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Challenges of Implementation of the Ecosystem Approach and Ecosystem Services Concept

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Key Points

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



Recent approaches in ecosystem management

- Sectoral policies, pricing and subsidies
- Top down processes with limited stakeholder engagement
- Focus on species and protected areas vs others
- Ecosystem functioning or ecosystem services ignored

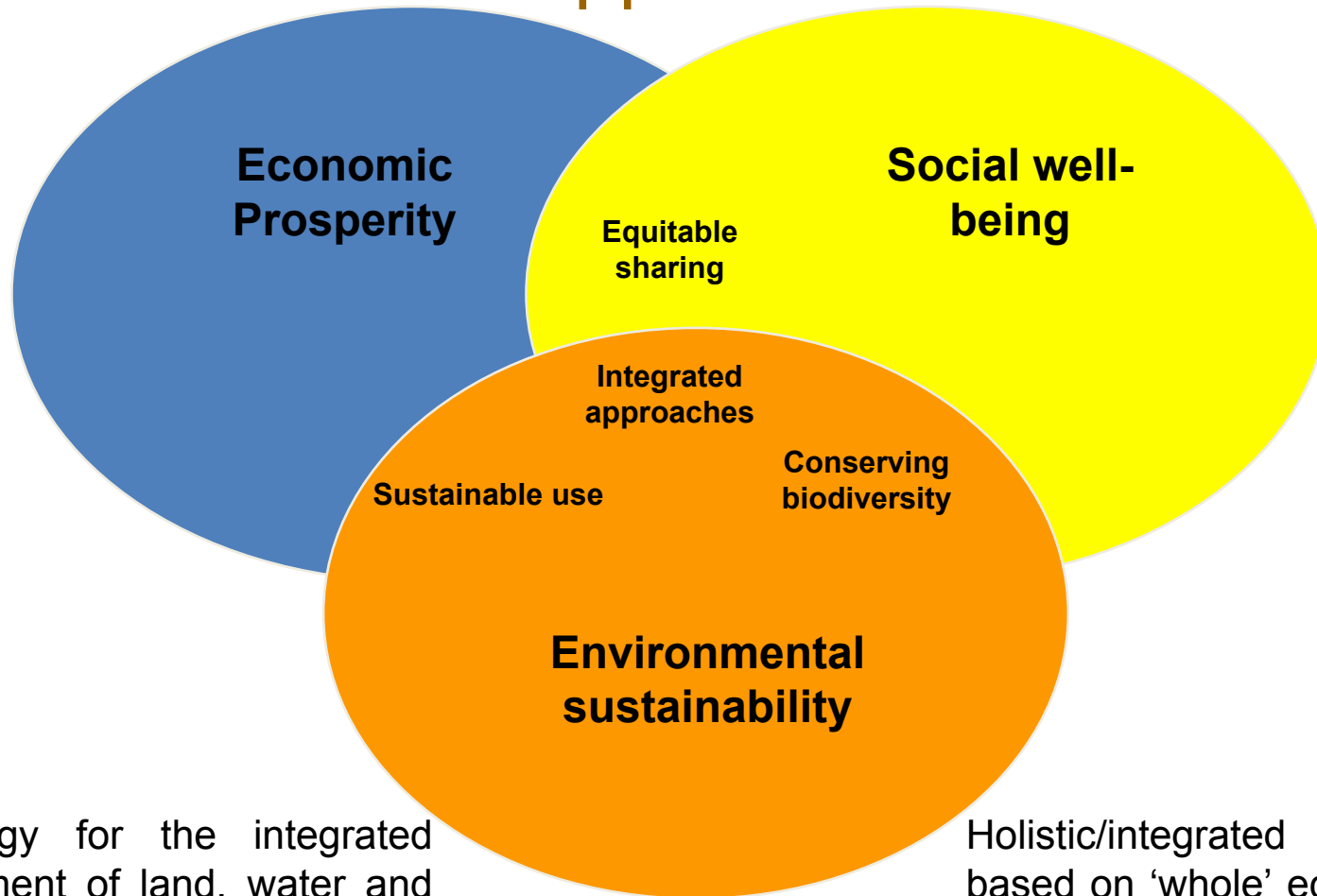


Elements of an emerging new paradigm

- 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)



