




**Ecological economics** tries to make producers account for social costs, as well as environmental costs. For example, if a power plant releases soot from its smokestack, populations downwind suffer from air pollution. Suppose the population living downwind incurs health expenses, lost work days, and illness as a result. Is it the power plant's responsibility to pay for these health expenses and lost wages? Traditional economics has said no, that society should bear responsibility. Ecological economists say yes, these costs should be considered part of the cost of power production, and the added cost should be included in the price of electricity. What are some other external costs?

Environmental Economics would include:

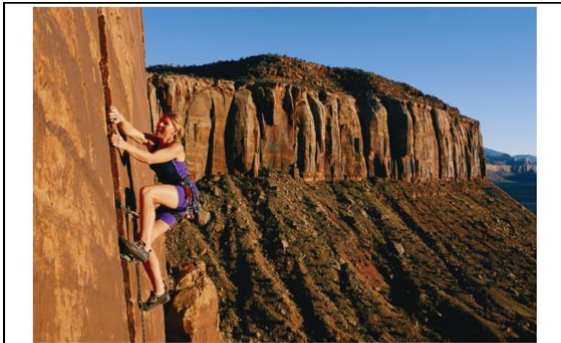
- \* Non renewable resources
- \* Renewable resources
- \* Intangible resources


Tragedy of the commons game

Sharing is Better





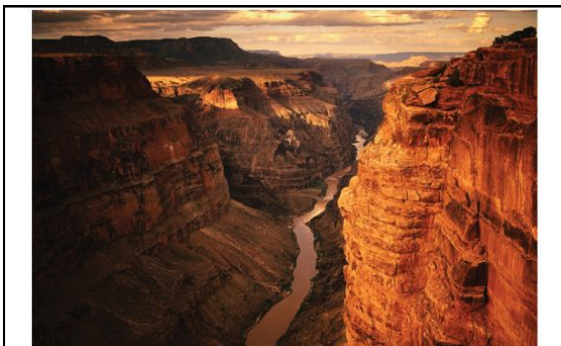
**(b) Use values**

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**(c) Option values**

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**(d) Aesthetic values**

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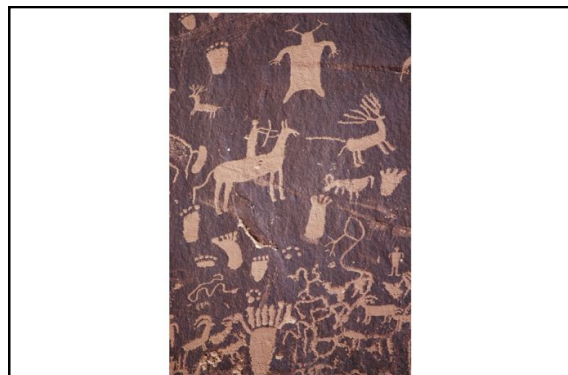
**(e) Scientific values**

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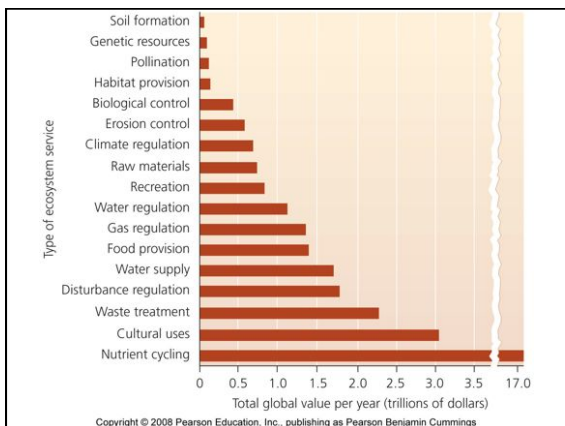
**(f) Educational values**

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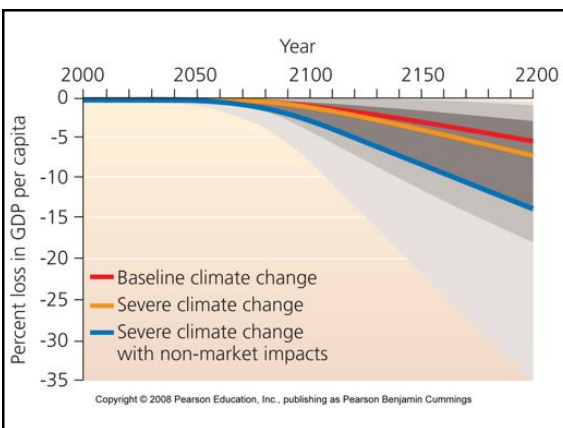
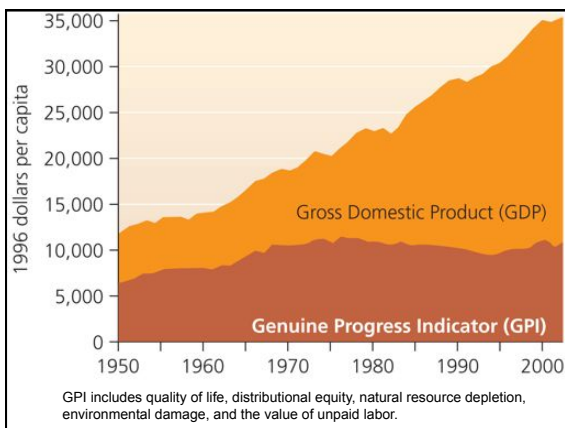
**(g) Cultural values**

