

NENE VALLEY

Nature • Improvement • Area

connecting people and nature

Establishing PES schemes

Dr Mark Everard

Connections





The services of nature: the Millennium Ecosystem Assessment classification

Provisioning services
Fresh water
Food (eg crops, fruit, fish, etc)
Fibre and fuel (eg timber, wool, etc)
Genetic resources (used for crop/stock breeding and biotechnology)
Biochemicals, natural medicines, pharmaceuticals
Ornamental resources (eg shells, flowers, etc)

Cultural services
Cultural heritage
Recreation and tourism
Aesthetic value
Spiritual and religious value
Inspiration of art, folklore, architecture, etc
Social relations (eg. fishing, grazing, cropping communities)

Regulatory services
Air quality regulation
Climate regulation (local temp. /precipitation, GHG sequestration, etc)
Water regulation (timing/scale of run-off, flooding, etc)
Natural hazard regulation (ie storm protection)
Pest regulation
Disease regulation
Erosion regulation
Water purification and waste treatment
Pollination

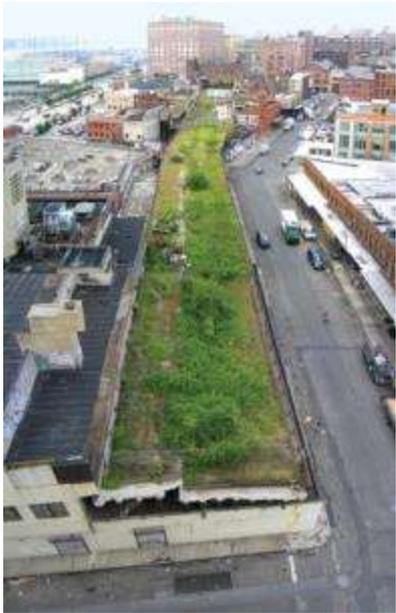
Supporting services
Soil formation
Primary production
Nutrient cycling (water recirculation in landscape)
Water recycling
Photosynthesis (production of atmospheric oxygen)
Provision of habitat

Addenda services
PROVISIONING: Energy harvesting
REGULATORY: Salinity control, fire control

The land sparing model



Co-existing with nature... and its benefits



'Cherry picking' ecosystem services

Provisioning services

Fresh water

Food (e.g. crops, fruit, fish, etc.)

Fibre and fuel (eg timber, wool, etc)

Genetic resources (used for crop/stock breeding and biotechnology)

Biochemicals, natural medicines, pharmaceuticals

Ornamental resources (eg shells, flowers, etc)

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Water purification and waste treatment

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Supporting services

Soil formation

Primary production

Nutrient cycling (water recirculation in landscape)

