

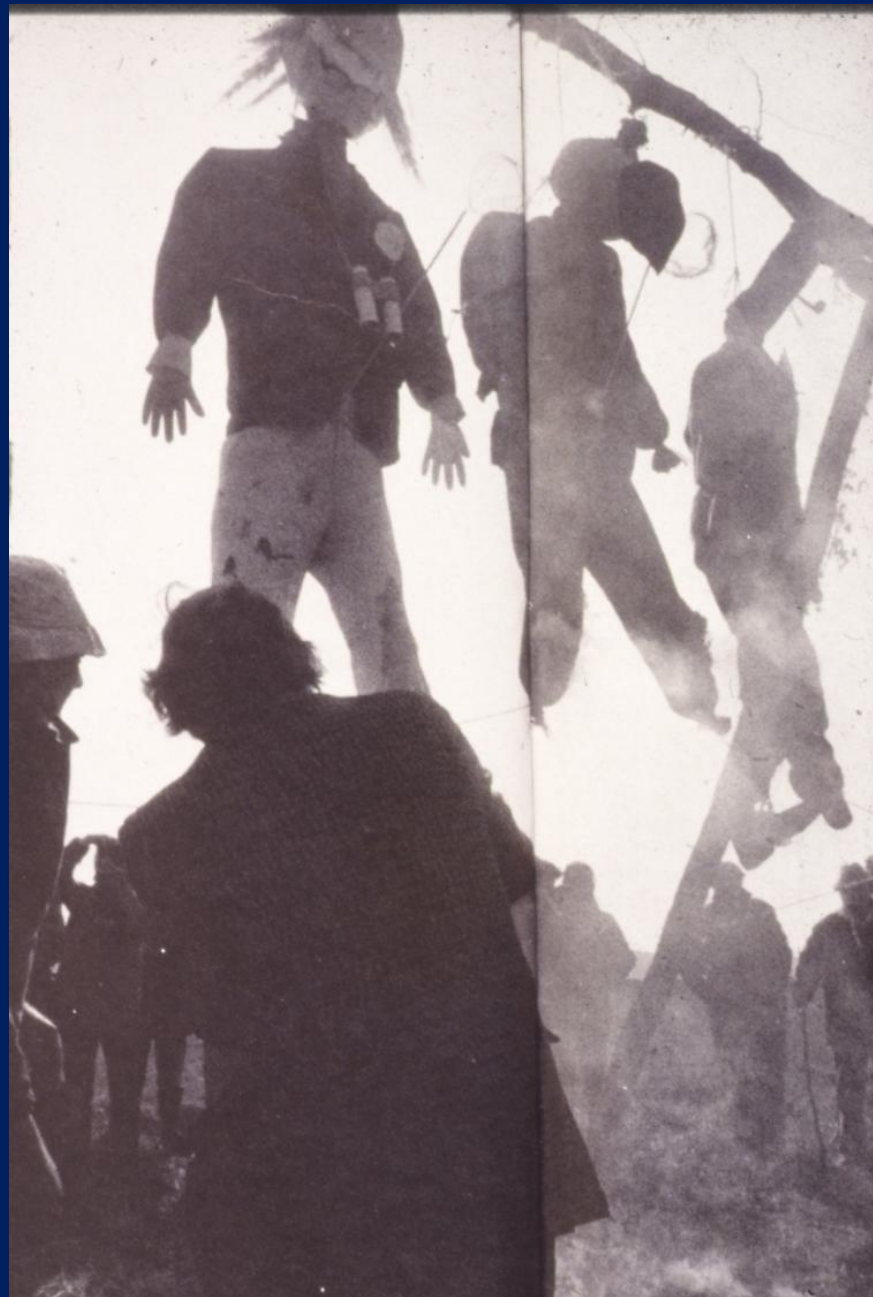
The Ecosystem Approach – Sweet Sixteen or Teenage Trauma?

