



Environment
Canada

Environnement
Canada

Canada

Improving Policy Analysis and Decision Making in the 21st Century: The EVRI database



<http://www.evri.ca>

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AGENDA

- Who we are in Environment Canada ..
- Why value the environment ...
- The EVRI advantage ...
- Who uses EVRI ... and why ...
- EVRI Content ...
- Review: What they had to say about EVRI...
- Revamp: new website for improved performance
- Conclusion



Who we are in Environment Canada ...

Environment Canada (EC) - Economic Analysis Directorate (EAD)

Our Mandate:

Departmental centre of excellence for development and application of economic concepts and analytical approaches to environmental issues.

Focuses on the development and integration of environmental, economic and social evidence to:

- Provide high quality economic analysis and advice in support of departmental programs and initiatives;
- Support and inform strategic policy options; and
- Improve program and policy instrument design.

Three divisions:

1. Current Analysis and Modeling
2. Regulatory Analysis and Instrument Choice
- 3. Environmental Policy Analysis and Valuation**



Who we are in Environment Canada ...

Environmental Policy Analysis and Valuation

Key Responsibilities:

- Analyze benefits of various environmental policies under consideration by the department.
- Analyze and design market-based instruments for efficient and effective environmental policies.
- Develop tools and models to assist in the valuation of environmental goods and services, including international consortium for the Environmental Valuation Reference Inventory (EVRI)



Why value the environment?

Environmental valuation:

- Specialised field of economics that develops methodologies and techniques to value the environment.
- Supported by a rigorous theory of welfare economics.
- Valuation techniques are used globally to support research, policy development and regulation.



Why value the environment?

Two broad categories of environmental valuation:

- a) **stated preference** – asking people directly how much they would be willing to pay for a change in an environmental good or service (contingent valuation and choice modelling studies)

- b) **revealed preference** – inferring monetary values by observing market prices associated with environmental assets (e.g. travel cost method and hedonic pricing studies).



Why value the environment?

Benefits transfer approach:

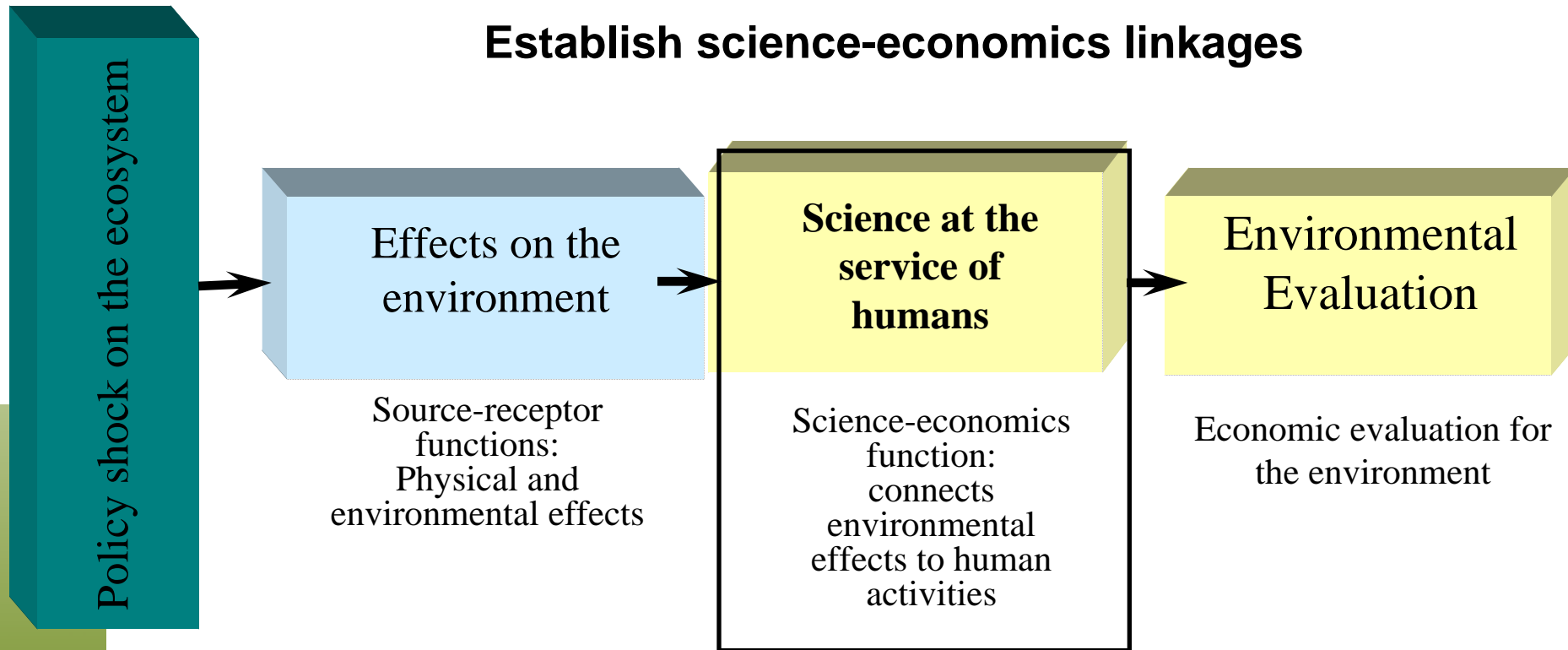
Time-saving and cost-effective approach that uses economic values from previous studies and applies them to address current policy challenges.

