Integrating Ecosystem Services into Environmental Assessment

SESSION 10: Innovative Ways of Reaching Environmental Assessment's Intended Objectives and Outcomes

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Ecosystem Services

"The direct and indirect contributions of ecosystems to human wellbeing"

United Nations Environment Programme & EU (2010)

Overview

- Introduction
- Concept and Rationale
- Valuing Ecosystem Services
- Current Consideration in Ontario, Canada and elsewhere
- Integrating Ecosystem Services into EAs
- Bringing ecosystem services to bear for Ontario EA
- Summary and Key Considerations

Introduction

- Enhance the effectiveness of our practice in order to better fulfill EA's intended objectives and outcomes

- Ontario EA Act:
  - Consider potential environmental effects before an infrastructure project begins
  - Consider all aspects of the environment and systematically evaluate net effects

- In evaluating the effectiveness of an 'innovative' approach we can ask if it:
  - upgrades our EA toolbox >>> more **realistic** and representative characterisation of the environment
  - clarifies conceptual frameworks >>> ensuring EA processes are systematic – i.e. **rigorous**, **pragmatic** and **comprehensive**
  - is **cost-effective**

- Legislative bodies around the world have tried to enhance their EA protocols through considering ecosystem services

Concept / Rationale

- According to their Statement of Environmental Values, the MOECC "…adopts an ***ecosystem approach*** to environmental protection and resource management – considering air, land, water and living organisms…"

- The current CEAA meanwhile, recognises valued "*…**ecosystem components*** …as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance" and which should be included in EAs

- An ecosystem approach doesn't necessarily capture the complex network of interrelated **services** associated with it's individual components. We don't systematically 'Mind the Gap'

- Recent provincial, federal and global efforts to understand and measure ecosystem components have begun to bear fruit.

- Ecosystem Services was defined by the UN Environment Programme and the European Union as: "The direct and indirect contributions of ecosystems to human wellbeing" (2010)

Ecosystem Services and Natural Capital

Such contributions can be collectively considered as **'natural capital'** >>> limited stocks of physical, biological and cultural resources which support, provide for and regulate human life via:

- **Regulating** services (flood protection, erosion control and moderation of climate)
- **Provisioning** of 'goods' (food, fuel, fiber and clean water)
- **Supporting** services (pollination and soil formation)
- **Cultural** services (recreational, spiritual, public health benefits, etc.)

The Economics of Ecosystem Services and Biodiversity (TEEB)

Valuing Ecosystem Services

- In taking ecosystem services for granted in the pursuit of physical or financial capital, we risk inadvertently - and sometimes irreversibly - eroding the natural capital of human habitats.

- Organisations typically assess the value of their assets / investments through conventional accounting > used to underpin critical decisions and manage risks.

- Many benefits from natural capital not factored into these accounts.

- Range of evolving methods for evaluating ecosystem services > each with a varying degree of uncertainty, trade-offs, pros and cons (as with many natural and social science disciplines)

Valuing Ecosystem Services

One of the more commonly used and easily understood is ‘economic valuation’. That is:

- Understanding the way a decision is likely to influence the environment (qualitative assessment)

- Measuring the associated changes in that environment and their benefits or costs (quantitative assessment)

- Approximating a monetary valuation by integrating data from – for example; market prices, observed behaviour and individuals’ statements of value.

Considering Ecosystem Services

Ontario, Canada and elsewhere

- Environmental Reference Inventory (EVRI) - Ontario-specific information about the economic benefits from ecosystem services and biodiversity

- Useful ecosystem services studies by the Ontario Ministry of Natural Resources and Forestry, conservation authorities and NGOs

- International and alternative approaches:

  – UK National Ecosystem Assessment to analyse the country's natural environment in terms of the benefits it provides to society and economic prosperity > delivering a range of tools and methods to assist decision-makers.