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Key Points

- A paradigm shift
- Definitions and confusion
- Problemsheds as foci
- Ecosystem services – human well-being
- Implementation



Elements of an emerging new paradigm

- Different ecosystems with different functional and biodiversity characteristics can occupy the same global space.
- Ecosystems are dynamic and respond to environmental as well as human-induced changes
- Human societies have been a key determinant of change since prehistoric times.
- “Recombinant Biology” is likely to be increasingly important
- Increasing recognition of links between ecosystem functioning, economic and human well-being (ES)





Everglades

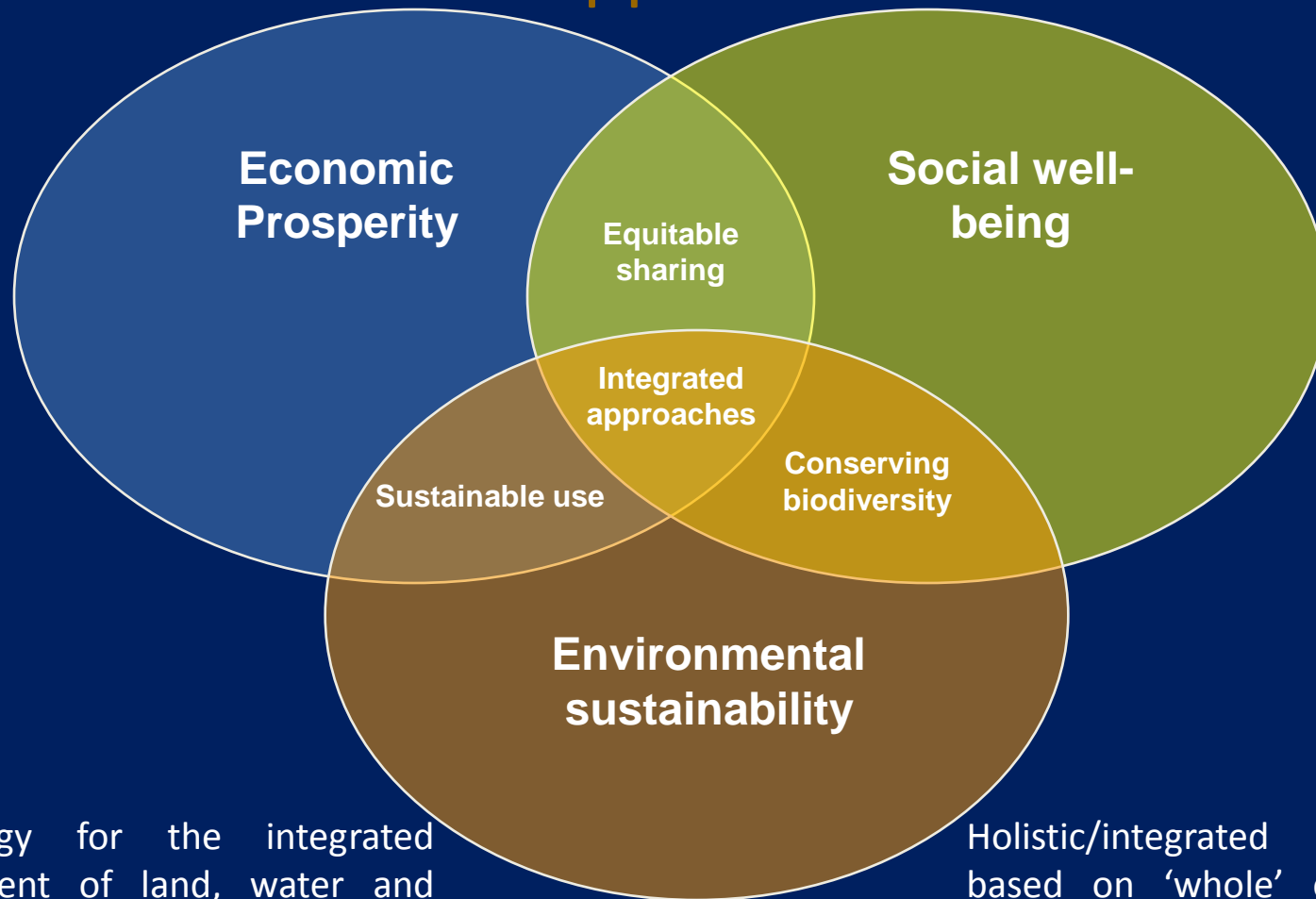


Advances in thinking

- Developments both within the CBD and elsewhere
- Nearly a decade before formal DEFRA and UK statutory agency reports
- Houses of Parliament POSTNOTE 16 years after SBSTTA and COP2 Decision 11/8 and 19 years after Rio



