

Economics and Conservation

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Seema P

seema.purushothaman@apu.edu.in

Oikos logos vs Oikos nomos ?

- Studying one's habitat/ household

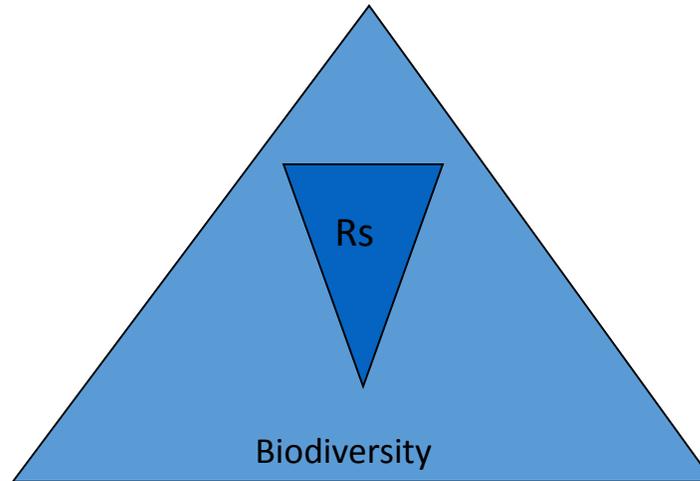
vs

- Managing one's habitat/ household ?

Co-evolved till divergence and specialization became the norm in knowledge seeking and science

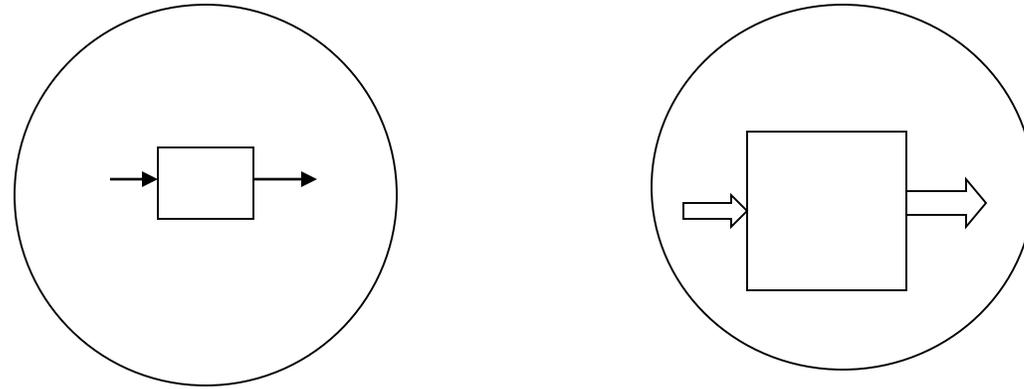
Conservation and Economics – how divergent?

Pre analytic vision - Ecologists and Economists



Ecologist's pyramid- a reverse of the economist's pyramid. "The fact that the latter is within the former is not evident in Economics" (Davidson, E). If so how does that affect economy and society?

Empty world & Cowboy economy to a Full world & a Space ship economy



Ever expanding economic subsystem in a Finite global ecosystem

“It took all human history to reach the \$600b/yr scale; today world economy grows at this rate every two years”