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Ordinary people often refuse to answer questions about how much money they would pay to save a wilderness or how much they would accept to allow it to be destroyed. (Therefore Cost-Benefit Analysis is difficult)

Some things are difficult to assign a value to (see above).



**REDUCING POVERTY TO IMPROVE ENVIRONMENTAL QUALITY AND HUMAN WELL-BEING**

- The World Bank lending policies now require review of environmental and social effects before approval.
- Also, we can sharply cut poverty by forgiving the international debts of the poorest countries, greatly increasing international aid and small individual loans to help the poor help themselves.

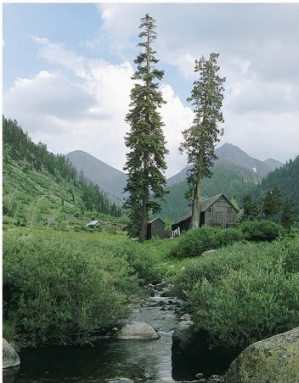


Example:  
Carbon tax  
Cap and trade

**Trade-Offs**  
**Environmental Taxes and Fees**

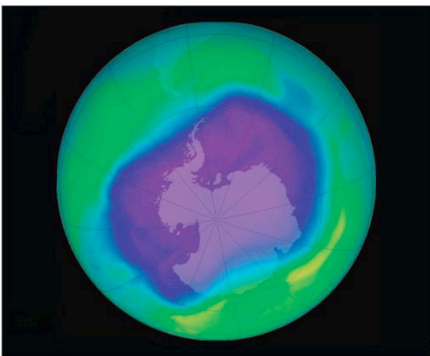
Advantages	Disadvantages
Helps bring about full-cost pricing	Penalizes low income groups unless safety nets are provided
Provides incentive for businesses to do better to save money	Hard to determine optimal level for taxes and fees
Can change behavior of polluters and consumers if taxes & fees are set at a high enough level	Need to frequently readjust levels, which is technically and politically difficult
Easily administered by existing tax agencies	Gov'ts may see this as a way of increasing general revenue instead of using funds to improve environmental quality and reduce taxes on income, payroll, & profits
Fairly easy to detect cheaters	

© 2007 Thomson Higher Education **Fig. 24-10, p. 580**



Mineral King Valley at the border of Sequoia National Park. The Disney Corporation wanted to build a ski resort here, but the Sierra Club sued to protect the valley on behalf of the trees, rocks, and native wildlife.

Other "legal" options: arbitration and mediation



International treaties: **1987 Montreal Protocol** - cut CFC production in half to stop ozone depletion (picture over Antarctica September 24, 2006).



International treaties: **1997 Kyoto Protocol** - reduce emissions of greenhouse gasses to equal or lower than 1990 levels.

Federal Administrative Agencies that Influence Environmental Policy	
Executive Office of the President	Department of the Interior
Council on Environmental Quality	Bureau of Indian Affairs
Department of Agriculture (USDA)	Bureau of Land Management (BLM)
Natural Resources Conservation Service	Bureau of Reclamation
U.S. Forest Service (USFS)	Minerals Management Service
Department of Commerce	National Park Service (NPS)
Bureau of the Census	Office of Surface Mining
National Marine Fisheries Service	U.S. Fish and Wildlife Service (USFWS)
National Oceanic and Atmospheric Administration (NOAA)	U.S. Geological Survey (USGS)
Department of Defense	Department of Justice
Army Corps of Engineers	Environmental and Natural Resources Division
Department of Energy (DOE)	Department of Labor
Energy Efficiency and Renewable Energy	Occupational Safety and Health Administration (OSHA)
Energy Information Administration (EIA)	Department of State
Federal Energy Regulatory Commission (FERC)	Bureau of Oceans and International Environmental and Scientific Affairs
National Laboratories and Technology Centers	Bureau of Population, Refugees, and Migration
Office of Environmental Management	Department of Transportation
Office of Fossil Energy	Federal Transit Administration
Department of Health and Human Services	Independent Agencies
Agency for Toxic Substances and Disease Registry	Consumer Product Safety Commission
Centers for Disease Control and Prevention (CDC)	Environmental Protection Agency (EPA)
Food and Drug Administration (FDA)	National Aeronautics and Space Administration (NASA)
	National Transportation Research Center
	Nuclear Regulatory Commission (NRC)
	Tennessee Valley Authority (TVA)
	U.S. Agency for International Development (USAID)

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### National Environmental Policy Act (1970)

- Authorizes Council on Environmental Quality as the oversight board.
- Directs federal agencies to take environmental consequences into account during decision making.
- Requires an **Environmental Impact Statement (EIS)** for every federal project having significant environmental impact.

