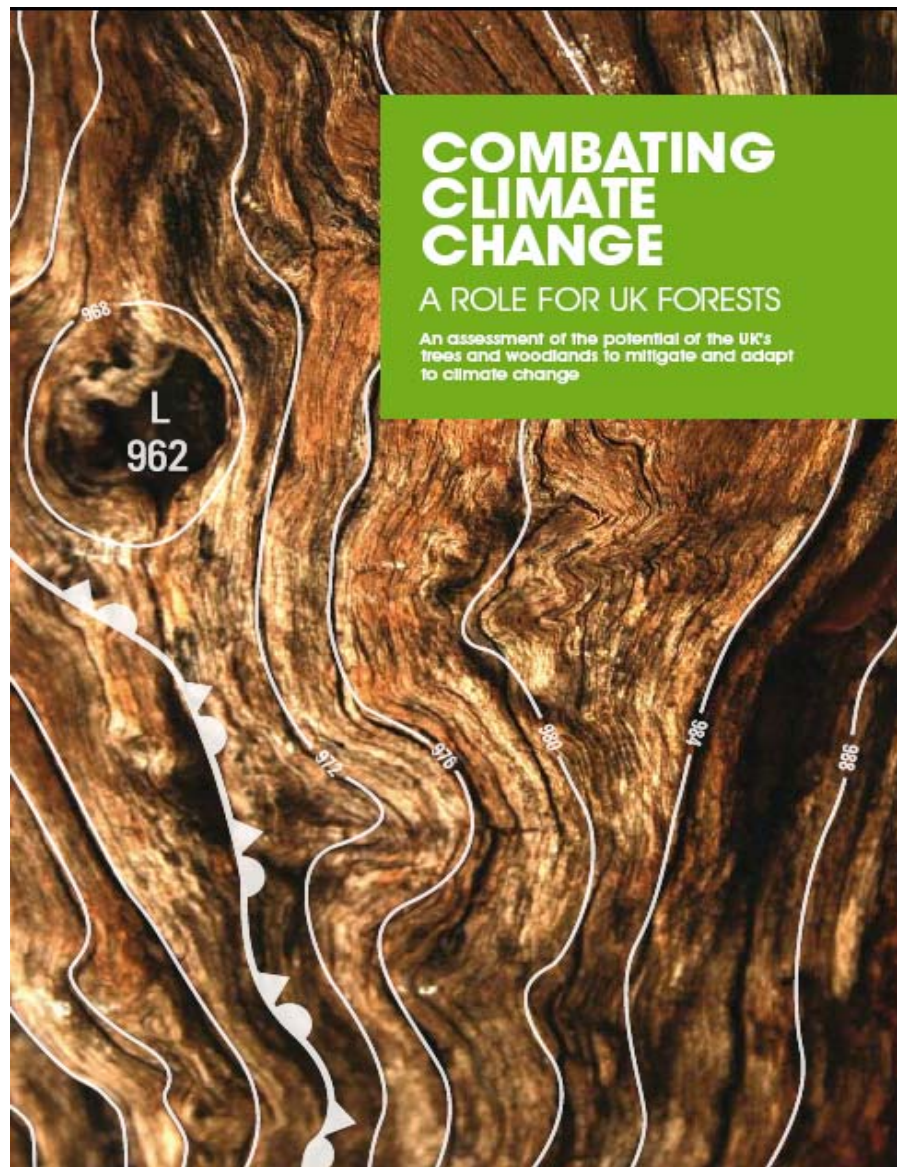
Landscape – appr.39% residential, remainder from commuting  
 Biodiversity – appr.80% ASNW, remainder CF and BL

**\* adjusted for carbon values from DECC (2010)**

- The Read Report (2009)

Enhanced planting of 23,000 ha per year over next 40 years could by 2050 abate 10% of GHG emissions