  – Natural Capital Project's InVEST software (USA)

  – Natural Capital Protocol (global, multi-stakeholder): *"standardised framework designed to help generate trusted, credible and actionable information to inform decisions."*

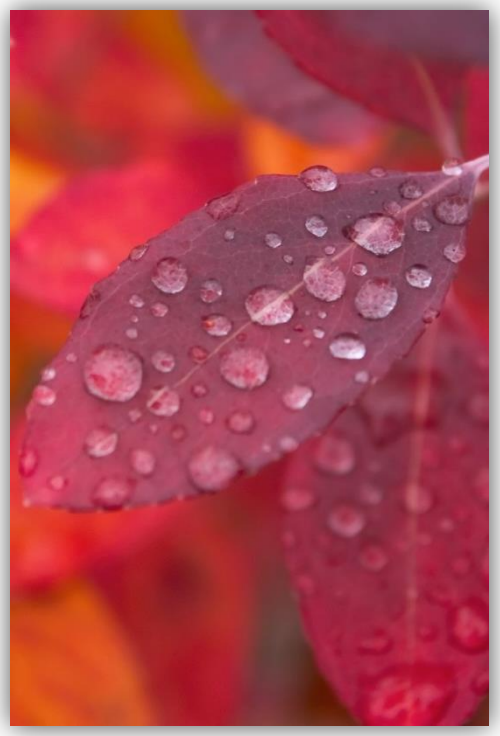
Considering Ecosystem Services

Environmental Assessments

- No policy, protocol or framework for systematically considering and accounting for ecosystem services in Ontario or indeed Canada

- Policies, plans, programs and projects which ignore ecosystem services may be ineffective or lead to unintended / unknown consequences

- By contrast, factoring ecosystem services into EAs can would lead to more comprehensive assessment and decision making processes >>> addressing the numerous mechanisms through which natural capital sustains human well-being.



Considering Ecosystem Services

Environmental Assessments

- Institutions from around the world have tried to address the identification, evaluation and integration of ecosystem services into EA protocols

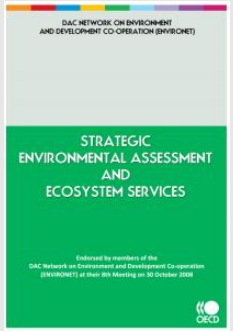
- World Bank's Sustainability Performance Standards simply *reference* the consideration of ecosystem services in ESIA but lack guidance

- Others have gone further…

Evolving Role of Ecosystem Services in EA

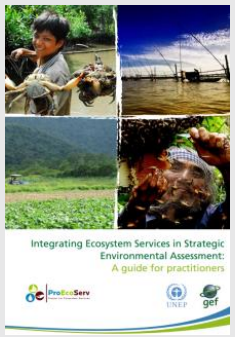
2006 — UN Convention on Biological Diversity: Voluntary Guidelines