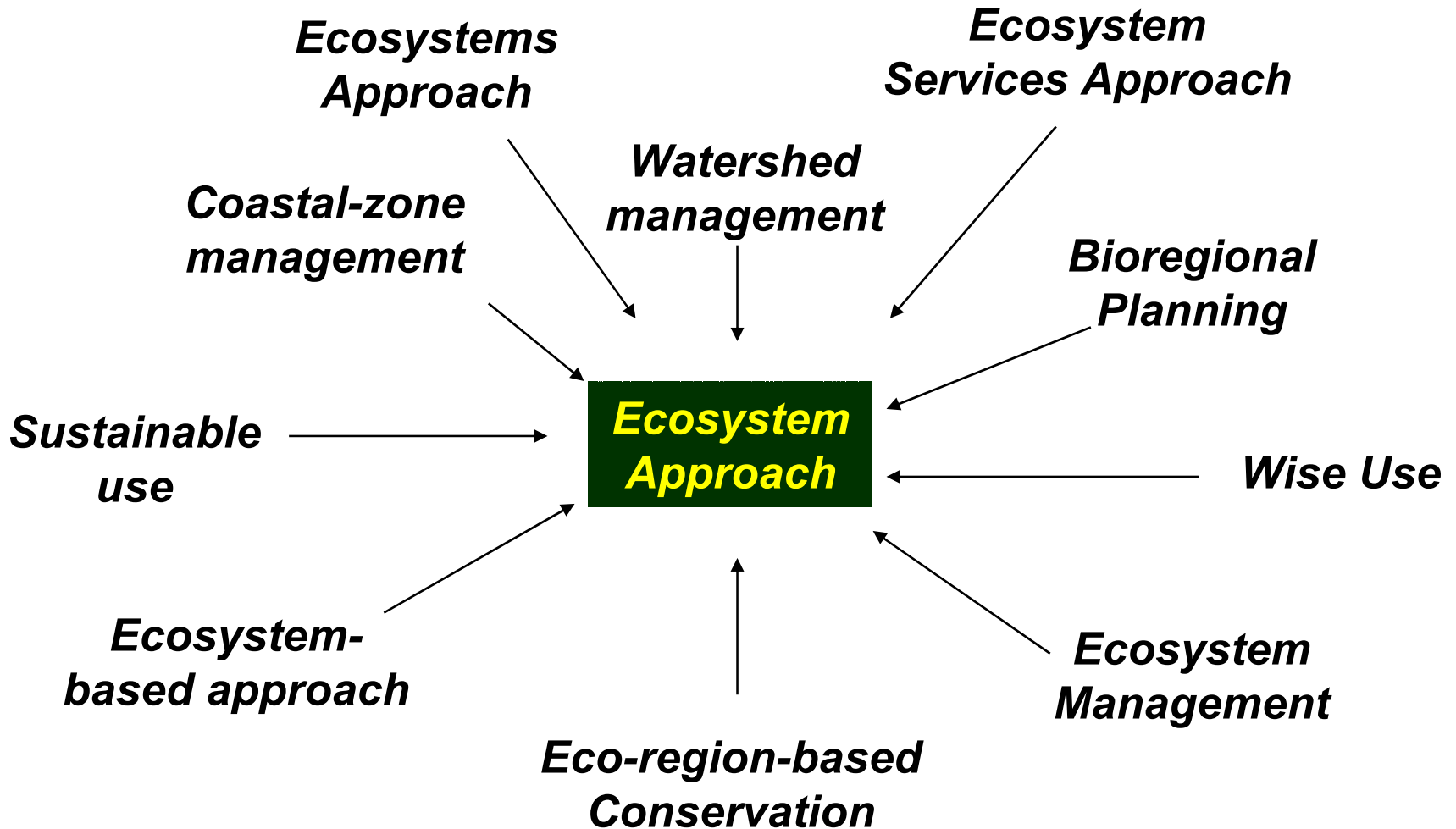
Structure and outcomes of the Ecosystem Approach



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

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



EA demands paradigm shift:

From	To
Preservation	Adaptive management
Sectoral	Integrated
Scientific	Multifaceted knowledge
Environmental	People and the environment
Top down	Both directions
National	Appropriate level
Conservationist	All stakeholder
Nature	Social and environmental well-being

