

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.

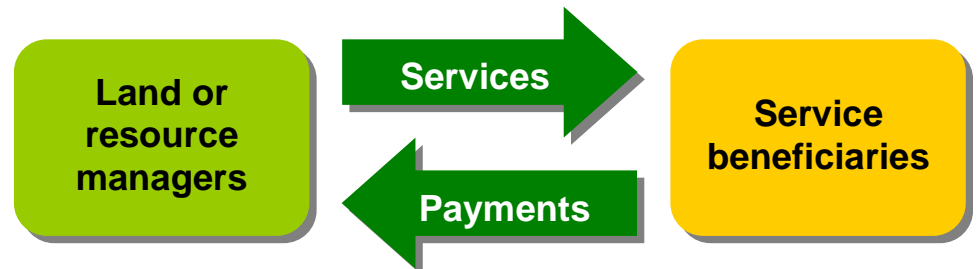
Definition

- 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

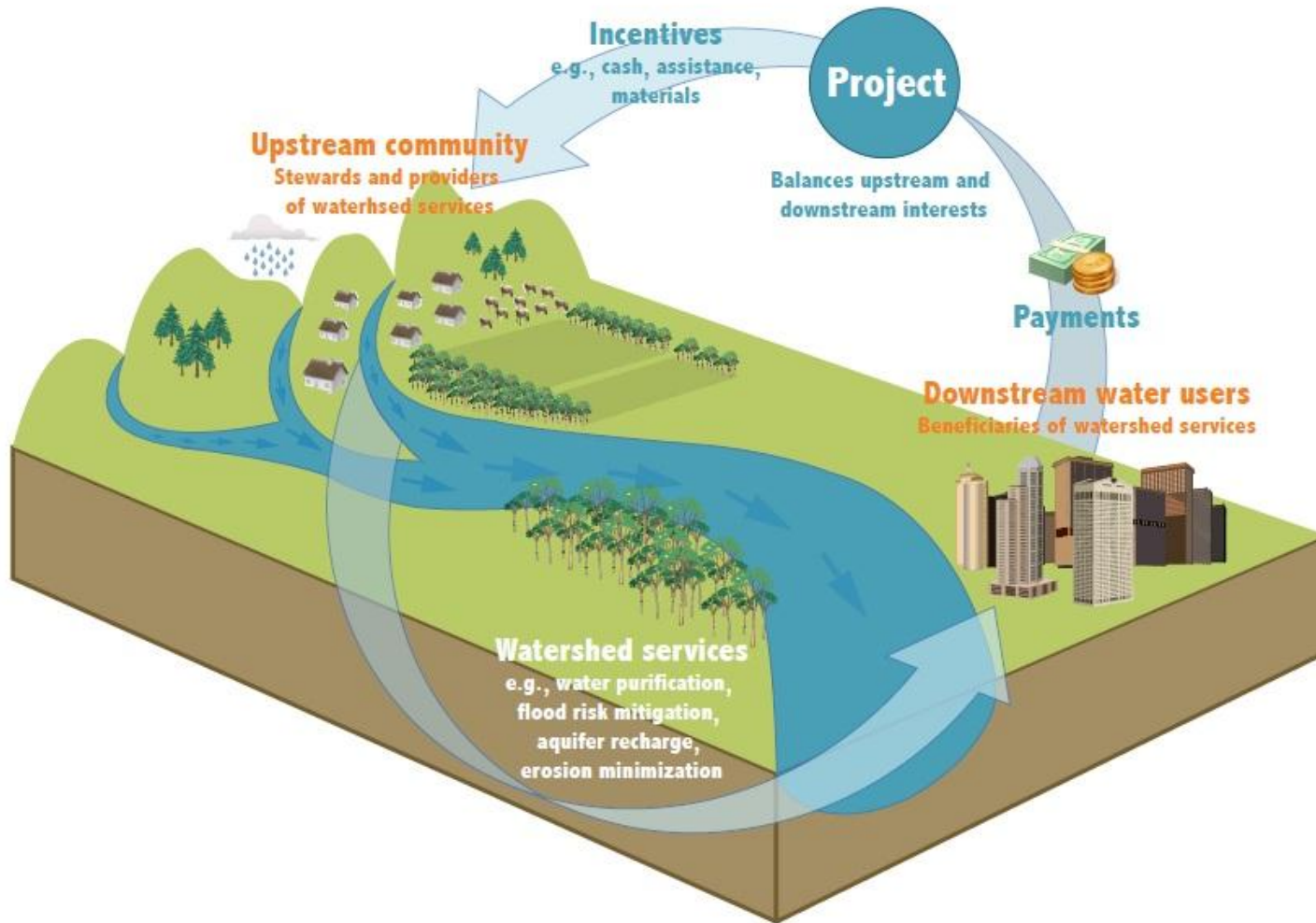


What's interesting about PES?

- ❑ 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?

