

Ecological Economics for Sustainable Wellbeing

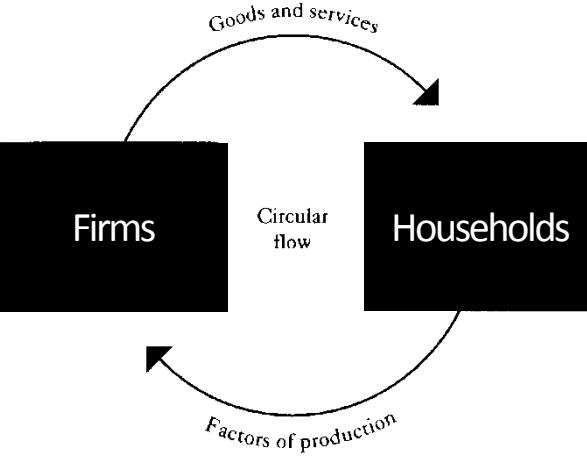
Presented by Eric Miller
At the 2015 PEF Summer School
May 28 at Ryerson University

Natural Resource Economics

Material
& Energy
Inputs

Environmental Economics

Waste Materials
& Heat
Outputs

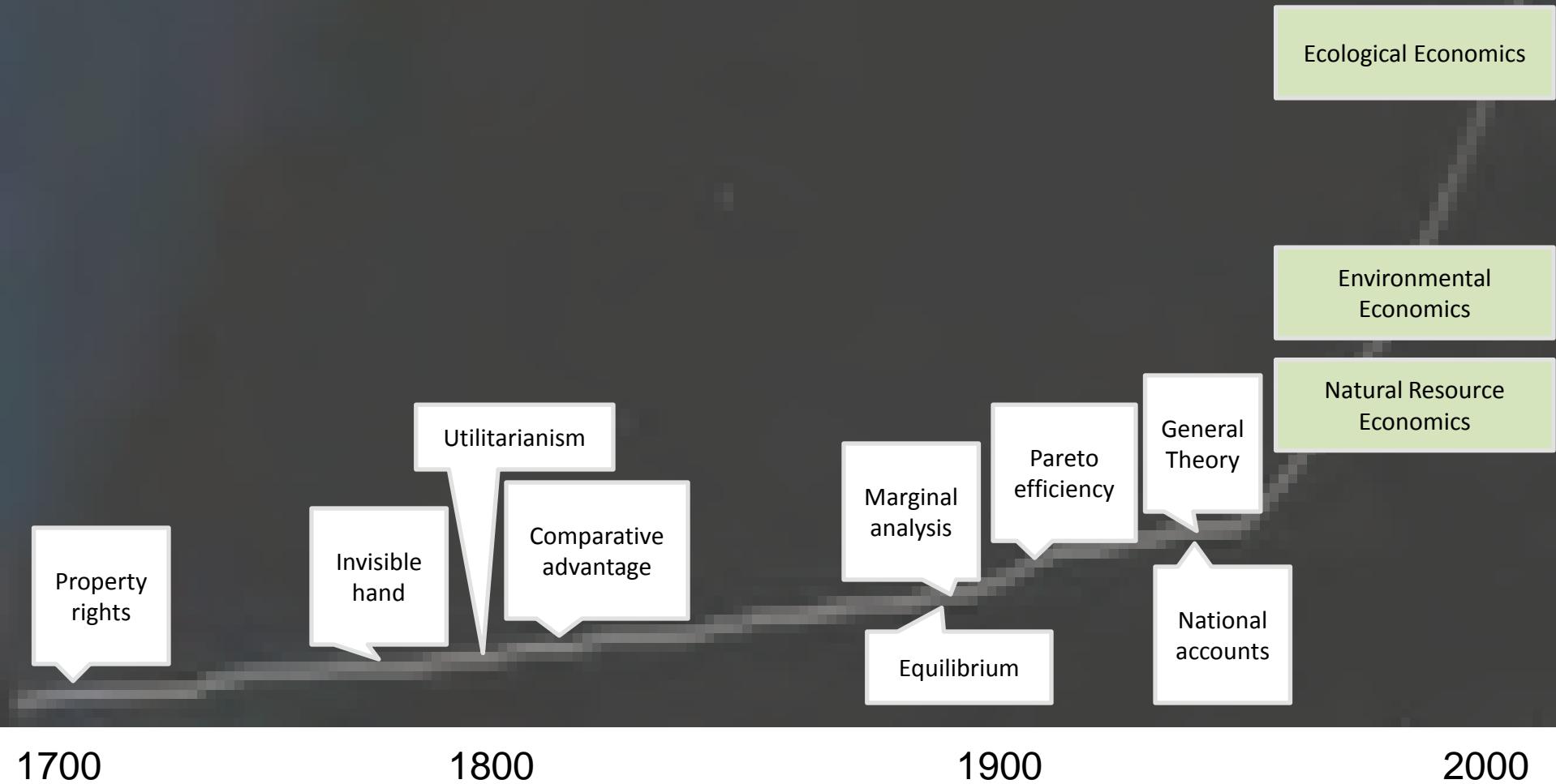


Insights from other scholarship

Ecological Economics

(Video from Anthropocene.info)