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Provision of habitat

Addenda services

PROVISIONING: Energy harvesting

REGULATORY: Salinity control



'Cherry picking' Ecosystem Approach principles

Ecosystem Approach principle	SCaMP	Upstream Thinking	Mayesbrook Park	Alkborough Flats
1: Societal choices	Market-driven service with largely piggybacked co-benefits	Market-driven 'anchor' service with largely piggybacked but nonetheless planned co-benefits	Extensive stakeholder engagement about multiple benefits	Driving factors were habitat and flood risk benefit, with other co-benefits 'piggybacked'
2: Decentralisation	Buy-in of landowners is optional, though tenancy holder has significant negotiating power	Buy-in of landowners is optional, overall scheme agreed by rural-urban dialogue	Local scale, multi-stakeholder participation sought	Largely centrally planned
3: Adjacent impacts	Seeks catchment-scale quality/quantity outcomes	Seeks catchment-scale quality/quantity outcomes, mindful of benefits for ecosystems and cultural benefits	Mainly addressing local benefits, with some wider flood risk benefits	Built to enhance flood envelope and habitat matrix of wider estuary
4: Economic context	Embraces fundamental principles of PES schemes	Embraces fundamental principles of PES schemes, seeking win-win outcomes with farm businesses	Ecosystem services study sought to address range of benefits relative to costs, fed back into adaptive management	Subject to benefit:cost assessment, albeit many co-benefits of habitat creation externalised
5: Ecosystem structure and function to maintain ecosystem services	Primary concern is water quality/quantity outcomes	Although the primary regulatory concern is water quality/quantity outcomes, Upstream Thinking is planned also to restore catchment functioning and associated benefits	Restores some ecosystem structure and functioning lost to former development	Habitat recreation through managed realignment restores some formerly lost structure and functioning
6: Limits of ecosystem functioning	Primary concern is water quality/quantity outcomes and recovery of SSSI habitat status	Although the primary regulatory concern is water quality/quantity outcomes, Upstream Thinking seeks to restore catchment functioning and associated benefits	Restores some ecosystem functioning lost to former development	Restores subset of ecosystem structure and functioning lost to former land drainage
7: Appropriate spatial and temporal scales	Scales related only to water quality/quantity outcomes	Attempts to intervene strategically in the catchment system to optimise durable benefits for water quantity/quality but also wider benefits	Mainly addressing local benefits, with some wider flood risk benefits (as most of the river network runs in culverts)	Designed in part to mitigate longer-term sea level rise, relieving pressure from wider estuary
8: Long term	Long-term buy-in sought for water quantity/quality outcomes	Long-term buy-in sought for water quantity/quality and wider ecosystem service outcomes	Long-lived asset with long-term climate change considered	Long-lived asset designed in part to mitigate longer-term sea level rise
9: Change is inevitable	Adaptive approach implicit rather than explicit	Adaptive approach explicit within the strictures of statutory controls on expenditure	Designed as world's first 'climate change park'	Designed in part to mitigate longer-term sea level rise, relieving pressure from wider estuary
10: Balancing conservation and use of biodiversity	Biodiversity is a co-benefit of water resource management, but also focus on status of SSSIs on utility-owned uplands	Biodiversity and its many contributions to human benefits are intended co-benefits of water resource management	Ecological, social and economic uplift sought simultaneously	Net restoration of habitat under Habitats Directive for wildlife to offset loss to use and sea level rise elsewhere in estuary
11: Accounts for all forms of information	Makes use of rural community and water engineer knowledge	Makes use of farmer, NGO, rural community and water engineer knowledge	Local scale, multi-stakeholder participation sought	Mainly centralised design for flood and habitat benefits
12: Participation of all sectors of society	Consensus sought from relevant, economically affected sectors of society	Consensus sought from relevant sectors of society	Local scale, multi-stakeholder participation sought	Mainly centralised design for flood and habitat benefits, with buy-in sought from locals

'Mainstreaming' the value of nature

The Natural Choice (11th June 2011)

- **Driving principles:**

- Nature is of huge but generally overlooked value
- It is important to recognise these values
- It is necessary to 'mainstream' them across society

- **Economic threads**

- Ecosystem Markets Task Force (EMTF)
- Natural Capital Committee (NCC)
- General 'mainstreaming'
- Payments for Ecosystem Services (PES)



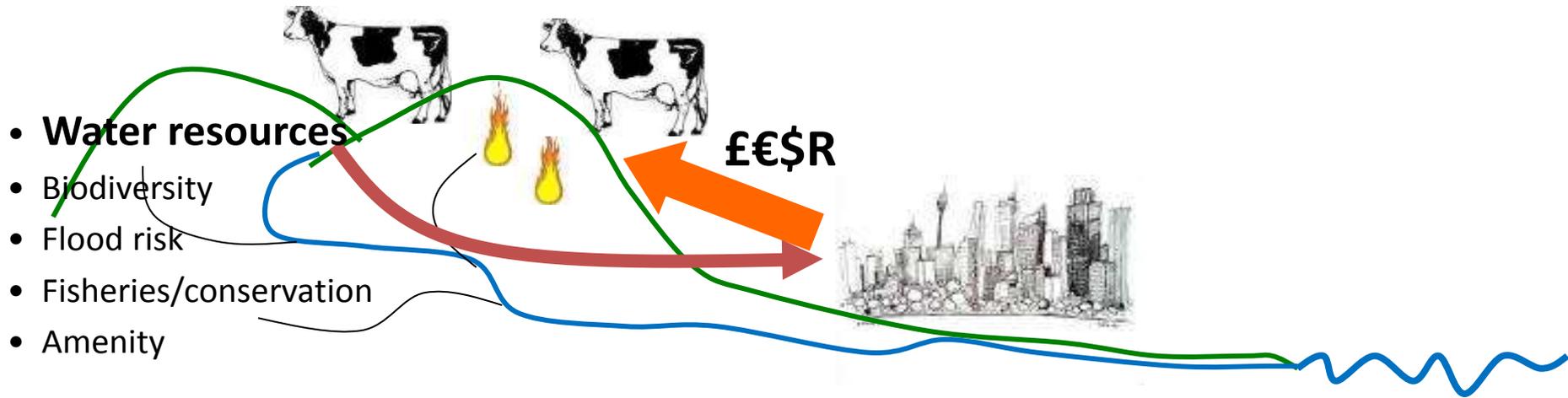
What is economic value?