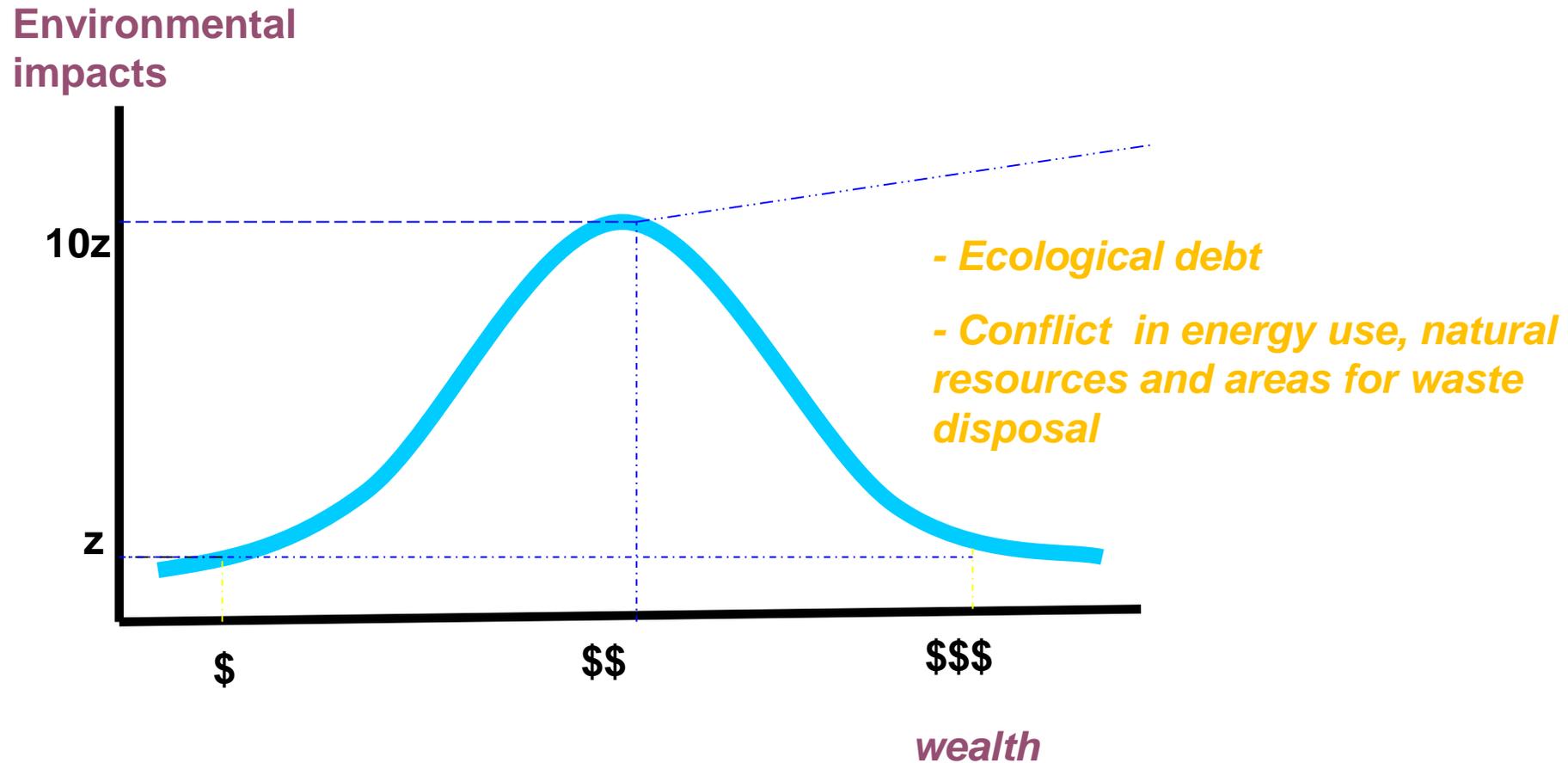
How does economics deal with crowding the ecosystem with economy?

- rely on technology to substitute resources and services as and when needed
- rely on economic growth and market to take care of distribution /social justice; initial ownership of resources is not dealt with
- rely on neo classical welfare economics methods and tools

Why does Economics do/ think so?

- apart from the divergence we saw in the pre analytic vision (reverse pyramid within limits)?

Why? 1- Belief in Kuznets Environmental Curve



Richer countries often have less environmental conflicts inside their territory (though they may export pollution/unsustainability)

Why ? 2 - Prices and scarcity

1. Simon and Ehrlich - wager on scarcity (price) of 5 metals selected by the ecologist

Prices declined - ecologist lost. No scarcity?

Why? 3- Assumptions

- 'rationality' is (and only-) in being materialistic and utilitarian (*homo economicus*)
- individual materialist rationality will ultimately be maneuvered by the 'invisible hands' of the market, towards socially desirable optima
- responses of ecosystems to human activities are linear
- economic policies of national interest can take care of environmental issues (though ecosystems and hence impacts transcend borders)
- 'precision' will be compromised while reflecting complex reality in methods and tools

Approaches to conservation from Economics

Natural Resource Economics

Optimal rates of harvest for exhaustible and renewable resources

Environmental Economics

Design economic instruments based on substitutability of natural resources with capital and technological capabilities

Ecological Economics

Recommend regulatory measures and informal institutions based on limits to growth and inter- and intra generational equity

What does Environmental Economics strive for ?

