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# Introduction to Payments for Ecosystem Services

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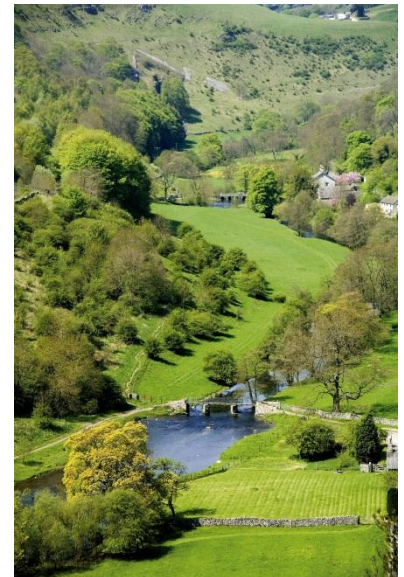
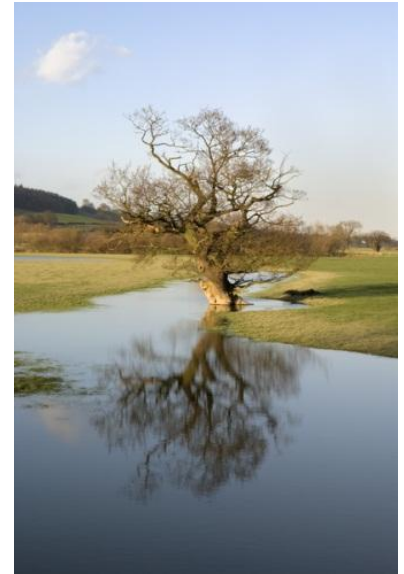
## *This presentation*

- The “economic invisibility of nature”
- The natural capital and ecosystem services agenda
- Ecosystem service markets
- PES: key concepts and principles
- PES: opportunities and challenges
- Where next for PES?



## *“the economic invisibility of nature” (Pavan Sukhdev)*

- Despite the importance of ecosystem services, their value is often overlooked in decision-making
- These goods and services are not generally traded in the marketplace; they are not generally ascribed a price and are regarded as ‘free’
- PES provides an opportunity to put a price on previously un-priced ecosystem services and, in doing so, brings them into the wider economy