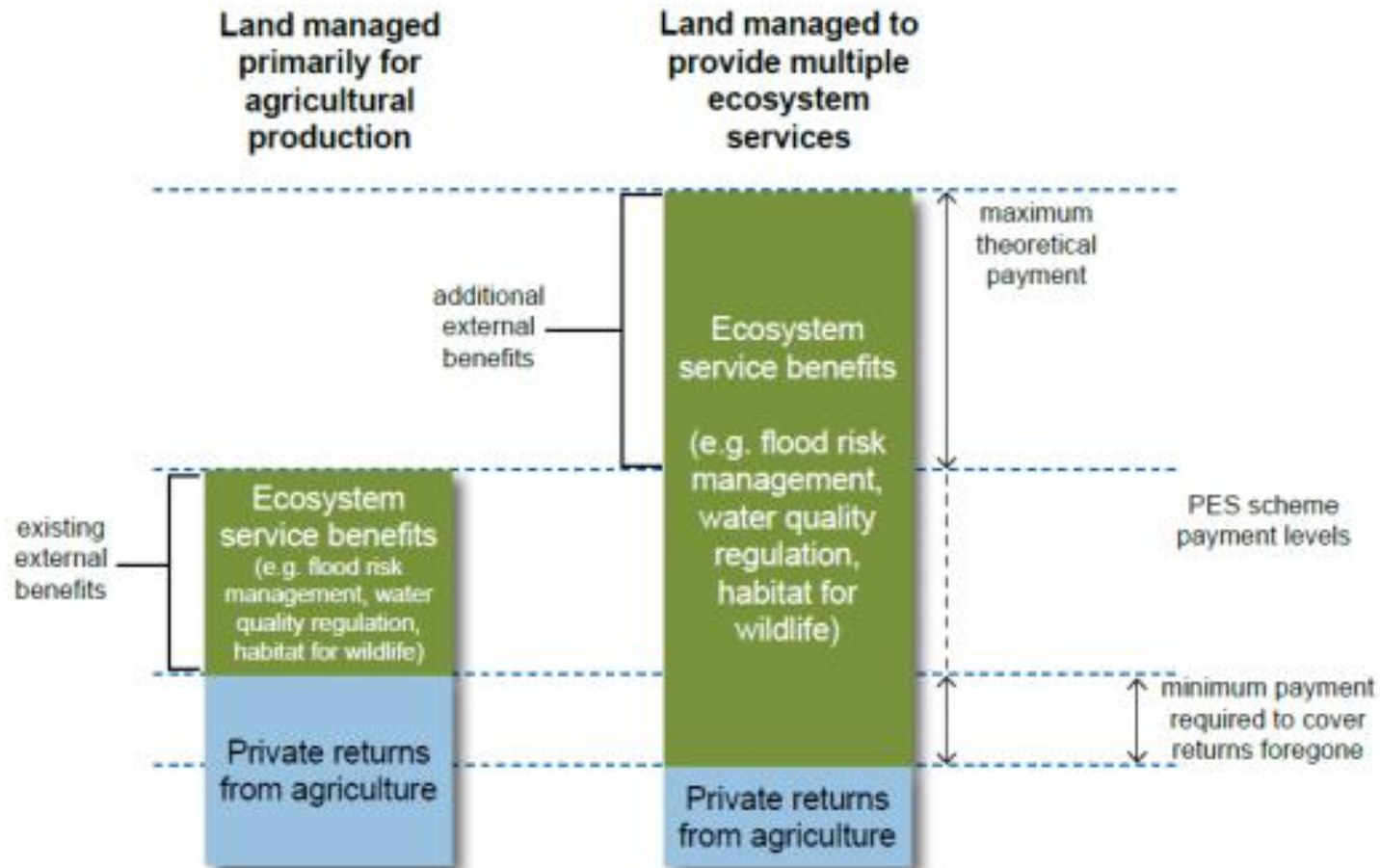


Additionality

- “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

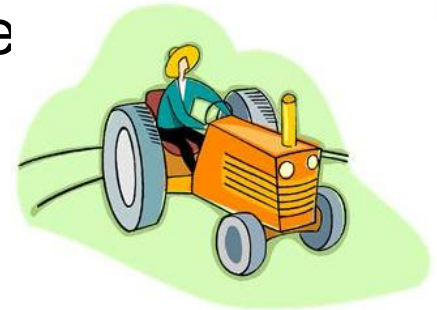


Scale of PES

- 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)



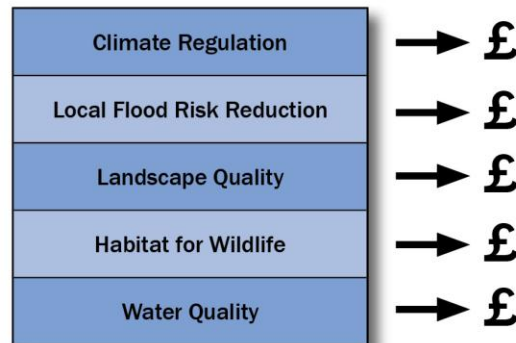
'Packaging' ecosystem services

A Bundling



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

B Layering (or stacking)



