# Payments for Ecosystem Services (PES)

Special Symposium organized by the IAIA Biodiversity & Ecology Section

7-8 February 2013 | Inter-American Development Bank | Washington , D.C.

# This session

- Brief introduction to PES – Steven Smith (URS)
- Integrating Conservation Goals with National Development Priorities through REDD+ - Dillon Ripley Lanius (Code REDD)
- Payments for Ecosystem Services: An Increasing Role in Environmental Protection in England? – Steven Smith (URS)
- Discussion: a greater role of PES in environmental protection?

# Payments for Ecosystem Services: A brief introduction

Dr Steven Smith, URS




# ‘Environmental policy toolkit’

- Regulation
- Provision of services by Government (e.g. publicly owned green infrastructure)
- Voluntary efforts by business, communities and individuals
- **Incentive or market-based mechanisms**
  - Charges (e.g. taxes and user fees)
  - Tradable permits (e.g. biodiversity offsets)
  - Certification schemes (e.g. eco-labels)
  - **Payments for Ecosystem Services (PES)**

Jack, B.K., Kouskya, C. and Simsa, K.R.E. (2008). Designing payments for ecosystem services: Lessons from previous experience with incentive-based mechanisms. PNAS 105(28): 9465-9470.

# Definition

- A PES is:
  - a *voluntary* transaction where
  - a *well-defined* ES (or a land-use likely to secure that service)
  - is being ‘bought’ by an (minimum one) ES *buyer*
  - from a (minimum one) ES *provider*
  - if and only if the ES provider secures ES provision (*conditionality*)

Wunder S. (2005). *Payments for environmental services: Some nuts and bolts*. CIFOR Occasional Paper No. 42, Centre for International Forestry Research, Bogor, Indonesia

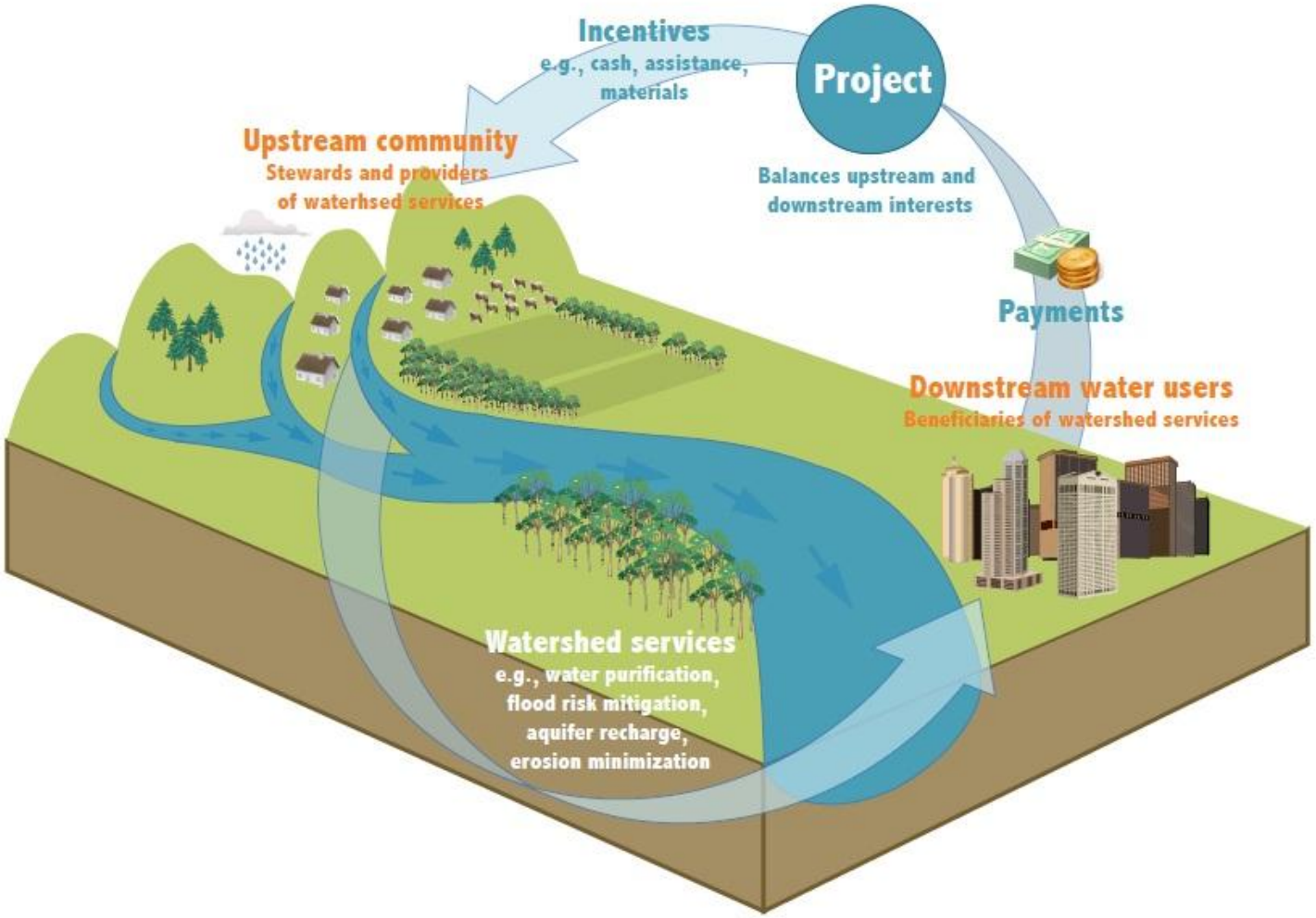
# PES in practice

- **Land or resource managers ('sellers')**
- PES often involves a series of payments to land or other natural resource managers in return for a guaranteed flow of ecosystem services (or, more commonly, payment for management actions likely to enhance their provision) over-and-above what would otherwise be provided in the absence of payment
- **Beneficiaries ('buyers')**
- Payments are made by the beneficiaries of the relevant services: individuals, communities, businesses or government organisations acting on their behalf

# What's interesting about PES?

- PES provides an opportunity to put a price on previously un-priced ecosystem services such as climate and water quality regulation and, in doing so, brings them into the wider economy
- Focuses on the 'beneficiary pays principle', as opposed to the 'polluter pays principle'
- Can connect geographically disparate providers and beneficiaries