Woodlands cost-effective





Technical Report



Independent & peer-reviewed

Understand trends & drivers of change

Foster inter-disciplinary approach

8 broad habitats

Stakeholder participation

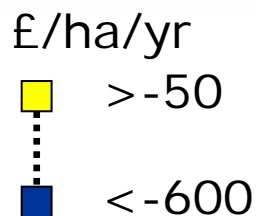
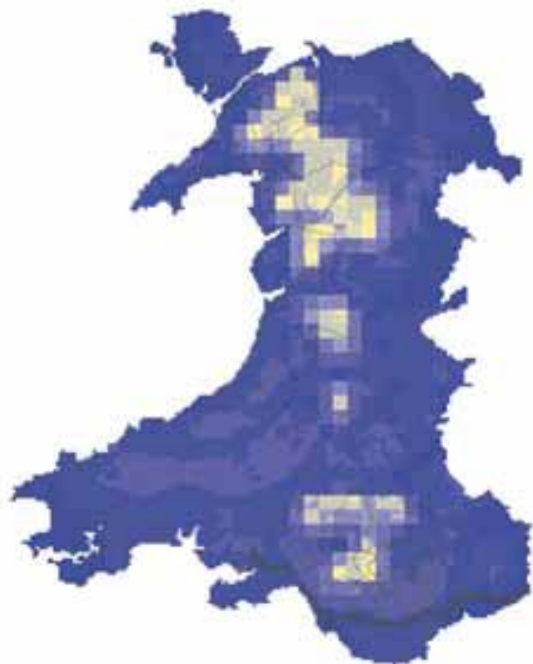
Key messages to raise awareness

Chapter on woodlands

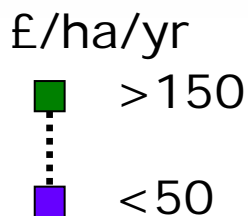
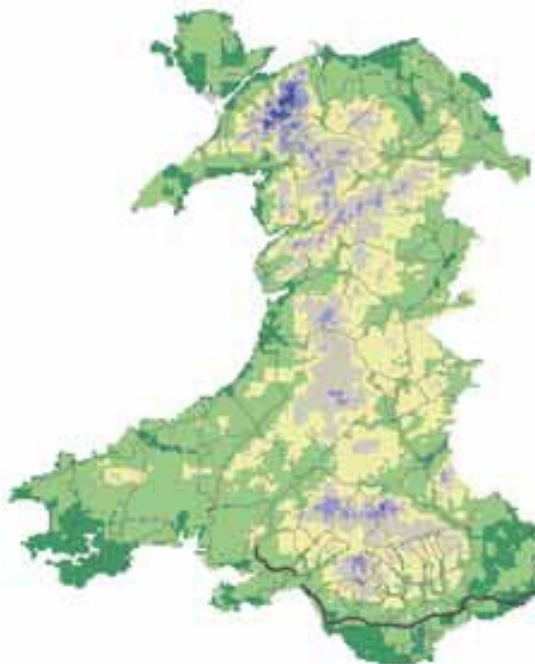
<http://uknea.unep-wcmc.org/>

Economic values that would arise from a change of land use from farming to multi-purpose woodland in Wales (£ per year) (1)

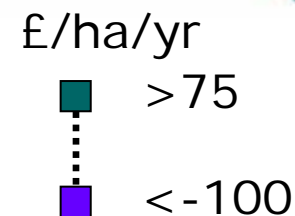
a) Potential loss of agricultural value



b) Potential value of timber

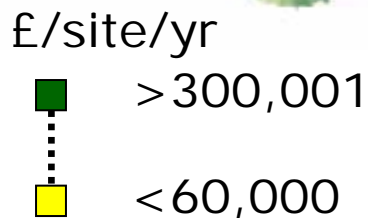
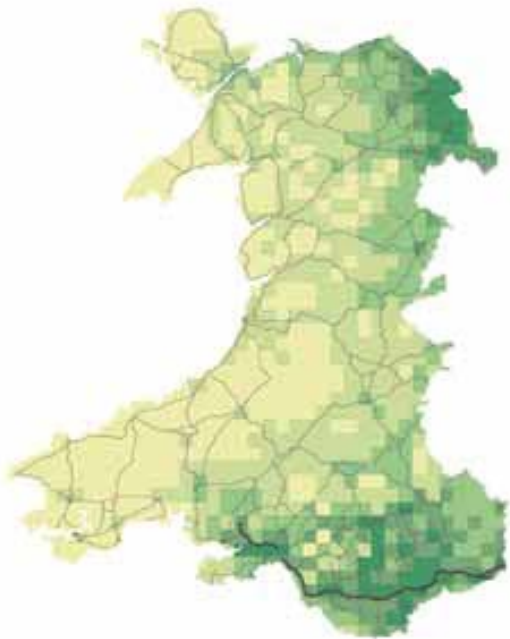


