Ecosystem Services in policy and practice: and international perspective

Patrick ten Brink
Senior Fellow and Head of Brussels Office
Institute for European Environmental Policy (IEEP)
ESCOM
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55 Quai Au Foin / Hooikaai 55, Brussels 1000, Belgium
11 Belgrave Road, London, SW1V 1RB, UK
www.ieep.eu  ptenbrink@ieep.eu
Presentation Overview

• The emergence of the ecosystem services concept

• Ecosystem services’ incorporation in international frameworks

• Implementing the ecosystem services concept in policy and practice internationally - the progress, struggles, & needs
The emergence of the ecosystem services concept - a very simplified summary...

- Convention of Biological Diversity (CBD)
- Millenium Ecosystem Assessment
- The Economics of Ecosystems and Biodiversity (TEEB):
- Strategic Plan for Biodiversity 2011-2020
- IPBES
- Growing literature on ecosystem services

- 1992
- ...2005
- 2008-10+
- 2010
- 2012...
Convention of Biological Diversity (1992)
One of the three Rio Conventions

Article 6. General Measures for Conservation and Sustainable Use (...of biological diversity)

Article 8. In-situ Conservation

Article 10. Sustainable Use of Components of Biological Diversity

Article 15. Access to Genetic Resources

Article 19. Handling of Biotechnology and Distribution of its Benefits

Biodiversity focus – conservation and sustainable use, with recognition of benefits for humanity – without using the term “ecosystem services”

Article 2: "Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

"Biological resources" includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity [emphasis added].
Millenium Ecosystem Assessment

**ECOSYSTEM SERVICES**
- **Provisioning**: food, timber, raw materials, water...
- **Supporting**: nutrient cycling, soil formation, crop pollination
- **Regulating**: water purification & retention, climate control, pest & disease control...
- **Cultural**: aesthetic, spiritual, recreational, knowledge...

**HUMAN WELLBEING & LIVELIHOODS**
- **Direct livelihood support**: Food and materials, water...
- **Security & resilience**: Food security, mitigation of natural disasters, climate change adaptation & mitigation
- **Health**: Access to clean air & water, disease control, medication, traditional medicine
- **Social relations**

**INSTITUTIONS & STAKEHOLDERS**
Government and public institutions, regional and local authorities, companies, communities, NGOs, academia and citizens

**INSTRUMENTS**
Planning and zoning, permitting, regulation & enforcement, Investment, EIA & SEA, MBIs, information & assessment et al.

**NATURAL CAPITAL**
- Social capital
- Human capital
- Man-made capital

**Source**: Own Representation building on MA (2005) and TEEB (2011a)
The Economics of Ecosystems and Biodiversity (TEEB): Key Messages

1. Make nature’s values visible
2. Assess the value of ecosystem services and integrate these into decision making
3. Account for risks and uncertainty
4. Value the future
5. Measure better to manage better
7. Encourage corporate disclosure
8. Change the incentives
9. Designate, manage and invest in protected areas.
10. Invest in ecological infrastructure
11. Mainstream the economics of nature

2008-10+
Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services & Aichi targets 14 and 15 explicitly focus on ecosystem services.

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society - implicitly focus on ESS

Target 1 (…people are aware of the values of biodiversity …)

Target 2 (…biodiversity values have been integrated …)

Values of ESS are a part of the values of biodiversity

Target 14 states that “By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable”.

Target 15 stated that “By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.”
EU 2020 Biodiversity Strategy: Targets

**Target 1:** To halt the deterioration in the status of all *species and habitats* covered by EU nature legislation and achieve a significant and measurable improvement in their status...

**Target 2:** By 2020, *ecosystems and their services* are maintained and enhanced by establishing Green Infrastructure and restoring at least 15% of degraded ecosystems.

**Target 3 A) Agriculture:** By 2020, maximise areas under agriculture across grasslands, arable land and permanent crops that are covered by biodiversity-related measures under the CAP so as to ensure the conservation of biodiversity and to bring about a measurable improvement in the conservation status of species and habitats....

**B) Forests:** By 2020, Forest Management Plans or equivalent instruments, in line with Sustainable Forest Management (SFM), are in place for all forests that are publicly owned and... so as to bring about a measurable improvement in the conservation status of species and habitats .....  

**Target 4: Fisheries:** Achieve Maximum Sustainable Yield (MSY) by 2015. ... fisheries management with no significant adverse impacts on other stocks, species and ecosystems, in support of achieving Good Environmental Status by 2020, as required under the Marine Strategy Framework Directive.

