with contributions from Marianne Kettunen (IEEP), Aaron Bruner (CI)
building on the work of a range other experts (Andrew Balmford, Robin Naidoo et al), and thanks also for comments from Sonja Gantioler, Graham Tucker, Samuela Bassi (IEEP) + Matt Rayment (GHK), Paul Morling (RSPB) & Aude Neuville (European Commission) and others.

Presentation Structure

- **Protecting Nature in & beyond Protected Areas**
- **Costs**
- **Costs in the context of Benefits**
- **Key Issues for Beyond 2010**

"Protecting nature"….a wide range of foci

- **Protected Areas**
  - **Natura 2000 Network,** IUCN categories (I, II, III, IV, V), Ramsar sites & UNESCO World Natural Heritage sites & Biosphere reserves

- **Protecting nature in wider land- and seascapes**

– **Buffer zones** around PAs and **habitats linking PAs** (some already part of Natura 2000)

– **Nature in general**, e.g. agricultural lands (e.g. high nature value agriculture), soils, forests, wetlands, high seas, even nature in cities

Costs of nature protection - What are they ?

Range of different cost, they vary over time as needs change

Complicated process of estimating (national, EU or global) aggregate costs

- **One Off Costs**
- **Recurrent Costs**
- **Opportunity costs** **(some in compensation, not all)**

Elements

- **Finalisation of PA site lists**
- **Management & planning**
- **Investment costs**
- **Habitat management**
- **Monitoring**

Costs of nature protection – example Natura 2000

Natura 2000 – different estimates and work ongoing

- **Costs of managing Natura 2000 between 3.7 and 5.7 billion EUR per year for EU-15** (Markland report 2002)
- **6.1billion EUR for EU-25** (EU Communication (COM 2004/431)
- **14 billion per year (EU-25) for at least the next 10 years** (RSPB 2005)
- **…this equates to about 28 EUR per person per year in Europe.**

No common agreement on what is the actual size of the economic challenge

Ongoing work

- **Commission questionnaire on costs to Member States** (7 replies already in, 4-5 in pipelines, others?) **and a follow-up work with ambitions of having a regular update to see financing needs.**

Why is it important to understand the costs?

- **Can help clarify the scale of financing challenge**
  - → Needs for **EU budget** and allocation of EU funds – to complement **national contributions**
  - → **Ensure cohesion across EU**
  - → **Identify (the need for) new financing sources**
  - → Help **convince decision makers** of the need to take policy / budgetary action
- **Can help clarify policy instrument needs and design**
- **Understanding costs of protecting nature can help understand (part of the) costs of meeting other policy objectives**

Costs of nature protection in PAs – perspectives from outside the EU

There is a recognised financing gap in most parts of the world

PAs in developing countries

- **Total needs $1-3 billion/yr**
- **Actual spending 1/3rd of needs** (35%-50% Ghana, Ecuador; 20% Congo Basin)
- **(Potential) Compensation** for existing protected areas estimated at **$5 bn/yr** (based on land value)

PAs globally *(seen now as an underestimate by the authors)*

- **Needs to effectively manage existing PAs $10bn/yr, shortfall $3bn/yr**
- **Total needs for expansion of PAs network**
  - **Acquisition: $11 bn/yr** over 30 years (15% of land area, currently ~ 11 %)
  - **Additional management: $7-22 billion/yr.** Includes 20-30% of the ocean (estimated 20 times expansion of current coverage needed)
- **Total annual needs for expanded PAs network ~ $45bn/yr**

Note: Biodiversity friendly agriculture globally $240 billion/yr

Sources: Bruner A, R Naidoo and A Balmford (2008) Review of the Economics of Biodiversity Loss: Scoping the Science & presentation by Joanna Durbin (CI), 29 May 2008, Bonn.

Putting the numbers in context (1/2)

Is biodiversity that expensive?