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

C Piggy Backing

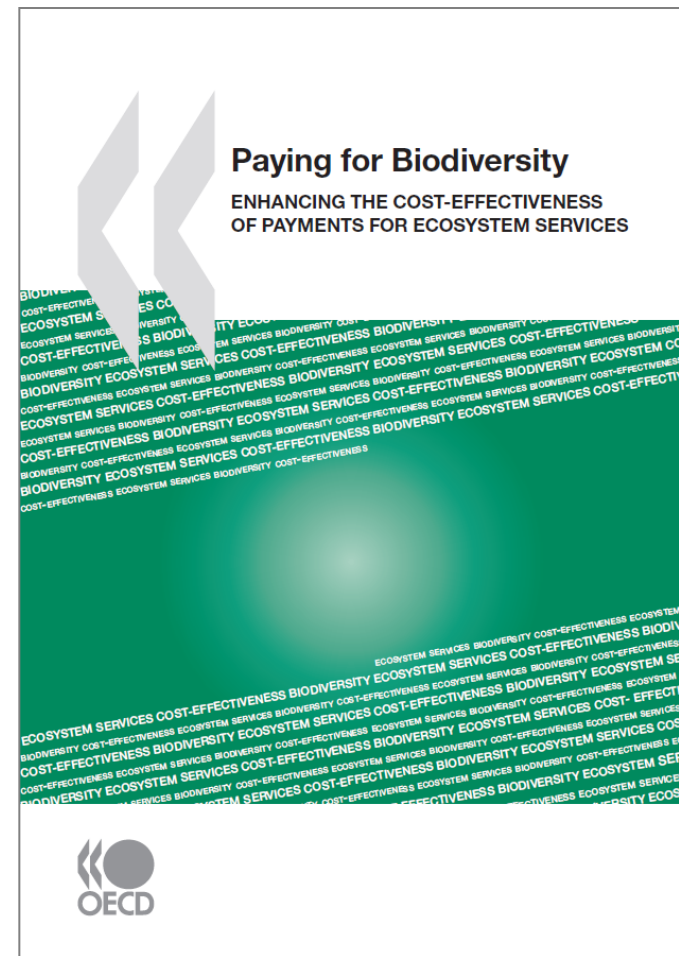


Piggy-backing – Not all of the ecosystem services produced from a single habitat are sold to buyers. One (or a few) service(s) is sold as an umbrella service, whilst other services are said to 'free ride', i.e. the benefits they provide are received by users free of charge.

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)

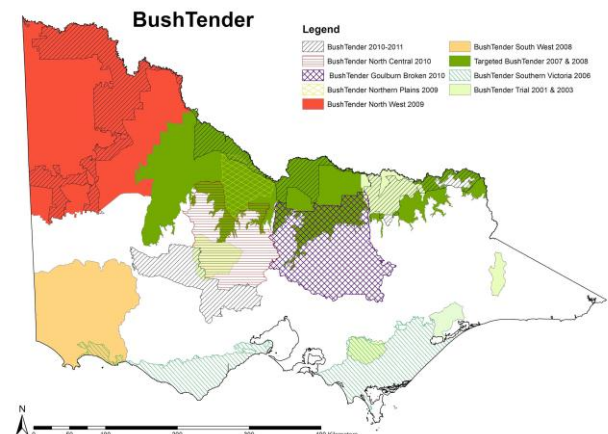


PES schemes: examples

- ❑ 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



<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”