**Target 5:** By 2020, *Invasive Alien Species* and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS.

**Target 6:** By 2020, the EU has stepped up its contribution to averting *global biodiversity loss*.
Ecosystem services: Success and Needs

Integration into biodiversity policy processes

- CBD COP-10 (2010)
- CITES COP-15
- Ramsar COP 11 XI/17 (July 2012)
- CBD COP 11

Wider policy integration needs & opportunities

- Climate change: mitigation & adaptation
- Sustainable Development: MDGs, SDGs
- Water security: clean water supply
- Agriculture & Food
- Fisheries & marine policy (inc. Oceans)
- Forestry
- Poverty alleviation and health
- Development Cooperation
- Regional development (e.g. CP)
- Energy and transport
- Insurance and finance
- …

Added-value of ecosystem services:
Synergies with biodiversity policy – achieving win-wins; & Ecosystem services integration in wider policy and decision making
Natura 2000
26,000 sites ~ 18% of EU

Remaining Challenge

Funding a challenge

Costs ~ 5.8 bnEUR/yr
Source: Gantioler et al 2010

But also benefits

illustrative value of between €200-300 bn/yr
ten Brink et al. (2012)

Service focus: Natura 2000 network currently stores around 9.6 billion tonnes of carbon, equivalent to 35 billion tonnes of CO2, which is estimated to be worth between €607 billion and €1,130 billion (stock value in 2010)  
Markandya and Ding research in ten Brink et al., 2012
TEEKB Water and Wetlands: An illustration of process of integration

Rio+20: June 2012
Ramsar COP 11: July 2012
CBD COP 11: October 2012
Ramsar STRP: February 2013
Ramsar COP 11: Resolution XI/17
CBD COP 11: Inland Water Ecosystems (XI/21)


NC/ESS: status and opportunities of integration

OPERAS WP4 Analysis

**Policy focus:** Air; Soil; Water; Agriculture & rural dev.; Forestry; Marine & coastal (inc. fisheries); Regional dev./ Cohesion; Climate; Bioenergy; Transport & grey infrastructure

**Review of EU policy documents:** policies/strategies, regulations & directives, communications, guidance docs, assessments...across policy areas

**Categorise and assess:** level of integration at conceptual and operational levels

<table>
<thead>
<tr>
<th>Level of integration</th>
<th>Conceptual integration</th>
<th>Operational integration</th>
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<tbody>
<tr>
<td>Comprehensive and explicit</td>
<td>All ecosystem services &amp; recognition of contribution to human wellbeing</td>
<td>Dedicated instruments enabling comprehensive integration.</td>
</tr>
<tr>
<td>Explicit but not comprehensive</td>
<td>Some ecosystem services &amp; recognition of contribution to human wellbeing</td>
<td>Some instruments that proactively address / build on ESS/NC within the policy area.</td>
</tr>
<tr>
<td>Implicit and incomprehensive</td>
<td>Generally focus on preventing negative impacts of a policy sector to ecosystem services and natural capital</td>
<td>Some aspects - mainly avoid negative impacts on (some) ecosystem services - integrated into sectoral instruments.</td>
</tr>
<tr>
<td>No specific integration</td>
<td>No recognition (direct / indirect) of ecosystem services and natural capital</td>
<td>No instruments exist that would in any way address ESS/NC.</td>
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Source: Kettunen et al 2014: WP 4 Deliverable 4.1
## NC/ESS: status and opportunities of integration