**Important US legislation**

Mining Act of 1872 – allows companies to purchase federal land if they patent it.  
1897 – Forest Management Act – creates the Forest Reserves to be used for timber, mining, and grazing.  
\*Lacey Act of 1900 – prohibits the transport of live or dead wild animals or parts of wild animals across state lines without a federal permit.  
Antiquities Act of 1906 – establishes areas of archeological or historical interest on federal lands as monuments.  
\*National Park Service Act of 1916 – establishes the NPS.  
Migratory Bird Treaty Act of 1918 – places hunting restrictions on migratory birds.  
Taylor Grazing Act of 1934 – allows Department of the Interior to issue grazing permits and collect fees to graze animals on public land.  
Soil Conservation Act of 1935 - establishes the Soil Conservation Service in the United States Department of Agriculture; focused on erosion control.  
Federal Aid in Wildlife Restoration Act of 1937 – aka Pittman–Robertson Act – provides federal funds for wildlife protection.  
Federal Food, Drug and Cosmetic Act of 1938 – protects consumers; (Delaney Clause 1958 amendment) prohibits the addition of any known carcinogen to any processed food, drug, or cosmetics.  
\*Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (FIFRA) – protects from dangerous and persistent pesticides; (1972) registration and testing of pesticides required.

**Important US legislation**

Price-Anderson Act of 1957 – promotes nuclear power by limiting the liability of power plant owners or the government in the event of a major accident.  
Multiple Use and Sustained Yield Act of 1960 – national forests are to be used for recreation and hunting, not just timber and mining.  
\*Clean Air Act of 1963 – air quality standards; (1970) protects air as a resource from pollution; the EPA is to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment; (1977) extends dates for reaching NAAQS; (1990) addresses acid rain, ground-level ozone and stratospheric ozone depletion.  
\*Wilderness Act of 1964 – established the National Wilderness Preservation System which protects primitive areas in the US.  
\*Federal Water Pollution Control Act of 1964 (aka Clean Water Act) – restore and maintain US waters; (1972 and 1977) regulate discharges of pollutants into water; gives EPA power to implement pollution control programs; sets water quality standards in surface waters; regulates point source pollutants; funds the construction of sewage treatment.  
National Wild and Scenic Rivers Act of 1968 – protects unique and beautiful river sections.  
\*National Environmental Policy Act of 1969 (NEPA) – requires environmental impact statements for construction projects regulated by federal government.

**Important US legislation**

Marine Protection, Research, and Sanctuaries Act of 1972 – establishes the National Marine Sanctuary Program administered by the National Oceanic and Atmospheric Administration.  
Ocean Dumping Act of 1972 – prohibits dumping of sewage sludge and industrial waste to include radiological, chemical, or biological warfare agents, high-level radioactive waste, and medical waste.  
Marine Mammal Protection Act of 1972 – protects marine mammals  
\*Endangered Species Act of 1973 – USFWS and USNMF must establish programs to protect endangered organisms.  
\*Safe Drinking Water Act of 1974 – sets standards and regulates public drinking water.  
Energy Policy and Conservation Act of 1975 – promotes conservation and efficiency.  
Federal Land Policy and Management Act of 1976 – Bureau of Land Management land is managed under multiple-use, sustained-yield principles.  
Toxic Substances Control Act of 1976 – regulation of toxins.  
Resource Conservation and Recovery Act of 1976 (RCRA) – tracking of hazardous wastes; states develop hazardous waste management plans  
National Forest Management Act of 1976 – Directed USFS to manage forests for "multiple use".  
Surface Mining Control and Reclamation Act of 1977 (SMCRA) – regulates restoration of surface mines.

**Important US legislation**

\*Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or Superfund) – uses Superfund to clean up hazardous waste sites (new regulations established with SARA – Superfund Amendments and Reauthorization Act in 1986).

**Important INTERNATIONAL legislation**

\*CITES – Convention on International Trade in Endangered Species of Wild Fauna and Flora – 1987 – regulates international trade in endangered species.  
\*Montreal Protocol on Protecting Stratospheric Ozone – 1987 – phases out use and production of CFCs.  
Basel Convention on the Transboundary Movements of Hazardous Wastes and Their Disposal – 1992 – prevents disposal in developing countries of hazardous wastes produced in developed countries.  
Convention of the Prevention of Marine Pollution by Dumping of Waste and Other Matter (London Dumping Convention or LDC) – controls ocean pollution; prohibits dumping of high-level radioactive wastes, heavy metals, and other hazardous wastes.  
\*Kyoto Protocol – 1997 – Reduce emissions of greenhouse gasses to equal or lower than 1990 levels.