c) Potential value of carbon storage

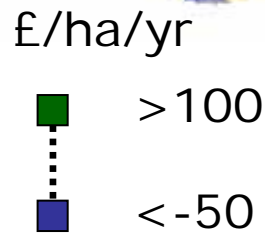
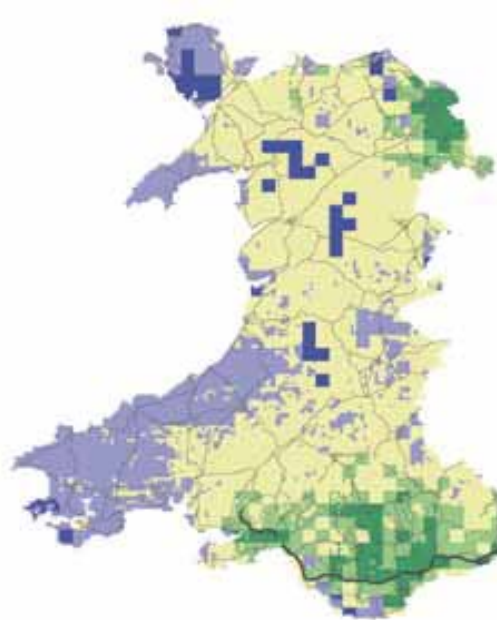


Economic values that would arise from a change of land use from farming to multi-purpose woodland in Wales (£ per year) (2)

d) Potential value of recreation\*



e) Net benefits



f) Current Forestry Commission woodland



# CASE STUDIES

# What have woodlands got to do with waste?



+



= ?????

The **‘WOODLANDS FROM WASTE’** project led by Lancashire County Council explains how



**Create *new native woodland* across Lancashire:**  
extra 2.5 million trees by 2032,  
community benefit & CO<sub>2</sub>  
sequestration



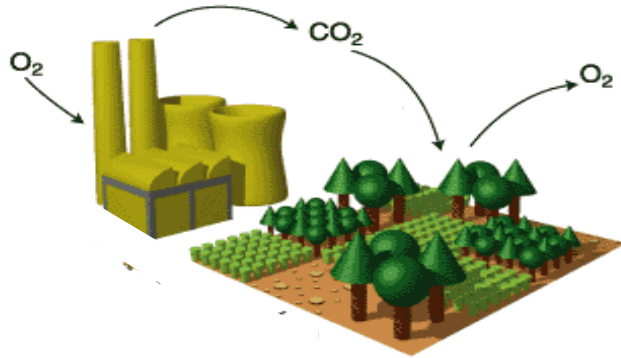
**Enhance the local environment of Blackpool:** using urban tree planting

**Divert stabilised organic residues from landfill** - applied as an Organic Growth Medium (OGM), to improve & regenerate brownfield & marginal land