1. quantifying, valuing and accounting for envtl changes

- Stern's review on climate change, Green GDP, NPV of forests for mining

2. designing economic instruments for reconciling development priorities and conservation

tax ecologically damaging activities

subsidize and/ pay for conservation action

tradable permits for emission control

Wouldn't measure or respond to the actual realization of emission reduction or biodiversity – leaves that to **market** processes

Markets, so what ?

Market failures

- Externalities are third party (or spill-over) effects arising from the production and/or consumption of goods and services, for which no / appropriate compensation is paid.
- With externalities, price mechanism does not take into account the full social costs and social benefits of production and consumption leading to market failure.
- Externalities expand the divergence between private and social costs of production/ consumption
- Social cost includes all costs of production of a particular good or service, including third party (external) costs : social and ecological impact of felling for mining

SOCIAL COST = PRIVATE COST + EXTERNALITY

= Cost of mining + (cost in lost forests, contaminated water, soils etc)
+ (cultural & livelihood impacts)

- There could be positive externalities (say, employment to otherwise starving households, gender justice etc)
- When negative externalities dominate, Marginal Social Cost > Private Marginal Cost.

Now, what?

Economic instruments to correct market failures:

1. Green taxes

- Easy to implement; reaches all
- Encourage innovation
- Raise revenue- petrol tax, vehicle excise duty, landfill tax, and carbon tax, felling tax?
- Follows “Polluter Pays Principle”: to increase the polluters’ private marginal cost until it equates with social marginal cost to reach socially efficient level of output.
- Tax equal to the level of socio- environmental damage caused at the optimum level of output.

For the intended impact, green taxes need to pay attention to

- the right tax rate that will achieve the envtl objective
- any adverse distributional impacts
- right utilization of revenue
- avoid unintended consequences (e.g. employment, another kind of pollution)

Economic instruments to face market failures:

2. Green subsidies

- Market is at equilibrium when Supply = Demand when people maximise their welfare with Private Marginal Benefit = Private Marginal Cost.
- But, social efficiency occurs where Social Marginal Benefit = Social Marginal Cost
- At free / perfect market equilibrium, the Social Marginal Benefit > Social Marginal Cost. Society would benefit from increasing output till these are equal.
- In such a free market, people ignore the positive externalities of consumption and under consume these e.g. cycling to work, waste segregation, rag picking, public transport
- Government could pay part of the cost to the firm/individual as Subsidies to reduce the price of the good and encourages more consumption/ production (green subsidies for positive externalities need to bear in mind the possible unintended impacts: in-efficiency and inequality)

Economic instruments to face market failures:

3. Direct Payments

PES – (Payments for environmental / ecosystem services) are paid to farmers or landowners in the catchment/ upstream who have agreed to manage their land or watersheds to provide an ecological service to people at the down stream / command area.

