



Second Forum for the Future of Agriculture
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**The nature and scale of public goods
delivered by EU land managers**

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Presentation by members of a RISE Task Force

- Allan Buckwell the challenge
- Peter Nowicki what are public goods?
- Jozséf Popp delivery mechanisms
- David Baldock link to the CAP



The Food and Environmental Security challenges

- The interdependence between EU food and environmental security
 - 4/5ths of Europe's land is farmed or forested
- The way we 'do' our farming and forestry massively impacts the environment
- The quality of the environment
 - Soils
 - Water
 - Air
 - Genetic diversity

hugely determines our food producing capacity

What does a Food and Environment Security Policy do?

- It achieves food security by
 - Ensuring there is a profitable farming industry
 - Maintaining production capacity by
 - Protecting best agricultural land & keeping it in good agricultural condition
 - a flow of R&D & Extension to maintain and increase productivity growth & reduce negative environmental impact
 - Ensuring agriculture gets its fair share in the food chain
- It achieves environmental security by
 - Precision, highly productive land management
 - Active, appropriately-scaled set of environmental policy measures to deliver public goods from land management

Breadth & components of the interaction between land management & environment

- We can see this positively as the services provided by land managers - farming and forestry occupy 80% EU land
 - resource protection, biodiversity & cultural landscape
- Or as market failures: too many environmental 'bads' – insufficient 'goods'
 - Pollution of rivers and groundwater
 - Over-exploitation of aquifers
 - Insufficient rain absorption, too much run-off
 - Atmospheric pollution Green House Gases + ammonia
 - Soil: erosion, compaction, organic matter depletion
 - Biodiversity, habitat and species loss
 - Landscape degradation
 - Insufficient protection of cultural heritage

How to internalise these externalities?

- This is a question of who pays?
 - Food consumers
 - Food producers (but to be sustainable they must charge full costs)
 - Direct users of the environment
 - Taxpayers
- The choice between these is a matter of cost/effectiveness and fairness
- It can be defined as a question of assignment of property rights in land use
 - You would expect us to argue the value of private property rights - that is a contractual basis for environmental service delivery rather than a command and control regulatory approach

The scale of the environmental market failures - Global

- **Constanza *et al* (1997)**
 - Global ecosystem services worth \$33tr, 1.8 x GDP
- **UNEP Millennium Assessment (2003)**
 - Substantial and largely irreversible loss of biodiversity
- **WWF (2005) Living Planet report**
 - Global footprint 30% > global biocapacity
- **Stern (2006) Economics of climate change**
 - Costs & risks if inaction equiv to 5% of GDP/yr
 - Cost of action can be limited to 1% of GDP/yr
- **The Economics of Ecosystems & Biodiversity**
TEEB (2008) who measured the Cost Of Policy Inaction
 - By 2050 compared to 2000 = €14tr, 7% GDP pa

The scale of the environmental market failures - European

- **Defra (2008) Environmental Accounts for UK agriculture**, figures are annual flows for 2007
 - £1.2b +ve; £545m -ve; net +£645m ~12% GVA
 - and -£2b air emissions (different calcⁿ. basis)
- **Roewer (2008) Environmental protection expenditure by Industry in the EU 1997-2004**
 - In 2004, €45.6b, 0.4% of GDP, 2.4% of GVA
 - Manufacturing 80%, Elect, gas & water 17%, mining 3%
- **Dutch Min of Ag. Nature and Food**
 - "Nature and landscape pay, reason enough to continue to invest
- **Scale of corrective actions does not yet match the scale of the problems**

Indicate scale of the problem to motivate commensurate policy action

- Big measurement problems:
 - total flows or marginal changes
 - valuation problems
 - benefit transfer
- What resources do we need to deliver Environmental Public Goods - EPGs?