- ‘Putting a price on nature’
- Accountancy

- What nature DOES
- Integrated value systems
 - “Apples with apples”
 - Big or small, positive/negative?
- The default is ZERO!

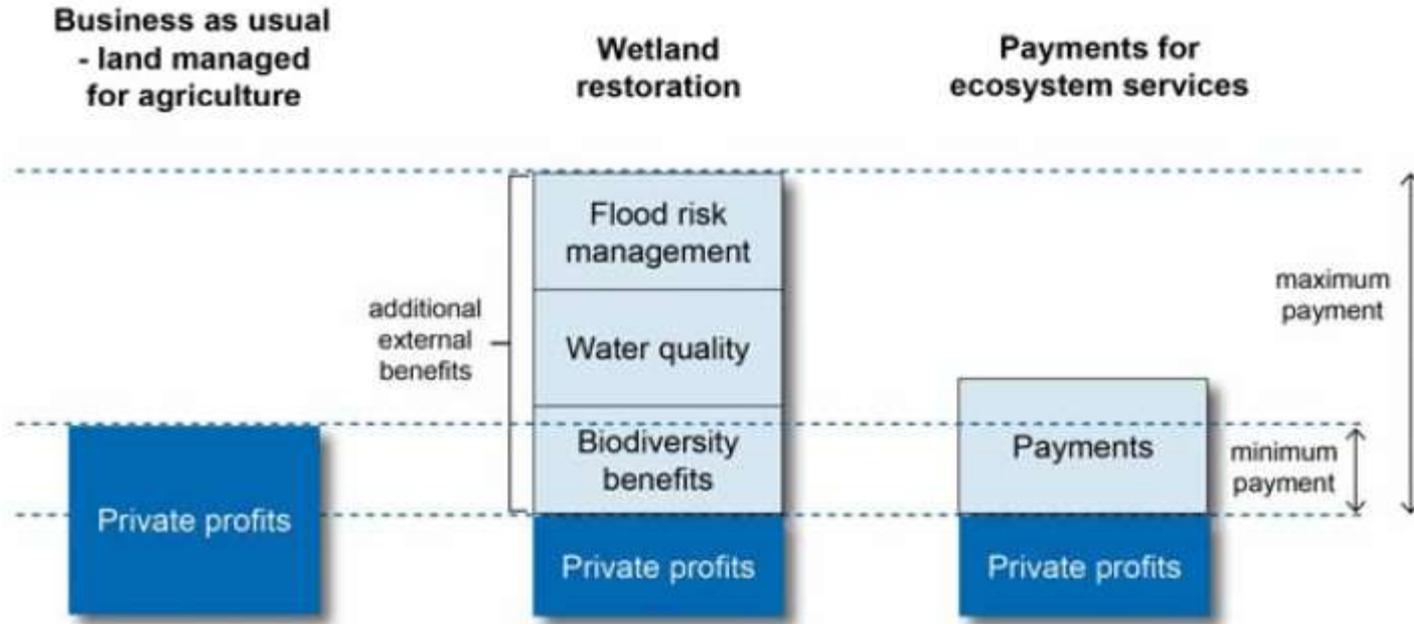
Illustrative PES: 'Paying for ecosystem services'



- ☞ South Africa, Costa Rica, New Zealand, Germany, US, UK...
- ☞ Water, carbon sequestration, sedimentation, biodiversity, amenity, nutrients, etc...
- ☞ OECD (2010) estimate 300+ PES or PES-like schemes in the world
- ☞ Schomers, S. and Matzdorf, B. (2013)... thousands!