# What does PES look like?

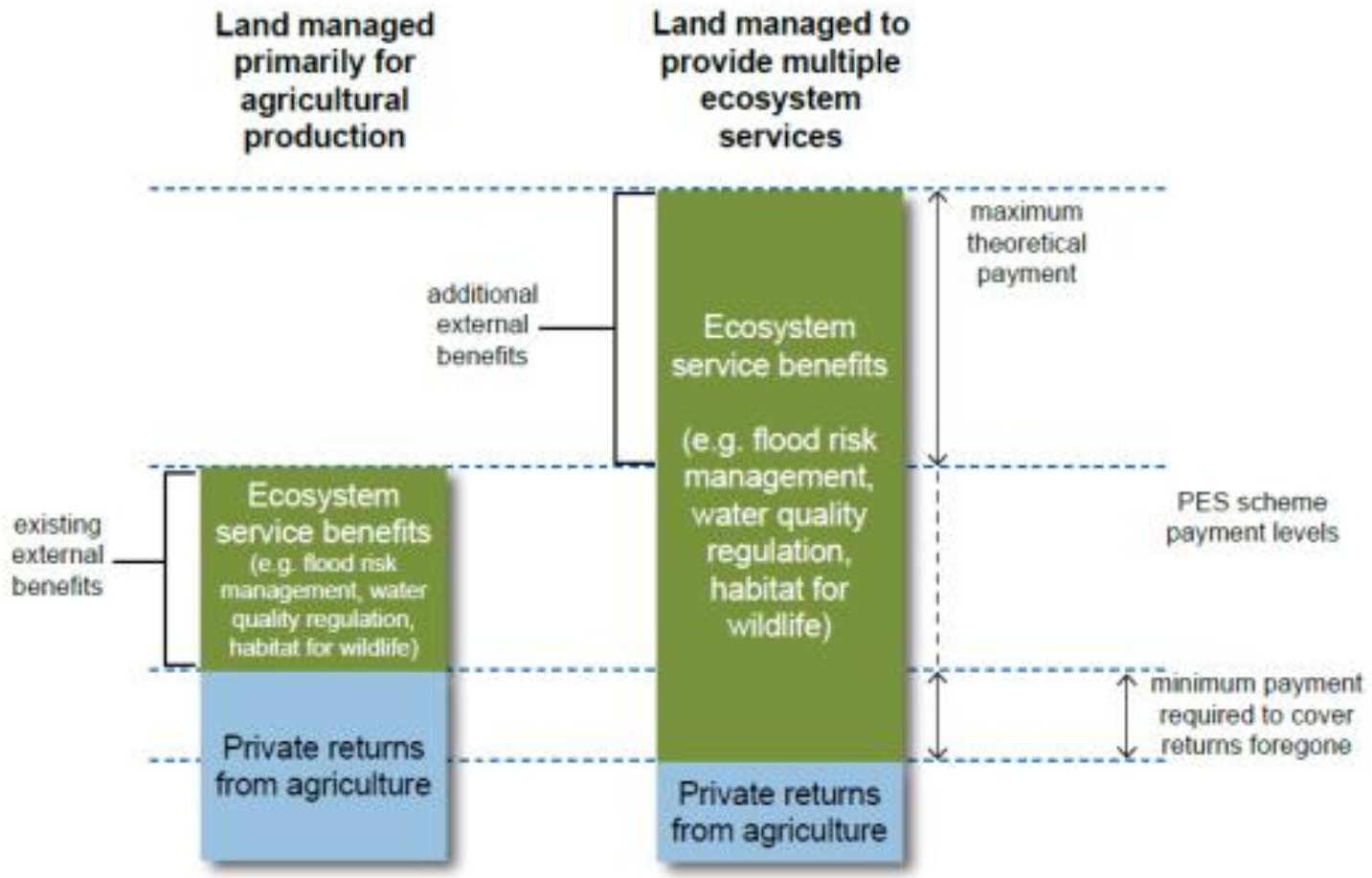


# Additionality

- “Payments should typically be for actions that are **additional** to what is usually expected of landholders – they should not be compensated for obeying the law, but rather for actions that society considers beyond the landholder’s responsibility”

RSPB (2010). *Financing nature in an age of austerity*

# Additionality



# Types of PES scheme

- There are two broad types of PES scheme:
  - **public payment schemes** through which government pays private land owners to maintain or enhance ecosystem services on behalf of the wider public (government-financed PES)
  - **self-organised private deals** in which individual beneficiaries of ecosystem services contract directly with service providers, paying the providers to deliver ecosystem services (user-financed PES)
- Examples of public/private partnerships emerging

# Mode of payment

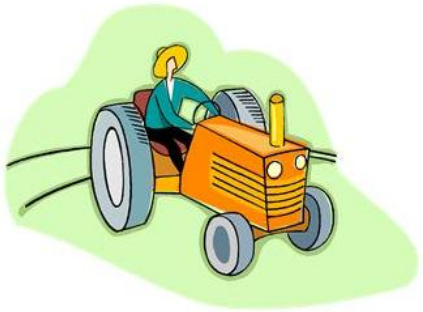
- The mode of payment is a key variable in scheme design:
  - **'Output-based' payments** where payments are made on the basis of actual ecosystem services provided
  - **'Effort-based' payments** where payments relate to agreed changes in management practices, on the assumption that these are likely to yield the desired change in service(s) provision

# Scale of PES

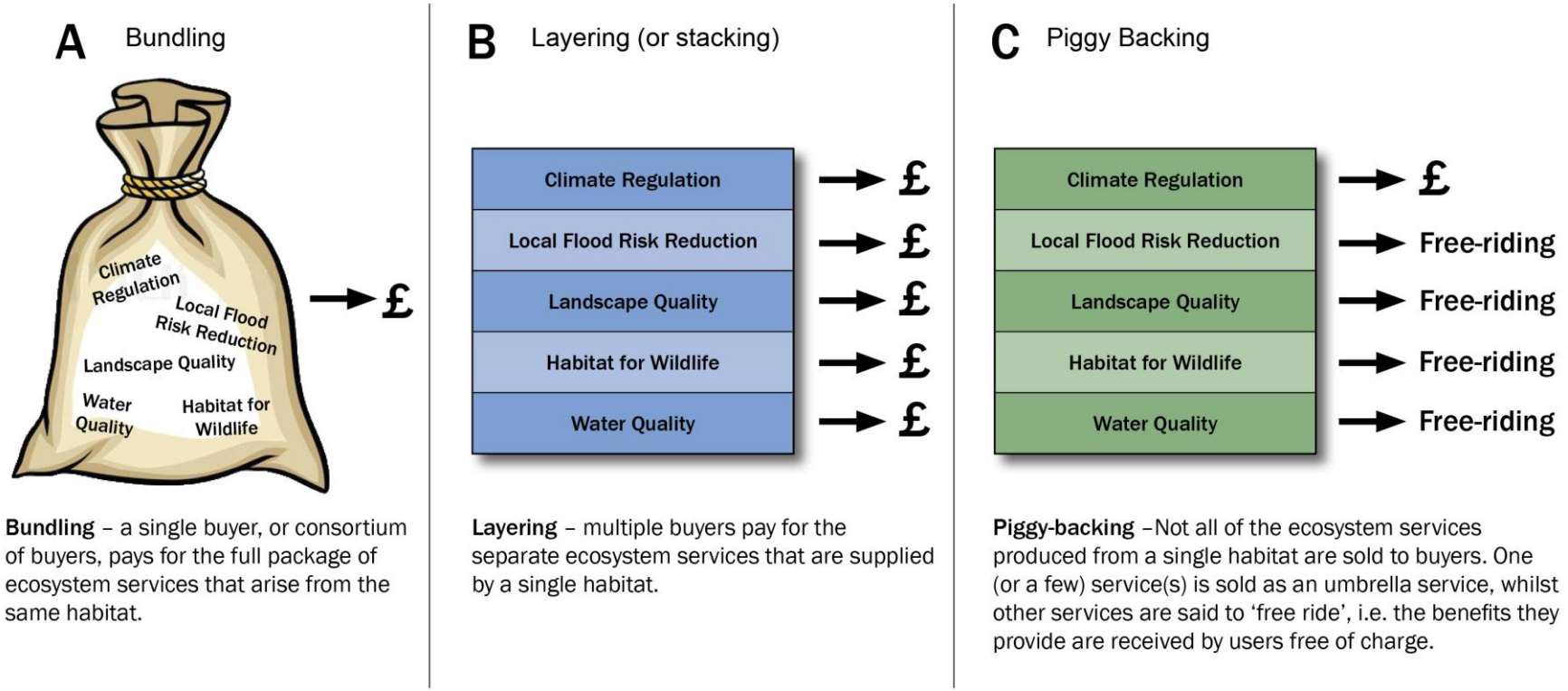
- PES can be developed at a variety of spatial scales, e.g.
  - **International**, e.g. REDD+, Green Development Mechanism, Ecuador Yasuni ITT Trust Fund
  - **National**, e.g. Agri-environment schemes (tend to be Government-financed)
  - **Catchment**, e.g. downstream water users paying for watershed management on upstream land (tend to be user-financed)
  - **Local**, e.g. residents collectively funding an NGO to manage local green space for biodiversity

# PES actors

- **Buyers** (individuals, communities, businesses or governments acting on their behalf)
- **Sellers** (land or resource managers whose actions can potentially secure production of the beneficial service)
- **Intermediaries** (‘honest brokers’ who can assist with scheme design and implementation)
- **Knowledge providers** (e.g. resource management experts, land use planners, economists, regulators and legal advisors who can facilitate scheme development)



# ‘Packaging’ ecosystem services




**Bundling** – a single buyer, or consortium of buyers, pays for the full package of ecosystem services that arise from the same habitat.