Structure and outcomes of the Ecosystem Approach

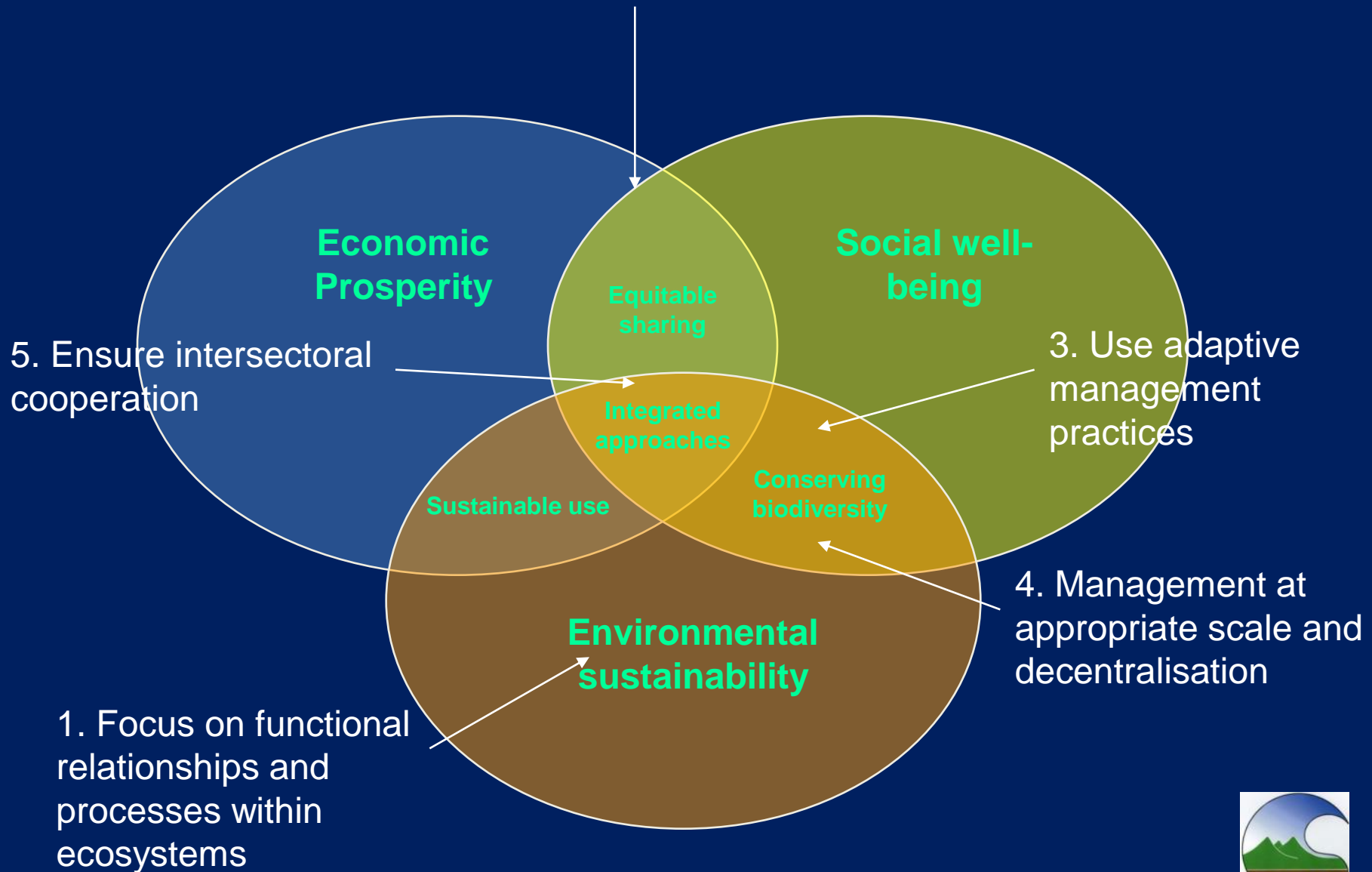


A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (CBD)

Holistic/integrated approach based on 'whole' ecosystems. Value of ecosystem services fully reflected in policy/decision making(DEFRA)



