Valuation and WAVES: A PTEC project

Presented by: Giles Atkinson, London School of Economics
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Wealth Accounting and the Valuation of Ecosystem Services www.wavespartnership.org
Motivation: Two Houses Divided? …

Economic accounting (SNA)

- Economic activity as endpoint to be measured
- Exchange value as valuation principle
- Emphasis on transactions between buyers and sellers
- Crucial focal point in novel extensions to e.g. ecosystem accounting and accounting for value of ecosystem services

Economic appraisal (CBA)

- Social welfare as endpoint of analysis
- Welfare value as valuation principle
- Valuation methods tend to focus on valuing demand for e.g. ecosystem services
- Wealth accounting (e.g. World Bank, various, UNU-IHDP/ UNEP, 2012, 2014) as ‘macro-’ scale counterpart of this approach
SEEA and Ecosystem Services & Goods

Ch. 5 of UN (2013) provides good description of valuation challenge

- Public good nature of ecosystem services (or assets giving rise to these)
- TEV framework and ES framework (i.e. P-R-C)
- Candidate valuation methods from environmental economics
- Consistency of welfare and exchange values

... What sort of story might a revised “Ch. 5” craft that might be more definitive and compelling for its intended audience?

This Project

The people

- **PTEC:** Carl Obst, Jeff Vincent, Bram Edens, Giles Atkinson
  - But also Robert Smith, Michael Vardon, Kirk Hamilton

- **WAVES/ World Bank:** Sofia Ahlroth, Glen-Marie Lange, Juan-Pablo Castanada
  + reviewer panel of experts drawn from economics and accounting

The project stages & outputs

1. **The value of ecosystem services**
   - Exchange values and welfare values: guidance/ suggestions for a way ahead
   - Public goods, externalities and the SNA
   - (Implicit) exchange values for levels of ecosystem services consumed
   - Trace ways in which ecosystem services enjoyed by firms and households to determine appropriate (SNA-consistent) valuation methods

2. **Wealth accounting**
   - Valuing ‘future’ flows of ecosystem services and ecological capital
### Accounting for the Value of Ecosystem Services: The Problem

#### Exclusive vs. Non-exclusive

<table>
<thead>
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<th>Rival</th>
<th>Non-rival</th>
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| • Various ecosystem goods  
• Ecosystem services effects contained in property ownership  
• Recreation on congested, contained properties | • Ecosystem goods in uncontained ecosystems  
• Natural pest control and pollination services  
• Ecosystem services realised in quality of rival goods (e.g. water regulation, waste assimilation)  
• Recreation on congested, uncontained properties |
| • Recreation on uncongested, contained properties | • Equable climate  
• Air purification  
• Recreation on uncongested, uncontained properties |

Source: adapted from Vincent (2015)

Source: adapted from Brown et al. (2007)
Accounting for the Value of Ecosystem Services: The Problem

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<th>Pathway for ecosystem service ((q)) as an economic input</th>
<th>Explanation</th>
<th>Examples</th>
<th>Valuation methods</th>
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<td>(x = x(K, q))</td>
<td>Ecosystem good or service is an input to production along with other factors</td>
<td>• Waste disposal services  • Non-renewable and renewable ecosystem goods  • Water quality</td>
<td>Production functions</td>
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<td>(u = u(x_1, z, q))</td>
<td>Households choose level of ecosystem service via purchase of (heterogeneous) market good: i.e. (x_2 = p(z, q))</td>
<td>• Amenity value  • Local air quality,  • Recreational opportunities  • Non-use value reflected in purchases and donations</td>
<td>Hedonic methods (e.g. property markets)</td>
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<td>(u = u(x_1, z(x_2, q)))</td>
<td>Households choose level of ecosystem service to enjoy via purchase of complementary market good (or substitute market good)</td>
<td>• Recreation,  • Water quality  • Air quality</td>
<td>Travel cost, defensive expenditures</td>
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<td>(u = u(x_1, x_2) + q)</td>
<td>Households enjoy ecosystem service unrelated to any purchase of market good</td>
<td>• “Pure” non-use  • Equable climate</td>
<td>Contingent valuation, (discrete) choice experiment</td>
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Source: adapted from Day & Maddison (2015)
Further Issues

Some additional issues

What gets left out ... and does it need to be?
- Human health and ecosystem goods and services: exchange values and health-wage risk?

Putting valuation methods in their place?
- Example: When could a stated preference method be used in place of another approach (e.g. hedonic pricing) ... if more straightforward and reckoned to be represent an (implicit) exchange value?
- Role of cost-based approaches?

A Hierarchy of questions?

Consistency exchange values:
- Is imputed economic value consistent with exchange value?

Further technical considerations:
- Are there other practical criteria that must be satisfied before values can be considered robust?

Processes and procedures for valuation
- Are accounting consistent/robust values transparent, capable of scrutiny, replicable etc.?
THANK YOU

Thank you!