- **Global PA costs** estimated (of widened and adequately managed network) at circa $45bn/year **- ie less than $8/capita/year**
- **Biodiversity friendly agriculture** of $240bn/year **– is less than $40/capita/year**

- **Global environmental harmful subsidies**: in OECD countries

  €340 bn in 1999 for agriculture (OECD 2002) and

  €19 bn for fisheries of which **€11 bn 'bad subsidies'** (Sumaila 2007)

- **Financial crisis:** : US bail out for **AIG alone $180bn**

Where should one focus funds? Need for subsidy reform?

Sources: Bruner A, R Naidoo and A Balmford (2008) Review of the Economics of Biodiversity Loss: Scoping the Science & presentation by Joanna Durbin (CI), 29 May 2008, Bonn.

Putting the numbers in context (2/2)

The cost of not protecting nature – COPI Study

- Over the period 2000 to 2010 welfare losses from loss of ecosystem services from loss of nature estimated to amount to around **50 billion Euros extra loss per year, every year**.
- By **2010** the welfare losses amount to **545 billion EUR in 2010**.
- The loss of welfare in 2050 from the **cumulative loss** of ecosystem services between now and then amounts to **14 trillion (10^12) Euros**
- This is equivalent in scale to **7% of projected global GDP for 2050** – across land-based biomes

The potential welfare benefits from saving just one year's "normal" loss of biodiversity/ecosystem services is same order of magnitude as the costs.

As we lose more ecosystem services, the cost of the loss will rise – to 10 times the cost of protecting nature by 2010, and it goes on rising as we continue to lose nature.

- *Source: L. Braat & P. ten Brink (eds.) 2008 COPI Study*

Costs of nature protection - who faces them?

Costs tend to be local or national (with some exceptions)

- **Site owners**: some private/some public
- **Government:** local authorities, regional governments, national government, EU – depends who pays
- **NGOs and private donors** through donations, fees, in-kind contributions
- **Society/private - Opportunity costs**: foregone output (e.g. farmers, foresters) or lost "opportunities" (mining, oil exploration, construction - some recognised in compensation, others not)

Some costs (eg of extending or improving the network) are not yet "owned".

Benefits are more widely distributed – and often global

Costs of protecting nature lead to benefits

The cost of protecting nature will lead to valuable biodiversity benefits:

protection of sites/habitats, species, genetic diversity & ecosystems & ecosystem functions

This in turn leads to maintenance of a wide range of ecosystem services

- **Food & Fuel** - often of paramount importance to poor
- **Water supply and purification** – critical for many cities
- **Carbon Storage** – not appreciated as an important service no so long ago.
- **Pharmaceuticals/medicines**
- **Air quality and waste management** – pollution management
- **Natural Hazards Management** – eg flood control / avoidance
- **Recreation** – tourism and amenity – and Identity/cultural value
- "**Cultural services**" - education, bequest and existence values