2. Enhance benefit sharing

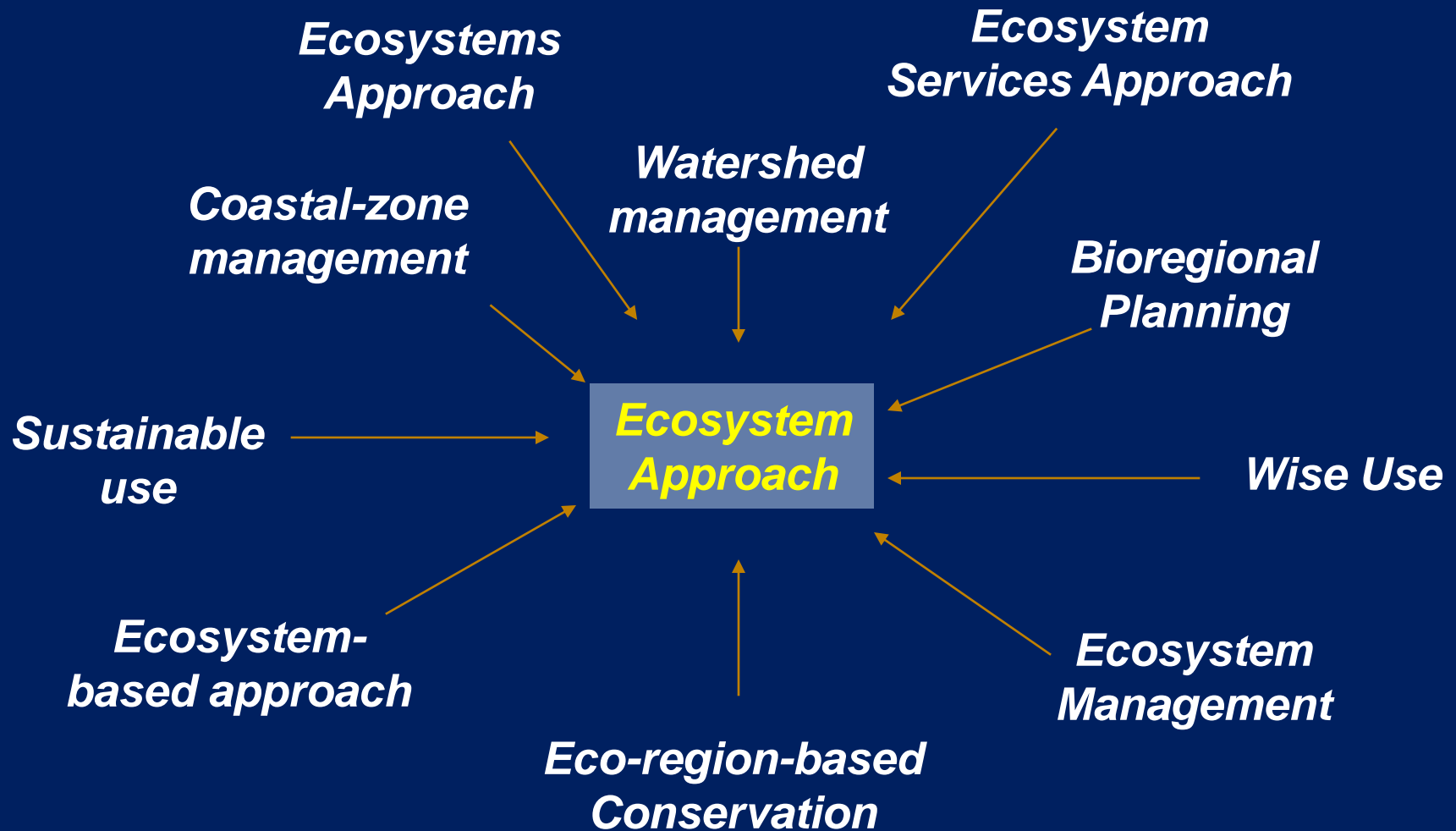


Some constraints:

- Elaboration of the term has introduced confusion, hostility and resistance among parts of scientific community
- Implementation requires fundamental changes in the sectoral organisation of government and threatens fiefdoms, conventional economics and fiscal policy.
- Certain societal priorities may be better met by alternative models / approach.