2008 — OECD: Guidelines on SEA and Ecosystem Services



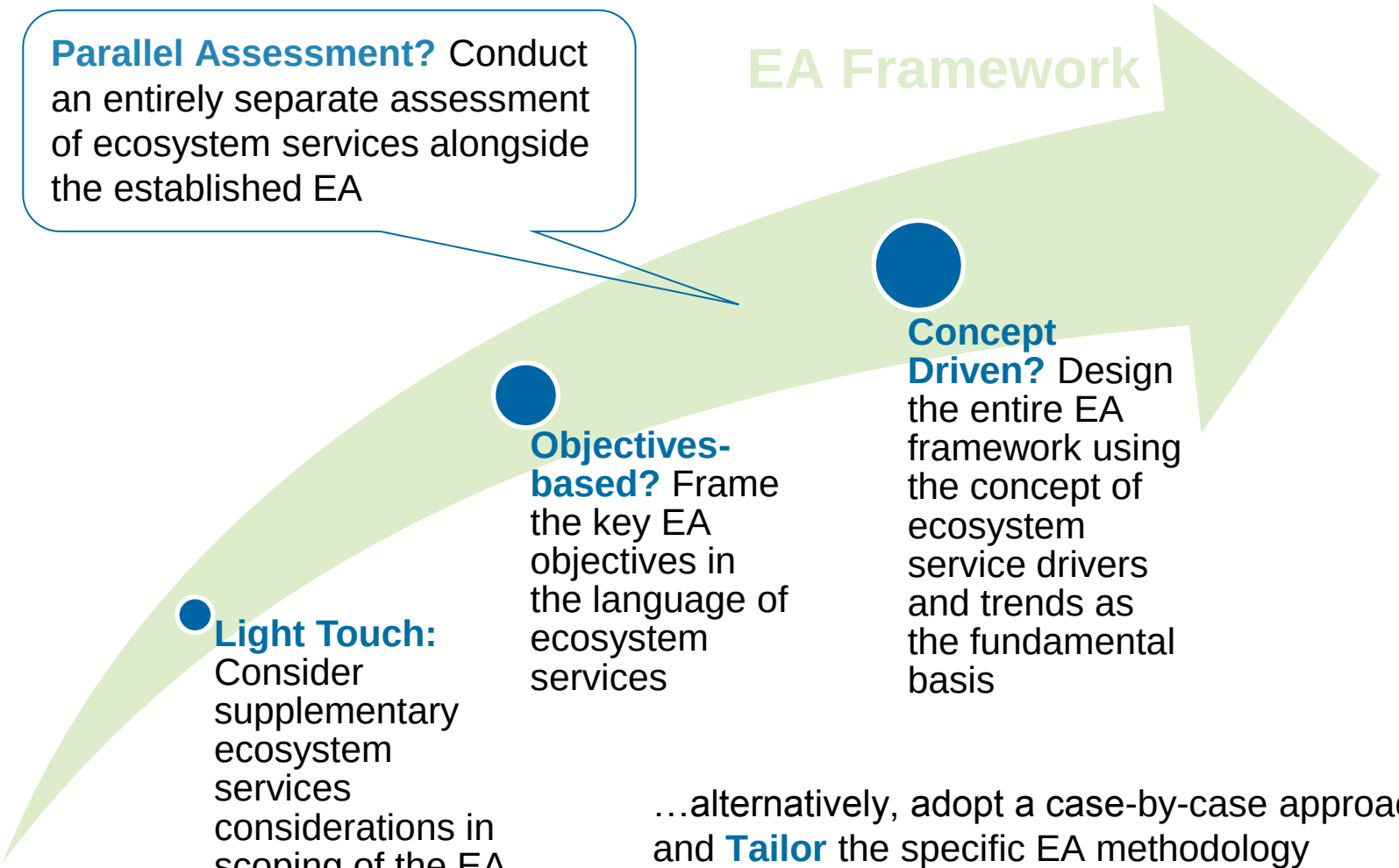
2012 — World Resources Institute: Ecosystem Services Review for Impact Assessment