Basic economics of PES:

Theoretical study of converting farmland to wetland



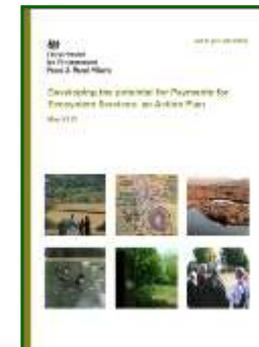
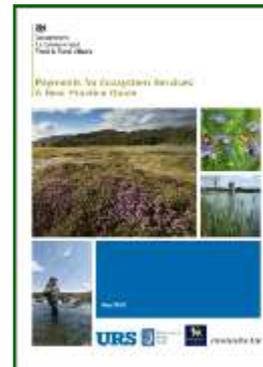
Adapted from Defra (2010). *Payments for Ecosystem Services: a short introduction*

Defra PES initiatives

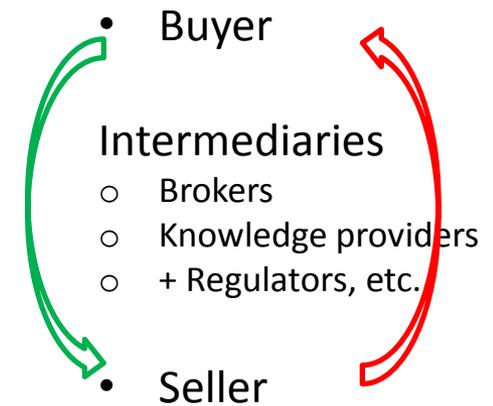
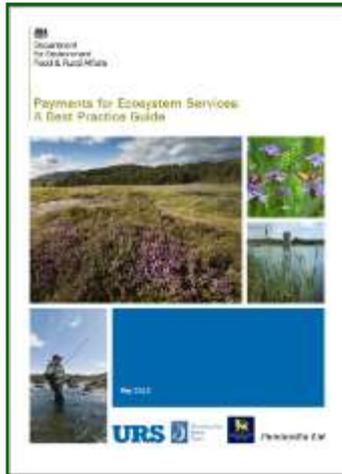
- **Barriers and Opportunities to PES R&D (2011)**
- **'PES Pilots' research fund**
 - Phase 1: (1) RSPB/Wessex; (2) UEA/WRT; (3) Hull flooding
 - Phase 2:
 - (a) CRT; (b) 'Cotswolds catchment'; (c) Luton/Lea; (d) BART/ICWs; (e) Peatland Carbon Code; (f) Montgomeryshire; (g) visitor payback
 - Phase 3: (watch this space!)



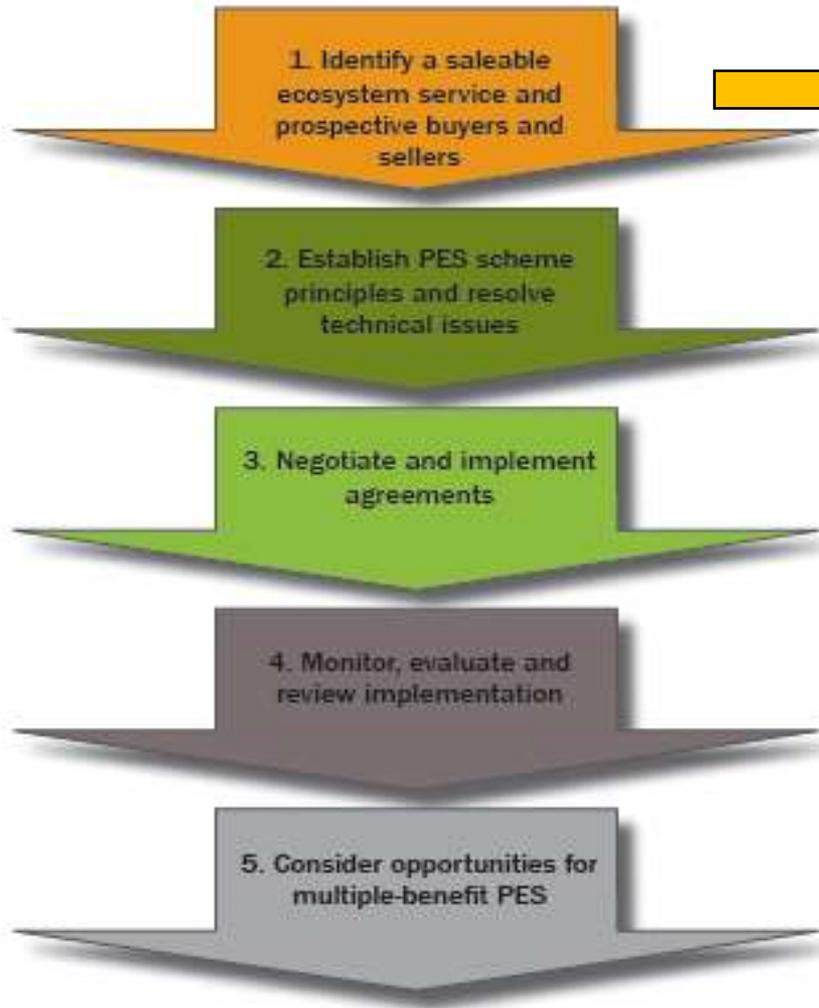
- **PES Best Practice Guide (2013)**
- **PES Action Plan (2013)**