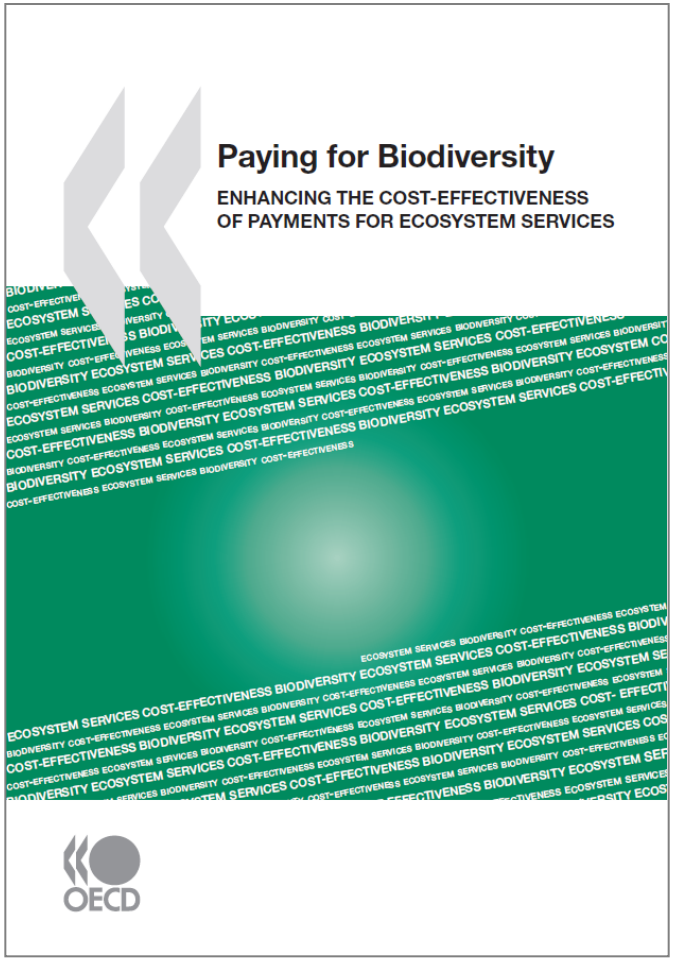
**Layering** – multiple buyers pay for the separate ecosystem services that are supplied by a single habitat.

**Piggy-backing** –Not all of the ecosystem services produced from a single habitat are sold to buyers. One (or a few) service(s) is sold as an umbrella service, whilst other services are said to ‘free ride’, i.e. the benefits they provide are received by users free of charge.

Adapted from Lau, Winnie W.Y. (2012). Beyond carbon: Conceptualizing payments for ecosystem services in blue forests on carbon and other marine and coastal ecosystem services. *Ocean and Coastal Management* (April 2012).

# Existing PES schemes

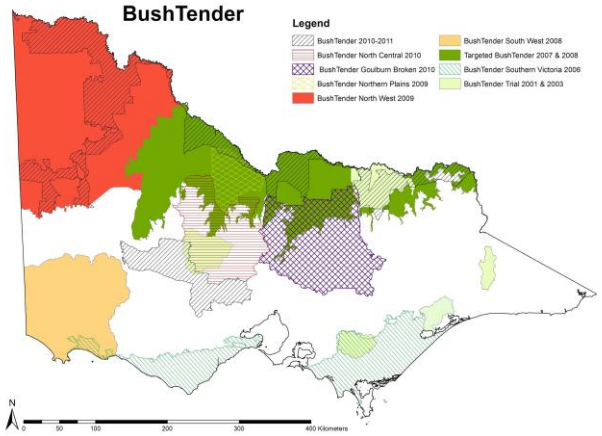
- “PES programmes are now being increasingly applied across developed and developing countries. There are today more than **300 PES programmes implemented worldwide**, most of which have been set up to promote biodiversity, watershed services, carbon and landscape beauty” (OECD, 2010)



# PES schemes: examples

- Pago de Servicios Ambientales, Costa Rica
- Pago por Servicios Ambientales Hidrológicos, Mexico
- Conservation Reserve Program (CRP), US
- Environmental Stewardship, UK
- Catskills Long-Term Watershed Protection Program, US
- Vittel Payments for Ecosystem Services, France
- Lake Naivasha Watershed Management Project, Kenya
- BEF's Water Restoration Certificates, US
- Yasuni ITT Trust Fund, Ecuador
- Tasmanian Forest Conservation Fund

Yasuni-itt
Crea un nuevo mundo

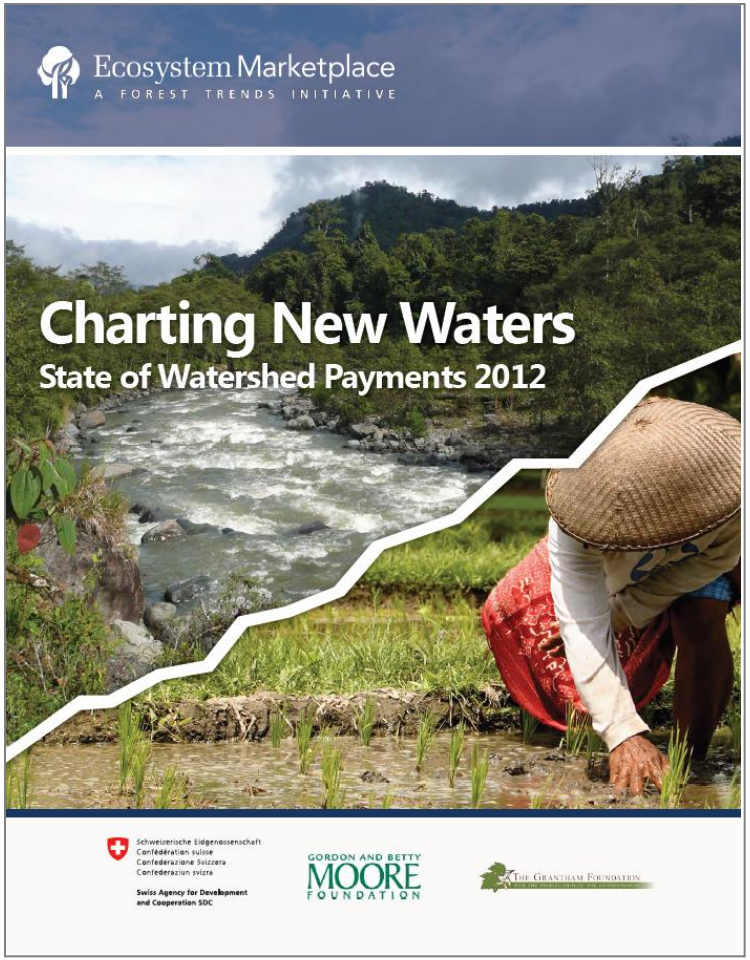



http://mptf.undp.org/yasuni

www.dse.vic.gov.au

# Watershed Payments

- 205 active programs around the world with 61 in China and 67 in the United States
- Transactions totalled $8.17 billion in 2011
- 117 million hectares managed for watershed services in 2011