Benefits transfer can:

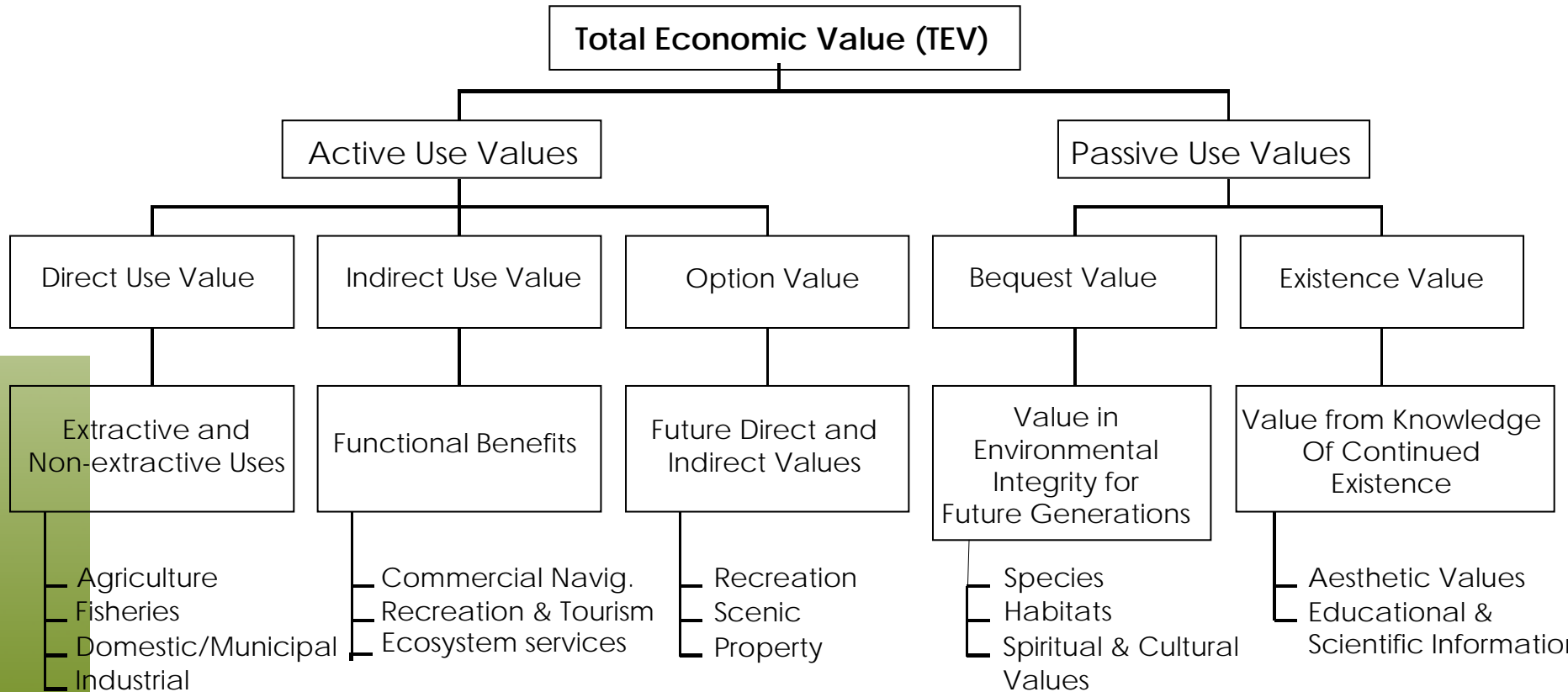
- guide and complement primary valuation research
- help in the design of policy instruments
- provide estimations for cost-benefit analyses and impact assessments, encouraging the internalisation of negative externalities (pollution costs) and appreciation of natural capital tradeoffs.