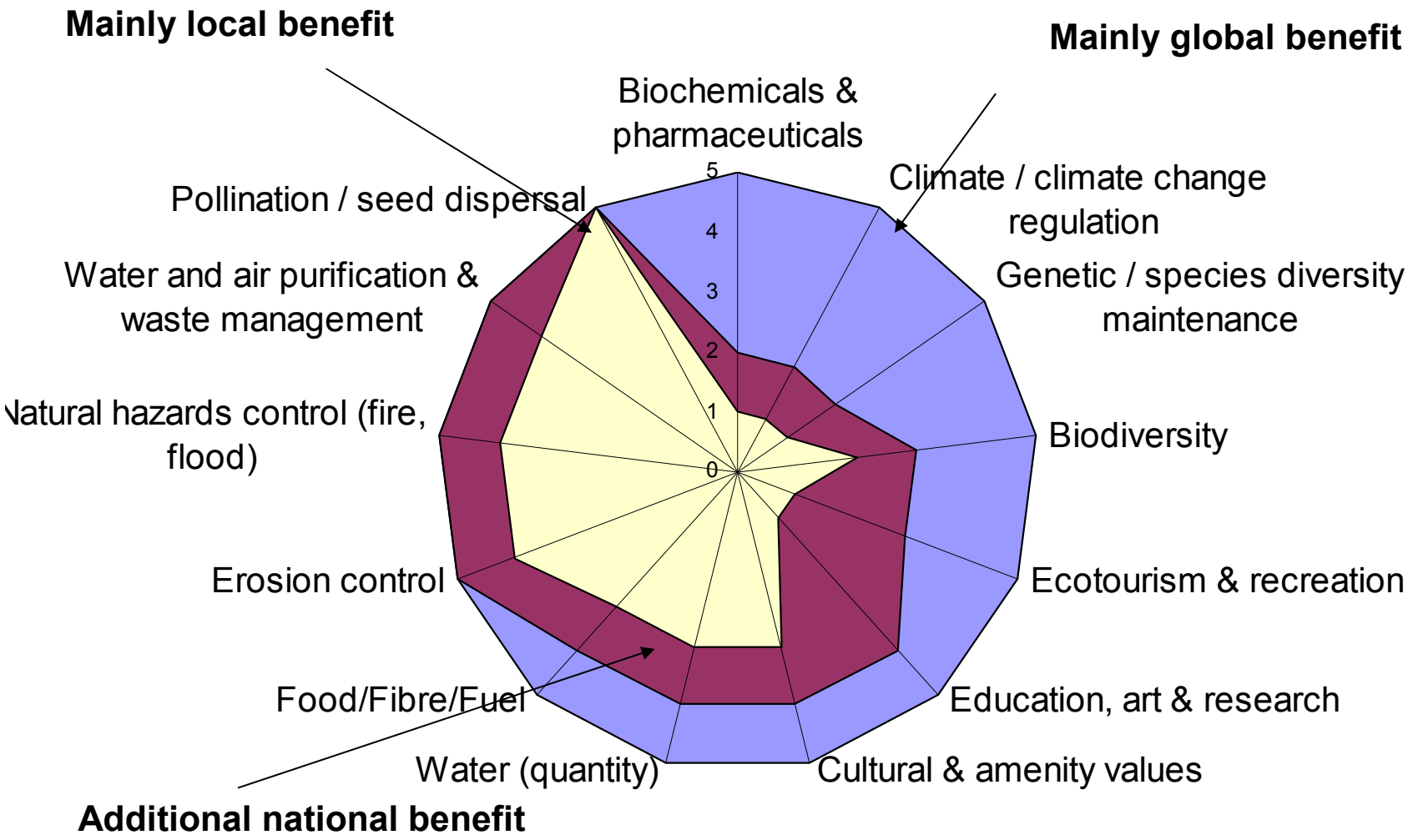
Many are unrecognised & unpriced benefits

Some common access / public goods.

Some **private gain** and some **public gain**

Do benefits from a site only benefit the site?

Local action leads to local, to national & to global benefits



What are the policy implications > Funding? PES?

Ecosystem service benefits vary over time

- Avoided destruction and / or degradation of nature leads to **immediate (gross) benefits across services** (i.e. avoided losses).
- Whether there are immediate **net benefits** depends on opportunity costs (often **not** the case -eg for illegal logging, shrimp farming)
- Investment in a site (or restoration) lead to different **benefits over time,**
  - **Short term benefits** – pollination, natural biological control
  - **Medium term** – eg cultural values such as tourism benefits
  - **Long term** - eg carbon storage
  - **Ad hoc, risk based -** flood control, genetic diversity & food security (resilience)

Understanding timing of benefits is important for discussions on **"nature" component** of any **"Green New Deal"**

How can one deal with the fact that many costs are up front and benefits come at different times?

Why does Conservation not happen where benefits exceed costs ?

- **Short term benefits from conversion** vs. **long term for conservation**
- **Private benefits** from conversion exceed **private costs**, (e.g., the shrimp farm)
- **Societal costs** not fully responded to by governance / political processes (polluters pays principle weakly applied) – "governance failure"
- **Benefits are often non monetary** and underappreciated (**awareness low**)
- **Costs**, in contrast, **require money** to deal with properly – where does that come from if benefits are often non-monetary?

What other reasons do you see?

What is the role of policy/government to address? What is the potential for market solutions?

Where do welfare benefits more than merit the costs?