The PES Development process



Stage 1: 'Upstream Thinking'



SOUTH WEST WATER

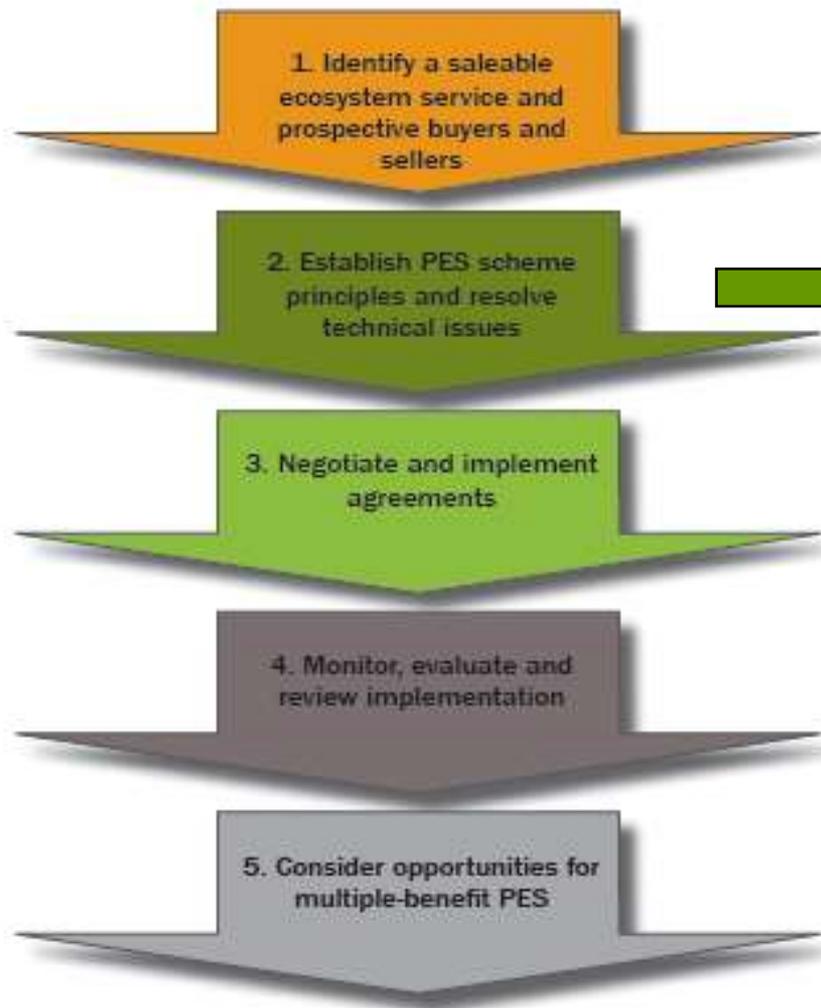
Westcountry Rivers Trust

OFWAT
65:1 benefit:cost

A green curved arrow points from the water glass image to the first step of the flowchart. A red curved arrow points from the OFWAT logo to the water glass image.