## 1. Increase woodland cover

*Target: almost 10% more woodland for Lancashire by 2032 (1200 hectares)*



## 2. Reduce CO<sub>2</sub> emissions from Lancashire's Waste Network

*Target: saving of 16,000 tCO<sub>2</sub> /yr by 2020*

## 3. Recover maximum resource from waste



## 4. Minimise disposal of waste to landfill

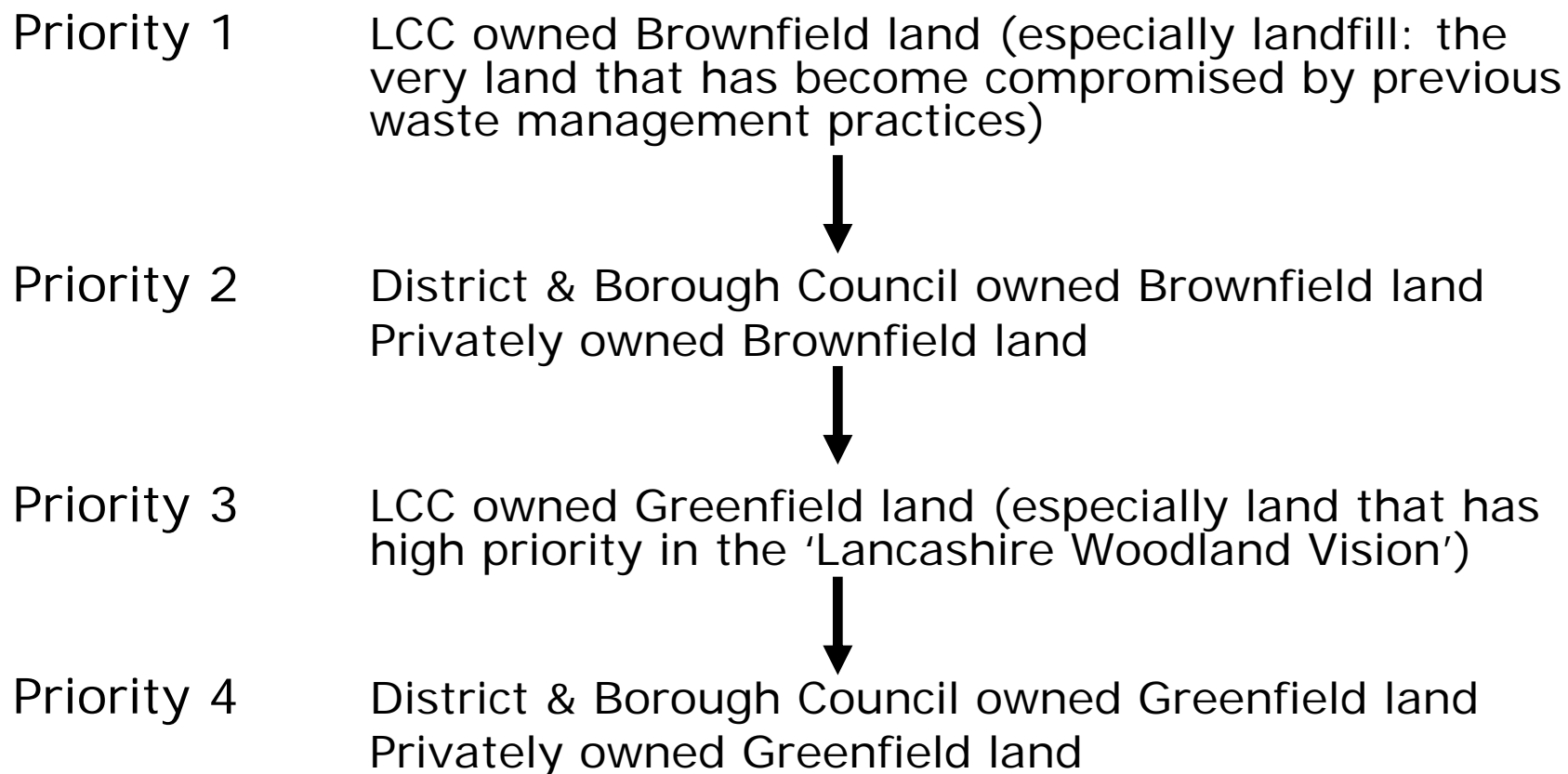


## 5. Regenerate marginal land

## **Support and/or complement other initiatives**

- Urban regeneration projects
- Land management (agri-environment schemes)
- Management of designated areas (AONBs)
- Reclamation projects
- Environmental and access improvements
- Community projects
- Habitat creation
- District and Borough Council Initiatives

## 50 hectares per year are required to provide the land for woodland planting





## Forestry can affect flood flows

- Reducing and slowing run-off
- Holding back flood waters in floodplains

## 2007 floods in England & Wales

⇒ Review: called for greater working with natural processes

⇒ **'Slowing the Flow'** – show how integrated land management practices can reduce flood risk at catchment scale, while providing multiple benefits for local communities

building bunds & large woody debris dams

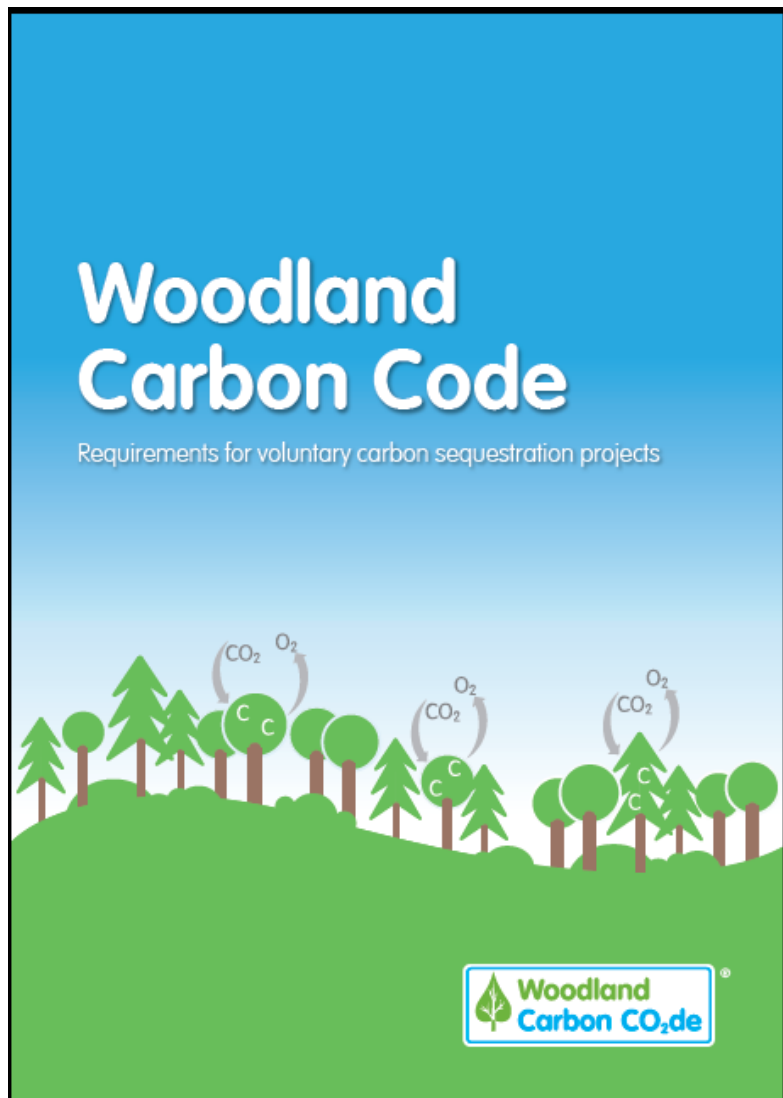
planting riparian and floodplain woodland

