Protecting the Commons

Eight Annual Edward and Nancy Dodge Lecture
Johns Hopkins Bloomberg School of Public Health

Robert Costanza
Gordon and Lulie Gund Professor of Ecological Economics
and Director, Gund Institute of Ecological Economics
Rubenstein School of Environment and Natural Resources
The University of Vermont
Burlington, VT 05405
Practical Problem Solving Requires the *Integration* of:

- **Vision**
  - a. How the world works
  - b. How we would like the world to be
- **Tools and Analysis**
  - appropriate to the vision
- **Implementation**
  - appropriate to the vision
The Commons

“refers to all the gifts we inherit or create together. This notion of the commons designates a set of assets that have two characteristics:

they’re all gifts, and
they’re all shared.

A gift is something we receive, as opposed to something we earn.
A shared gift is one we receive as members of a community, as opposed to individually.
Examples of such gifts include air, water, ecosystems, languages, music, holidays, money, law, mathematics, parks, the Internet, and much more”.

Peter Barnes, *Capitalism 3.0*
Full World Anthroposphere
Temperature, past and future

The graph illustrates temperature anomalies over time, from the year 1000 to 2100. The y-axis represents temperature anomaly in °C, while the x-axis represents the year. The graph shows historical temperature trends and projections for future years. The label 'TODAY' indicates the current temperature anomaly, which is just above 0 °C. The lines with envelopes represent different climate models for past and future scenarios.
## Projected Impacts of Climate Change

<table>
<thead>
<tr>
<th>Global temperature change (relative to pre-industrial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C</td>
</tr>
<tr>
<td>Food</td>
</tr>
<tr>
<td>Water</td>
</tr>
<tr>
<td>Ecosystems</td>
</tr>
<tr>
<td>Extreme Weather Events</td>
</tr>
<tr>
<td>Risk of Abrupt and Major Irreversible Changes</td>
</tr>
</tbody>
</table>

Source: Stern review on the economics of climate change, 2006
What is “the economy” and what is it for?
"Empty World" Model of the Economy

Property rights

Private

Public

Perfect Substitutability Between Factors

Manufactured capital

Labor

Land

Improvement

Education, Training

Research

Building

Economic Process

GNP

Goods and Services

Individual Utility/welfare

Consumption (based on fixed preferences)

Investment (decisions about, taxes, government spending, education, science and technology policy, etc., based on existing property rights regimes)

Cultural Norms and Policy
Empty World Energy Planning?

Alabama Power’s motto: “Always on”

“With Electricity prices at least 15% below the national average, why not?”
“Full World” Model of the Ecological Economic System

Positive impacts on human capital capacity

Well Being (Individual and Community)

Consumption (based on changing, adapting preferences)

Investment (decisions about, taxes community spending, education, science and technology policy, etc., based on complex property rights regimes)

Evolving Cultural Norms and Policy

Materially closed earth system

Waste heat

The Commons:

• Non-marketed natural and social capital assets

• Public goods (non-excludable, non-rival)
## Goods and Services Classified According to Rivalness and Excludability

<table>
<thead>
<tr>
<th>Excludable</th>
<th>Non-Excludable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rival</strong></td>
<td></td>
</tr>
<tr>
<td>Market Goods and Services</td>
<td>Open Access Resources (some provisioning services)</td>
</tr>
<tr>
<td>(most provisioning services)</td>
<td></td>
</tr>
<tr>
<td><strong>Non-rival</strong></td>
<td></td>
</tr>
<tr>
<td>Club Goods</td>
<td>Public Goods and Services (most regulatory and cultural services)</td>
</tr>
<tr>
<td>(some recreation services)</td>
<td></td>
</tr>
</tbody>
</table>
More realistic vision of human behavior

• Multiple motivations (personality types, culture, etc.)
• Limited knowledge and “rationality”
• Evolving preferences
• Satisfaction based on relative, rather than absolute, consumption, plus a host of “non-consumption” factors
• Central role of emotions in decision-making and evading social traps
• Embedded in multiscale, complex, adaptive, systems
Phineas Gage
Quality of Life (QOL) as the interaction of human needs and the subjective perception of their fulfillment, as mediated by the opportunities available to meet the needs.

Ecological Economics

{oikos = “house”
logy = “study or knowledge”
nomics = “management”

Literally: management of the house (earth) based on study and knowledge of same

Integrated Questions/Goals:
• Ecologically Sustainable Scale
• Socially Fair Distribution
• Economically Efficient Allocation

Methods:
• Transdisciplinary Dialogue
• Problem (rather than tools) Focus
• Integrated Science (balanced synthesis & analysis)
• Effective and adaptive Institutions

The key is developing a better understanding of the opportunities to create a sustainable future with a high quality of life.
Figure 2. Subjective well-being by level of economic development.
R = .70  N = 65  p < .0005
**Observed Life Satisfaction versus Predicted Life Satisfaction**

\[ \text{LS} = 0.78 \times \text{HDI} + 0.26 \times \text{NCI} + \text{?} \]