Why value the environment?



Total Economic Value framework



Decreasing Tangibility of Value to User



Why value the environment?

1999

Pollutant	Impacts	Dose Response	Environment-Economy Links	Economic Valuation
PM	Health	Developed	Developed	Developed
	Visibility	Some evidence	Some evidence	Some evidence
	Material Soiling	Some evidence	Some evidence	Some evidence
	Biodiversity (EG&S)	Unclear	Unclear	Unclear
Ozone	Health	Developed	Developed	Developed
	Agriculture	Some evidence	Some evidence	Some evidence
	Forest (market)	Unclear	Unclear	Unclear
	Forest (non-market)	Unclear	Unclear	Unclear
	Wildlife	Unclear	Unclear	Unclear
	Biodiversity (EG&S)	Unclear	Unclear	Some evidence
Acid Rain	Corrosion (transmission lines)	Unclear	Unclear	Unclear
	Corrosion (Modern infrastructures)	Unclear	Unclear	Unclear
	Corrosion (Heritage infrastructures)	Unclear	Unclear	Unclear
	Forest (market)	Unclear	Unclear	Unclear
	Forest (non-market)	Unclear	Unclear	Unclear
	Recreational fishing	Unclear	Unclear	Unclear
	Commercial fishing	Unclear	Unclear	Unclear
	Remediation (Liming)	Unclear	Unclear	Unclear
	Soil/water habitats	Unclear	Unclear	Unclear
	Wildlife	Unclear	Unclear	Some evidence
Biodiversity (EG&S)	Unclear	Unclear	Unclear	



Why value the environment?

2009

Pollutant	Impacts	Dose Response	Environment-Economy Links	Economic Valuation
PM	Health	Developed	Developed	Developed
	Visibility	Developed	Developed	Developed
	Material Soiling	Very limited	Very limited	Very limited
	Biodiversity (EG&S)	Unclear	Unclear	Some evidence
Ozone	Health	Developed	Developed	Developed
	Agriculture	Developed	Developed	Developed
	Forest (market)	Some evidence	Developed	Developed
	Forest (non-market)	Some evidence	Some evidence	Developed
	Wildlife	Unclear	Some evidence	Developed
	Biodiversity (EG&S)	Unclear	Unclear	Some evidence
Acid Rain	Corrosion (transmission lines)	Developed	Some evidence	Developed
	Corrosion (Modern infrastructures)	Developed	Some evidence	Some evidence
	Corrosion (Heritage infrastructures)	Developed	Some evidence	Some evidence
	Forest (market)	Some evidence	Developed	Developed
	Forest (non-market)	Unclear	Some evidence	Developed
	Recreational fishing	Some evidence	Developed	Developed
	Commercial fishing	Some evidence	Developed	Developed
	Remediation (Liming)	Some evidence	Developed	Developed
	Soil/water habitats	Developed	Developed	Developed
	Wildlife	Some evidence	Some evidence	Developed
Biodiversity (EG&S)	Unclear	Unclear	Some evidence	



Why value the environment?

Clean Air Regulatory Agenda

- EVRI data is extensively used as a source of economic values for environmental components, to estimate the benefits of improved air quality on the environment
- Economic impact models developed or about to be developed to characterize the impact of Ozone, Acid Rain and Particulate Matter on forest, agriculture, visibility, fisheries, etc., including:
 - VOICCE : Value of Ozone Impacts on Canadian Crops Estimator
 - VIEW: Visibility Impacts Estimator of Welfare
 - SCSIE - Soiling Cleaning Savings Impacts Estimator
 - CITTE - Corrosion Impacts on Transmission Towers Estimator



Why value the environment?

Environment Canada partnered with national statistical agency (Statistics Canada) for pilot project to value water resources in Canada

- In 2002, developed framework that identified uses and functions of water in total economic value (TEV) framework and recommended methodologies
- In 2007, Alberta was considering use of valuation study to assist with allocation of water. Validated framework in one of Alberta watershed and include Statistics Canada proceeding with valuation of some functions (e.g. hydro-electric) for water asset account as part of green accounts.