# Opportunities for PES

- PES schemes are most likely to emerge in situations where:
  - specific land or resource management actions have the **potential to increase the supply** of a particular service (or services);
  - there is a **clear demand** for the service(s) in question, and its provision is financially valuable to one or more potential buyers; and
  - it is clear **whose actions** have the capacity to increase supply (for example, certain land or resource managers may be in a position to enhance supply)

# Challenges: scientific uncertainty

- “[g]etting the science right is crucial and requires a clear understanding of the biophysical relationships between [land managers’] actions and their environmental consequences”

FAO (2007). The State of Food and Agriculture 2007: Paying Farmers for Environmental Services

# Challenges: unintended consequences

- Securing an ecosystem service in one location simply leads to the loss or degradation of ecosystem services elsewhere (**leakage**)
- Risk of **perverse incentives** (e.g. managers might plant non-native species to bank carbon faster)
- Discouraging **beneficial natural phenomena** (e.g. fire and flooding may be essential for biodiversity)

# Challenges: perceived unfairness

- Land or resource managers already providing services would not qualify for payments under a PES programme premised on additionality

- Programmes based on additionality may be perceived as “not fair” and as “rewarding the bad guys”

# Challenges: poor spatial targeting

- “An evaluation of the first two years of the [Payment for Hydrological Services] programme [in Mexico] showed that most of the payments had gone to protect forests outside of critical watersheds and were too fragmented in their distribution to provide a measurable improvement in water services. In addition, payments were made mainly for forests that were not at risk of being lost”

FAO (2007). The State of Food and Agriculture 2007: Paying Farmers for Environmental Services

# Opportunity: better targeting

- Four relevant factors vary spatially:
  - ecosystem service benefits
  - risk of benefits being lost or degraded
  - opportunities for enhancing benefits
  - opportunity costs of providing ecosystem services
- “The greater the spatial variation in costs and benefits, the larger the potential cost-effectiveness gains are when PES programmes are designed to take these differences into account”

OECD (2010). Paying for biodiversity: enhancing the cost-effectiveness of payments for ecosystem services

# Overall challenge

- "…establishing PES is a very complex undertaking, one that requires the consideration of scientific but also social, economic, political, institutional, and power relationships"

- "The entire programme was essentially a **'learning-by-doing'** experiment"

Perrot-Maître, D. (2006). *The Vittel payments for ecosystem services: a "perfect" PES case?* International Institute for Environment and Development

# Payments for Ecosystem Services: An increasing role in environmental protection in England?

Dr Steven Smith, URS

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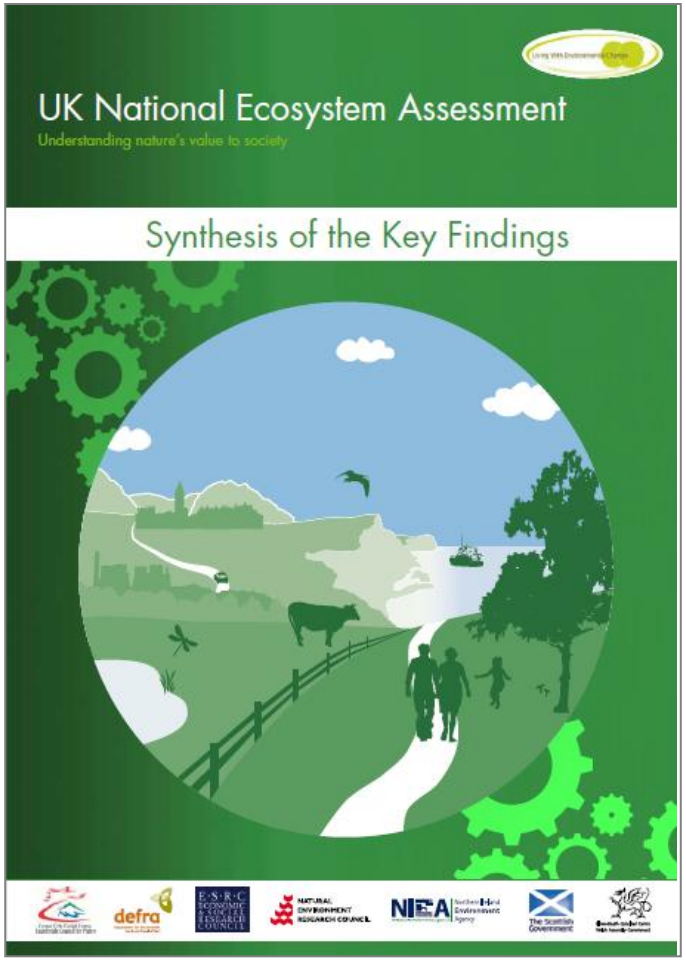
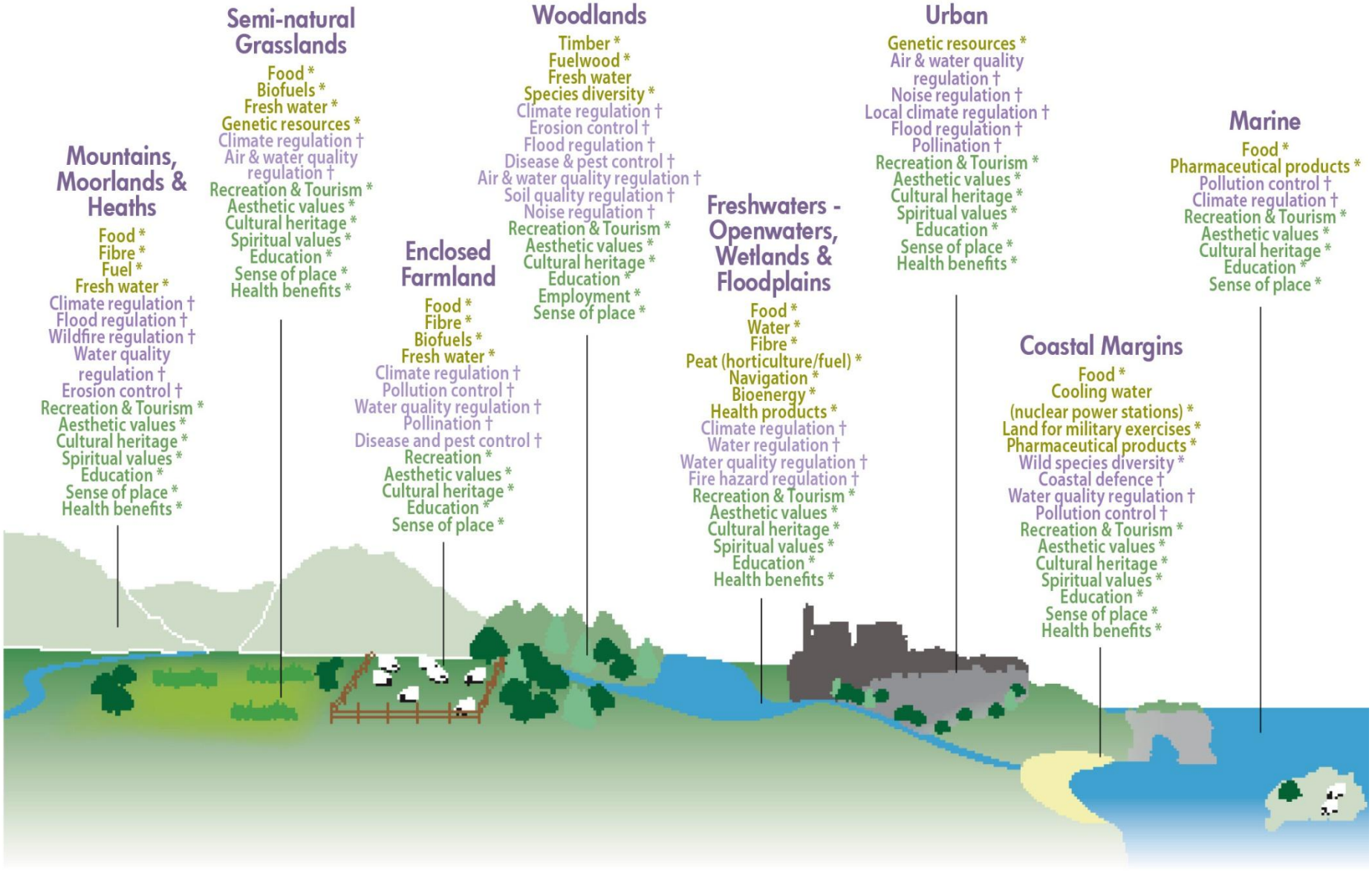
# Ecosystem services – a growing agenda in the EU and UK

