WHY ECONOMIC VALUATION (OF ECOSYSTEM SERVICES)?

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Outline

• Many big resource conflicts beg for knowledge of people’s preferences/values
• There is a slow train moving towards more economic valuation
• How can valuation research become more relevant for real decisions?
Loss of nature last 100 years

What do we know about this loss and if it was worth it?

Nature with wilderness-like qualities, more than 5km from technical installations
Coastal transport is on the rise....

Coastal transport May 2015 (all traffic except fishing boats), Automatic Identification System (AIS) data, Norw. Coastal Authorities
..and occasionally disaster strikes....

«Full City» grounded off Langesund, South coast, summer 2009, ca. 300 tons of crude oil in prime recreation areas

...or is just avoided...

«Tide Carrier» grounded off coast of Jæren 22. February 2017
Massiv utlysning av oljeløpere

Regjeringen utlyser rekordmange nye leieblokker i Barentshavet i konsesjonsrunden. Miljøbevegelsen raser og mener oljem青岛ene skal avbrytes.

Nyheter Olje

**Fillerister statens kalkyler**

Statens egne lønnsomhetsberegninger i forkant av den pågående oljeleidingen i Barentshavet er faglig uholdbare. Det er påstanden fra samfunnsøkonomiprosessor Knut Einar Rosendahl og Mads Greaker ved Statistisk sentralbyrå.
June 2017

National plan for wind power development

- Where to locate new wind power projects?
- How large and how many?
- How visible?
- Current planning process – to be finalised in 2018
- Will result in a proposed map
MANY MORE CURRENT EXAMPLES (JUST THE LAST 6 MONTHS...)

Regjeringen godkjenner felling av 26 ulv utenfor ulvenesonen

Milenonens som bygger sjømatnasjonen

Reiselivsdirektør: – Vil ikke anbefale turister å reise til Lofoten om sommeren

– Repparfjorden er ingen søppelfylling

Miljøbevegelsen lar seg ikke vippe av pinnen.

Statnett snart halvveis i utbyggingen

Statnett har kommet nesten halvveis i den størstilte oppgraderingen av hovedstrømnnettet i Norge. Til sammen skal det investeres 50-70 milliarder kroner.
The point is of course....

• **Not** that all environmental impacts should be avoided – only that they should be accounted for equally in economic analysis of trade-offs

• Too many big decisions are made with no explicit knowledge of the full welfare impacts on those affected

• Only by «coincidence» would current planning processes and regulations «internalise externalities» of economic activities

• In any case – all decisions give implicit values to effects that are traded off. Much better to make values explicit!
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We have the tools to help out...

- We can find out the sum of what people are willing to give up of other goods and services (income) to obtain more of an ecosystem service

- And with the ecosystem service framework, it is possible to better include them in comprehensive economic analysis

- And to actually improve the information basis for the decisions – big and small
Total Economic Value of Nature Goods & Services

Use Values
- Direct Use Values
  - Direct consumption
    - Food
    - Biomass
    - Recreation
    - Health
  - Indirect Use Values
    - Functional benefits
      - Ecological functions
      - Flood control
      - Storm protection

Option Values
- Future direct & indirect use values
  - Biodiversity
  - Conserved habitats

Non-Use Values
- Bequest Values
  - Value of leaving use- and non-use values for future generations
    - Habitats
    - Irreversible changes
    - Cultural heritage
    - Landscape aesthetics
- Existence Values
  - Value of knowledge of continued existence
    - Habitats
    - Endangered species
    - Cultural heritage

Values increasingly intangible
ECONOMIC VALUES AND METHODS

TOTAL ECONOMIC VALUE
(of a change in BD or ES flow)

<table>
<thead>
<tr>
<th>USE VALUE</th>
<th>NON-USE VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIRECT</td>
<td>INDIRECT</td>
</tr>
<tr>
<td>EXISTENCE VALUE</td>
<td>BEQUEST VALUE</td>
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Market prices
Avoidance, mitigation, restoration costs
Production/damage function approach
Revealed preferences (travel costs, house prices)
Stated preferences (willingness to pay)

Value certainty?
Value coverage?

Value certainty?
Value coverage?
Slow train moving...

• There are stricter requirements now for CBA in most sectors («utredningsinstruks»)
• Departments and directorates are asking for more environmental valuation
  - Public Roads Administration
  - Railway directorate
  - Environment Agency
  - Coastal Authorities
  - Statnett (network company)
  - Others

• Some are ambivalent/not sure, but may have to do more soon
• Research programs (NFR) more open for environmental valuation
• Nordic Council of Ministers etc.
SOME RECENT PRACTICAL EXAMPLES
More examples

- Value transfer for Ecosystem Services affected by changes in hydro power regulations
- Costs of alien species – using an Ecosystem Service approach
More examples

• Value transfer/hedonic pricing of values for avoiding overhead transmission lines

• Valuation study (Contingent valuation) of ES affected by accidental oil spills from ships
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Challenges & opportunities for economic valuation

- Usefulness & suitability of economic valuation depends on purpose:
  - Awareness raising (reviews, stories, illustrations)
  - Green accounting (ex: green national accounts)
  - Priority-setting (ex: Cost-benefit analysis, trade-off analysis)
  - Instrument design (setting incentive levels, targeting user groups)
  - Litigation (damage & compensation claims)

Sources: Adapted from David Barton, NINA, Navrud and Pruckner (1997)
Is monetary valuation fit-for-purpose? What accuracy is needed?

Source: David Barton, NINA
If we have values – how to «mainstream»?

Source: Daily et al 2009
Classic critiques from practitioners and skeptics need serious responses and more research

• When moving from awareness raising to uses that are more «committing»
  - For example CBA, incentive design and litigation?

• How to deal with lack of knowledge and data on quantitative impacts on ES?
  - Not possible to wait for the whole truth to come to us

• Some challenges of stated preferences:
  - Hypothetical bias is there for sure, but how large? How to deal with it?
  - Design choices may have relatively large impacts (e.g. one-time vs annual payment)
  - Are non-use values «real» and if so how large («how to define our market»)
  - The value of this project compared to all possible projects...?
  - Temporal stability – and what to say about values over time?

→ Can we be sure to say that «our numbers are better than no numbers»?
Classic critiques from practitioners and skeptics need serious responses and more research (2)

• Some challenges of revealed preferences:
  - Captures real behaviour yes, but not the non-use values
  - Data intensive and highly sensitive to econometric assumptions (same as for stated preferences)
  - Not very easy to use

• For any valuation method: No way around being explicit about uncertainty and sensitivity of valuation estimates
  - Dear we say how close we think we are to the truth?
  - How robust is our estimates over time and space?
  - Can we find similar values using different methods (triangulation)?
  - Is the uncertainty acceptable for the current use of the value information?

• Note: it is unfair to demand higher level of accuracy for environmental values, than for other costs and benefit estimates (that are often uncertain too)
In conclusion

• Explicit environmental valuation is currently largely absent from the «big» decisions
• There is some movement on the ground (for «smaller» decisions)

• For valuation research to become more relevant, we must deal with several issues:
  - Dear to do more policy-relevant, committing valuation work – not just metodological tests for papers and awarenewss raising
  - Concerns and critiques of our methods cannot just be brushed aside
  - More research and practical valuation work is needed

• No way around dealing explicitly with accuracy and uncertainty for different uses of valuation information
• At least: Good valuation research can «narrow the bound of ignorance»