# *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')



# *The 'environmental policy' toolkit*

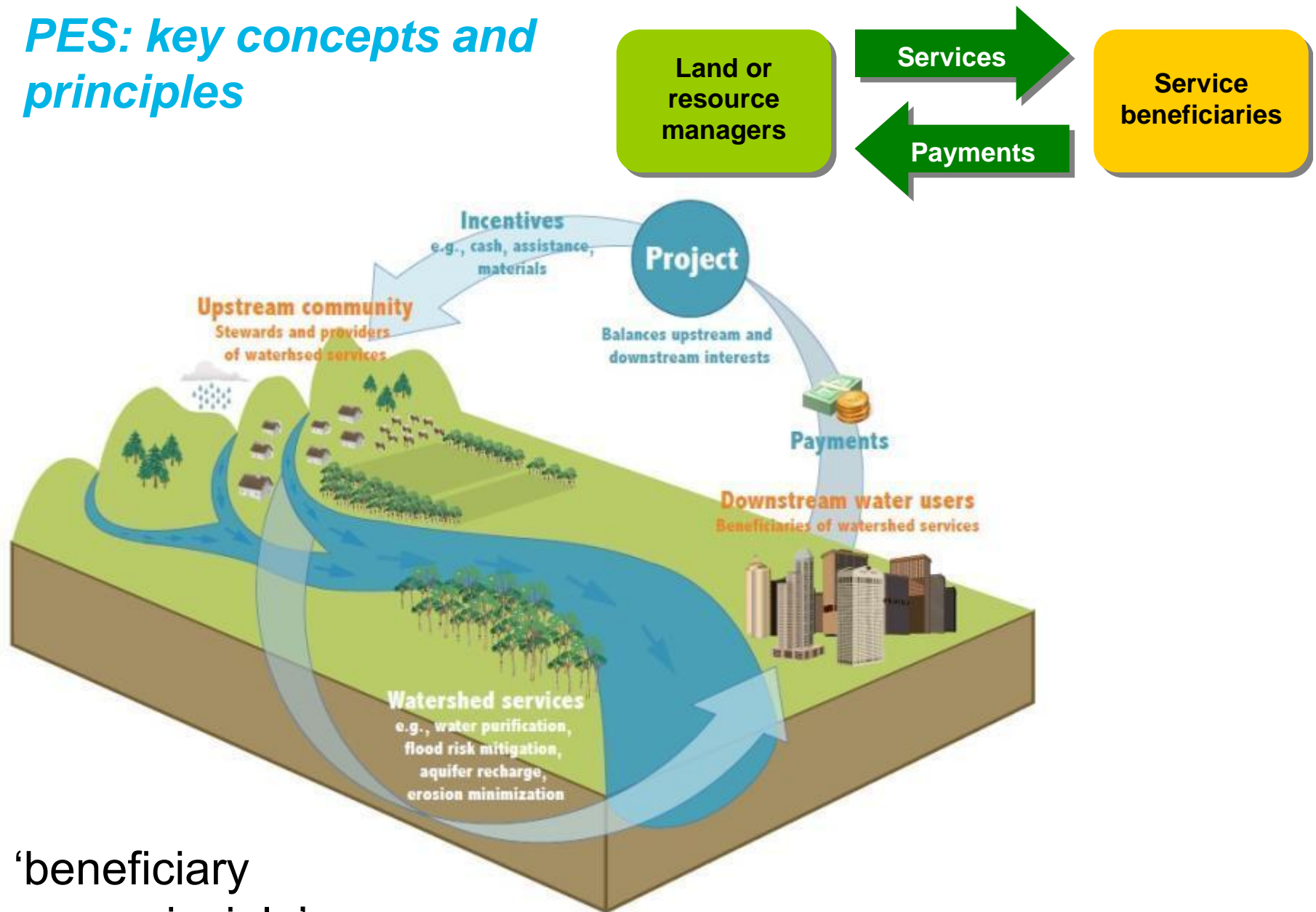


- Regulation
- Provision of services by Government (e.g. publicly owned green infrastructure, e.g. Scotland's National Forest Estate)
- Voluntary efforts by business, communities and individuals
- **Incentive or market-based mechanisms**
  - Charges (e.g. taxes and user fees)
  - Tradable permits (e.g. emissions trading)
  - 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



# *PES: key concepts and principles*



‘beneficiary  
pays principle’

## ‘Classic’ 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

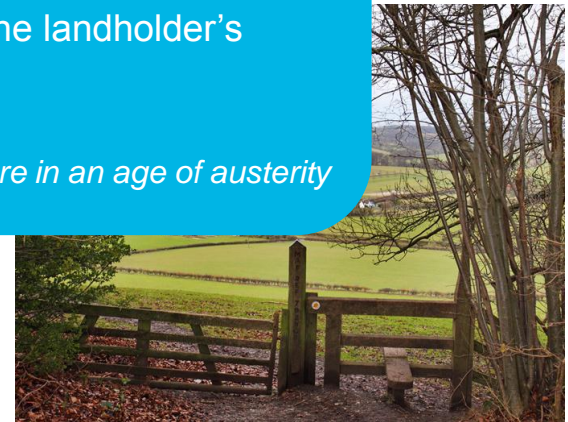


# PES principles

- ✓ Voluntary
- ✓ Beneficiary pays
- ✓ Direct payment
- ✓ Additionality
- ✓ Conditionality
- ✓ Ensuring permanence
- ✓ Avoiding leakage

