The Environmental Valuation Reference Inventory (EVRI): A Tool to Support Policy Decision-Making and Cost-Benefit Analysis

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What’s wrong in that CBA?

Fictive Development Project: Oversimplified Mining Inc.

<table>
<thead>
<tr>
<th>Cost-Benefit Analysis Summary Table</th>
<th>(NPV at 7% over 30 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Capital Investment (1st year)</td>
<td>$3.8 billion</td>
</tr>
<tr>
<td>O&amp;M Costs</td>
<td>$4.4 billion</td>
</tr>
<tr>
<td>Revenues from Mining Activities</td>
<td>$12.8 billion</td>
</tr>
<tr>
<td>Government Revenues from Taxes &amp; Royalties</td>
<td>$800 million</td>
</tr>
<tr>
<td>Jobs created</td>
<td>500 1st year / 300 after</td>
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By the way, a 200 hectare wetland will be destroyed and forever converted into a toxic tailings pond. The associated impacts were not monetized.
Policy Decision-Making and Environmental Valuation

• In principle, non-monetary impacts should be given proper consideration in decision-making process

• Providing a qualitatively description of environmental impacts may be relevant to inform decision-making, but...
  • Claiming “unquantifiable” or “infinite” value may result in implicit value of $0
  • Risk that if qualitative considerations not properly communicated, decision-makers’ attention may focus only on CBA summary table

• This stresses the importance of conducting environmental valuation in order to better integrate ecological considerations into the decision-making process

• Environmental valuation is more interested in measuring the relative utility of ecological goods and services for the purpose of weighting trade-offs rather than estimating the precise intrinsic value
Challenges Associated with Environmental Valuation

Environmental valuation of policy impacts requires analysts to:

- Find appropriate baseline information
- Develop robust dose/exposition-response functions
- Establish links between ecological impacts and economic dimensions
- Estimate the monetary value of impacted ecological goods and services

Possible solution: **Conduct primary analysis** (survey, on-site study, etc.)
- This type of analysis is advisable and more accurate, but is generally long, costly and resource-intensive

Another possible solution: **Use benefit transfer**
Benefit Transfer

- Using values from a previous study to apply them to a policy context
  - Example: using the findings of a recent study on the value of ecosystem services provided by a wetland – with similar ecologic characteristics to our policy site – to generate an estimate of the foregone benefits due to the conversion of a wetland into a tailings pond

- Quick, cheap... and probably better than presenting no values

- However, benefit transfer is no “magic cure”, and limitations should be properly acknowledged

- Applying logic and rigour is necessary at each step of benefit transfer. Analysts should be aware of the adjustments to be made, transparent with regards to assumptions, and humble about the precision of results

- In addition, analysts should seek the advice of biologists and ecologists
# Benefit Transfer Techniques

<table>
<thead>
<tr>
<th></th>
<th>Value Transfer</th>
<th>Function Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data from a single study</td>
<td>Single Point Estimate</td>
<td>Simple Function</td>
</tr>
<tr>
<td>Data from many studies</td>
<td>Average Estimate</td>
<td>Meta-Analysis</td>
</tr>
</tbody>
</table>

- The selected benefit transfer technique depends on available resources and data, as well as on the analyst’s objectives.

- However, regardless of the selected technique, the analyst needs to find relevant studies to transfer values from, which can be time-consuming...

- **Is there any place where we could easily find information about values and functions for benefit transfer?**
Environmental Valuation Reference Inventory (www.evri.ca)

- A compendium of summaries of studies providing contextualized monetary values of ecological goods and services

- With about 4,000 study summaries online (about 1,400 for the USA), EVRI is the largest database of its kind in the world – 290 new studies entered in 2014-15

- U.S. EPA and Environment Canada created this database in early 1990s

- Many leading environmental valuation experts contributed to its development, including J. Loomis, W. Adamowicz, W. Desvousges, J. Shogren, A. Krupnick, etc.

- EVRI was originally created in response to the need to compile the findings of environmental valuation studies in a common space
  - Originally intended to facilitate benefit transfer by policy decision-makers
  - Largely used and supplemented by academic experts
  - EVRI serves as a “bridge” between the providers of knowledge (mainly academics) and the end-users relying on this information to support their work (mainly policy decision-makers)
How is EVRI Useful?

- To quickly find values of ecological goods and services
- To identify studies that can be used to apply benefit transfer
- To conduct empirical literature review of environmental valuation studies
- To learn more about non-market valuation techniques
- To compile studies for meta-analysis purposes

Access is free for residents of the United States, Canada, Mexico, United Kingdom, France, Australia and New Zealand

These 7 countries financially support the operations of EVRI

Environment Canada is now exploring opportunities to secure global access
Some Important Remarks...

- **EVRI is not a substitute for expert judgment.**
  The analyst will have to demonstrate economic rigor and apply the necessary adjustments for benefit transfer. We highly recommend consulting the original publication in order to take full advantage of reading the footnotes.

- **EVRI does not evaluate the quality of the original studies.**
  Although studies in EVRI have to meet some minimal quality standards, the analyst has to decide whether a specific study is suitable for their research needs.
  Grey literature may sometimes be the only existing source of information and could be sufficient to meet the specific needs of an analyst.

- **EVRI is not a «black box» generating dollar values to paste into a report.**
  EVRI is only meant to simplify the search for environmental values and to properly contextualize them.
Search Example

Step 1:
Use 1 of the 3 different search modules

Step 2:
Define search criteria

Step 3:
Screen search summary and keep relevant results

Step 4:
Save and/or export search results (optional)
Content of a Study Record

1) Source
Bibliographical Information

2) Area
Study Location
Substitute Sites
Demographics

3) Focus
Env. Assets Valued
Extent of Change
Source of Stressors

4) Method
Type of Study
Sources of Data
Survey Information
Valuation Technique
Functions/Equations

5) Values
Estimated Values
Discount Rate
Currency and Year

6) Abstract
Summary of Findings
What are the Challenges and Future Projects?

- **Evolving context:**
  - EVRI originally designed for “unit value” transfer, but trend is moving towards meta-analysis
  - Increasing pace of publication in the environmental valuation discipline

- **Upcoming website re-vamp (expected by the end of 2015):**
  - Redesign visual interface
  - Simplify registration process and user access
  - Improve search functionalities
  - Improve data extraction and capacity to create metabases
  - Increase the visibility of EVRI on the Web (currently unknown by many potential users)

*Should you have comments, questions or suggestions of studies to include into the database, do not hesitate to contact us: evri@ec.gc.ca*