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

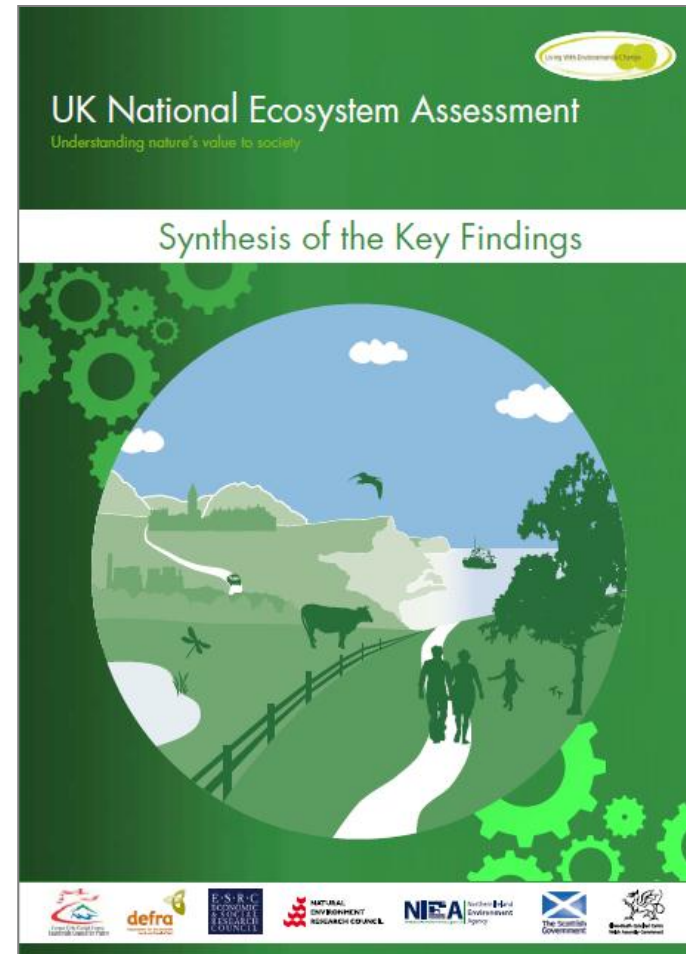
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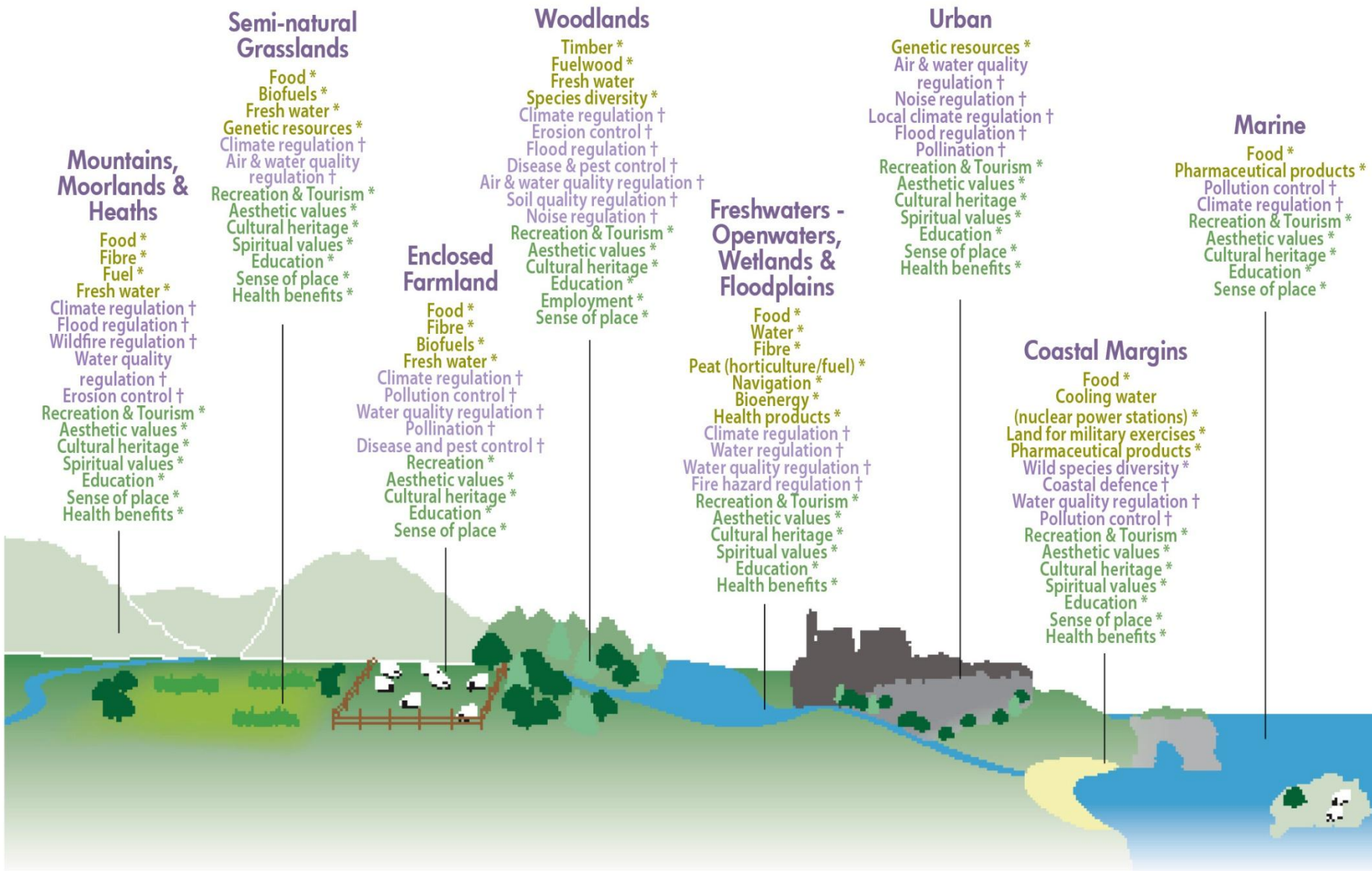
Ecosystem services – a growing agenda in the EU and UK

- ❑ 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)

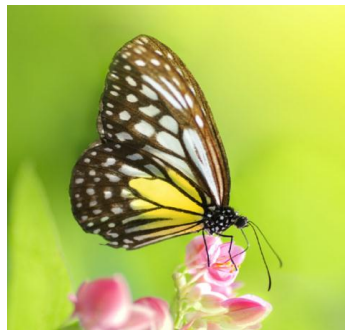




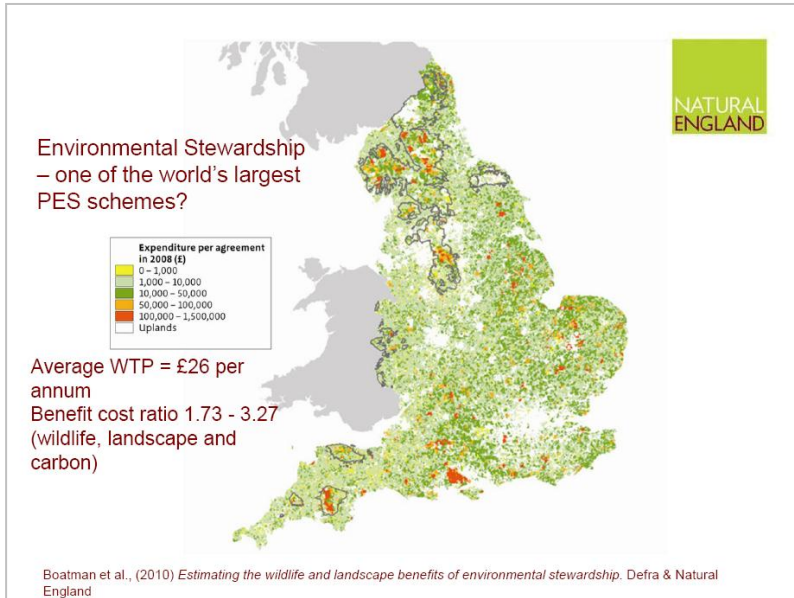
Ecosystem markets

- “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



Woodland Carbon Code

Requirements for voluntary carbon sequestration projects

Woodland Carbon CO₂e

scamp news
WORKING TOGETHER FOR WILDLIFE AND WATER
ISSUE 6: SPRING 09

A day on the farm

This spring, tenants, local interest groups and environmental associations were given the opportunity to see, first hand, a farm on our Bowland Estate where all the work under our SCAMP programme has been completed.