Why value the environment?

Uses	Total Value (1,000 \$)	Water Used (1,000 m3)	Average Value/ 1,000 m3
Agriculture (crops)	\$ 197,640	2,858,760	\$ 69.13
Agriculture (livestock)	\$ 4,310	77,510	\$ 41.69
Agriculture (GHG)	\$ 514	783	\$ 657.12
Domestic	\$ 460,428	211,720	\$ 2.17
Commercial	\$ 42,032	77,000	\$ 0.55
Industrial	\$ 138,066	344,450	\$ 0.40
Hydro-electricity	\$ 38,377	377,540	\$ 0.10
Thermal electricity	\$ 77,636	113,480	\$ 0.68
Mines, gases, oils, minerals	\$ 4,097	?	?
	Total Value (\$1,000)	# of Days of Fishing	Per Day of Fishing
Recreational fishing	\$ 15,444	1,141,640	\$ 13.53
	Total Value (\$1,000)		Per Household
Passive Uses	\$ 21,523	-	\$ 33.24



The EVRI advantage ...

- Free access to all residents of member countries from the “EVRI Club” (AU, CA, FR, NZ, UK and US).
- EVRI Club Principles:
 - To maintain and expand EVRI database for the benefit of member countries
 - To promote the use of valuation
 - To remain accountable for dollars invested
- EVRI Club members key partners to set policy for the EVRI database



The EVRI advantage ...

- Close to 2,200 international studies providing values, methodologies, techniques and theories on environmental valuation;
- Facilitate worldwide development and promotion of environmental valuation using the benefits transfer approach;
- Enhance countries' capacity and efficiency to analyze and measure economic impacts and trade-offs of policy approaches.
- EVRI can:
 - Assist with cost-benefit analysis and full cost accounting;
 - Support environmental and economic decision-making;
 - Contribute to developing sustainable and greater evidence-based policies;
 - Source of important knowledge for the development and application of innovative environmental valuation approaches



The EVRI advantage ...

- Researchers/policy makers in need of a “one stop shop” for benefits transfer
- EVRI recognized as “THE” starting point for defensible benefit transfer studies
- EVRI now includes:
 - Envalue (Australian database)
 - Lincoln University database, Geoff Kerr (Ongoing)
 - Expanding continuously
- Reasonable cost for environmental departments to support EVRI enhancement
(~\$100K/yr spread among all member countries)



Who uses EVRI? Why?

What's in it for you? ...

Government policy makers and analysts

- significantly improve the evidence base behind policy decisions (particularly around non-market impacts); and
- save resources from not needing to conduct new primary studies.

Academic researchers and students

- convenient tool to generate extensive bibliography on economic valuation approaches for environmental components;
- provide state of science in environmental valuation and allow expansion of research effort to develop innovative environmental valuation techniques; and
- tool for teaching benefits transfer techniques

Private sector

- provide quick assess to values or know-how on sound valuation approaches;
- save resources from not needing to conduct new primary studies



EVRI Content ...

By geographic area:

• North America	1,211
• Europe	621
• Asia/Oceania	304
• Africa	55
• South America	41