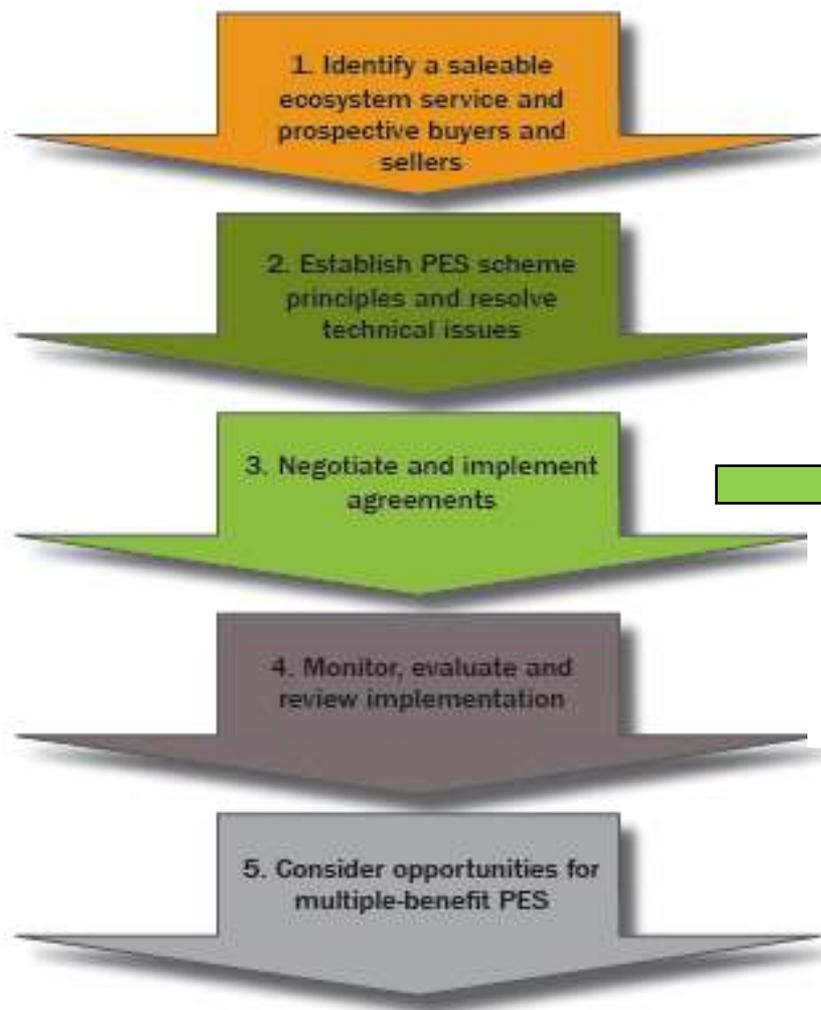


Stage 2: 'Upstream Thinking'



'Reverse auctioning'
(PES Pilots Phase 1)

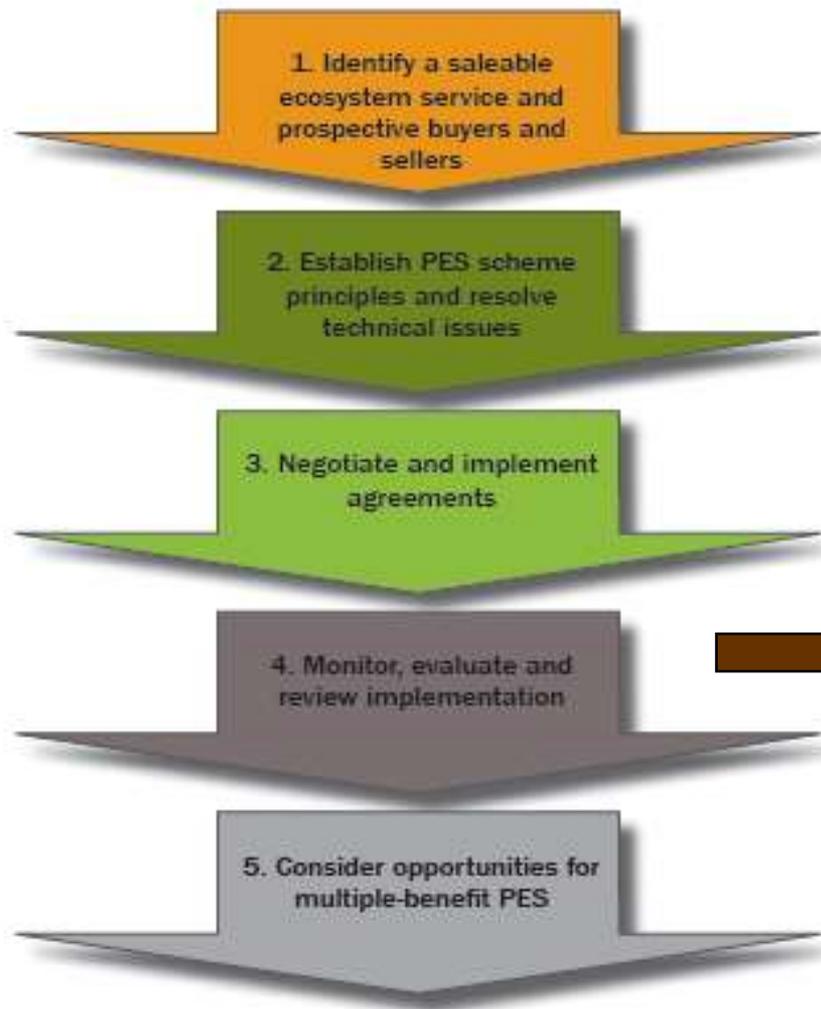
Stage 3: 'Upstream Thinking'