- Do current short-term urgent priorities impede the action necessary to achieve practical delivery?



Terminology can be Confusing



So Why Take an Ecosystem Approach?

Classical natural resource approaches as sole tool may:

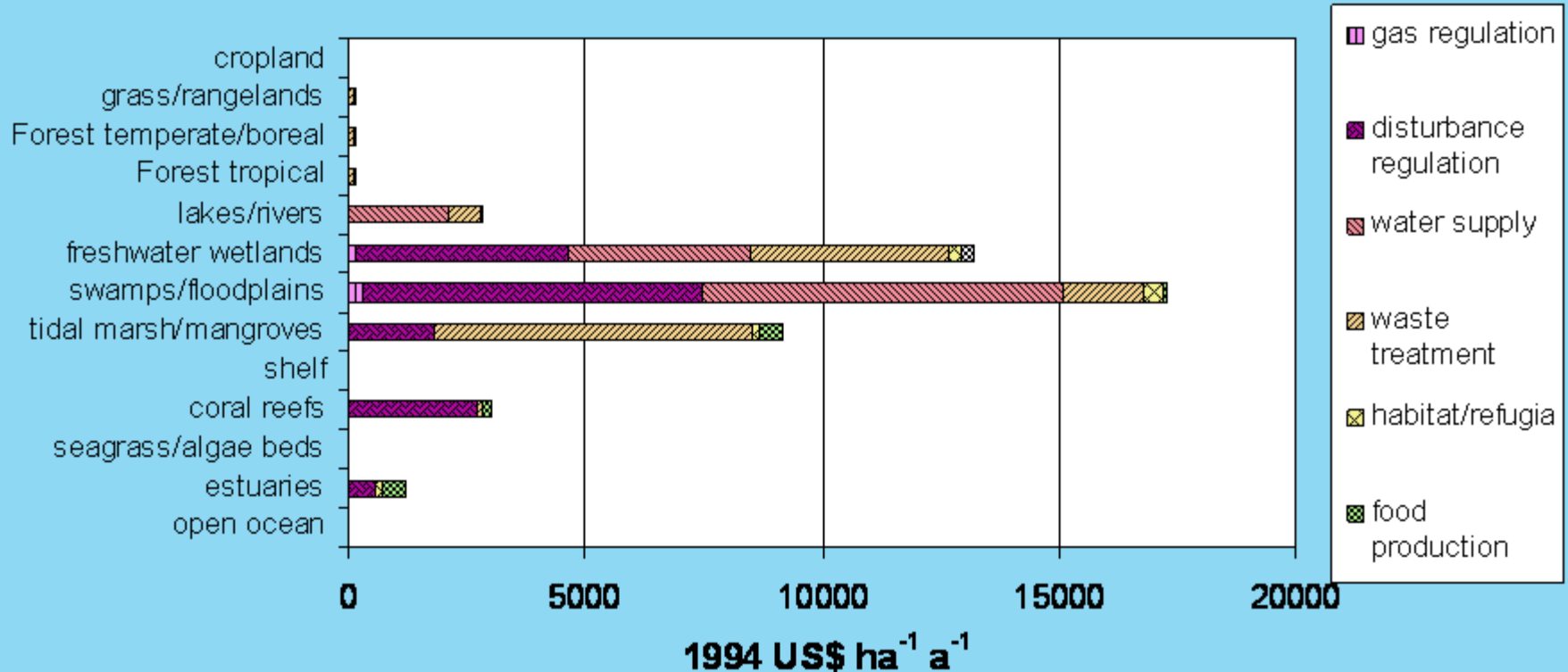
- Lack recognition of importance of ecosystem functioning
- Ignore connectivity
- Ignore interlinkage of nature & society
- Lack of stakeholder participation in management of ecosystem
- Inappropriate division of costs & benefits
- Sectoral interests not integrated