Origins of contemporary economic approaches

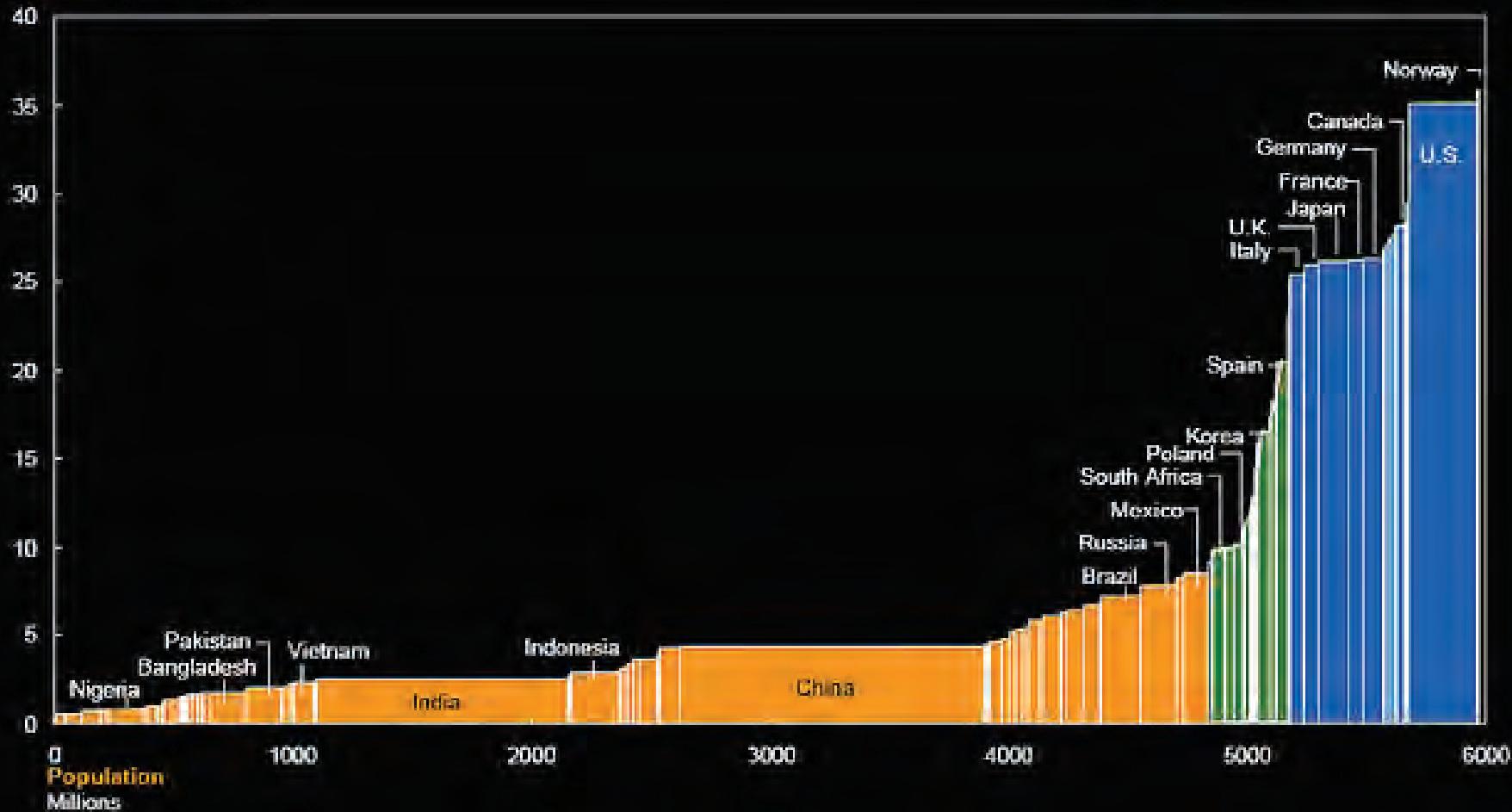


WORLD DISTRIBUTION OF PER CAPITA GDP BY COUNTRY

U.S. Dollars, at PPP

- High income countries
- Middle income countries
- Low income countries

GDP per capita, 2002
U.S. 2002 \$ thousands



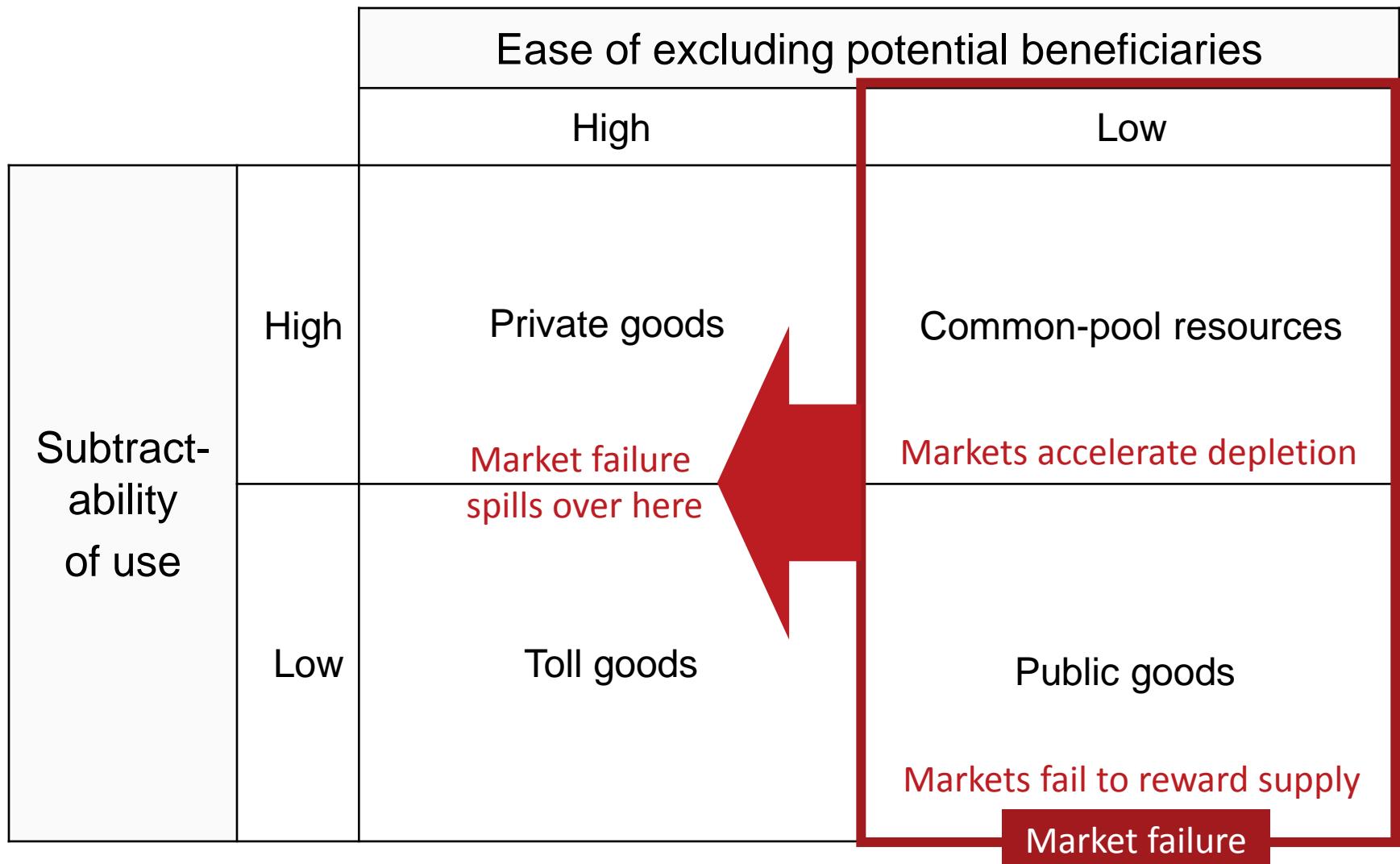
Source: McKinsey & Co.

efficient allocation

equitable distribution

biophysical scale

how well can markets
deliver efficient outcomes?



what should we do to
manage market failure?

how is nature a factor of
economic production?



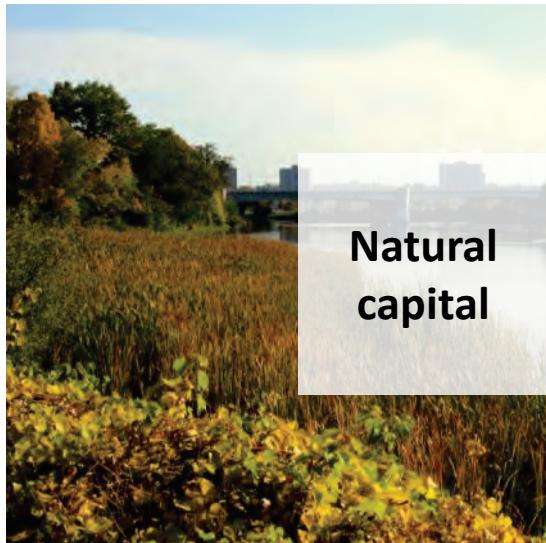
Natural capital

ecosystem
goods

ecosystem
services

**Built Capital
and
Human Capital**

Human
wellbeing



	Economic benefits	Market value	Non-Market value	Biophysical supply
ecosystem goods	Food	\$\$		
	Building materials	\$\$		
	Fuel	\$\$		
ecosystem services	Local water quantity regulation	0	\$\$ / time	## / time
	Local water filtration	0	\$\$ / time	## / time
	Regional aesthetic enjoyment	0	\$\$ / time	## / time
	Global GHG sequestration	0	\$\$ / time	## / time
	Continental wildlife benefits	0	\$\$ / time	## / time
	(Plus others)			



Integrate Sustain

how much natural capital
needs to be conserved?