- EU target to halt the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 and restore them in so far as feasible

- UK Government White Paper on the Natural Environment

- UK National Ecosystem Assessment (NEA)



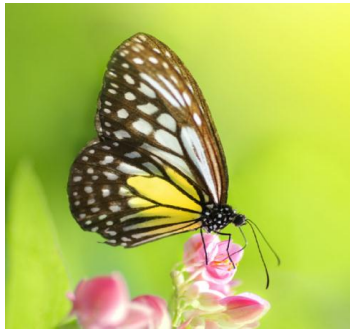



UK National Ecosystem Assessment (NEA)

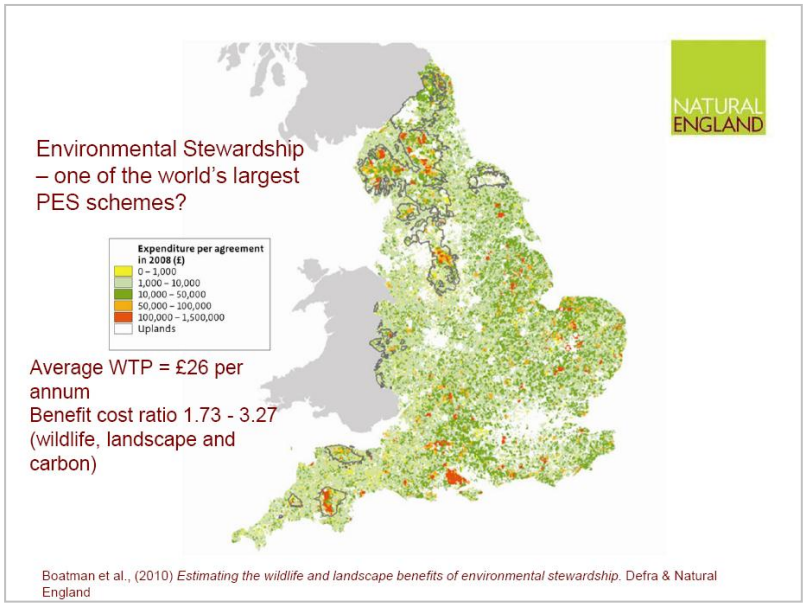
# Ecosystem markets

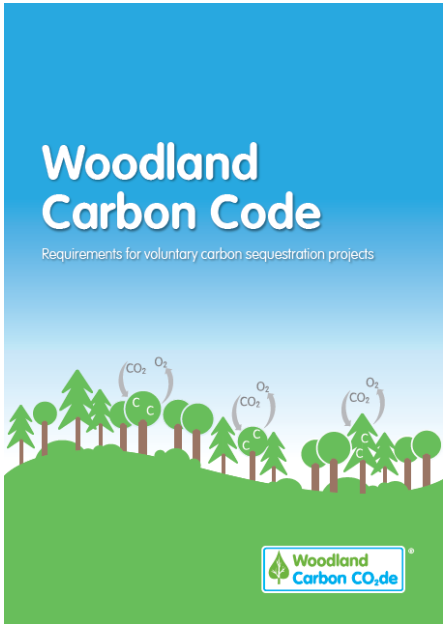
- “Understanding the links between biodiversity and a wider range of ecosystem services is rapidly improving… and we are increasingly able to place values on such services… The urgent and logical next step is to develop **markets** that enable these values to be realised for services such as water quality, flood risk management, climate regulation and other benefits”

Making Space for Nature: A review of England’s Wildlife Sites and Ecological Network (the ‘Lawton Review’)



# Existing PES schemes





UPSTREAM THINKING

nurture lakeland

CareMoor for Exmoor

THE NEW FOREST TRUST

DONATE TO THE DALES

ANGLING PASSPORT

# Upstream Thinking

- **Buyer** = South West Water (private water company)
- **Sellers** = Farmers in target catchments
- **Intermediate** = Westcountry Rivers Trust (charity)
- **ES** = water quality (plus water quantity, biodiversity)

- Encourages and/or incentivises farmers to implement land management actions to improve raw water quality, with many management measures locked into 10 or 25 year covenants

- South West Water and the Westcountry Rivers Trust worked together to develop an action plan for three target catchments

# Upstream Thinking

## Before Investment

Before intervention agricultural pressures meant that soil, nutrients and fecal matter was entering the water courses through poor, but legally compliant, infrastructure.

## After Investment

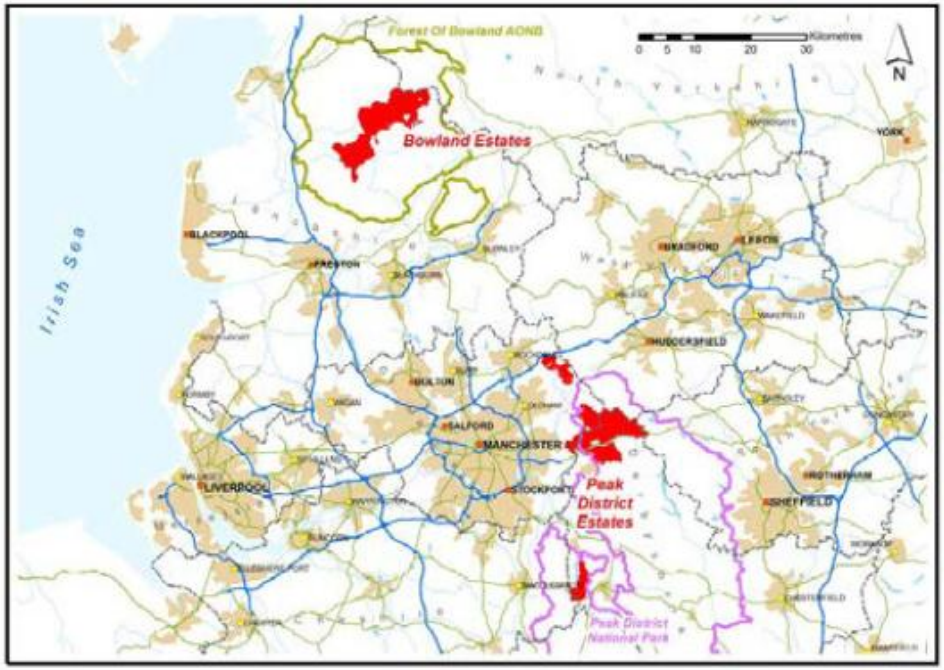
Investment removes or minimises these pressures and is 50% co-funded by the farmer

# Sustainable Catchment Management Programme (SCaMP)

- **Buyer** = United Utilities (private water company)
- **Sellers** = Tenant farmers on United Utilities land
- **Intermediate** = United Utilities and RSPB
- **ES** = water quality (plus biodiversity, carbon sequestration and recreation)

- By incentivising improvements in land management, the SCaMP scheme has sought to improve the condition of designated wildlife sites and reduce risks to water quality

- United Utilities' customers have paid 75% of the capital costs for improvements through minor increases in their water bills