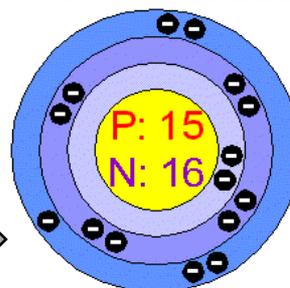
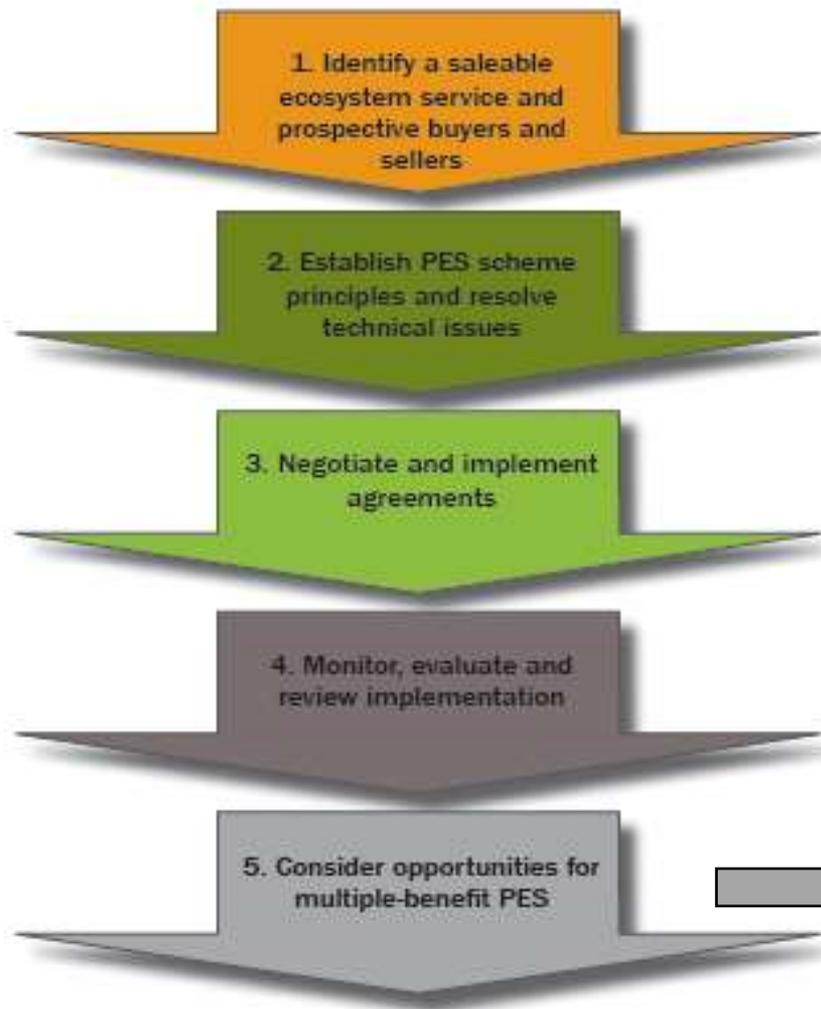
- Revised farm plans
- Grant structures
- Covenants, etc..



Stage 4: 'Upstream Thinking'



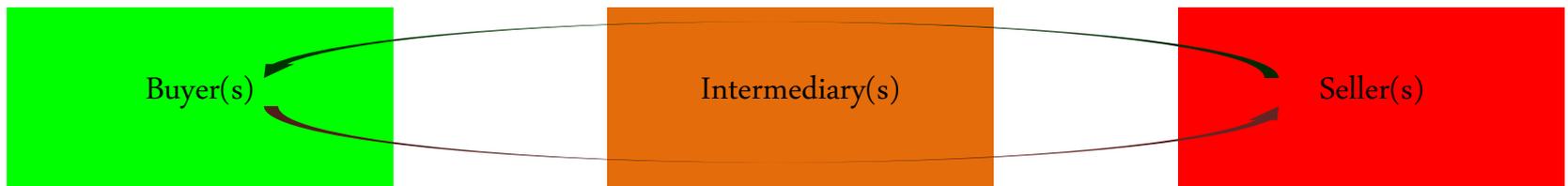
Stage 5: 'Upstream Thinking'



Progressive thinking about PES (1)

PES 1.0

- Developing 'classic' (Sven Wunder, 2007) markets



- A voluntary transaction
- A well-defined environmental service or a land use likely to secure its provision
- At least one buyer
- At least one provider effectively controlling service provision
- If and only if the environmental service provider secures service provision (conditionality)

Potentially risks externalities, like any market

Wunder, S. (2007). The Efficiency of Payments for Environmental Services in Tropical Conservation. *Conservation Biology* **21(1)**: 48–58.

