



## Valuation and WAVES: A PTEC project

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Wealth Accounting and the Valuation of Ecosystem Services [www.wavespartnership.org](http://www.wavespartnership.org)



# Motivation: Two Houses Divided? ...

## Economic accounting (SNA)

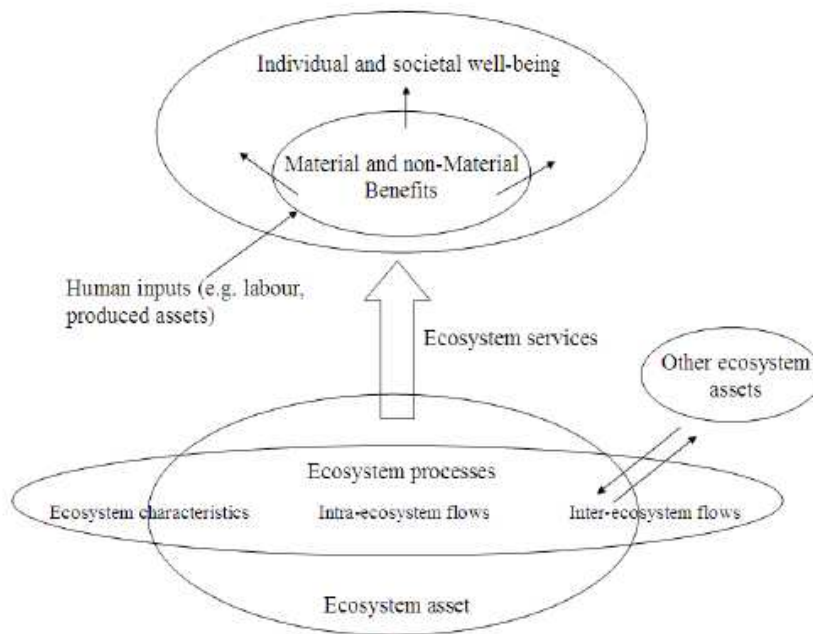
- Economic activity as endpoint to be measured
- Exchange value as valuation principle
- Emphasis on transactions between buyers and sellers
- Crucial focal point in novel extensions to e.g. ecosystem accounting and accounting for value of ecosystem services

## 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



Source: United Nations (2013)

**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**

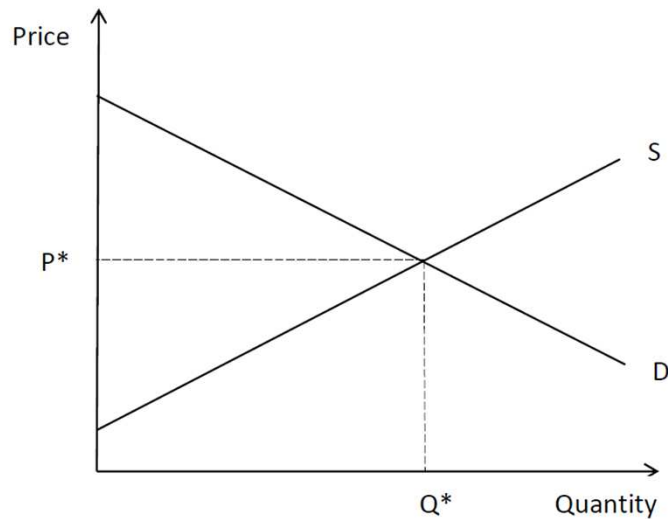
- Public goods, externalities and the SNA
- (Implicit) exchange values for levels of ecosystem services consumed
- Trace ways in which ecosystem services enjoyed by firms and households to determine appropriate (SNA-consistent) valuation methods

### 2. Wealth accounting

**Valuing 'future' flows of ecosystem services and ecological capital**



# Accounting for the Value of Ecosystem Services: The Problem



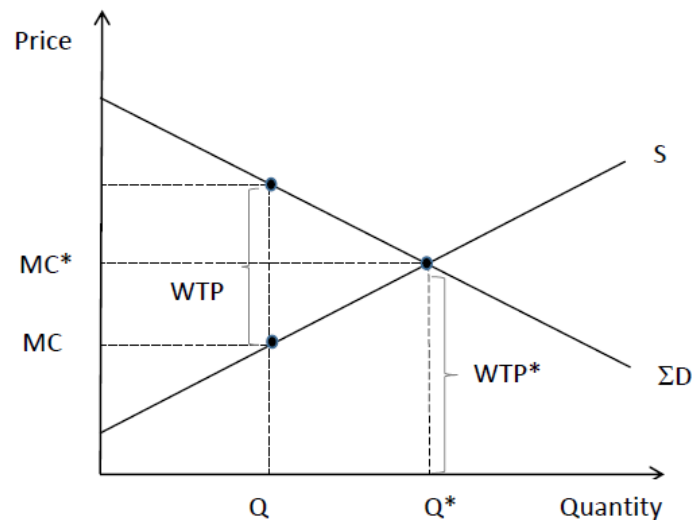
Source: adapted from Vincent (2015)

	Exclusive	Non-exclusive
Rival	<ul style="list-style-type: none"> <li>• Various ecosystem goods</li> <li>• Ecosystem services effects contained in property ownership</li> <li>• Recreation on congested, contained properties</li> </ul>	<ul style="list-style-type: none"> <li>• Ecosystem goods in uncontained ecosystems</li> <li>• Natural pest control and pollination services</li> <li>• Ecosystem services realised in quality of rival goods (e.g. water regulation, waste assimilation)</li> <li>• Recreation on congested, uncontained properties</li> </ul>
Non-rival	<ul style="list-style-type: none"> <li>• Recreation on uncongested, contained properties</li> </ul>	<ul style="list-style-type: none"> <li>• Equable climate</li> <li>• Air purification</li> <li>• Recreation on uncongested, uncontained properties</li> </ul>

Source: adapted from Brown et al. (2007)



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	Pathway for ecosystem service ( $q$ ) as an economic input	Explanation	Examples	Valuation methods
Production	$x = x(K, q)$	Ecosystem good or service is an input to production along with other factors	<ul style="list-style-type: none"> <li>• Waste disposal services</li> <li>• Non-renewable and renewable ecosystem goods</li> <li>• Water quality</li> </ul>	Production functions
Consumption	$u = u(x_1, z, q)$	Households choose level of ecosystem service via purchase of (heterogeneous) market good: i.e. $x_2 = p(z, q)$	<ul style="list-style-type: none"> <li>• Amenity value</li> <li>• Local air quality,</li> <li>• Recreational opportunities</li> <li>• Non-use value reflected in purchases and donations</li> </ul>	Hedonic methods (e.g. property markets)
	$u = u(x_1, z(x_2, q))$	Households choose level of ecosystem service to enjoy via purchase of complementary market good (or substitute market good)	<ul style="list-style-type: none"> <li>• Recreation,</li> <li>• Water quality</li> <li>• Air quality</li> </ul>	Travel cost, defensive expenditures
	$u = u(x_1, x_2) + q$	Households enjoy ecosystem service unrelated to any purchase of market good	<ul style="list-style-type: none"> <li>• “Pure” non-use</li> <li>• Equable climate</li> </ul>	Contingent valuation, (discrete) choice experiment

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!