# Woodland Carbon Code

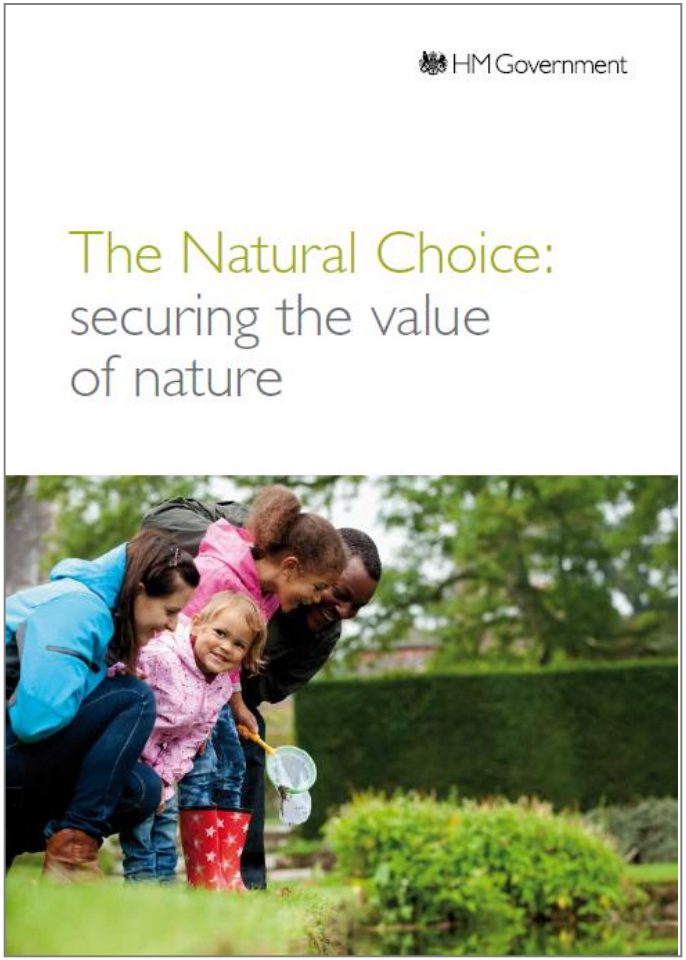
- **Buyer** = Private companies
- **Sellers** = Landowners
- **Intermediate** = Forestry Commission
- **ES** = carbon sequestration (plus 'co-benefits')

- The Woodland Carbon Code provides standards for the creation of woodland with the aim of removing $CO_2$
- Provides businesses with the opportunity to invest in local and visible carbon sequestration projects for the purposes of Corporate Responsibility

- Companies can report carbon savings as part of their net GHG emissions under Government reporting guidelines

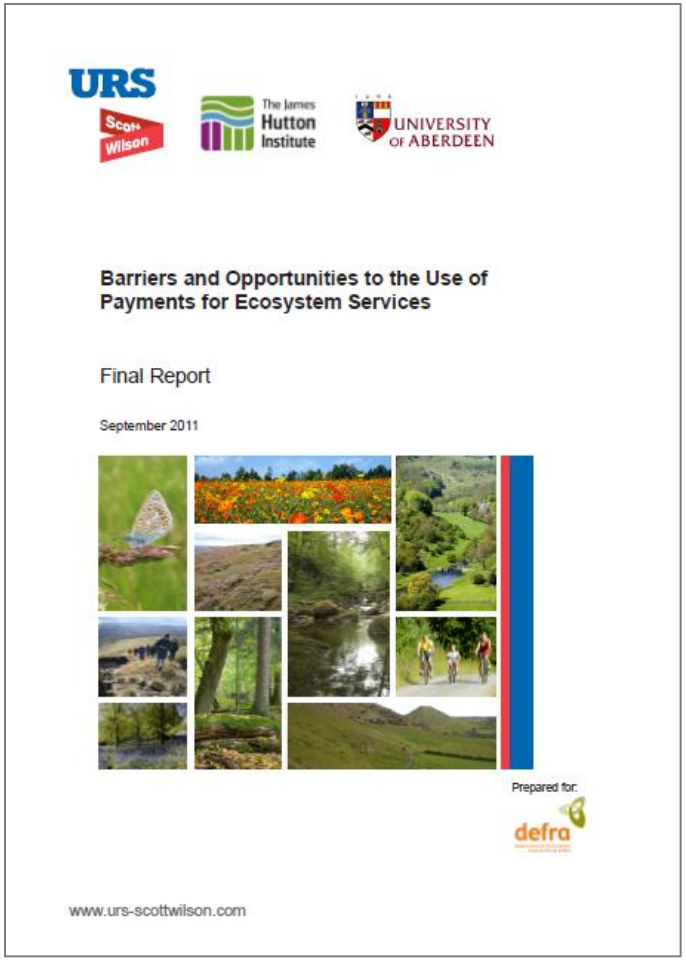
# Prospects for PES

- "We will publish an **action plan** in 2012 to expand schemes in which the provider of nature's services is paid by the beneficiaries, after undertaking a full assessment of the **challenges** and **barriers**. We will introduce a new **research fund** targeted at these schemes and will publish a **best practice guide** for designing them"