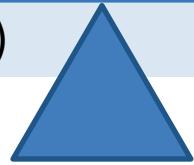
ecosystem
goods

ecosystem
services

**Built Capital
and
Human Capital**

***Biophysically
Sustainable
Human
wellbeing***

Biocapacity (supply)



Ecological footprint (biocapacity demanded)

If supply > demand: sufficient natural capital to sustain current demand

If supply < demand: insufficient natural capital to sustain current demand



REPORT

INT

2014

THIS REPORT
HAS BEEN
PRODUCED IN
COLLABORATION
WITH:



Global Footprint
Network
Measuring Earth's Capacity

ZSL
Zoological Society of London

Living Planet Report 2014

Species and spaces,
people and places



Global Footprint Network®
Advancing the Science of Sustainability

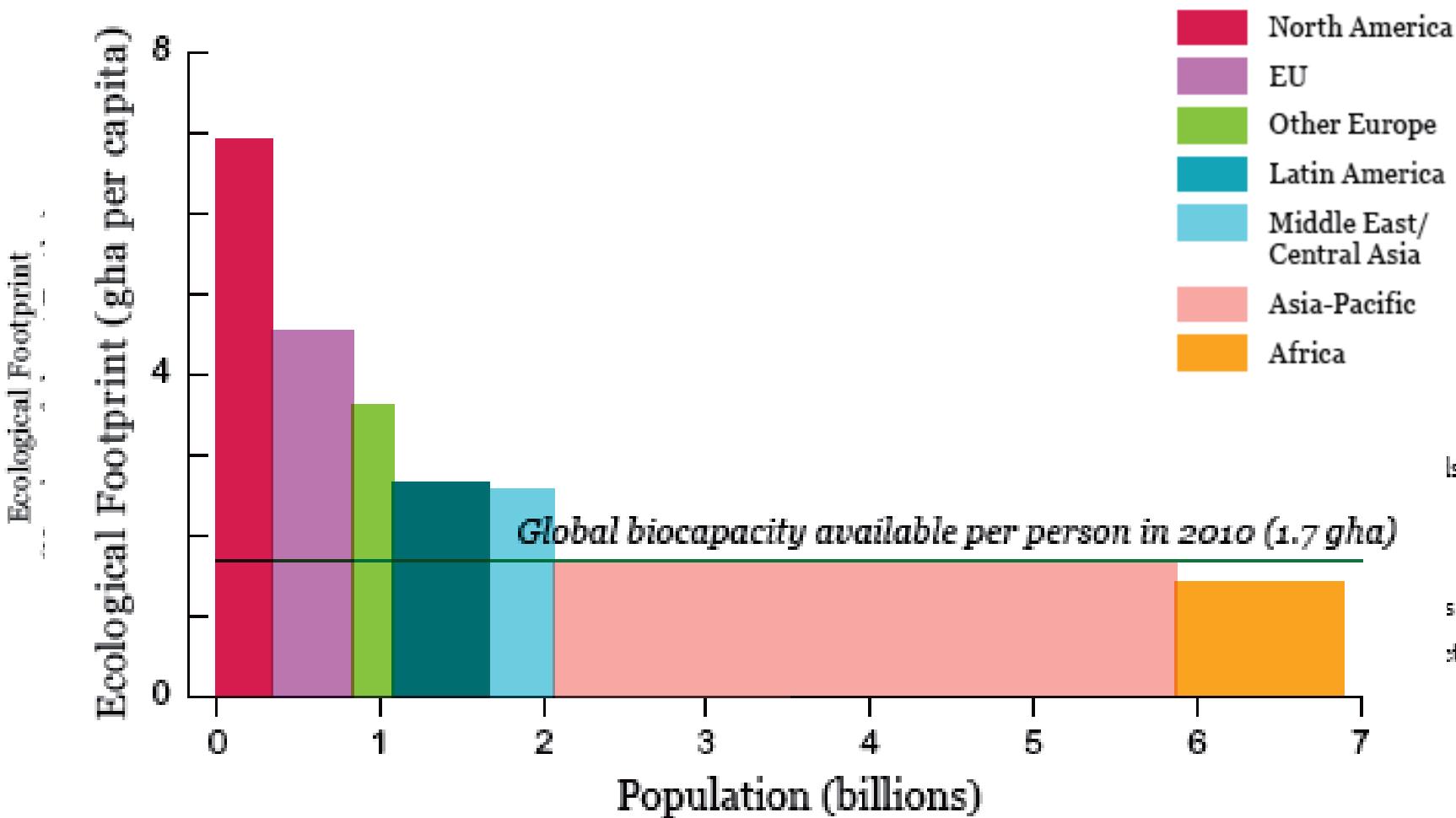
The Footprint and Biocapacity of Ontario, Canada: Comparing Results for 2005 and 2010