Representatives from a whole host of organisations including Lancashire County Council, The Countryside Alliance, The Environment Agency, The Forestry Commission, The Moorland Association, Natural England, The Ribblesdale Conservation Trust and the Bowland Estate Tenants' and Holders' Association were invited to see for themselves the improvements made to the farm over the last three years.

The day incorporated a tour of the recently completed buildings including alterations to the existing sheep building and a covered yard and milking shed.

The group walked across the fall to look at some recent low water levels in the reservoirs. Glynis had been blocked.

Carolyn Hedges, Bowland Land Agent explained the reasons behind all the work which was carried out as part of SCAMP and the full on-going environmental scheme.

The reservoir drains were blocked with the aim of raising the water level on the land to slow our runoff from the land into the water outfall and reservoirs to stabilise or reduce water colour from these areas and reduce the amount of peat eroded into the aquifers.

The new drainage was aimed to reduce sheep splash off the fall during the winter months in order to reduce grazing pressure on the fall as part of the scheme.

"Including the roof also leads to a rise in the proportion of manure, so it was essential to improve the muck to accommodate this increase to protect water quality," she added.

Also on the agenda for the group was a visit to Bowland Reservoir to view the Wetland restoration which will help achieve the Lancashire Biodiversity Action Plan target. The work has involved the removal of conifers and the planting of native broadleaves, all funded by United Utilities.

Nursing Langden Head back to health

A huge project has begun to stabilise and re-vegetate areas of bare and eroding peat at Langden Head in Bowland.

More than 40 hectares is being fenced off from livestock which exacerbate the erosion in bare peat.

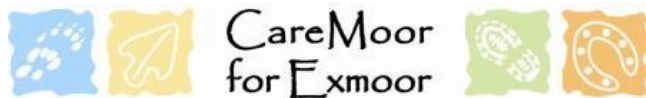
Since the fencing has already been put in place, the sheep and cattle have been kept out of the eroding areas and the heather brush applied to faster ground.

Next, we will be spreading lime, fertiliser and grass seed to cover the area in a lush growth of vegetation.

This first crop of grass will act as a nurse crop, stabilising the ground while providing the essential microclimate for the heather and other moorland plants to re-establish themselves.

Natural England is funding the majority of the project which has also been funded from a £20,000 grant from Lancashire County Council's Our Moors, Our Future Plan which will be used to help offset some of the legal grazing charges on the site.

Above: Peat on site at Langden Head in Bowland. See how the sheep apply to the sheep pen area.



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.



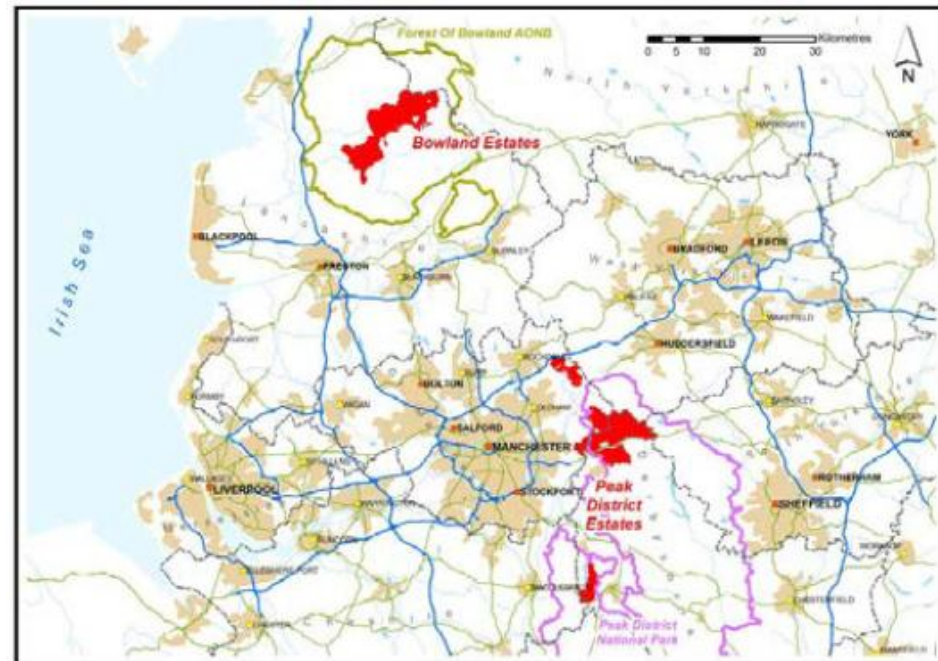
After Investment

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')
- ❑ Companies can report carbon savings as part of their net GHG emissions under Government reporting guidelines
- ❑ The Woodland Carbon Code provides standards for the creation of woodland with the aim of removing CO₂
- ❑ Provides businesses with the opportunity to invest in local and visible carbon sequestration projects for the purposes of Corporate Responsibility