Value of environmental services > Justifiable expenditure to deliver EPGs > Costs of delivery by land managers

- EU budget review, Budget Heading 2, Protection and Management of Natural Resources

Nature and Scale of Public Goods



Peter Nowicki
Wageningen University

Public Goods

- Goods are called *public* if one person's consumption of them does not preclude consumption by others.
- Public goods are non-excludable and non-rival in consumption

Private - honey



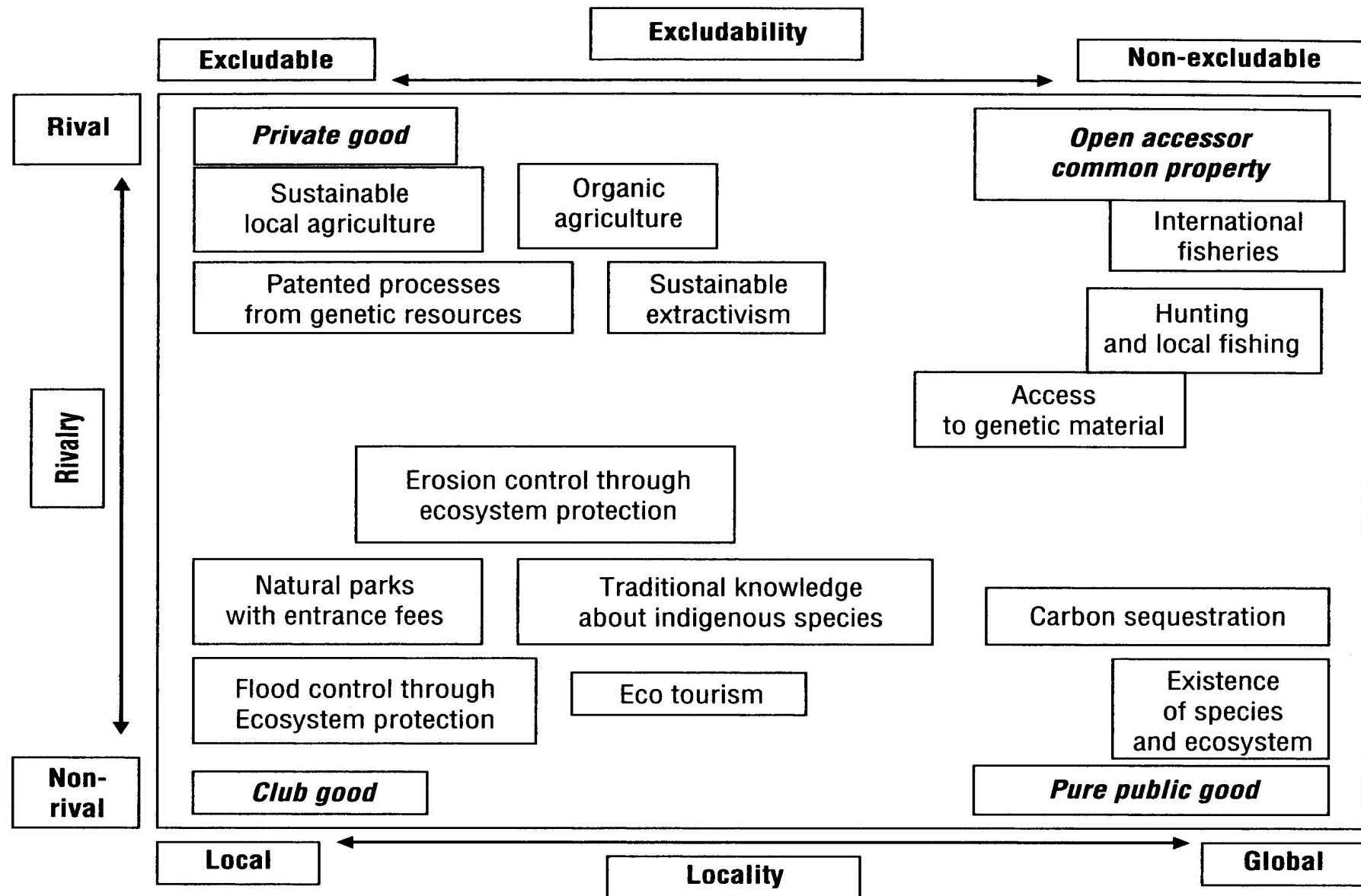
Public - pollination



Functional and social perspectives of public goods



Broad range of character of public goods



Source: OECD (2003).