March 2015



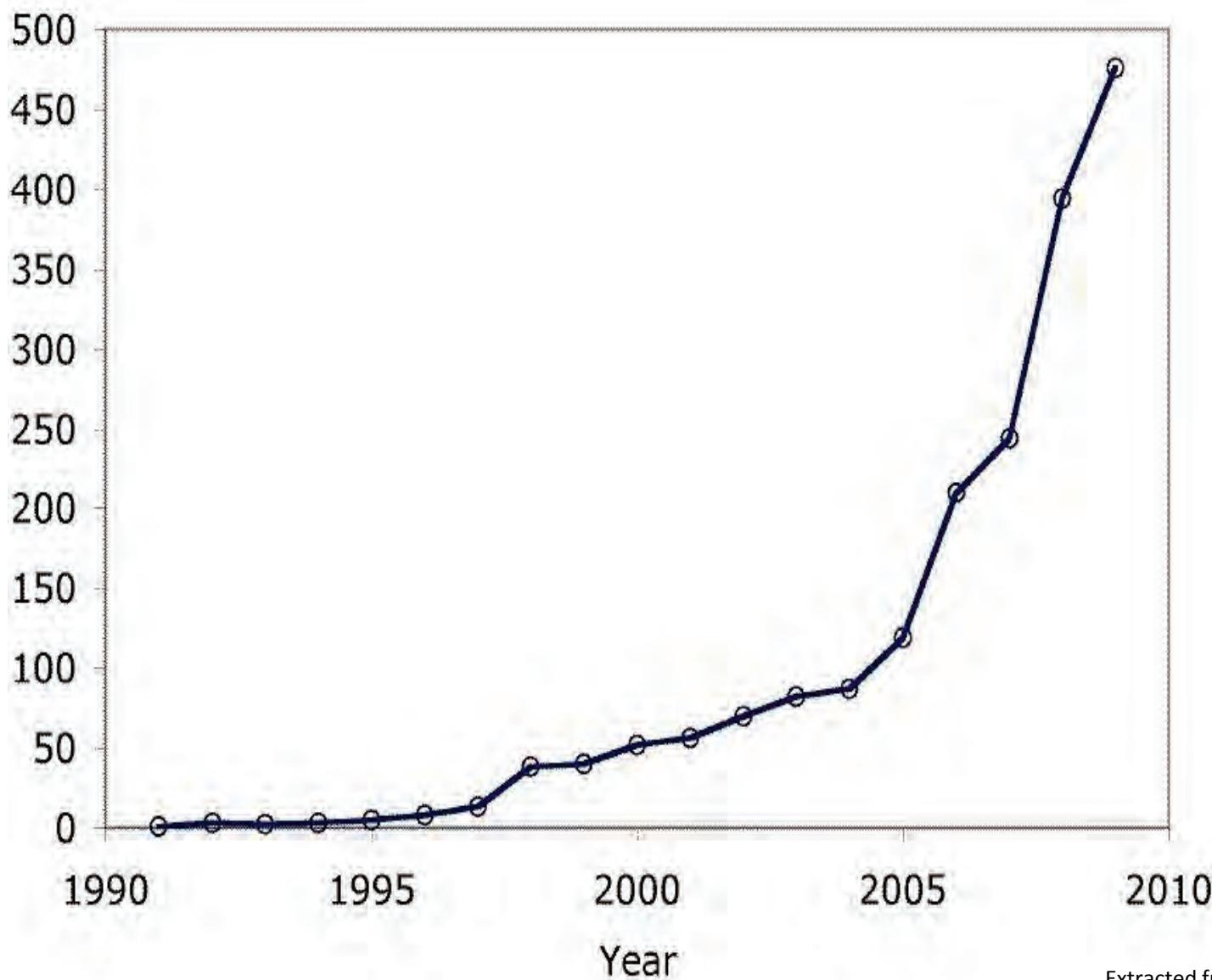
www.footprintnetwork.org

Produced for the Ontario Ministry of Natural Resources and Forestry



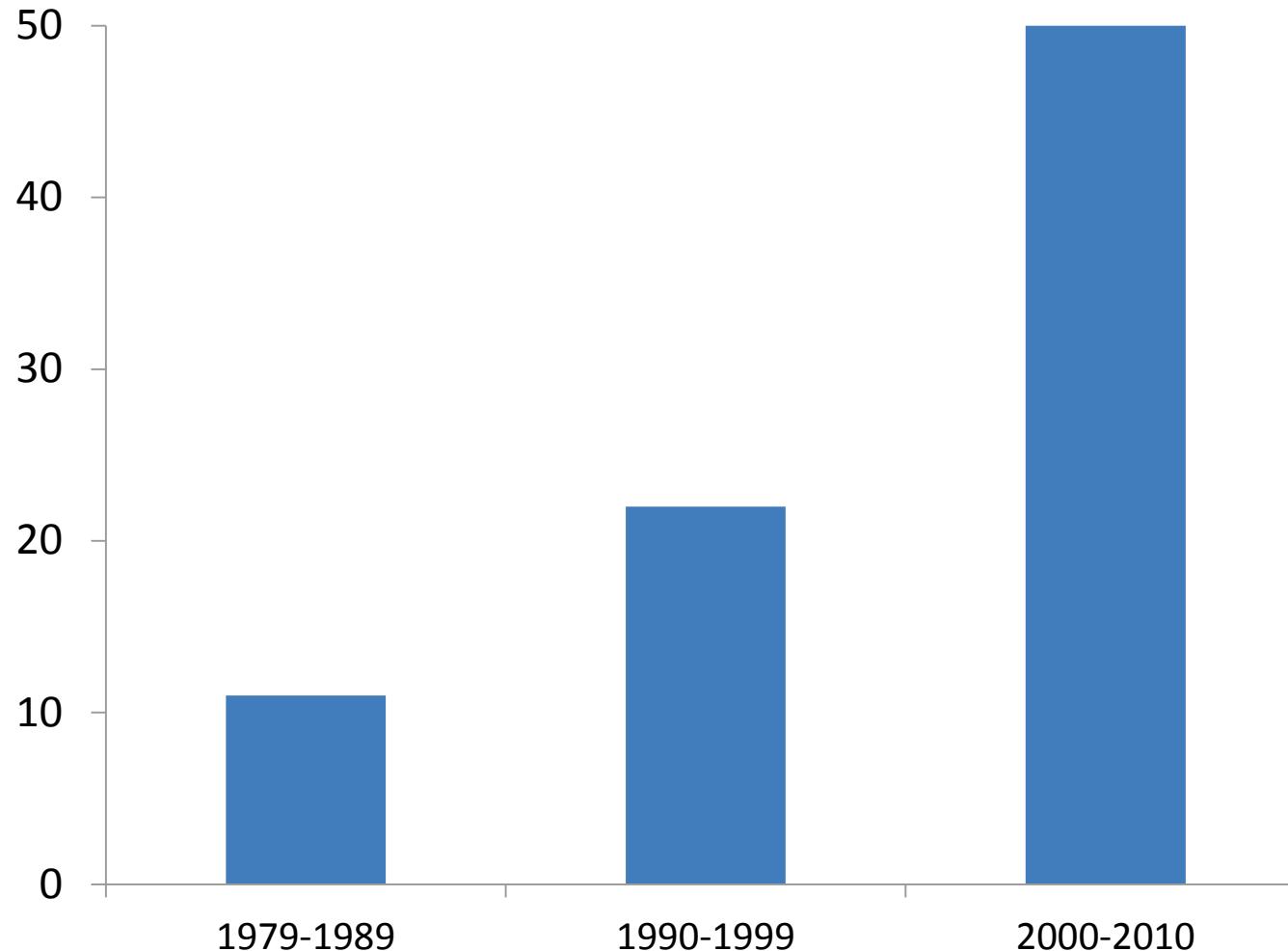
how should
ecosystem services
be economically valued?

New (English) scholarly publications about ecosystem services



Extracted from Peterson (2010)

New publications about ecosystem services in Ontario (from EVRI)