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”

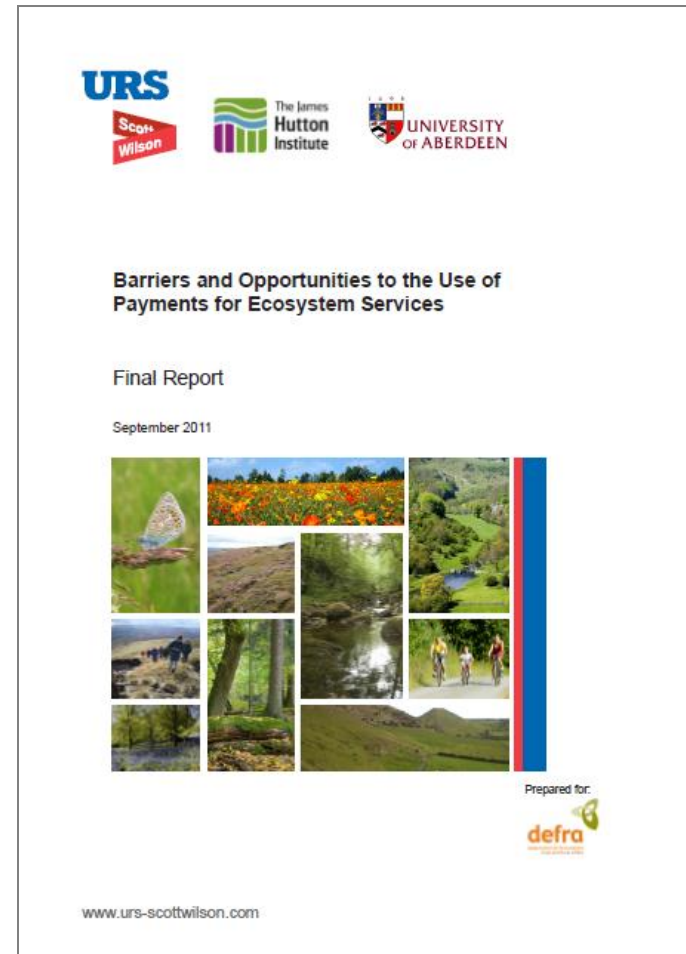
 HM Government

The Natural Choice:
securing the value
of nature



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

The cover features logos for URS, the University of Aberdeen, and Westcountry Rivers Trust. It includes the Defra logo and the title 'Payments for Ecosystem Services: A Best Practice Guide'. The central image is a collage of four photos: a wide river landscape, purple flowers with butterflies, a river with reeds, and a person fishing. A blue box at the bottom contains the text 'Draft Guide for Stakeholder Comment' and 'August 2012'.

URS
UNIVERSITY of ABERDEEN
Westcountry Rivers Trust

defra
Department for Environment, Food and Rural Affairs

**Payments for Ecosystem Services:
A Best Practice Guide**

**Draft Guide for
Stakeholder Comment**

August 2012

The cover features logos for URS, the University of Aberdeen, and Westcountry Rivers Trust. It includes the Defra logo and the title 'Payments for Ecosystem Services: A Best Practice Guide'. The central image is a collage of four photos: a forest floor with blue flowers, a field of orange flowers, a river with reeds, and people cycling on a path. An orange box at the bottom contains the text 'Annex - PES Case Studies' and 'August 2012'.

