THE ECONOMICS OF CLIMATE CHANGE

IN

7 CONTROVERSIES

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50 shades of green

Neoclassical economics (1890)

methodological individualism, marginalism, rationality, utility and profit maximisation, equilibrium via market clearing

ERE (1960s)

e.g. Schelling, Tietenberg, Pearce, Krutilla, Kneese, Dales, Weisbrod

resource economics

↓

pollution economics

Journal of Environment Economics and Management

Environmental and Resource Economics

EE (1980s)

e.g. Boulding, Daly, Georgescu-Rogen, Holling, Odum, Martinez-Alier, Ropke

ecological economics → **biophysical economics**

green/sustainability economics

social ecological economics

Ecological Economics **Journal of Cleaner Production**

The environment in the history of economic thought

- **1920s**. A.C. Pigou “private and social marginal net products”
- **1931**. H. Hotelling’s rule in *The economics of exhaustible resources*
- **1950**. K.W. Kapp’s *The social costs of private enterprise*
- **1952**. Resource for the Future (RFF) after the Paley Report
- **1954**. H.S. Gordon’s fisheries economics
- **1960**. R. Coase’s *the problem of social cost*
- **1966**. K. Boulding’s *The economics of the coming spaceship Earth*
- **1967**. E. Mishan’s *The cost of economic growth*
- **1968**. P. Ehrlich’s *population bomb*
- **1968**. G. Hardin’s *The Tragedy of the Commons*
- **1971**. N. Georgescu-Roegen’s *The entropy law and the economic process*
- **1974**. Creation of *Journal of Environmental Economics and Management*
- **1977**. H. Daly’s *Steady state economics*
- **1989**. Creation of *Journal of Ecological Economics*
- **1994**. Exxon Valdez’s contingent valuation by Carson et al.
- **1997**. R. Costanza et al.’s valuation of ecosystem services
- **2006**. Stern review

7 controversies

1. Does economic growth have **biophysical limits**?
2. Are different types of capital **substitutable**?
3. Is **decoupling** possible and feasible?
4. Should we put a **monetary value** on nature?
5. **Discounting**: positive, negative, or else?
6. Is there such a thing as a **climate debt**?
7. **Carbon tax** or **cap and trade** or what?

Biophysical limits

Can a growing *economy* be maintained in a finite *ecology*?

"economy-in-society-in-nature" (Costanza et al., 2012)

1. real economy < real real economy
2. "Everything is connected to everything else" (Commoner, 1971)
3. Social time is bounded to biophysical time
4. Physics. Physics. Physics.

Biophysical limits

Can a growing *economy* be maintained in a finite *ecology*?

Triple "S": **S**ources, **S**inks, **S**ustainability

- societal metabolism: inputs & outputs

- **throughput** = "the flow beginning with raw material inputs, followed by the conversion into commodities, and finally into waste outputs" (Daly, 1996)

- ecological sustainability = EF < BC

Strong sustainability

Are different types of capital substitutes or complements?

What is **C A P I T A L** ?

1. **NATURAL** “stock of natural resources that yield a renewable flow of goods”

2. **SOCIAL or CULTURAL**: “the web of interpersonal connections, social networks, cultural heritage, traditional knowledge, trust, and the institutional arrangements rules, norms, and values that facilitate human interactions and cooperation between people”

3. **HUMAN**: “their attributes, including physical and mental health, knowledge, and other capacities that enable people to be productive members of society”

4. **MANUFACTURED**: “all human artefacts and services that fulfil basic human needs”

Strong sustainability

Are different types of capital substitutes or complements?

In defence of strong sustainability:

1. **Matter matters**: "*One cannot build the same wooden house with half the timber no matter how many saws and carpenters one tries to substitute*" (Daly, 1996)

2. **Entropy**: "*The high-entropy output cannot be directly used again as an input for the same reason that organisms cannot eat their own excrement*" (Daly, 1977)

3. **Intergenerational justice**: "*Each time we produce a Cadillac, we do it as the expense of a reduction of the potential for future human lives*" (Georgescu-Roegen, 1979)

4. **Even if…** Weak sustainability is an invitation for exploitation

Decoupling

Can economic growth be decoupled from environmental impacts?

