Valuing the Health and Wellbeing Benefits of Ecosystems

David McNeil, European Centre for Environment and Human Health
Introduction

• Evidence base for health benefits of ecosystems growing
• Lack of robust valuation methods for health in ES/GI
• Subjective nature of wellbeing/socio-cultural benefits
• Wellbeing industries and information contingency
• Decision analysis, data mining and stakeholder valuation
• Collaborative approaches in action: The Blue Gym concept
‘Opening up’: How can ES Approach improve our understanding of the links between individual and environmental determinants of health?

‘Closing down’: How can the health and wellbeing benefits of ecosystems be incorporated within decision-making processes?
The ‘Ecosystem Approach’ to Human Health and Wellbeing

Determinants of human wellbeing are **multi-dimensional**
Ecosystem Services

Multiple scales

Multiple benefits

Multiple beneficiaries  (Boyd and Banzhaf, 2007)
Ecosystem Services

- Recognising ‘neglected’ public goods in decision-making
- Increasingly contextual approach to analysing environmental management for human wellbeing
- Tension between ‘social values’ and standardised accounting
- Trade-offs? Some services more amenable to valuation
- Few business support systems account for a range of ecosystem services in their operations (WRI, 2012)
Direct benefits (physical/mental health)

Indirect benefits (interaction/recreation)

Reduction in threats from pollution/vector-borne diseases
eg. Morecroft *et al.* 1998; Pitcairn *et al.* 1998; Bignal *et al.* 2004
Other Approaches

• **Happiness data** for environmental valuation

• Individual’s self-rated happiness as a function of their income and prevailing environmental conditions (Welsh and Kuhling, 2008)

Some Issues:

• Relatively small sample sizes/study areas

• General lack of longitudinal data on behavioural change

• **Unobserved heterogeneity**
Private evaluation of health states (e.g., Cost-Effectiveness Analysis) often ineffective for evaluation of public health:

- Individual and social preferences may differ in many cases
- Coping behaviour of individuals may reduce preventative measures
- Judgements require experience, time and information

Social policy should aim to maximise possibility of pursuing individual goals, rather than defining these goals (Hausman, 2010)

Capability Approach? (Sen, 1985)
**Capability Approach** and ecosystem services

- Environmental factors neglected area of CA

- Preference **construction**?

- How is information relayed?

(Polishchuck and Rauschmodyer, 2011)
Move beyond cost-effectiveness/informal judgement to ‘value’ in HTA assessment (eg. NICE criteria)

Equity/fairness?

Multiple indicators of physical/mental/subjective wellbeing emerging

Need to look beyond established communities of interest in the health sector (Thaler and Sunstein, 2008)
Valuing Health and Wellbeing

**Credence Goods**

- Benefits difficult or impossible for consumer to ascertain
- Must rely on experience of others or trust in provider/seller (e.g., doctor, nutritional information)

**Experience Goods** (Sloan, 2003)

- Value established through repetition and familiarity (e.g., green exercise)
• Health is an **information-contingent** good, predominantly allocated through price or authority signals

• Price signals supposedly correct imperfect knowledge of agents

• Ecosystems are (in general) public goods, and may have positive influences on health and wellbeing
Health and Wellbeing Industries

- Cross-section of multiple activities across multiple sectors
- Rapid growth in coming decade- overtaking medical healthcare in GVA

Global Wellbeing Industry, 2010 ($Bn USD)

- Workplace wellbeing: 30.7
- Medical tourism: 50
- Spa: 60.3
- Wellness tourism: 106
- Complementary & alternative medicine: 113
- Preventative/personalised health: 243
- Healthy eating/nutrition and weight-loss: 276.5
- Fitness and mind-body exercise: 390.1

- Process of ‘creative destruction’ (Schumpeter, 1934)
- Value predominantly based on excludability of information…
Health and wellbeing arises from consumption of market, social or ecosystem goods and services

- Health promotion increasingly business-led

- Individuals seek to maximise the ‘wellbeing value’ of their consumption decisions (eg. food choices)

- Workplace health schemes: need for a stronger evidence base

- Growth of nature-based and health-based tourism
Market Segmentation Approaches

• Increasing interest in public health/social marketing
• A dynamic multi-criteria problem - learning by observation
• Customers in a segment display similar characteristics
• Also respond in a similar way to the ‘marketing mix’ of goods or services

Multi-Criteria Decision Analysis

• Definition, weighting and scoring against objectives for alternative projects
• Incorporating qualitative and qualitative evidence
• Valuation as a process of preference construction/information exchange
Multi-Criteria Decision Analysis as a H&WB Valuation Tool

- Weighting/veto thresholds can provide ‘crisp’ behavioural data
- eg. response clustering
- Analytic Network Process (ANP) (Saaty, 1996) makes interactions between criteria explicit for responses
- Correspondence Analysis (CA) data mining techniques can provide greater analytical rigour

(Bottero and Mondini, 2003)
Clustering MCDA responses using weights (after: DeEste, 2009)

Criteria

- Project cost
- Degree of life health gain (QALYs)
- Environmental impact
- Pre-existing condition

Individuals

Environmental Impact cluster

Mean

% % %

%
Spatial Element of Decision Alternatives:

- **Action** (what to do?)
- **Location** (where to do it?)

The spatial component of a decision alternative can be considered either implicitly or explicitly.

“Innovation is about interaction with **context**” (Bessant, 2012)
Combining MCDA with Spatial Modelling

• Increasing importance of GIS within ES Approach

• Capturing environmental and contextual determinants of health and wellbeing

• Can provide insights into environment and behaviour

• GIS-MCDA wellbeing study in British Columbia (Bell, et al. 2007)

• Applications of MCDA to Adaptive Management
Strategic Bridging

- Natural environment as a ‘common’ health and wellbeing resource
- Freer exchange of information may lead to optimal public-private outcomes for knowledge-based goods such as health
The Blue Gym  (Depledge and Bird, 2009)

• Established restorative value of nature for physical and mental wellbeing  (eg. Kaplan and Kaplan, 1989)

• Positioning seas and coastal regions as a health and wellbeing resource- positional/disruptive innovation

• Ecosystem Services approach- multiple benefits

• Building an evidence base for ‘Blue space’

• Collaboration with tourism industry/social enterprise/public sector

• On-going evaluation using SRoI/MCDA
• Health and wellbeing arises from consumption of market, social or ecosystem goods and services

• Ecosystem Services Approach useful for lowering barriers to entry- disruptive innovation in the wellbeing sector

• Better exchange of information is key- valuation can help

(Tidd and Bessant, 2009)
Thanks for listening
david.mcneil@pcmd.ac.uk