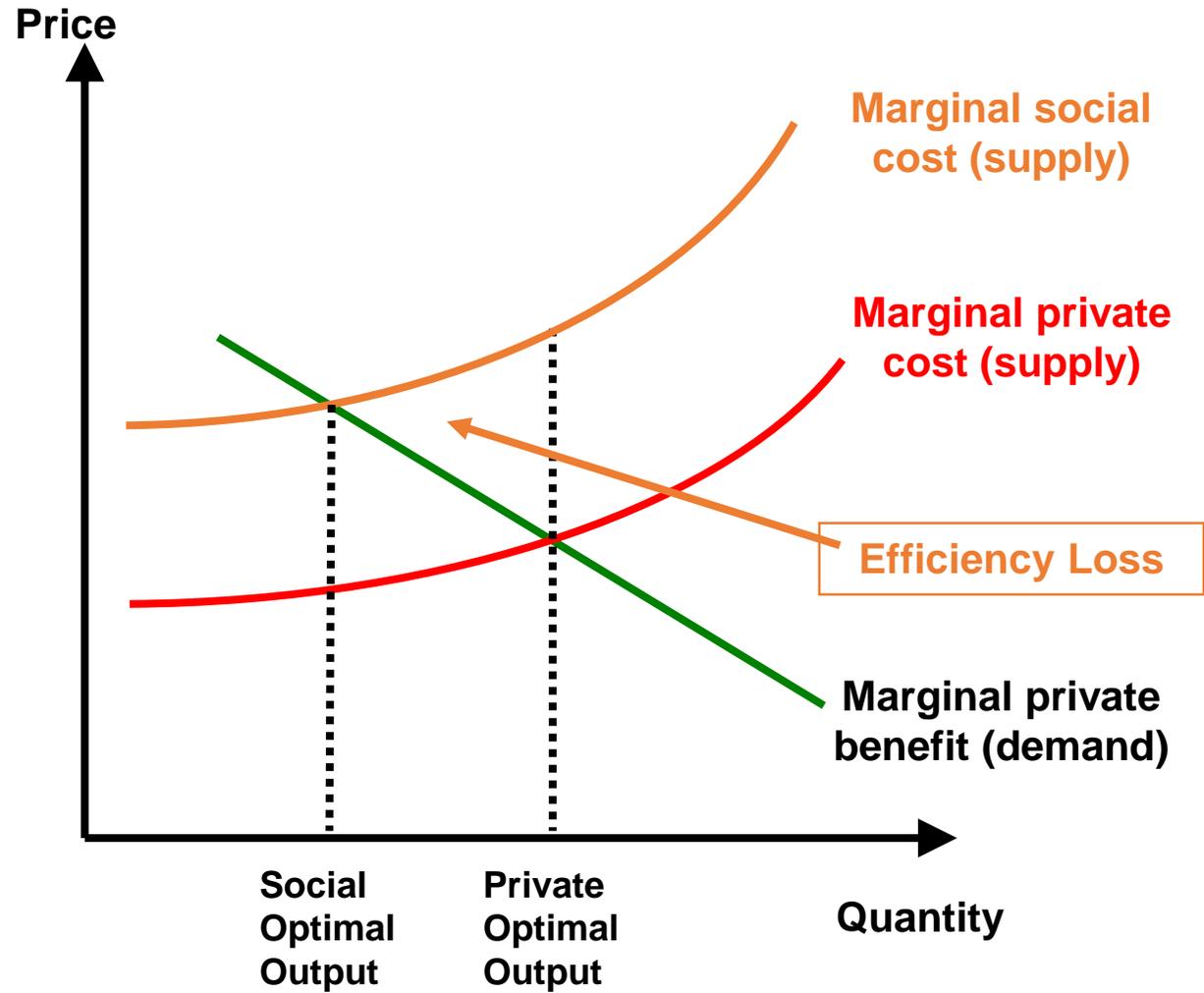
incentivize conservation action (private benefits for public ‘good’)

influence or even create market for the so far un-priced (not un ‘valued’)/marketed goods/services, (like subsidies and taxes)