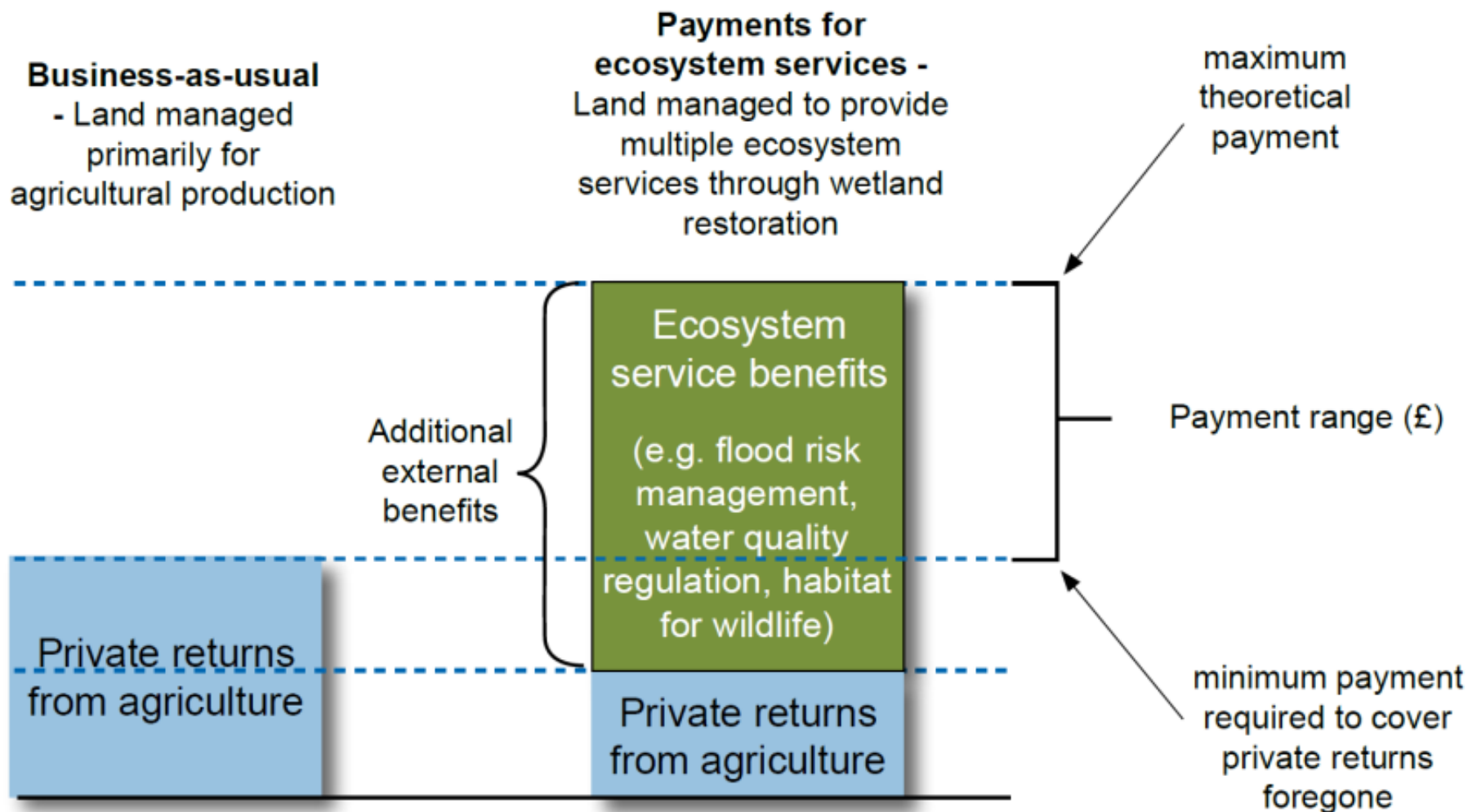
“Payments should typically be for actions that are additional to what is usually expected of landholders – they should not be compensated for obeying the law, but rather for actions that society considers beyond the landholder’s responsibility”

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





# How PES works



Source: Defra (2013). *Payments for Ecosystem Services: A Best Practice Guide*

## Scale of PES

- PES can be developed at a variety of spatial **scales**, e.g.
  - **International**, e.g. REDD+, mooted Green Development Mechanism
  - **National**, e.g. agri-environment schemes (tend to be public-financed)
  - **Catchment**, e.g. downstream water users paying for watershed management on upstream land (tend to be private-financed)
  - **Local**, e.g. residents collectively funding an NGO to manage local green space

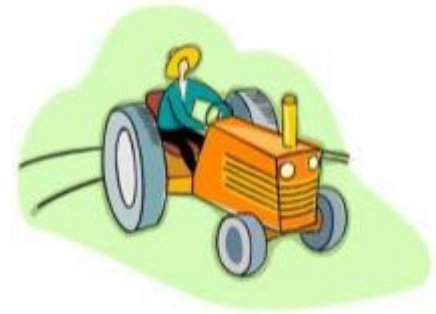


**National:** “70% of land in England is under an Environmental Stewardship agreement and can broadly be considered one of the world’s largest publicly funded PES schemes...” (Defra, 2013 *Developing the potential for Payments for Ecosystem Services: an Action Plan*)

**Local:** “Since 1st April 1991, the [Wimbledon and Putney] Commons have been largely financed by means of a levy on the Boroughs of Wandsworth, Merton and Kingston in a proportion relevant to the number of "D" Band properties in each Borough within 3/4 mile of the Commons or in the old Parish of Putney. The Boroughs pass on this levy by way of an addition to the Council Tax on properties in the area” ([www.wpcc.org.uk/commons.html](http://www.wpcc.org.uk/commons.html))