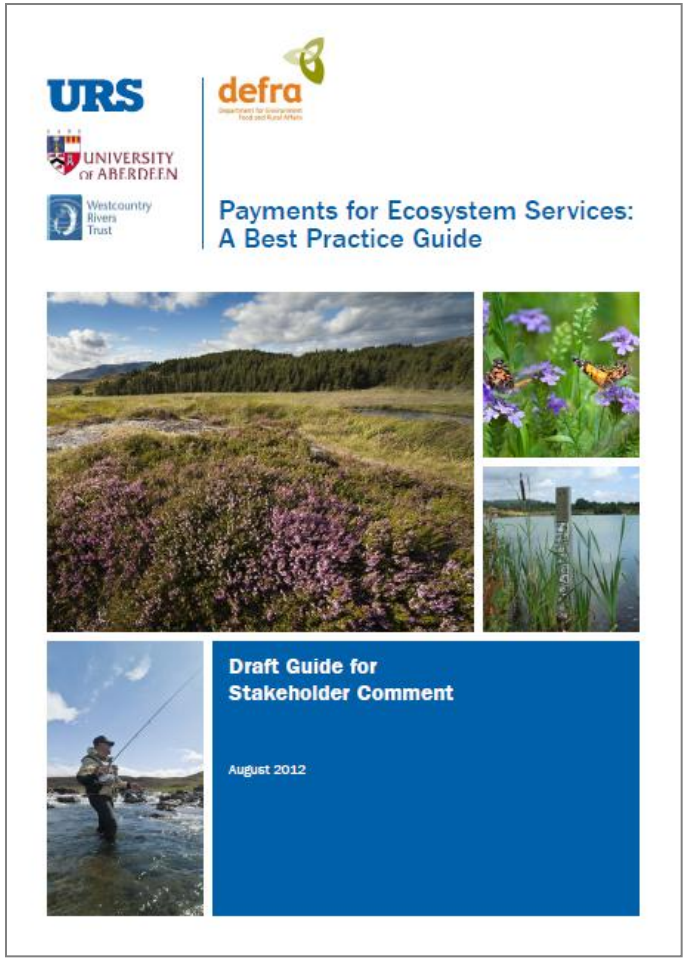


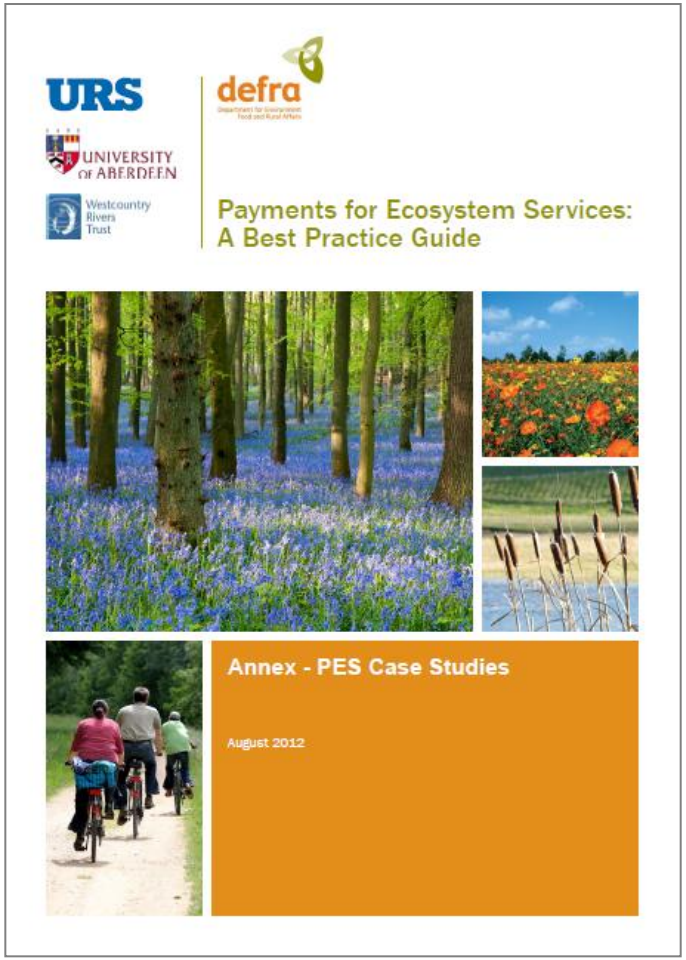
# PES: Barriers and opportunities

- Lots of potential barriers!
- But opportunities in relation to:
  - Water quality, water resources and flood risk management
  - Carbon sequestration (from woodland creation and peatland restoration)
  - Cultural services and wild species diversity (through, for example, visitor payback schemes)
  - Better targeting of public payments to farmers and woodland managers