- **Predicted Life Satisfaction (LS)**
- **Observed Life Satisfaction**
- **Human Development Index** (Index of Built and Human Capital)
- **Natural Capital Index** (based on value of Ecosystem Services)
- **No Social Capital Index**

A range of goals for national accounting and their corresponding frameworks, measures, and valuation methods

<table>
<thead>
<tr>
<th>Goal</th>
<th>Economic Income</th>
<th>Economic Welfare</th>
<th>Human Welfare</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Marketed</td>
<td>Weak Sustainability</td>
<td>Strong Sustainability</td>
</tr>
<tr>
<td>Basic Framework</td>
<td>1 + non-marketed goods and services</td>
<td>2 + preserve essential natural capital</td>
<td>value of the welfare effects of income and other factors (including distribution, household work, loss of natural capital etc.)</td>
</tr>
<tr>
<td></td>
<td>produced and consumed in an economy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-environmentally</td>
<td>GNP (Gross National Product)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>environmentally adjusted</td>
<td>GDP (Gross Domestic Product)</td>
<td></td>
<td>MEW</td>
</tr>
<tr>
<td>measures</td>
<td>NNP (Net National Product)</td>
<td></td>
<td>(Measure of Economic Welfare)</td>
</tr>
<tr>
<td>Environmentally</td>
<td>NNP* (Net National Product including</td>
<td></td>
<td>MEW</td>
</tr>
<tr>
<td>adjusted measures</td>
<td>non-produced assets)</td>
<td></td>
<td>(Measure of Economic Welfare)</td>
</tr>
<tr>
<td></td>
<td>ENNP (Environmental Net National</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Product)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SNI (Sustainable National Income)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SEEA (System of Environmental Economic Accounts)</td>
<td>SEEA (System of Environmental Economic Accounts)</td>
<td>ISEW (Index of Sustainable Economic Welfare)</td>
</tr>
<tr>
<td>Appropriate Valuation</td>
<td>Market values</td>
<td>1 + willingness to pay based values (see Table 2)</td>
<td>3 + constructed preferences</td>
</tr>
<tr>
<td>Methods</td>
<td></td>
<td>2 + replacement costs, + production values</td>
<td></td>
</tr>
</tbody>
</table>

Genuine Progress Indicator (or ISEW) by Column

Additions
- Column A: Personal Consumption Expenditures
- Column B: Income Distribution
- Column C: Personal Consumption Adjusted for Income Inequality
- Column D: Value of Household Labor
- Column E: Value of Volunteer Work
- Column F: Services of Household Capital
- Column G: Services Highways and Street
- Column H: Cost of Crime
- Column I: Cost of Family Breakdown
- Column J: Loss of Leisure Time
- Column K: Cost of Underemployment
- Column L: Cost of Consumer Durables
- Column M: Cost of Commuting
- Column N: Cost of Household Pollution Abatement
- Column O: Cost of Automobile Accidents

Subtractions
- Column P: Cost of Water Pollution
- Column Q: Cost of Air Pollution
- Column R: Cost of Noise Pollution
- Column S: Loss of Wetlands
- Column T: Loss of Farmland
- Column U: Depletion of Nonrenewable Resources
- Column V: Long-Term Environmental Damage
- Column W: Cost of Ozone Depletion
- Column X: Loss of Forest Cover
- Column Y: Net Capital Investment
- Column Z: Net Foreign Lending and Borrowing

Legend:
- Built Capital
- Human Capital
- Social Capital
- Natural Capital
Indices of ISEW— (Index of Sustainable Economic Welfare) and GDP — (1970 = 100)
Gross Production vs. Genuine Progress for the US, 1950 to 2002

(source: Redefining Progress - http://www.rprogress.org)
Figure 5.1
APPROXIMATE VALUE OF COMMON, PRIVATE, AND STATE ASSETS, 2001 ($ TRILLIONS)

Reflects only quantifiable assets.
Source: Friends of the Commons, State of the Commons 2003–04.
Ecosystem Services: the benefits humans derive from ecosystems

CONSTITUENTS OF WELL-BEING

- **Security**
  - PERSONAL SAFETY
  - SECURE RESOURCE ACCESS
  - SECURITY FROM DISASTERS

- **Basic material for good life**
  - ADEQUATE LIVELIHOODS
  - SUFFICIENT NUTRITIOUS FOOD
  - SHELTER
  - ACCESS TO GOODS

- **Health**
  - STRENGTH
  - FEELING WELL
  - ACCESS TO CLEAN AIR AND WATER

- **Freedom of choice and action**
  - OPPORTUNITY TO BE ABLE TO ACHIEVE WHAT AN INDIVIDUAL VALUES DOING AND BEING

- **Good social relations**
  - SOCIAL COHESION
  - MUTUAL RESPECT
  - ABILITY TO HELP OTHERS

Source: Millennium Ecosystem Assessment
Sea-viewing Wide Field-of-View Sensor (SeaWiFS) data on marine and terrestrial plant productivity
The services of ecological systems and the natural capital stocks that they produce are critical to the functioning of the Earth’s life-support system. They contribute to human welfare, both directly and indirectly, and therefore represent part of the total economic value of the planet. We have estimated the current economic value of 17 ecosystem services for 16 biomes, based on published studies and a few original calculations. For the entire biosphere, the value (most of which is outside the market) is estimated to be in the range of US$16–54 trillion (10^{12}) per year, with an average of US$33 trillion per year. Because of the nature of the uncertainties, this must be considered a minimum estimate. Global gross national product total is around US$18 trillion per year.