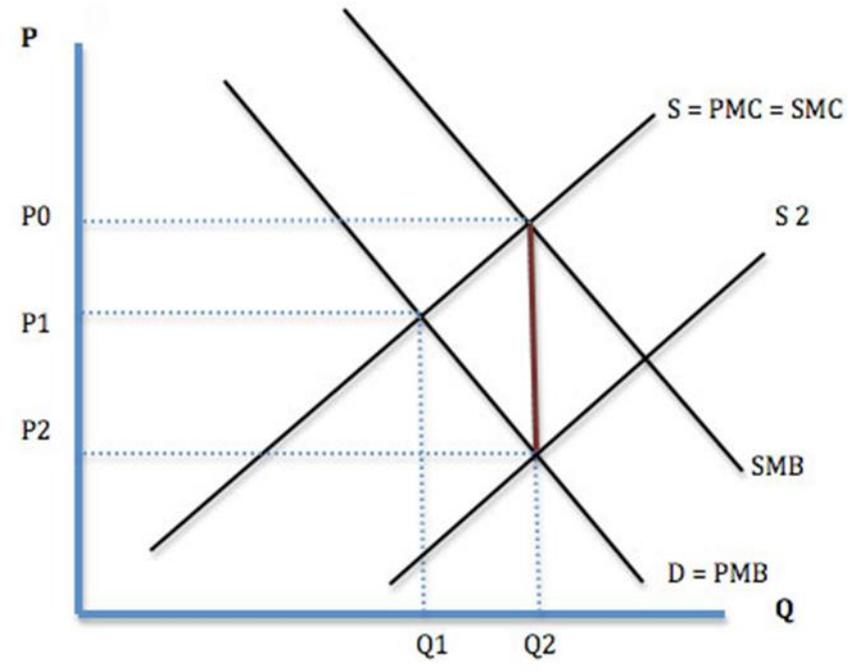
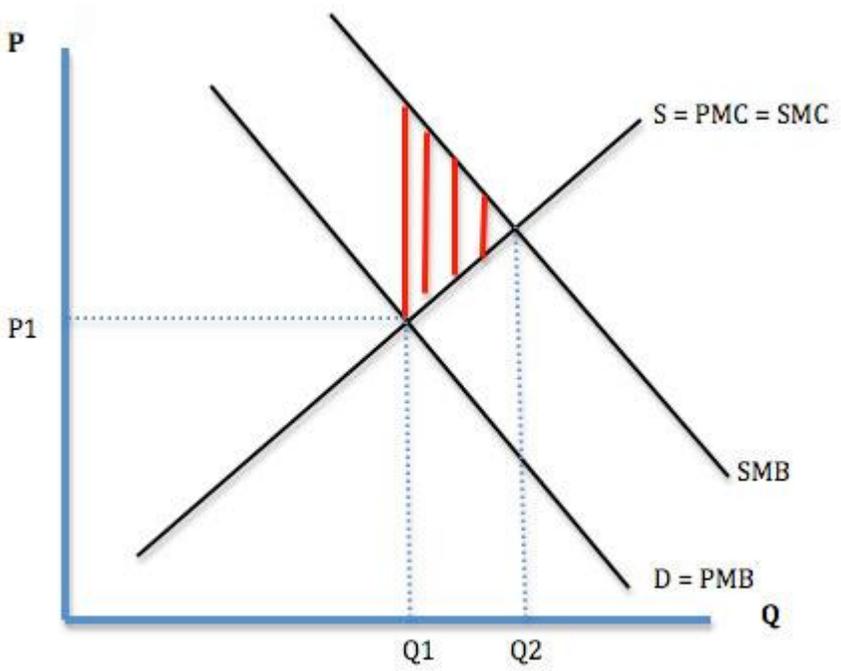
e.g: Costa Rica (forests), Brazil (forests), Vietnam (watersheds) and Uganda (Chimpanzees)

(PES needs robust research, clear property rights, finances and strong institutions)

Negative Externalities and Market Failure



Subsidy for market failure with positive externality



Economic instruments to face market failures:

4. Emission Trading - Trading the right to pollute

- To directly address **missing markets and missing environmental property rights** so as to create incentives to reduce pollution
- A **cap** is set on the emissions allowed
- The cap creates the **scarcity** (of right to pollute) required for the market
- At the end of each year, installations should ensure enough allowances to account for their **actual emissions**.
- High penalty per unit of excess emissions, a necessity

Economic instruments to face market failures:

4. Emissions trading...

- Under the Emissions Trading Scheme (ETS), industries such as energy companies, steel and cement producers, are issued permits to emit carbon, purchasing extra permits when required and selling excess when possible.
- The ETS suffered from a large oversupply of permits, lowering the price of carbon and undermining the incentive for industry to invest in cleaner production.