planting farm woodland on sensitive soils  
(to increase soil infiltration)

blocking moorland drains & restoring  
streamside buffer zones



- Constraints: landscape and biodiversity, finance (landowners)
- Modelling: flood storage bunds predicted to protect c50 properties in Pickering affected by low level flood events (1 in 25 yrs)
- Ecosystem services: flood regulation, erosion regulation, habitat provision, social relations, education and knowledge, climate regulation
- Mean annual gain of £0.2m; central NPV of £4.3m
- Lessons: secure full implementation & take opportunities to extend, continue monitoring, communicate and promote success
- Recommendations: develop & trial a PES to secure wider implementation



Underpinning UK voluntary carbon markets :

- **Helping meet UK climate change mitigation targets**
  - not 'offsets'
- **Standards on**
  - carbon
  - environment
  - additionality & permanence
  - independent verification

<http://www.forestry.gov.uk/carboncode>



## The application process



## Carbon Lookup Tables

Species	Spacing	Yield Class	Management	Period (year)	Carbon Standing (tCO <sub>2</sub> e /ha/yr)	Debris (tCO <sub>2</sub> e /ha/yr)	Soil (tCO <sub>2</sub> e /ha/yr)	Total (tCO <sub>2</sub> e /ha/yr)	Cumulative in period (tCO <sub>2</sub> e /ha/yr)
OK	1.2	6	NO_thin	0-5	3.1	0.8	0.0	3.9	19.3
OK	1.2	6	NO_thin	5-10	9.5	0.9	0.0	10.4	52.0
OK	1.2	6	NO_thin	10-15	15.9	0.9	0.0	16.8	84.1
OK	1.2	6	NO_thin	15-20	15.9	0.9	0.0	16.8	84.1
OK	1.2	6	NO_thin	20-25	15.1	0.8	0.0	15.9	79.6
OK	1.2	6	NO_thin	25-30	11.5	-0.5	0.0	11.0	55.2
OK	1.2	6	NO_thin	30-35	8.8	-0.6	0.0	8.2	40.8
OK	1.2	6	NO_thin	35-40	8.3	-0.6	0.0	7.7	38.5
OK	1.2	6	NO_thin	40-45	7.9	-0.4	0.0	7.6	37.8
OK	1.2	6	NO_thin	45-50	8.4	-0.1	0.0	8.3	41.3
OK	1.2	6	NO_thin	50-55	8.1	0.0	0.0	8.0	40.2
OK	1.2	6	NO_thin	55-60	7.9	0.1	0.0	7.9	39.7
OK	1.2	6	NO_thin	60-65	7.5	0.1	0.0	7.6	38.2
OK	1.2	6	NO_thin	65-70	7.2	0.1	0.0	7.3	36.5
OK	1.2	6	NO_thin	70-75	6.8	0.1	0.0	6.9	34.7

# CONCLUSIONS

## a. Powerful evidence

Using all ecosystem values in decisions  $\longrightarrow$  major land-use changes

## b. Evolution of valuation studies

1990s: Single benefit

2000s: Multiple benefits

2010s: Cross sectoral benefits

## c. Uses of non-market values

- policy priorities & project analysis (incl. damage)
- establishing price signals, incentives and markets
- green accounting...
- awareness

## e. Principles

- 'single issue' solutions  $\Rightarrow$  integration (across sectors)
- synergy & partnership (policy, skills, resources, vision...)
- cost-effectiveness
- standards
- clarity and transparency

forestry is part of a much bigger picture

## • f. Future for a green economy

- rebuild natural capital
- develop mechanisms to integrate ecosystems into the economy (incl. natural accounting) and reward providers
- engage new partners and broaden expertise
- fundamental change in perception & behaviour

# Thank you

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