From perspective of ecosystem services

- **Carbon storage**
- **Water supply**
- **Pollination and natural bio-pesticides**
- **Food provision**

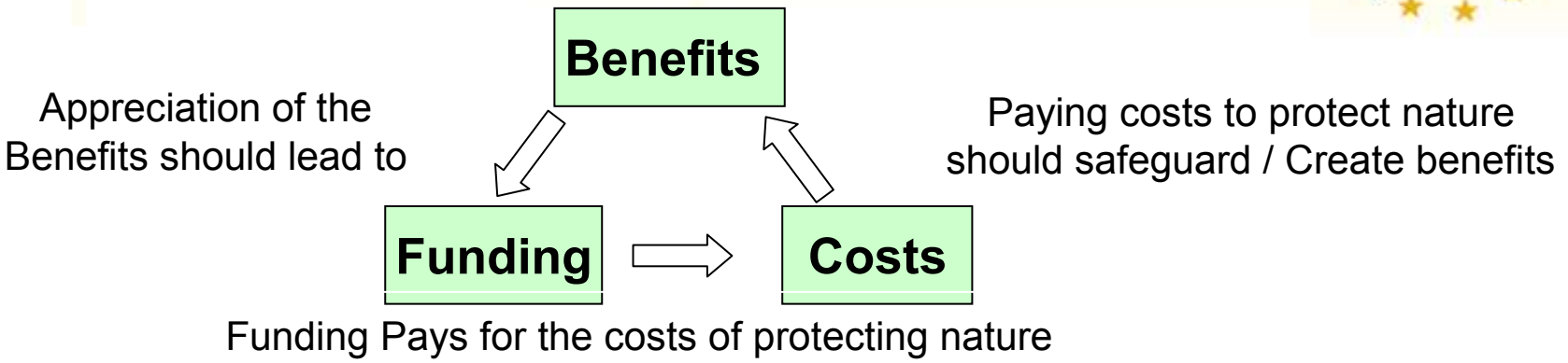
From perspective of countries / sites

- €211 million for Scotland's Natura 2000 network, with overall national welfare benefits estimated seven times greater than the national costs (Source: An Economic Assessment of the Costs and Benefits of Natura 2000 Sites in Scotland, 2004)
- Madagascar PAs provide benefits 2x management costs (Source: Carret and Loyer 2003)

What examples do you have?

Who can ensure that these cost-effective ideas get taken forward?

Instruments to respond to ecosystem service benefits & create revenue for biodiversity



- **Payments for Environmental Services (PES),** including REDD
- **Certification**
- **Access and benefits sharing (ABS)**
- **Entry fees, licensing, concessions, trust funds & Tax relief for donations**
- **In-kind contributions**
- **Investments/transfers to pay for bundle of services**

Which Instruments work in your countries? Or have you seen working well?

Key Issues for Beyond 2010 1/3

- Understanding costs & the financing gap – **how to ensure that we know what the costs are and plan for budget provisions?**

- How do we identify where (investment) costs lead to (much larger) benefits to biodiversity and ecosystem services – **finding cost-effectiveness?** And who will respond?

- How can we get around the issue that **costs / benefits are differently distributed across parties and across time?** Changing our evaluation tools, or a role for government or?

- **How can the costs best be covered so that we protect public goods?** What instruments and **how should the costs be shared ?**

Key Issues for Beyond 2010 for the EU 2/3

Domestic responsibility and international responsibility / interests

- **EU action at home: Community** and **Member State** (inc. local) levels
  - → **Potential Community role re services**: protecting biodiversity, but also maybe carbon, food security, water, natural hazards etc.
  - → Ensuring **EU Cohesion / EU-added value**
  - → Note: "home" should include the **overseas territories**

- **EU investment abroad** to reflect
  - → **benefits of global ecosystem services**
  - → **equity issues**
  - → ensure **cost-effectiveness**
  - → **financing reality** (we cannot conserve global biodiversity without contributing significantly)

- **EU/Member state "responsibility" abroad -** Avoid damage (including indirect) to nature abroad: eg "**ecological footprint**" via **biodiversity damaging products** import.