Progressive thinking about PES (2)

PES 2.0

- Recognises multiple services are linked
- Schomers and Matzdorf (2013)
 - 'Environmental services'...
 - ...lead marketed 'anchor service(s)'
- Optimisation of all other services, whether:
 - Bundled
 - Stacked
 - Piggy-backed



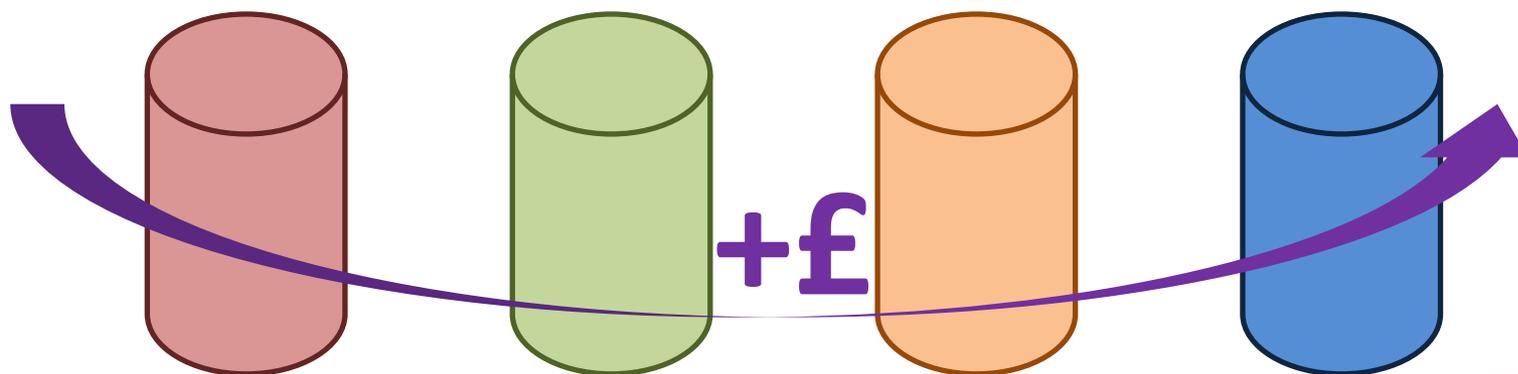
Investing in supporting services/system resilience:

- Always hard to monetise and bring into PES
- As a means to achieve net economic benefit
- Particularly around optimising outcomes from public sector budgets

Schomers, S. and Matzdorf, B. (2013). Payments for ecosystem services: A review and comparison of developing and industrialized countries. *Ecosystem Services*, 6, 16–30.

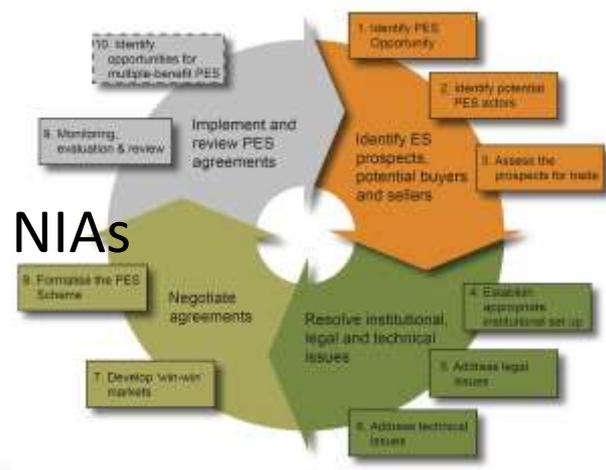
Policy implications of progressive PES thinking

- PES not as a formal buyer-seller market...
- ...but as a surrogate for value-add by integration across policy areas



Some implications:

- Multi-service potential as starting point for NIAs
- Restructuring the PES Best Practice Guide



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