Economic instruments to face market failures:

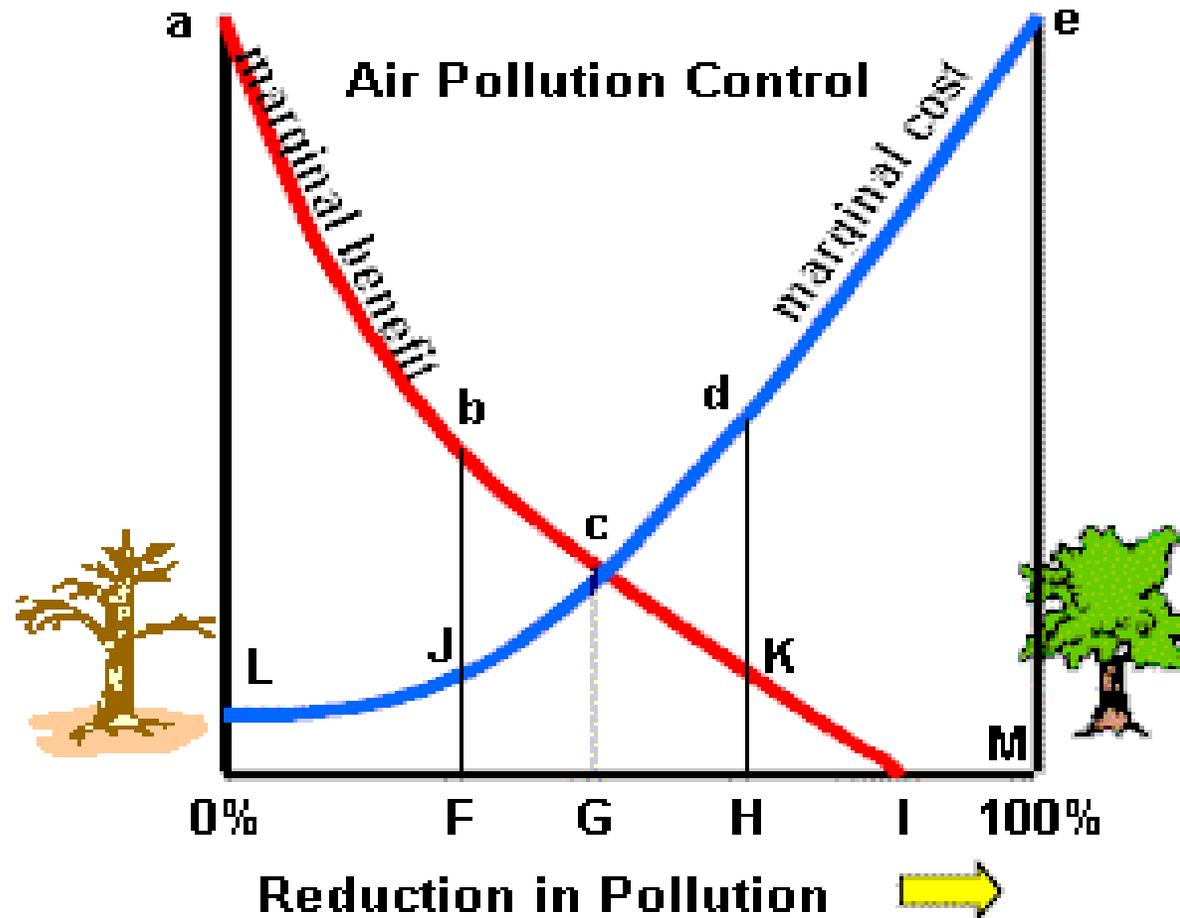
5. Clean Development Program

CDM: allows industrialized countries to invest in projects that reduce emissions in other countries - as an alternative to what would be more expensive emission reduction programmes in their own country.

Optimal pollution or degradation

- If there is an optimal level of conservation, there is also an optimal level of degradation
- When marginal cost of conservation is just equal to the marginal benefit from conservation, at that point, society's welfare has been maximized with respect to conservation.
- Just as it is possible to have too degraded an environment, it is also possible to have too clean/green an environment (under polluted/ in-sufficiently degraded).
- If the marginal cost of conservation/pollution abatement exceeds the marginal benefit from the reduction in pollution/deforestation, then the benefit of cleaning the environment/ forest conservation is not worth the expense - further attempts to clean up the environment / conserve forests will result in a reduction in welfare (even if these are not ecological/ social optima)

Optimal pollution/ degradation



Alternate approaches

Most recent attempts are at re-integration – inter and trans disciplinary knowledge

- Ecological economics (within natural limits; limited substitution between capital and nature)
- Institutional analysis (taking envtl problems as governance / institutional failure than market failure)