Farm land: variety of features & functions



Public goods from agricultural land management: variety in nature & scale

	Local	Regional
Nature	Landscape features: <ul style="list-style-type: none">- Hedgerows, woodlots- Edge effects: habitats for specific species- Agricultural land use mosaic, fields, orchards	Landscape functions: <ul style="list-style-type: none">- Migration corridors- Habitat connectivity
Scale	Soil micro-biodiversity Depends on soil substrate and agricultural practice	Water basin management Land cover management influences water retention and filtering

Wide scope in benefits from rural public goods

□ Scale of benefits

- Water basin management: regional population
- Landscape maintenance: general opportunity value
- Biodiversity protection: global and individual gain

□ Nature of benefits

- Water quantity & quality: local development
- Attractive countryside: tourism operators
- Fauna & flora diversity: 'amateurs' & specialists

Delivery Mechanisms for Public Goods



Jozséf Popp

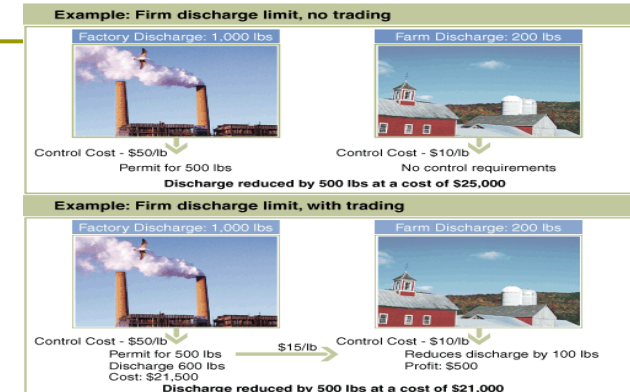
**Hungarian Research Institute
of Agrarian Economics**

Delivery by markets, clubs or government

- **Create markets** where possible
 - Government role to make this happen e.g. carbon
 - Caps on emissions, mandatory replacement of biodiversity
- **Private or charitable organisations – clubs**
 - Acquire land to provide services
- **Public payments** to private land managers
 - Costs and benefits of environmental services vary so spatially varied payments
 - Cross compliance, agri-environment schemes, LFA payments, Article 68 approach, the environmental value "pyramid"
- **Incorporate environment in food purchases**
 - Organic, local, speciality, GIs

Experience with creating markets

- ❑ **Markets** for carbon & water quality trading are **created** to reduce compliance costs associated with environmental regulations
- ❑ These **need government programmes** that require regulated business firms to meet strict environmental standards
- ❑ The **regulatory entity defines the tradable good and enforces the transactions**
- ❑ **Cap-and-trade programmes create a tradable** environmental service using programme rules to create demand
- ❑ **Other markets** organic labelling, certification have developed through private standards



How to assist market development?

- **Reduce uncertainty by setting standards for environmental services** and help reduce transaction costs
- As markets are established, entities/clearing houses emerge to reduce costs
- Government role to **develop tools and methods** to quantify how farming practices affect environmental services
 - E.g. online Nitrogen Trading Tool can be developed to help farmers determine nitrogen credits they can generate on their farms for sale in a water quality trading programme



Making the most of environmental services delivered

- ❑ **EU must define its policy on markets for environmental services**
- ❑ **Support producers wanting to participate in such markets**
- ❑ **Conduct research & develop tools to quantify environmental impacts of farming practices**
- ❑ **Establish technical guidelines for measuring environmental services**
- ❑ **Markets for environmental services do not replace the need for traditional conservation programmes**



Link to the CAP



David Baldock

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