2014 — UNEP: Integrating Ecosystem Services into SEA



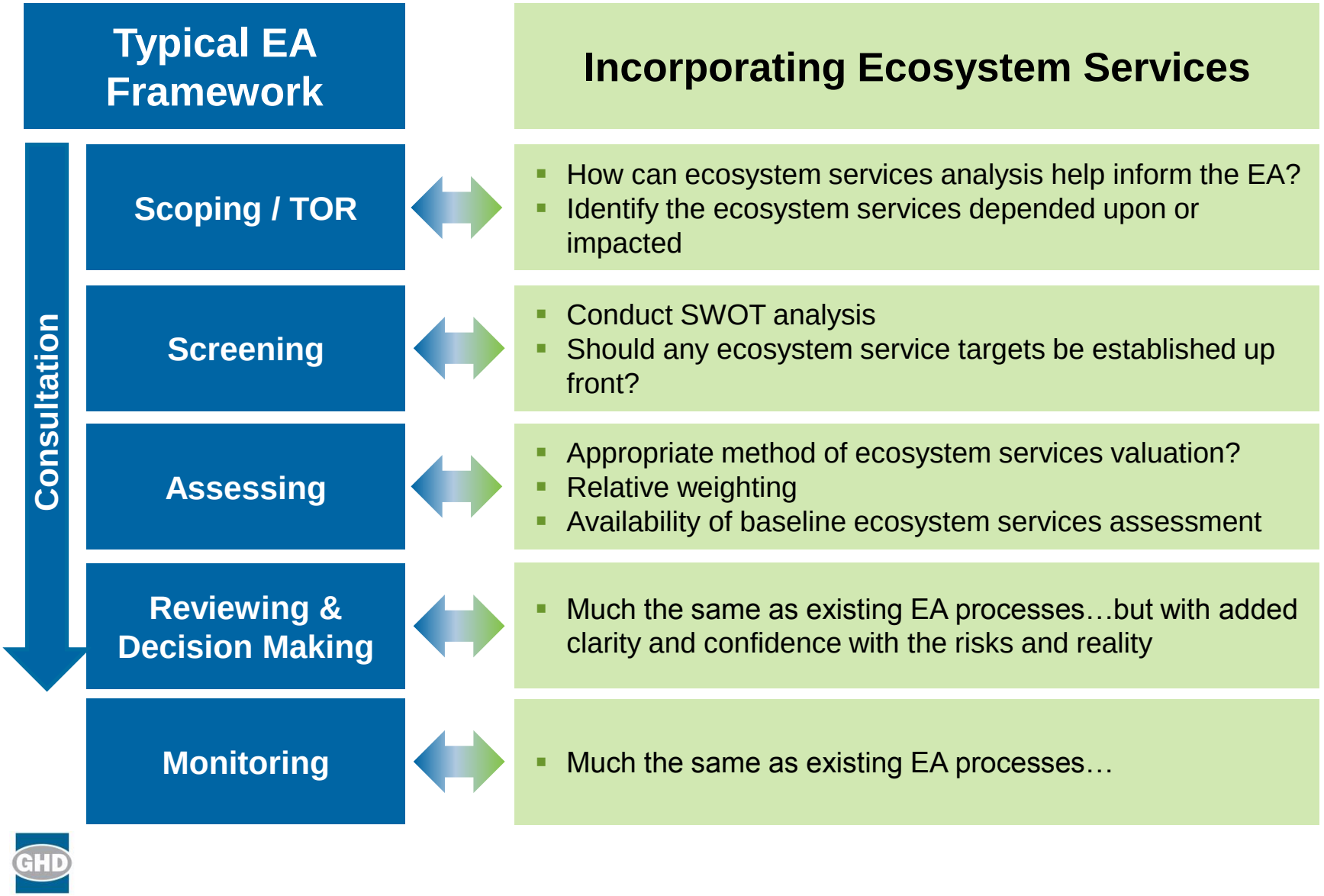
Integrating Ecosystem Services into EAs

after Baker et al. (2013)



…alternatively, adopt a case-by-case approach and **Tailor** the specific EA methodology accordingly (using elements of the above approaches as appropriate)

Tailoring EA to Incorporate Ecosystem Services



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Evaluating the Effectiveness

Ecosystem Services in EAs

- **Realistic:**
  - Facilitates a deeper understanding of our environment >>> numerous, often hidden mechanisms through which natural capital sustains human well-being

- **Rigorous:**
  - As much as many analytical methods from conventional social and natural science
  - Sound, tried & tested experience with established protocols elsewhere – the Natural Capital Protocol, InVEST, etc.

- **Pragmatic:**
  - Incorporation of ecosystem services need not require a complete reset of EA practice in itself >>> incremental changes to EA codes of practice and protocols.
  - Organisations can determine if/when/how it is appropriate to incorporate ecosystem services – on a project-specific or wholesale manner
  - Many of the staff in our organisations and schools already have a great deal of the capacity to facilitate this process.

Evaluating the Effectiveness
Ecosystem Services in EAs

- ***Comprehensive*** (Broadly applicable):
  - A range of approaches for incorporating ecosystem services into EA, from a light touch, to a tailoring process or a comprehensive concept-driven approach.
  - Perhaps most suited to large-scale policy, planning and SEA methods to provide an enhanced evidence base by which to inform decision-making.
  - Project-specific EA could then simply try to assess the net contribution of an undertaking to natural capital stocks.

- ***Cost-effective:***
  - Economic valuation of ecosystem services is part and parcel of determining the true costs/benefits of a given project – ignorance of unidentified costs/benefits doesn't really help achieve EA's intended objectives and outcomes
  - Adoption or adaptation of such methods for a Canadian-specific suite of free (at the point of the user), open-source tools, protocols and models
  - Economies of scale by pooling resources into a periodic, collaborative initiative for evaluating baseline natural capital and by producing open-source tools

Summary and Key Considerations

Challenges:

- Some ecosystem services protocols do not necessarily capture elements outside of the biophysical – i.e. cultural heritage value
- Gaps in awareness and knowledge about how to use ecosystem service valuation – multidisciplinary. No silos please!
- Lack of policy or legislative drivers for incorporating ecosystem services and limited natural capital accounting standards
- Potential for controversy / push-back in terms of putting an economic value on ecosystem services

Opportunities:

- Climate change – carbon pricing. We're doing it!
- Current reviews / revisions to EA frameworks – EA Act, IO Class EA, Municipal Class EA – SEA Directive?

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