Key Issues for Beyond 2010 3/3

- How do we use the understanding of nature's benefits to **support public and policy awareness & action?**

- **What instruments can we encourage?**
  - Green development mechanism / international PES, REDD and national PES?
  - Commitment to reduce footprints, go "biodiversity neutral", use green public procurement and certification/labelling?

- **Where are there policy synergies** (Eg with climate, poverty, development) that can help lead to sources of initiative/funding?

- **Where are there opportunities for policy response?**

What have you seen that works & would you like to see done?

Institute for European Environmental Policy

Thank you

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IEEP is an independent not for profit institute dedicated to advancing an environmentally sustainable Europe through policy analysis, development and dissemination.

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Annex – supporting information

Protecting Nature beyond Protected areas

"Protecting nature"….a wide range of foci

- **Protected Areas**
  - EU's Natura 2000 Network
  - Range of national designations
  - Protected areas: IUCN categories I, II, III, IV, V
  - Ramsar sites
  - UNESCO World Natural Heritage sites & Biosphere reserves

- **Protecting nature in wider land- and seascapes**
  - Buffer zones around PAs and habitats linking PAs (some already part of Natura 2000)
  - Nature in general, e.g. agricultural lands (e.g. high nature value agriculture), soils, forests, wetlands, high seas, even nature in cities. So "wild nature" and "semi-natural habitats" and converted lands each important

Our Focus today mainly on Protected Areas (Natura 2000 network)

Example: Natura 2000 Network

Build on existing protected areas (PAs) in Europe

First designations 1995, now network designations near to complete (for land based sites) – 15 years

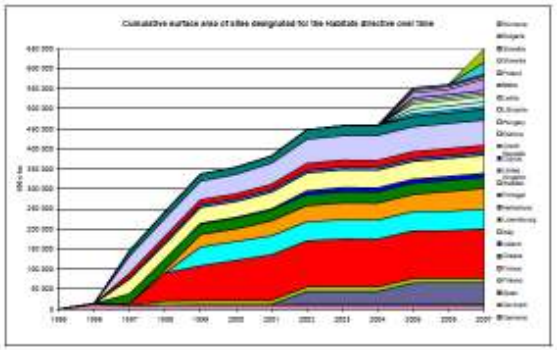
Sites: 25,000+

Area: 700,000 km^2 or 20% of EU landmass

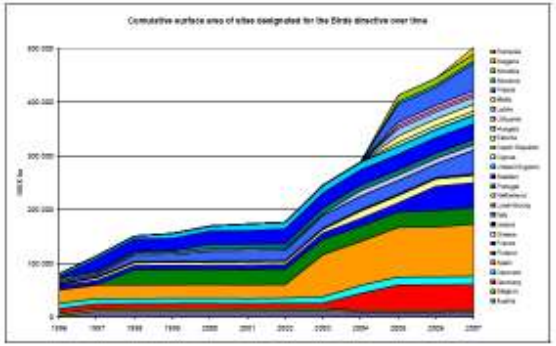
Efforts over time: acquisition (+compensation), designation, investment, management, monitoring.

Complex picture; costs vary over time + costs depend on ambitions ("quality" of site at designation + interpretation of favourable conservation status)

Site Designation Habitats Directive



Birds Directive



Source for figures: EEA and http://ec.europa.eu/environment/nature/natura2000/index_en.htm

Costs of nature protection - What are they ?

Costs items: One Off Costs

- **Finalisation of PA site lists and establishment of the (Natura 2000) network** (administration, consultation, scientific studies)
- **Management & planning** (management plans, consultation)
- **Investment costs** (land purchase, one-off compensation, infrastructure) (some are a series of one-offs)