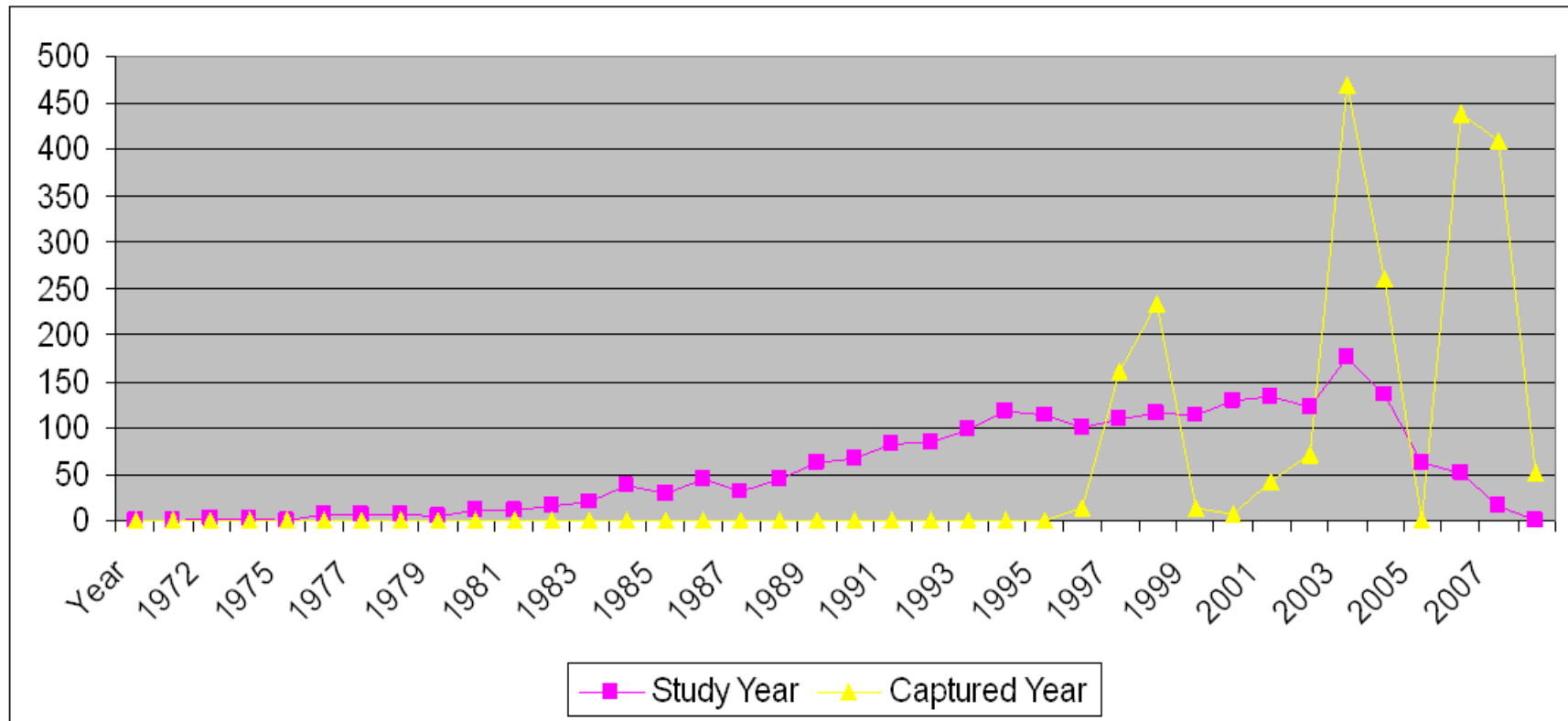
By Environmental Goods & Services:

• Use without extraction (e.g. recreation)	1,022
• Use with extraction (e.g. timber)	886
• Passive use	527
• Ecological functions	509
• Human health	423
• Built environment	190