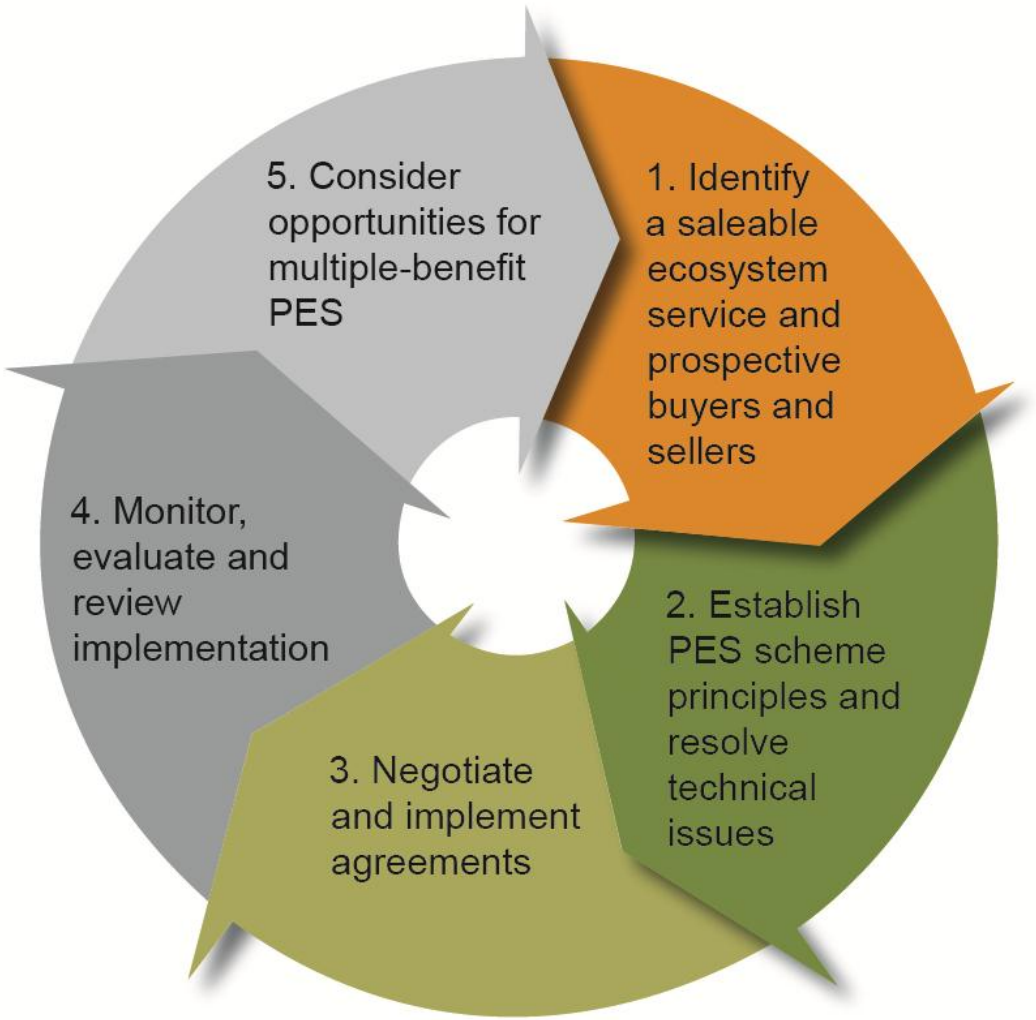


# PES: A Best Practice Guide



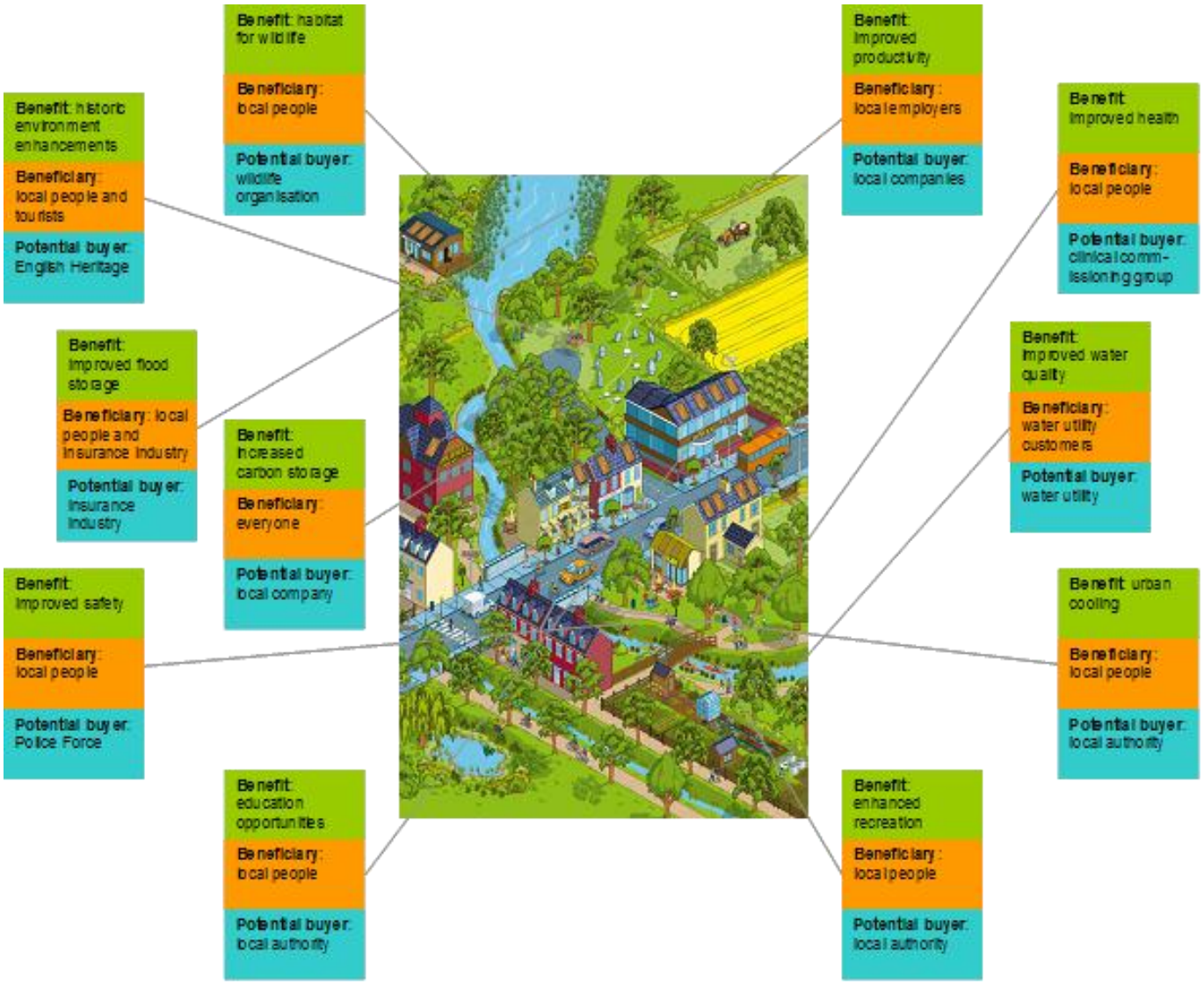



# Designing and implementing




Five broad phases for designing and implementing a PES scheme

# Beneficiary analysis




For a hypothetical PES scheme to fund the restoration and continued maintenance of an urban river corridor for multiple benefits

# Scope for PES in the uplands

- URS currently involved in two projects:
  - Investigating the feasibility of ‘place-based’ PES schemes in the English Uplands that bundle / layer carbon sequestration with other services
  - PES pilot research project on developing the **Peatland Carbon Code**

crichton carbon centre

BIRMINGHAM CITY University

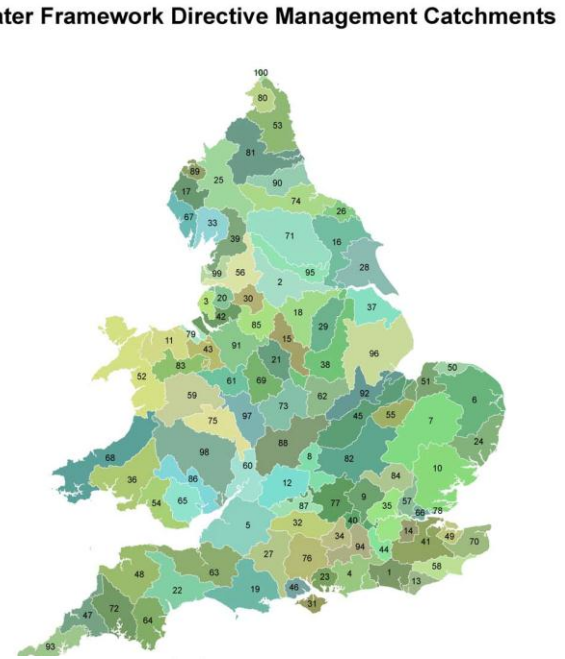
# Peatland carbon: clear demand

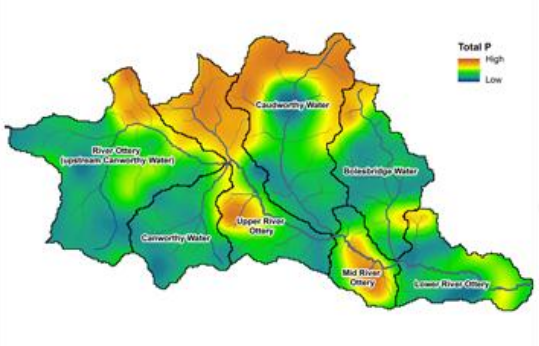
- Market demand for UK land-based carbon reduction: 1-10M tonnes p.a. (BRE, 2008)
  - Woodland carbon code secured 1 million tonnes of CO2 through projects covering 2733 ha in first year

- Significant scope for increasing ES supply - >80% UK deep peats damaged and potential for rewetting 1.8M ha

# Wider opportunities

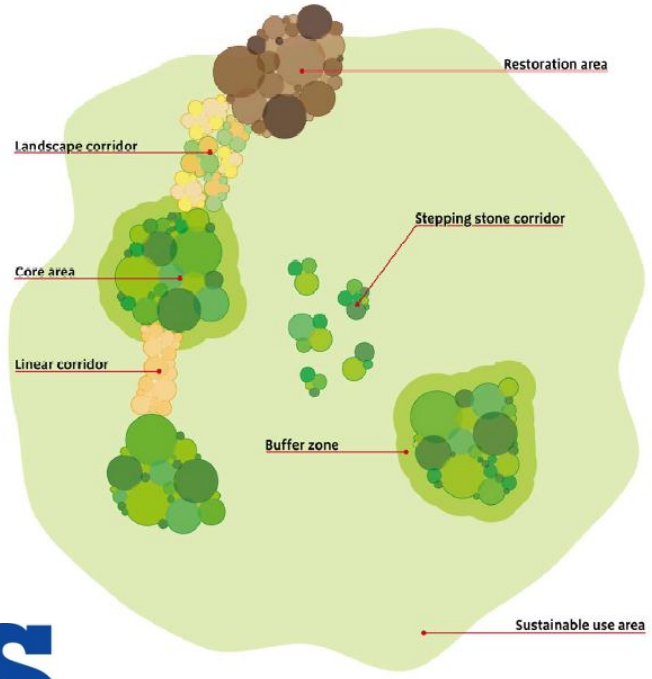
- PES schemes could contribute to wider environmental objectives (e.g. from catchment scale plans)
- Could PES form part of a wider and growing ‘spatial planning for ecosystem services’ agenda?




# PES and climate change

- URS leading a research project for UK Government on the **'Role of Payments for Ecosystem Services in Climate Change Adaptation'**

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# Ecosystem Markets Task Force

ecosystemmarkets TASK FORCE

**Ian Cheshire**, Group CEO Kingfisher, Chair of EMTF

**Kim Buckland**, Co-founder Liz Earle

**Jack Frost**, Director of Johnson Matthey Fuel Cells

**Vivienne Cox**, Chairman of Climate Change Capital

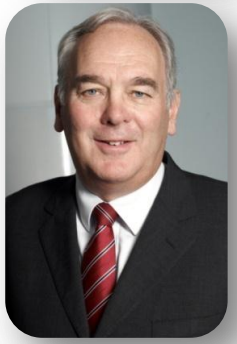
**David Hill**, Chairman The Environment Bank Ltd

**Russ Houlden**, Chief Financial Officer, United Utilities Group PLC

Amanda **Sourry**, Chairman of Unilever UK and Ireland

**Martin Roberts**, Programme Director of the Cambridge Natural Capital Leaders Platform

**Peter Young**, Chairman of the Aldersgate Group



**Mike Wright**, Executive Director, Jaguar Land Rover

# Conclusions – prospects for PES

- Government actively promoting PES and keen to secure private sector contributions to conservation
- Numerous challenges involved in designing and implementing PES but successful schemes nevertheless emerging
- As the science of ecosystem services improves and we are better able to value services more PES schemes are likely to emerge
- PES will only ever be a part of the solution alongside regulation, protected areas, other market-based mechanisms etc.

# Thank you

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# Discussion: a greater role for PES in environmental protection?