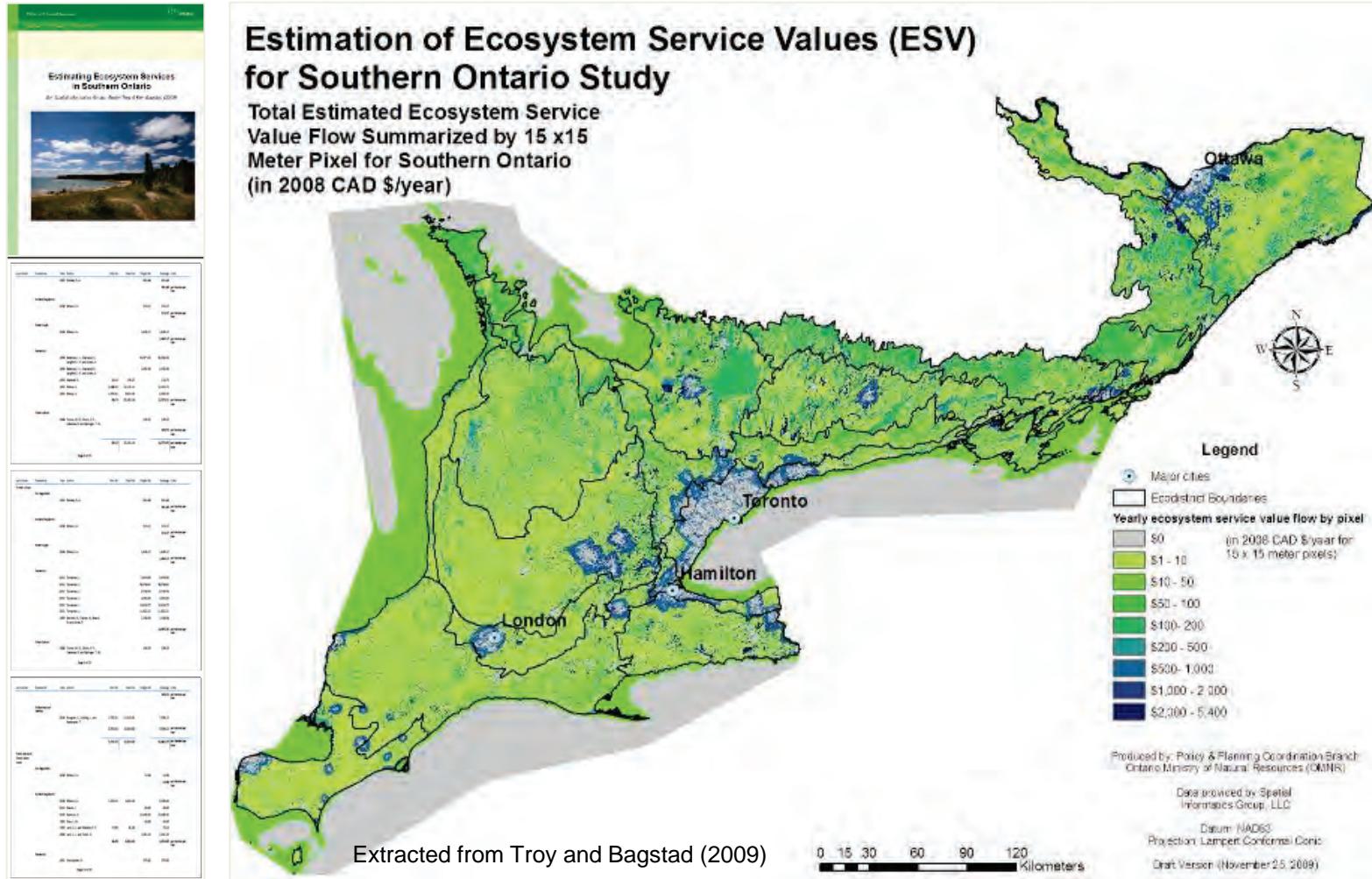


Many databases aggregate information and make it searchable

The screenshot shows the EVRI Environmental Value Database (EVRI) interface. On the left, there's a vertical menu bar with categories like Searching Module, Capturing Module, Screening Module, EVRI Tutorial, and Feedback. The main area has a title "Searching Module" and "Environmental". Below that, there's a "Similarity of Environmental Issues" section with a tree view of environmental issues categorized by medium (Air, Water, Soil, etc.) and specific topics like Air Quality, Water Quality, Land Use, etc. A central window titled "Beneficial Use Values Database (BUVD)" displays query parameters and results. The parameters include "Step 1: Choose data field to query: SuRBC beneficial use" and "Step 2: Refine search by choosing: (2010 watershed/nation to zoom inwards) SuRBC beneficial use / Groundwater Supply". Step 3 says "Click 'Run and View Query' to process your selected parameters and view the query results." Step 4 says "Click 'Run and Preview Report' to view the above Step 3 query results in a report format." The "Query Results" table lists several entries from the American Journal of Agricultural Economics, all related to "The On-Farm Costs of Reducing Groundwater Pollution". The table columns are Document #, Title, Reference Info, Publication Type, and Amenity. Below the table are buttons for "Run and View Query", "Run and Preview Report", "Run Existing Query", and "Run Existing Report".

Document #	Title	Reference Info	Publication Type	Amenity
1	The On-Farm Costs of Reducing Groundwater Pollution	American Journal of Agricultural Economics	Journal Article	Agricultural benefits from
2	The On-Farm Costs of Reducing Groundwater Pollution	American Journal of Agricultural Economics	Journal Article	Agricultural benefits from
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Spatial inventories relate values to elements of a landscape



how should we model
environment-economy
interactions?

how should we consider the
present value of future
environmental values?

what are some
synergies with other
heterodox economics?

20th century economics

Homo economicus

Markets (and a bit of government)

Economic value = market value

Governments balance budgets

Globalization through “Free Trade”

Quantity of jobs

Ecological Economics

Homo reciprocans

Markets, households, institutions, nature

= market + nonmarket value

Governments balance the economy

Globalization of Fair Trade

Quality of work and life

what are some
tensions with other forms
of heterodox economics?

20th century economics

GDP growth = “Economic growth”