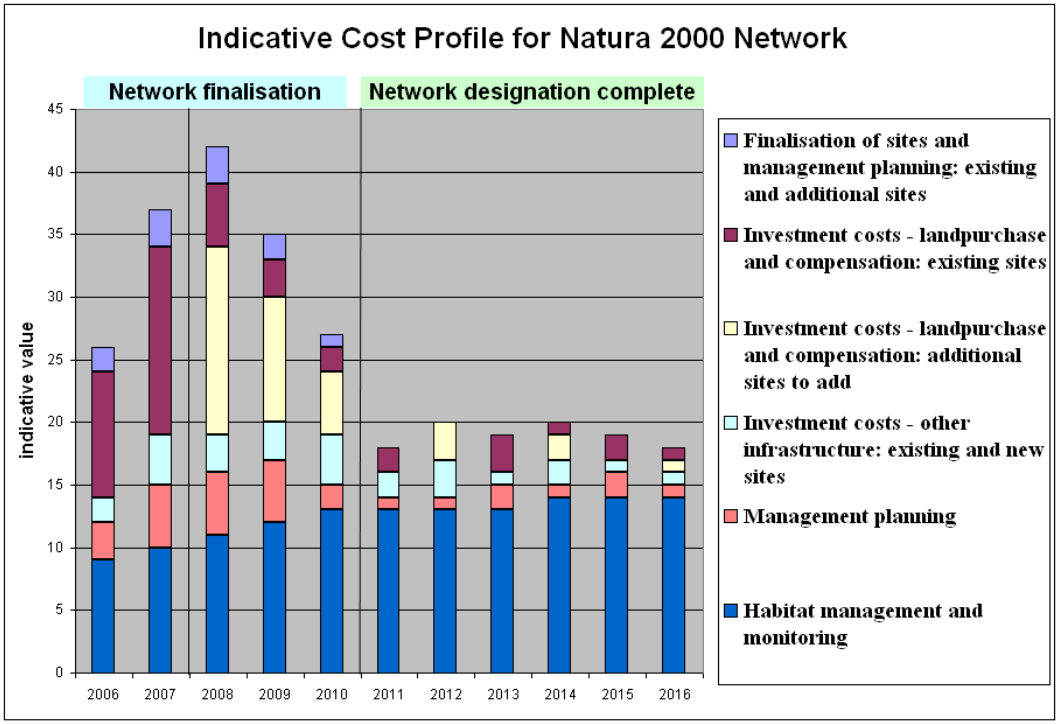
Costs items: Recurrent Costs

- **Management & planning (**
- **Habitat management and** measures, implementation with owners/managers, mo

Also: **Opportunity costs (some**

Costs vary over time - needs

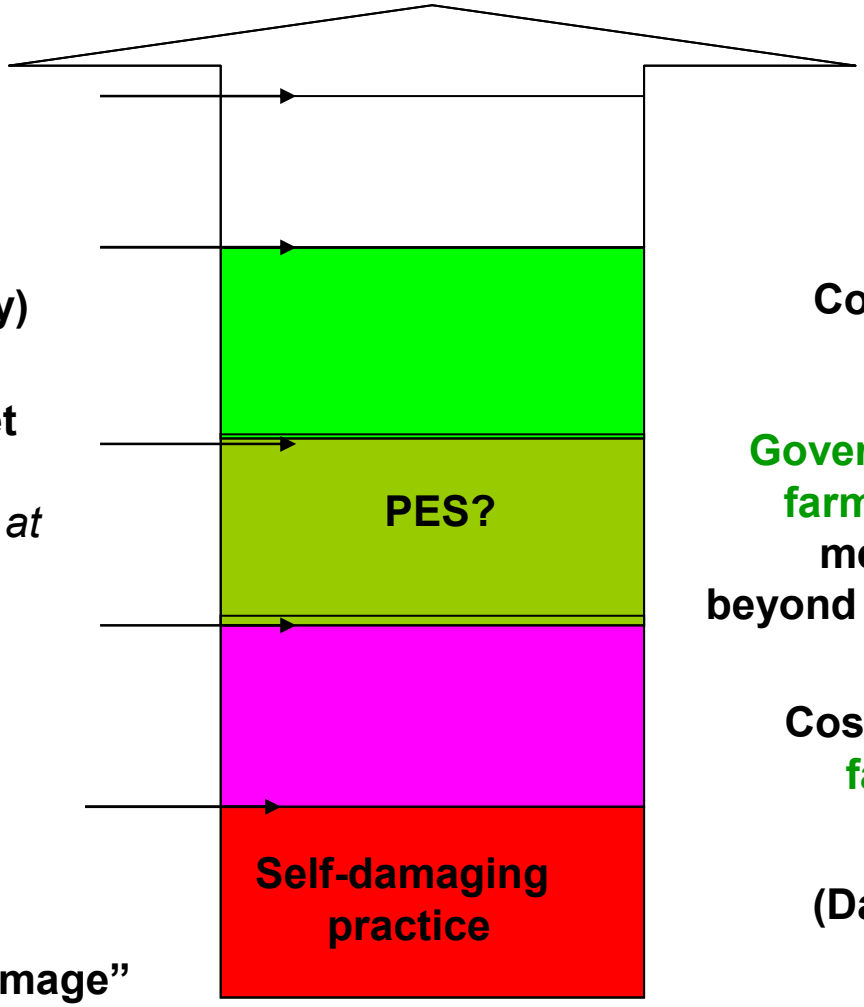
Complicated process of estimating (national, EU or global) aggregate costs