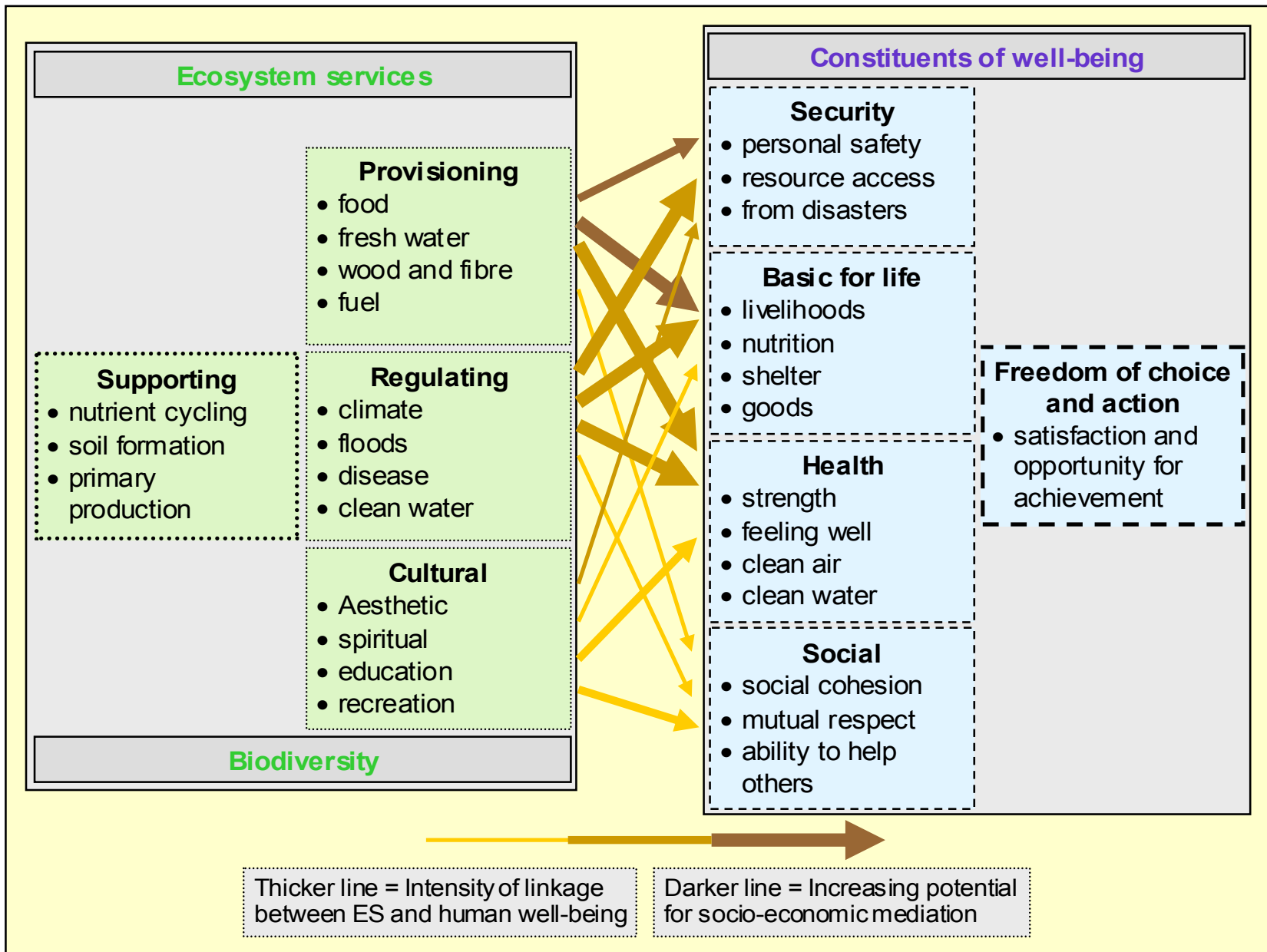


Defining 'Problemsheds': Some comparisons for holistic water management

EA	WFD
Societal choice, consider all information	Public consultation
Economic context	Economic analysis
Structure and functioning	Ecological quality
Appropriate scale effects on other ecosystems	River basin
Change inevitable long-term	Review planning
Involve all relevant sectors	Best practice by sector, issue and joined-up action
Manage within functional limits	Derogations
Management at lowest appropriate level	Appropriate administrative arrangements