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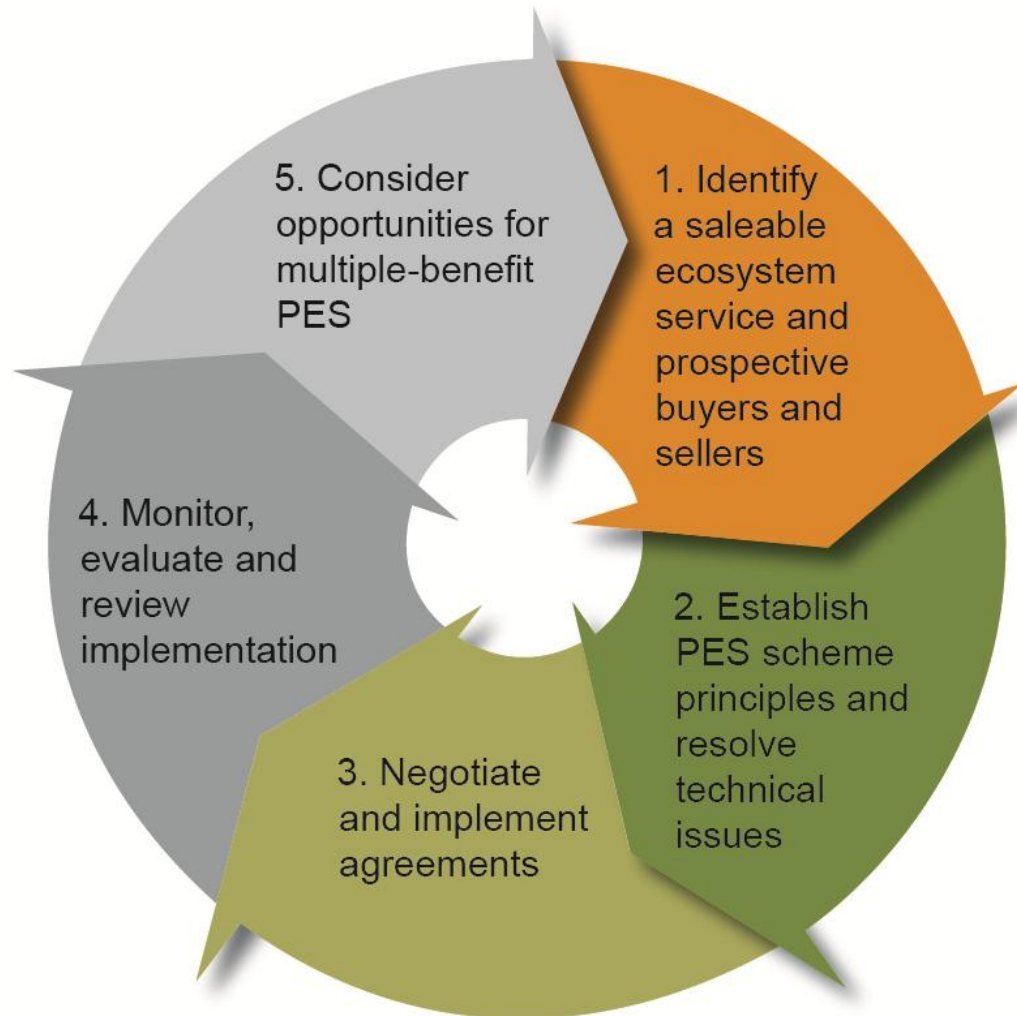
defra
Department for Environment, Food and Rural Affairs