## *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)





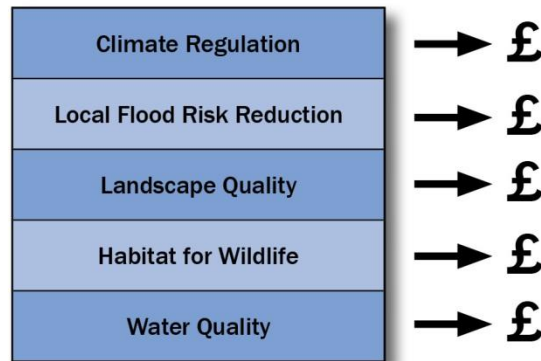
# 'Packaging' of ecosystem services

## 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).

## Mode of payment

- **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
  - **‘Input-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

**Input-based** e.g.  
habitat for wildlife,  
number and extent  
of field margins  
created and  
maintained



**Output-based**  
e.g. climate  
regulation, tonnes  
of carbon stored  
per hectare per  
year



## Scheme parameters

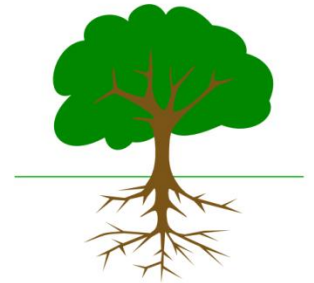
Parameter	
Ecosystem service(s)	E.g. water quality, climate regulation
Buyer(s)	E.g. Private company, government agency
Seller(s)	E.g. farmers, private woodland owners
Intermediary (where applicable)	E.g. environmental NGO, government agency
Key knowledge providers	E.g. regulator, research centres
Geographical scale	E.g. catchment, sub-catchment, neighbourhood
Contractual period	E.g. ten years, 15 years, in perpetuity
Agreed interventions	E.g. buffer strips, hedgerows, tree planting
Measures to minimise trade-offs	E.g. monitoring framework
Any 'packaging' of ecosystem services	E.g. bundling, layering
Mode of payment	E.g. input- or output-based payments



## Opportunities for PES

–PES schemes are most likely to emerge 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 for PES (examples)

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

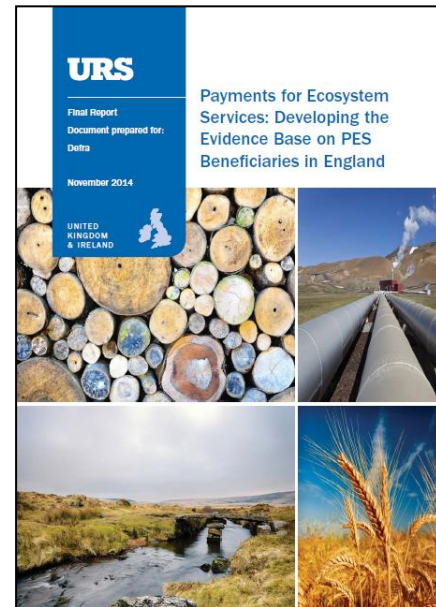
FAO (2007). The State of Food and Agriculture 2007: *Paying Farmers for Environmental Services*

- Ecological systems that provide ecosystem services often operate at a scale (e.g. landscape, catchment) and with network linkages (e.g. hydrological connectivity, habitat mosaics) that transcend individual management units
- Potential buyers of ecosystem services (e.g. local residents, businesses) are often unaware of their dependence on ecosystem services or are one or more steps removed from nature



## Persuading businesses to pay into PES schemes

- One interviewee from the beverage manufacturing sector was “...conscious of water footprint (both supply and disposal)” but “uses metered mains supply and sewerage so this is reflected mainly as a business cost rather than a direct ecological footprint”
- ➡ businesses that don’t abstract directly or require discharge permits are somewhat shielded from acknowledging and responding to impacts and dependencies on the natural environment