- OECD (2001): "*the breaking of the link between 'environmental bads' and 'economic goods'*"
- Source, sink/impact, and overall decoupling
- Relative and absolute decoupling
- Slow and fast decoupling
- **ENVIRONMENTAL KUZNETS CURVE (EKC)**: The Loch Ness monster of economics

Decoupling

Can economic growth be decoupled from environmental impacts?

NO! 6 reasons to be skeptical about decoupling:

1. Increasing marginal **costs of extraction**: EROI for Energy Return on Energy Invested (Hall, 1977)
2. **Rebound effects**: direct & indirect
3. Environmental **cost-shifting**: ecological unequal exchange and the “pollution haven hypothesis”
4. Structure and pace of **technological change**: purpose, nature, effects, pace
5. **Deindustrialisation**: indirect effects and impossible dematerialisation
6. **Entropic** limits to efficiency: all recycling is downcycling

Valuation of nature

To monetise or not to monetise?

- Quantification, monetarisation, commodification, financialisation?

- An environmentalist economist would say… economic valuation is necessary.

  - Contient valuation: willingness to pay/to sell?

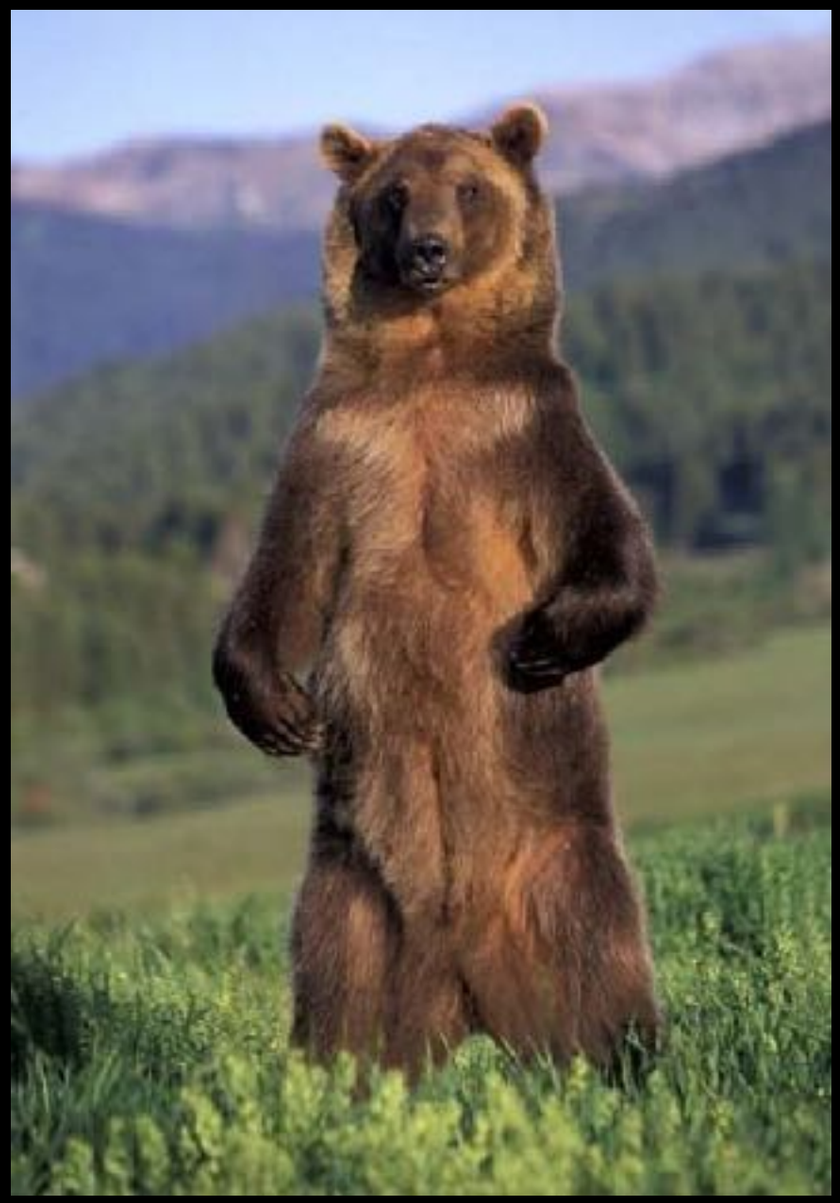
  - use, option, nonuse values

- An ecological economist would say… economic valuation is potentially dangerous.

Valuation of nature

To monetise or not to monetise?

monetise



DO NOT monetise