N.B. Example of other problemsheds: flooding, poverty alleviation, human health





Adapted from Millennium Ecosystem Assessment



Ecosystem Services Derived from Inland Rivers, Lakes and Wetlands

Provisioning Services	Cultural Services
<p>Food (fish, game, fruit, grain etc) Fresh water (storage, retention, provision) Fibre and Fuel (timber, fuel, peat, aggregates) Biochemicals (materials from living things) Genetic materials (medicine, resistance to pathogens, ornaments)</p>	<p>Spiritual (well-being, religion) Recreation (tourism, activities) Aesthetic (appreciation) Education (opportunities)</p>
Supporting Services	Regulating Services
<p>Biodiversity (habitats) Soil formation (retention, accumulation) Nutrient cycling (storage, processing) Pollination (habitat and support)</p>	<p>Climate (GHGs, temp, rain, CO₂) Hydrology (recharge, discharge, storage) Pollution (retention, removal, recovery) Erosion (protection, retention) Natural Hazards (floods, storms)</p>

N.B. Not always compatible



Ecosystem Services and Poverty Alleviation Study in South Asia (ESPASSA)

ESPASSA investigated linkages between ecosystems and poverty for India and the Hindu Kush-Himalayan region

- Bangladesh
- Bhutan
- India
- Nepal
- Pakistan

Region is a global poverty hotspot so meeting MDG No. 1 dependent on success in this region

Need to work towards achieving poverty alleviation through improved understanding and management of ecosystems and their services

ESPASSA laying the foundations for this (www.espassa.org)



Some key findings of the ESPASSA Situation Analysis

Over 800 million people live on less than \$2 a day

Enhanced loss of ecosystem services is impacting

- biodiversity
- the regional hydrological cycle
- food security

Climate change will affect the onset, duration and intensity of the monsoon and dependent ecosystem services

Case studies demonstrate that integrated management based on interdisciplinary understanding can reverse the trend of ecosystem services loss and improve livelihoods



Prioritised research can accelerate this process



Priority Setting

Local ecosystem managers					Key partnerships ▲ Government ● Academia ◆ Ecosystem managers ○ Global community
Government planning & regulating agencies					
Research institutes & universities					
Global community (including donor agencies)					
Research issues		Generation of disciplinary & interdisciplinary knowledge	Policy relevance	Addressing capacity needs	
Ecosystem services (ES)	Ecological processes contributing to ES	H	L	L	● ○ ▲
	Scale and units of ES				
	Interactions among ES				
Poverty	Ecosystem dynamics and resilience	M	H	L	▲ ● ○
	Non-income dimensions of well-being and vulnerability				
	Spatial incidence and trends				
Drivers	Poverty-ecosystem linkages	H	H	M	● ◆ ▲ ○
	Interactions among drivers				
	Scale issues				
Responses	Impact pathways	H	H	H	▲ ●
	Impact of adaptation and mitigation measures on ES				
Institutions	Policy-making based on economic valuation of ES	H	H	H	▲ ●
	Equity, gender and governance issues				
	Social processes contributing to success or failure	H	H	H	● ◆ ▲ ○



Examples of Priority Research Areas

1. Ecosystems

- Mapping the linkages between ecosystem services and poverty
- Regional hydrological flow and water cycling (e.g. scale and magnitude of combined impacts of glacial retreat and increased monsoon variation on regulating services)
- Seasonal patterns of dependence of the poor (esp. in agro-ecosystems) and their coping strategies

2. Drivers

- Reducing uncertainty in predictions of features of monsoonal rainfall (e.g. onset, duration) on timescales relevant to livelihoods of poor (intra-, inter-seasonal and decadal)
- Understanding intensity of impact of indirect drivers (e.g. trade and pricing structures) on ecosystem services

3. Responses

- Valuation (esp. regulating and cultural services) to support the decision making process

- Institutional frameworks and governance required for PES



Implementation

- Societal priorities – desired states/targets
- Science evidence base – process → function → service
- Acceptable valuation of ES – technical → ecosystem accounting policy
- Attribution to ES – e.g. health
- Scale – link to decision making
- Trade-offs – e.g. water quality vs biodiversity vs GHG



How do we Encourage Implementation?

- Increasing understanding
- Promote participation in society
- Demonstrating practical benefits of the EA
- Optimising ecosystem services/restoration priorities for human well-being
- Reduction in biodiversity loss
- Reduction in contribution to global warming
- Integrated strategies and actions for marine and terrestrial environments



How is this achieved?

- Better briefings for decision-makers
- Transdisciplinary working especially with socio- economics
- Stronger links between research and operational organisations
- More effective partnerships 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 organisations and disciplines