Payments for Environmental Services (PES) and the Polluter Pays Principle (PPP)

Reducing emissions/impacts

example farming & PES



Zero emissions

Zero impact (within assimilative capacity)

Environmental target *(practical /politically feasible env optimum at the time)*

Legal requirements ("reference level")

Farmer Economic Optimum

No control – "full damage"

Costs born by society (env impacts)

Government pays PES to help farmers pay for measures to meeting targets/objectives beyond legislative requirements

Costs of measures borne by farmer – eg Polluter Pays Principle (partly implemented)

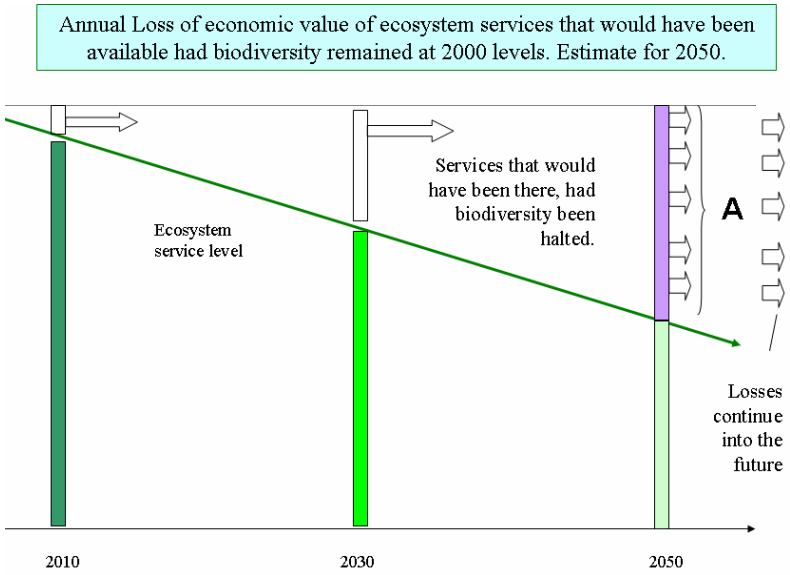
(Damage) Costs to farmers and society

Putting the numbers in context (2/2)

The cost of not protecting nature – COPI Study

- Over the period 2000 to 2010 welfare losses from loss of ecosystem services from loss of nature estimated to amount to around **50 billion Euros extra loss per year, every year**.
- By **2010** the welfare losses amount to **545 billion EUR in 2010**.
- The value of the amount lost every year rises as population and economies grow
- The loss of welfare in 2050 from the **cumulative loss** of ecosystem services between now and then amounts to **14 trillion (10^12) Euros** under the *fuller estimation* scenario
- This is equivalent in scale to **7% of projected global GDP for 2050** – across land-based biomes

- *Source: P ten Brink in L. Braat & P. ten Brink (eds.) 2008 COPI Study*



The potential welfare benefits of halting loss of one year biodiversity/ecosystem services same order of magnitude as the costs. As we lose more ecosystem services, the cost of the loss will rise – to 10 times the cost of protecting nature by 2010, and it goes on rising as we continue to lose nature.