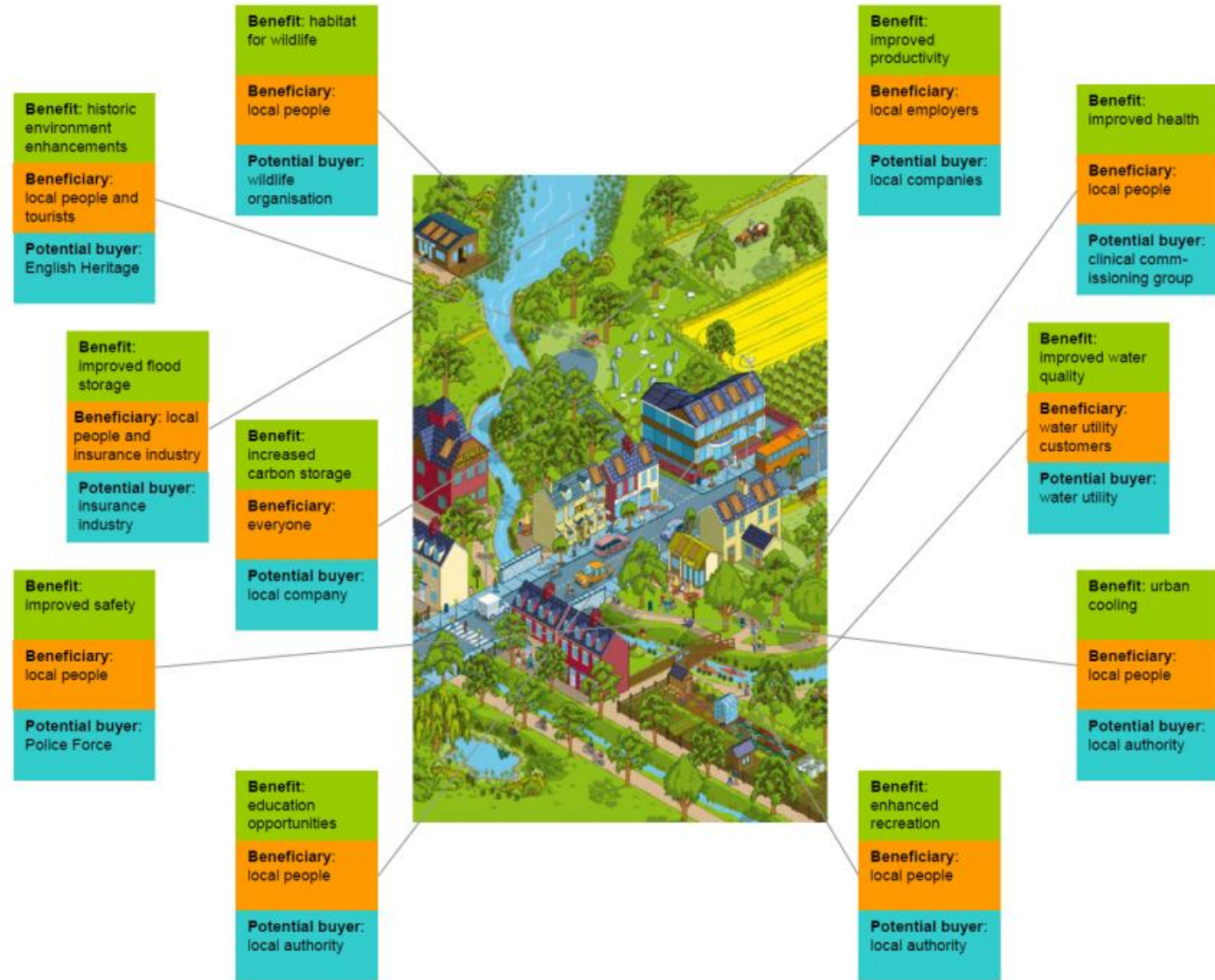




## *Persuading businesses to pay into PES schemes*

- One interviewee from the food manufacturing sector noted that *“Impacts on the natural environment are not high up on risk registers and not ‘company critical’ due to the availability of supplies from elsewhere... This limits the extent to which members are likely to invest in their supply chains”*
- ➡ many businesses do not have dedicated supply chains; instead the range of suppliers available to them can provide for almost infinite substitutability and a corresponding lack of stake in provenance; who does have a stake in the natural environment such that they would be willing to invest in a PES scheme?

# Where next for PES? E.g. supporting urban green infrastructure?



Source: Defra (2013). *Payments for Ecosystem Services: A Best Practice Guide*

# Where next for PES? E.g. supporting coastal realignment schemes?

“The Medmerry managed realignment scheme has created a major new sea defence in West Sussex, which improves the standard of flood protection and creates important new intertidal wildlife habitat and recreational opportunities” (Natural England and RSPB, 2014 *Climate Change Adaptation Manual*)

Picture source:  
[www.bbc.co.uk/news/science-environment-24770379](http://www.bbc.co.uk/news/science-environment-24770379)

## Beneficiaries

- ✓ Local residents
- ✓ Local businesses
- ✓ Tourists
- ✓ National government
- ✓ Environment Agency





## Where next for PES?

- “...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



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Thank you  
Diolch yn Fawr