Average global value of selected annual ecosystem services

Costanza *et al.* 1997

Average annual global value of selected ecosystem services



Impressive numbers!

- Conserving forests avoids GHG emissions worth US \$3.7 trillion
- Global fisheries underperform by US \$50 billion a⁻¹
- Bee keeping generates US \$213 million a⁻¹ in Switzerland (TEV of insect pollination worldwide 153 billion Euros = 9.5% world agricultural output in 2008)
- Tree planting in Canberra worth US \$20-67 million 2008-12 (TEEB)
- UK seas generate wealth worth £47 billion a⁻¹ (Charting Progress)
- Nitrogen pollution costs EU up to £280 billion a⁻¹ (Nitro Europe)



Valuation of Scotland's environment

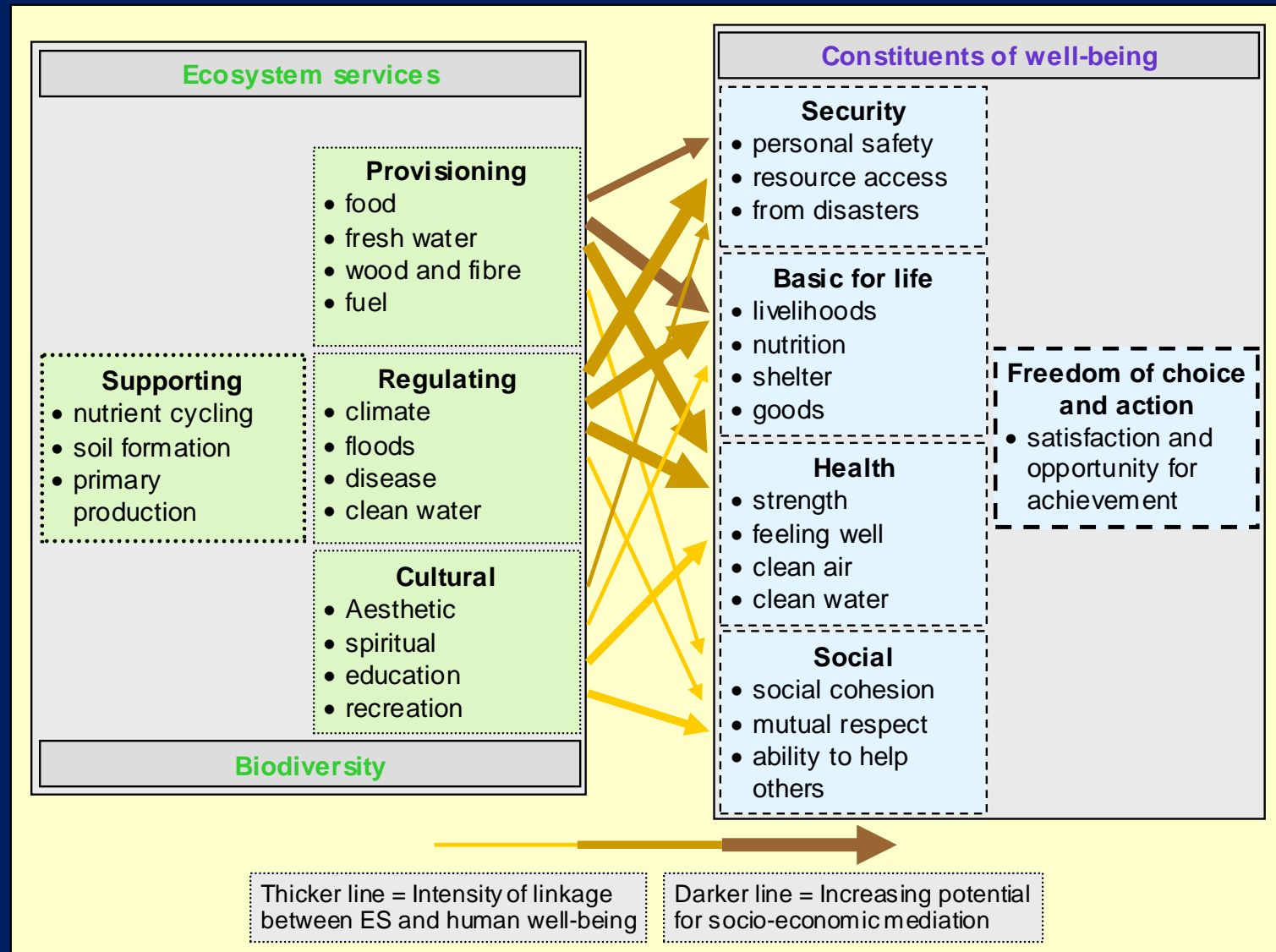
- 11% total economic output dependent on natural environment £172 billion
- 14% full-time jobs 242,000 jobs (2008)

Expenditure by freshwater anglers in England and Wales

- Supports £1 billion household income 37,000 jobs
- Public willing to pay £350 million/year to prevent a disease causing decline in salmon (2007)