**OPERAS WP4 Analysis: working insights & examples**

<table>
<thead>
<tr>
<th>Policy sector</th>
<th>Conceptual integration</th>
<th>Operational integration (examples)</th>
</tr>
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<tbody>
<tr>
<td><strong>Air</strong></td>
<td>Clean Air Policy Package</td>
<td>Negative effects of air pollution to ecosystems are addressed, but not the positive effects that ecosystems have on air quality or consequences of pollution on ESS.</td>
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<tr>
<td></td>
<td>Clean Air Programme for Europe</td>
<td></td>
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<tr>
<td><strong>Soil</strong></td>
<td>Soil Thematic Strategy. EU Roadmap to a Resource Efficient Europe</td>
<td>No dedicated policy instruments; Some aspects integrated into CAP &amp; Land Use, Land Use Change and Forestry (LULUCF).</td>
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<tr>
<td><strong>Water</strong></td>
<td>Blueprint to Safeguard Europe's Water Resources</td>
<td>Some indirect proactive elements - e.g. recognising the role of natural flood retention areas under the Flood Directive; None of the existing instruments explicitly recognise the role ecosystem services in maintaining water quality or maintaining ground water sources.</td>
</tr>
<tr>
<td><strong>Agriculture &amp; rural development</strong></td>
<td>Some ESS promoted under Pillars of the EU Common Agriculture Policy (CAP).</td>
<td>Some proactive elements (mainly agri-environment-climate, support to Natura 2000 areas, and non-productive investment measures in Member States’ RDPs).</td>
</tr>
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<td><strong>Forestry</strong></td>
<td>EU Forest Strategy</td>
<td>No separate / dedicated instruments for forest ecosystem services. EU Treaties: limited EU competence for common forest policy.</td>
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<tr>
<td><strong>Regional development / Cohesion Policy</strong></td>
<td>Regulations for Cohesion Policy funds (ERDF, ESF and CP) - recognise and addressed ecosystem services explicitly.</td>
<td>Opportunities for win-wins of ESS and Reg. Dev / Cohesion policy objectives. Not obligatory for the Member States to take up these opportunities. Nor obligatory to integrate ecosystem services into reporting on results / outputs of ERDF and CP funding.</td>
</tr>
<tr>
<td><strong>Climate Mitigation &amp; Adaptation</strong></td>
<td>Mitigation: &amp; EU LULUCF (Land Use, Land Use Change and Forestry) accounting rules EU Strategy on Adaptation to Climate Change recognises ecosystems services</td>
<td>Mitigation: direct but not comprehensive. e.g. Wetlands Adaptation: mainly indirect, preventing negative impacts on ES / ESS. Only explicit instrument is support to ecosystem-based approaches under EU funds.</td>
</tr>
<tr>
<td><strong>Bio-energy</strong></td>
<td>Ecosystem services are referred to directly in the Renewable Energy Directive</td>
<td>There are no EU-level sustainability criteria for solid biomass.</td>
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<tr>
<td><strong>Transport &amp; grey infrastructure</strong></td>
<td>Union guidelines for the development of the trans-European transport network</td>
<td>Indirect, preventing negative impacts on ecosystems - via EU environmental impact assessment procedure.</td>
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Source: Kettunen et al., 2014: WP 4 Deliverable 4.1
Tools to support NC/ESS integration – an illustration

**Policy decision-makers needs**

**OBJECTIVES and TARGETS**

**POLICY**
- Agriculture
- Biodiversity
- Fisheries
- Cohesion P.
- Climate
- Water

**INSTRUMENTS & MEASURES**
- Regulation
- NNL
- PES
- Subsidies
- Labelling
- Sp. planning (PAs)

**Assessment TOOLS**
- CBA
- MCDa
- Backcasting

**DATA**
- Surveys
- Scenario tools
- Indicators
- Mapping/GIS
- Visualizations

**Stakeholders: Needs**
(e.g. Identified problems/opportunities on the ground)

Science, Knowledge, Evidence

PROBLEMS/OPPORTUNITIES

EHS reform tool
Ecosystem Services and their value: perceptions

Positive Resonance

1. Nature has multiple values
2. Nature needs conservation: on intrinsic value grounds + for values to people
3. Working with nature useful for many policy objectives – *nature based solutions*
4. Integration in decision making is critically important: mainstreaming

Some Dissonance – potential missed interpretations

1. Intrinsic value vs anthropocentric values
2. Valuation is interpreted as monetary valuation & MBIs preferred response
3. Risks of Commoditisation
4. Risks of eroding biodiversity conservation objective: via focus on ESS (eg PAs)

Good governance:

Care needed to understand synergies and trade-offs, risks and opportunities, meaning of terms & assessment of best instrument (mix). Good science-policy interface essential.
Ecosystem Services and the way forward

1. Understand & build on win-wins – helps policy coherence & cost-effectiveness
   • Major opportunities for mainstreaming ESS remain at both policy & practice
2. Understand and manage trade-offs (minimise/optimise) - good governance
   • Systematic need for assessment and proofing
3. Appreciate the opportunities & risks of tools & concepts – use them with care
   • E.g. ESS: use spatial, qualitative, quantitative and monetary evidence together: understanding of the whole picture is important
4. Stakeholder & public participation and engagement important – for buy-in, understanding and evidence base
5. Develop the evidence base and the science policy interface: IPBES, EU, national levels.
6. Build on lessons from practice & existing & emerging tools: OPERAs & OpenNESS
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