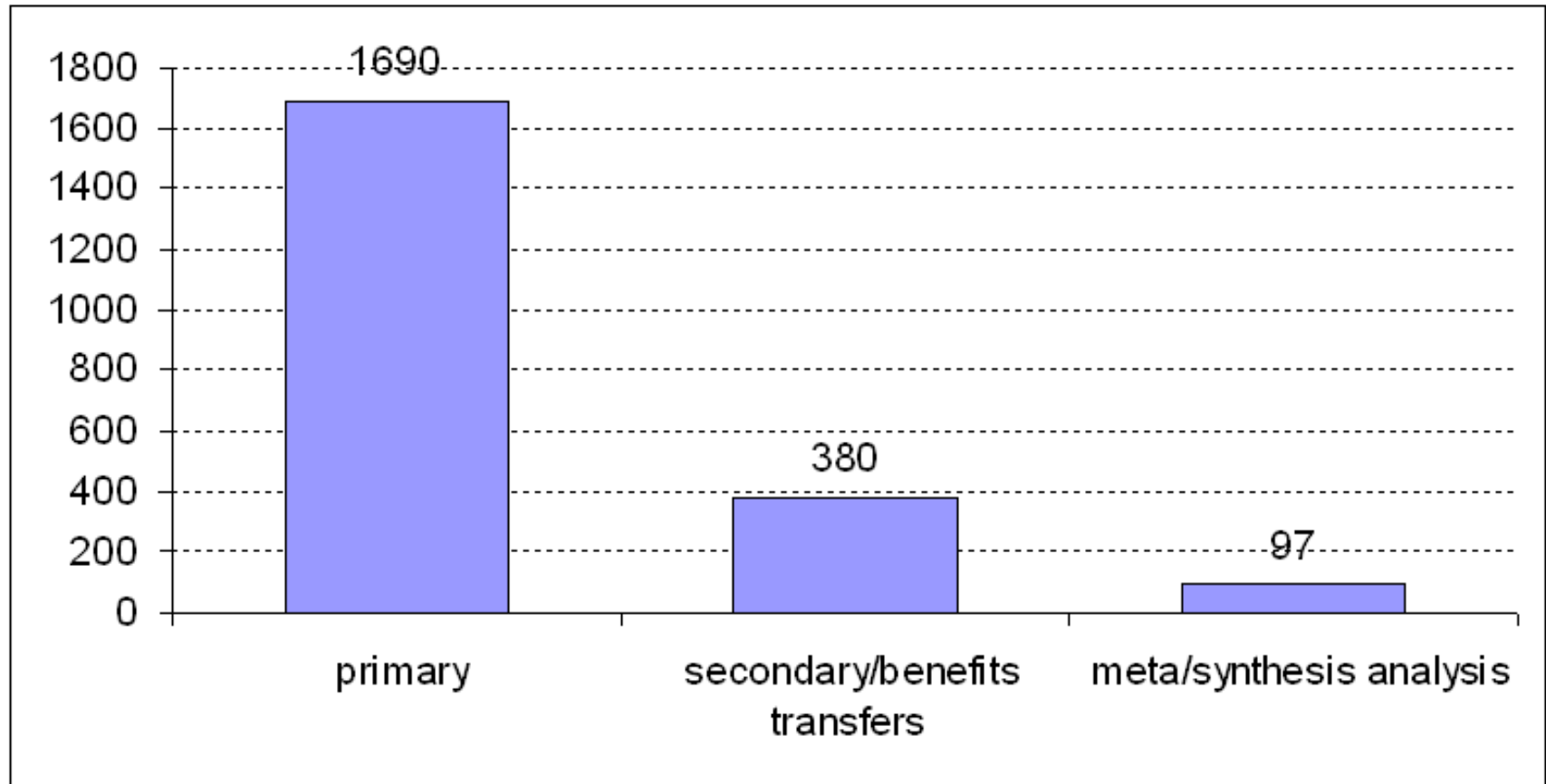


EVRI Content ...

EVRI in rapid expansion in terms of number of studies ...



EVRI Content ...



EVRI Content ...

- 30 studies from New Zealand and 60 more to come from Lincoln University database
- Many assets valued:
 - **Human Health:** Health Risk Reduction (UV), Genetically Modified Organisms, Solid waste
 - **Forest:** Timber, Indigenous Forest Remnants, Forest recreation, Ecosystem Values
 - **Habitat:** Threatened-Species, Conservation Value of NZ's Offshore Islands, Ecological Production, Ecosystem Services (from intense dairy farming),
 - **CO2:** Sea Level Rise
 - **Water:** Improved Water Quality, Water Pollution Control, Groundwater System
 - **Recreational Benefits:** Recreation Analysis, Recreation Values, Hunting, Recreational Fishing



Review: What they had to say about EVRI ...

Literature review on BT

- EVRI is recognized internationally, and particularly useful for benefit transfer (BT)
- BT commonly used but controversial components of benefit cost analysis
- EVRI provides comprehensive information to researchers and policy analysts

Implications: EVRI should

- Enhance reporting of study and context attributes
- Provide information on study validity and precision
- Maintain updated, comprehensive coverage of the recent published and grey literature
- Categorize studies according to standard criteria and preset classifications

Main outcome of four surveys undertaken:

- EVRI recognized internationally as best database by all experts and users, but always room for improvements

Revamp of EVRI: new website for improved performance

Why Need to Revamp EVRI?

- EVRI consists of several components developed over 18 years by several contractors.
- Current application has become inefficient and difficult for us to manage, mainly as a result of numerous patchwork fixes, over time.
- After over 10 + years in operation, urgent need to update EVRI database/website to ensure it remains operational and meets today's application standards.
- Initiated the first phase of the revamp in early 2008
- Deployment planned for Winter 2009



Conclusion

Free EVRI access at: WWW.EVRI.CA

- EVRI a “one stop shop” for benefits transfer
- Impressive valuation database in constant expansion
- EVRI useful for a variety purposes:
 - benefits transfer
 - e-library or store of knowledge
 - policy screening
- With support of “EVRI Club”, long-term commitment to populating and upgrading the database
- Any feedback welcome at EVRI@ec.gc.ca as to how to improve the EVRI website
- For more information, please contact: yves.bourassa@ec.gc.ca