Promote market expansion

Prices inform sustainability goals

Technological optimism:
improve intensity to reduce impacts

Increase demand to overcome scarcity

Ecological Economics

GDP growth may or may not be economic

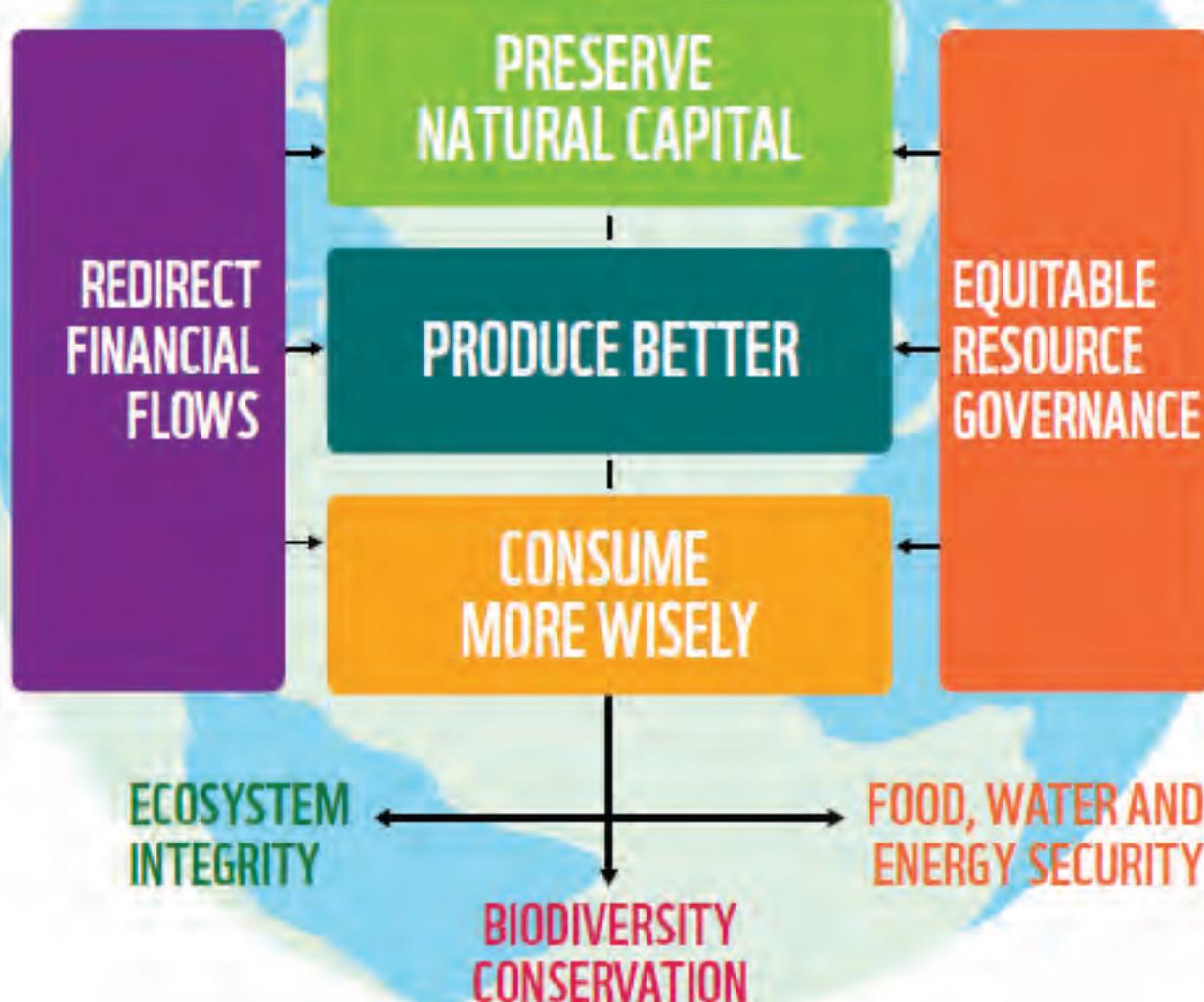
Solve market failures

Sustainability goals inform prices

Technological realism:
impacts = $fn(\text{scale}, \text{intensity})$

Focus on distribution to manage scarcity

FROM A ONE PLANET PERSPECTIVE



$$\max \left(\frac{\text{Life satisfaction, Life expectancy}}{\text{Ecological footprint}} \right)$$

subject to earth's biocapacity

Canadian Society
for Ecological Economics
www.cansee.org

as a chapter of the

International Society
for Ecological Economics
www.ecoeco.org

Ontario Network on Ecosystem Services
www.ONEcosystemServices.ca

References cited

- Global Footprint Network. 2015. The footprint and biocapacity of Ontario, Canada: comparing results for 2005 and 2010. Produced for the Ontario Ministry of Natural Resources.
- Miller, E and P. Lloyd-Smith. The Economics of Ecosystem Services and Biodiversity in Ontario (TEEBO). Prepared for the Ontario Ministry of Natural Resources.
- Ostrom, E. 2008. "Design principles of robust property-rights institutions: What have we learned?" In ed. K. Gregory Ingram and Yu- Hung Hong. 2009. *Property Rights and Land Policies*. Cambridge, MA: Lincoln Institute of Land Policy.
- Peterson, G. 2010. Growth of ecosystem services concept. Resilience Science.
<http://rs.resalliance.org/2010/01/21/growth-of-ecosystem-services-concept/>
- Troy, A and K. Bagstad. 2009. Estimating Ecosystem Services in Southern Ontario. Published by the Ontario Ministry of Natural Resources.
- WWF. 2014. Living planet report: species and spaces, people and places. Produced in collaboration with the Global Footprint Network, Water Footprint Network, and the Zoology Society of London.

Embedded video is from [Anthropocene.info](#) which is a collaborative project between researcher and communicators from some of the leading scientific research institutions on global sustainability, including the International Geosphere-Biosphere Program (IGBP).