**Payments for Ecosystem Services:
A Best Practice Guide**

Annex - PES Case Studies

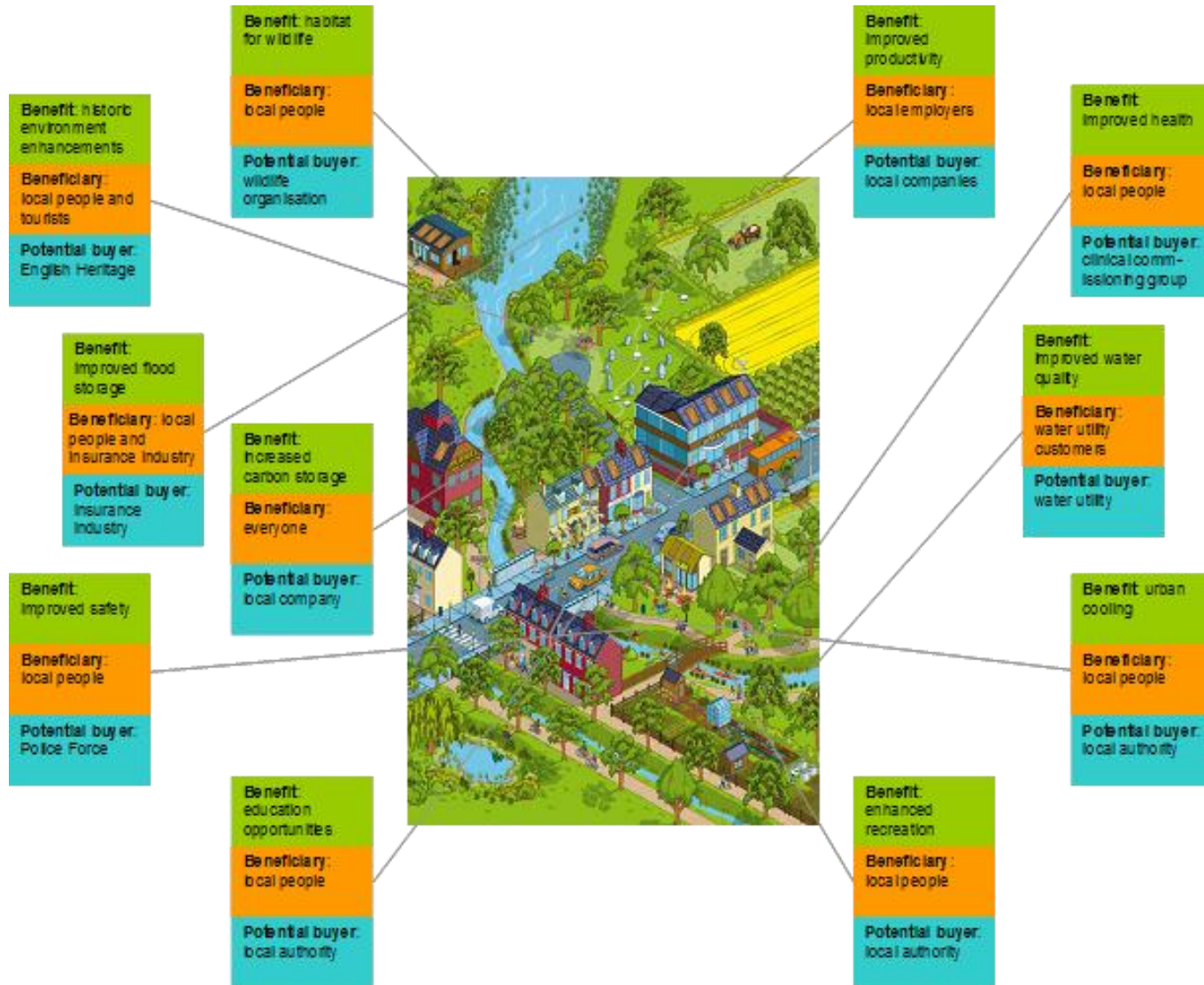
August 2012

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**



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

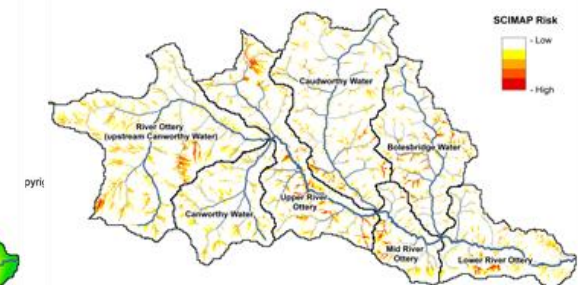
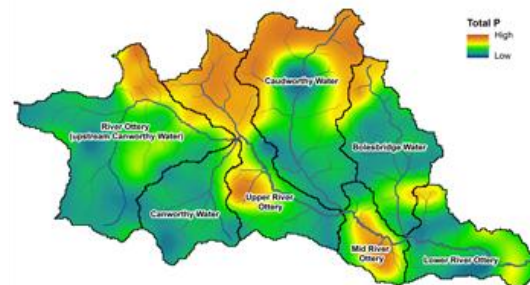
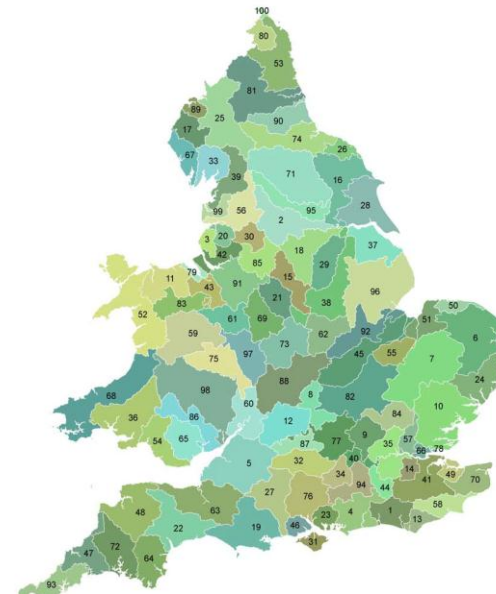
- ❑ Significant scope for increasing ES supply - >80% UK deep peats damaged and potential for rewetting 1.8M ha



Wider opportunities

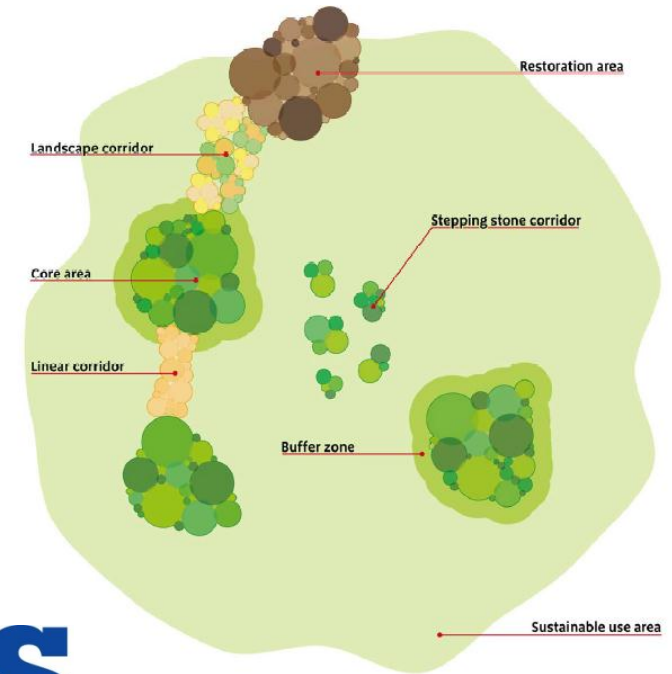
- ❑ PES schemes could contribute to wider environmental objectives (e.g. from catchment scale plans)
- ❑ Could PES form part of a wider and growing 'spatial planning for ecosystem services' agenda?

Water Framework Directive Management Catchments



PES and climate change

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



URS



ECOSYSTEM SERVICES PLANNING

Strategic information for effective environmental management



Ecosystem Markets Task Force



Ian Cheshire,
Group CEO
Kingfisher, Chair
of EMTF



Vivienne Cox,
Chairman of
Climate Change
Capital



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



Kim Buckland,
Co-founder Liz
Earle



David Hill,
Chairman The
Environment
Bank Ltd



Peter Young,
Chairman of the
Aldersgate
Group



Russ Houlden,
Chief Financial
Officer, United
Utilities Group
PLC



Mike Wright,
Executive
Director, Jaguar
Land Rover



Jack Frost,
Director of
Johnson
Matthey Fuel
Cells



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

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

Dr Steven Smith

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Discussion: a greater role for
PES in environmental
protection?