Links between ecosystem services and human wellbeing

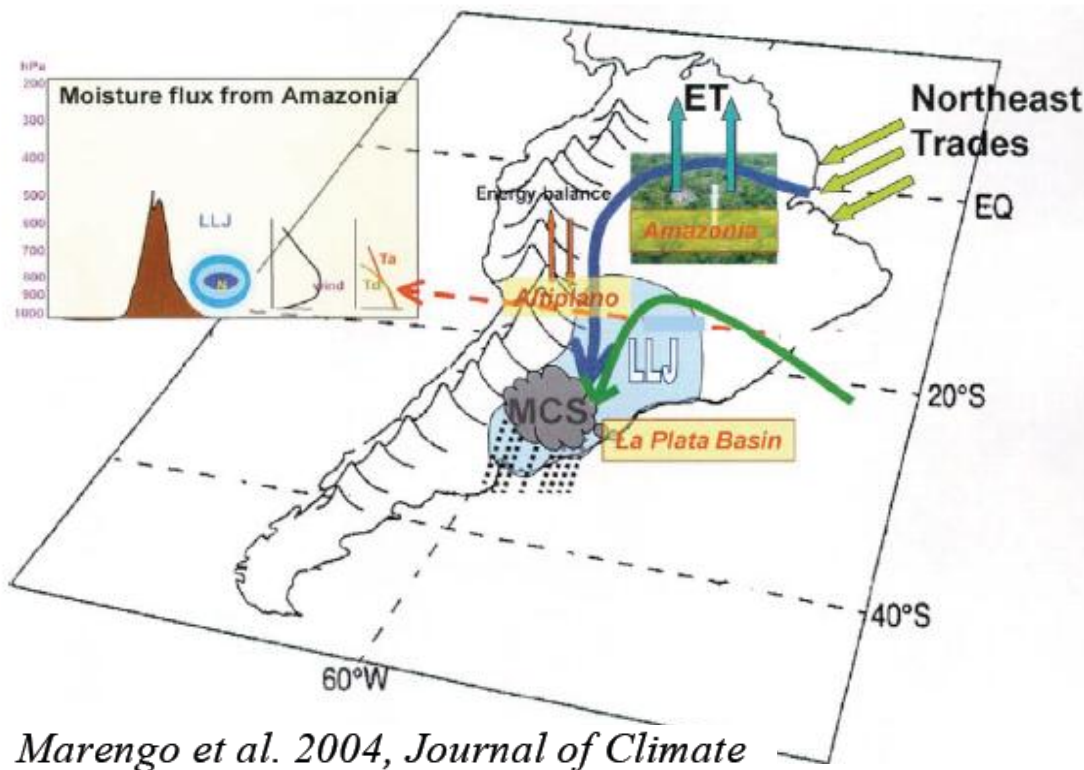


Agricultural Dependence on Conservation of Amazonas Ecosystem

Amazon Rainforest “Water Pump”

Evapo-transpiration puts 20 billion tonnes of water into the atmosphere daily, some of which falls as rain in the Rio Plata Basin...

(Global Canopy Programme & Canopy Capital Ltd, 2008)



Marengo et al. 2004, Journal of Climate

A Trillion-dollar agricultural economy in Latin America (Mato Grosso/ Brazil, Argentina, Uruguay, Paraguay) depends on this “Water Pump”



Ecosystem Approach

Societal choice

Millennium Development Goals (2000)

Eradicate poverty

Combat disease

Environmental sustainability

Partnership for development

Ecosystem structure and functioning

Millennium Ecosystem Assessment (2005)

Access to clean water

Risk from environmental hazard/degradation

Poor - most dependent on natural resources & ecosystem services

Yet - limited integration of environment in development plans;

- loss of ecosystem services continues

- climate change a major threat

Integration and balance of conservation and use.

Policy instruments

Convention on Biological Diversity (1992)

World Summit on Sustainable Development Plan of Implementation (2002)

Ramsar Convention (1971)

- wise use
- ecological character

EU Water Framework Directive:
- good ecological status

Kyoto Protocol



Policy Context (examples)

- Convention on Biological Diversity
- Water Framework Directive
- Climate change
- Poverty Alleviation
- Sustainability



Functional gradients

Groundwater-fed slope wetlands.

Carbon sequestration

Floodwater detention

Upland peat bogs.

Deepwater lake.

In-filled lake.

Floodplain modified for agriculture.

'Natural' river channel with levees.

Wooded river marginal (floodplain) wetlands.

Depressional (bottomland) wetlands in floodplain.

Reservoir

Lowland raised mire.

Shallow lake occupying depression.

Fenland.

Straightened channel.

Channel marginal wetlands.

Brackish water marsh.

Marshland with drainage channels.

Food chain support

Nutrient & contaminant transformation

Groundwater up-welling supporting reedbeds in estuary margin.





Key Challenges

- Public support
- Scientific Understanding
- Translation of the evidence base
- Dealing with trade-offs
- Institutional response and coherence



Recommended actions

- Better briefing for decision-makers across civil society
- Trans-disciplinary working especially with socio-economics
- Stronger links between research and operational organisations
- More effective partnership between knowledge-holders and end-users
- Good case studies
- New pilot projects
- Tool kits and decision-support tools
- Creating coherence and culture of cooperation between and within sectoral organisations and disciplines