2nd most cited article in the last 10 years in the Ecology/Environment area according to the ISI Web of Science.
Summary of global values of annual ecosystem services (From: Costanza et al. 1997)

<table>
<thead>
<tr>
<th>Biome</th>
<th>Area (e6 ha)</th>
<th>Value per ha ($/ha/yr)</th>
<th>Global Flow Value (e12 $/yr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Ocean</td>
<td>36,302</td>
<td>577</td>
<td>20.9</td>
</tr>
<tr>
<td>Coastal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estuaries</td>
<td>33,200</td>
<td>252</td>
<td>8.4</td>
</tr>
<tr>
<td>Seagrass/Algae Beds</td>
<td>3,102</td>
<td>4052</td>
<td>12.6</td>
</tr>
<tr>
<td>Coral Reefs</td>
<td>180</td>
<td>22832</td>
<td>4.1</td>
</tr>
<tr>
<td>Shelf</td>
<td>200</td>
<td>19004</td>
<td>3.8</td>
</tr>
<tr>
<td>Shelf</td>
<td>62</td>
<td>6075</td>
<td>0.3</td>
</tr>
<tr>
<td>Shelf</td>
<td>2,660</td>
<td>1610</td>
<td>4.3</td>
</tr>
<tr>
<td>Terrestrial</td>
<td>15,323</td>
<td>804</td>
<td>12.3</td>
</tr>
<tr>
<td>Forest</td>
<td>4,855</td>
<td>969</td>
<td>4.7</td>
</tr>
<tr>
<td>Tropical</td>
<td>1,900</td>
<td>2007</td>
<td>3.8</td>
</tr>
<tr>
<td>Temperate/Boreal</td>
<td>2,955</td>
<td>302</td>
<td>0.9</td>
</tr>
<tr>
<td>Grass/Rangelands</td>
<td>3,898</td>
<td>232</td>
<td>0.9</td>
</tr>
<tr>
<td>Wetlands</td>
<td>330</td>
<td>14785</td>
<td>4.9</td>
</tr>
<tr>
<td>Tidal Marsh/Mangroves</td>
<td>165</td>
<td>9990</td>
<td>1.6</td>
</tr>
<tr>
<td>Swamps/Floodplains</td>
<td>165</td>
<td>19580</td>
<td>3.2</td>
</tr>
<tr>
<td>Lakes/Rivers</td>
<td>200</td>
<td>8498</td>
<td>1.7</td>
</tr>
<tr>
<td>Desert</td>
<td>1,925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tundra</td>
<td>743</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ice/Rock</td>
<td>1,640</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cropland</td>
<td>1,400</td>
<td>92</td>
<td>0.1</td>
</tr>
<tr>
<td>Urban</td>
<td>332</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>51,625</td>
<td>33.3</td>
<td></td>
</tr>
</tbody>
</table>
Figure 3: Global Map of Non-Marketed Economic Activity (ESP) arising from Ecosystem Services and derived from Land Cover at 1 km²
(For National Totals See Table 1)
Valuing New Jersey’s Natural Capital: An Assessment of the Economic Value of the State’s Natural Resources

April 2007

Average Ecosystem Service Value per Hectare for New Jersey

Ecosystem Service Value in 2001 Constant Dollars

http://www.nj.gov/dep/dsr/naturalcap/
Degradation of ecosystem services often causes significant harm to human well-being

- The total economic value associated with managing ecosystems more sustainably is often higher than the value associated with conversion.
- Conversion may still occur because private economic benefits are often greater for the converted system.
Economic Reasons for Conserving Wild Nature

Costs of expanding and maintaining the current global reserve network to one covering 15% of the terrestrial biosphere and 30% of the marine biosphere

\[ \text{Benefits (Net value* of ecosystem services from the global reserve network)} \]

\[ \text{*Net value is the difference between the value of services in a “wild” state and the value in the most likely human-dominated alternative} \]

\[ = \text{US$45 Billion/yr} \]

\[ = \text{US$4,400-5,200 Billion/yr} \]

\[ \text{Benefit/Cost Ratio} = 100:1 \]

Social Capital Survey Questions

work by: Morgan Grove, Bill Burch, Matt Wilson, and Amanda Vermuri

as part of the Baltimore Ecosystem Study: http://www.ecostudies.org/bes/

- People in the neighborhood are willing to help one another*
- This is a close knit neighborhood*
- People in this neighborhood can be trusted*
- There are many opportunities to meet neighbors and work on solving community problems*
- Churches or temples and other volunteer groups are actively supportive of the neighborhood*
- There is an active neighborhood association
- Municipal (local) government services (such as sanitation, police, fire, health & housing dept) are adequately provided and support the neighborhood’s quality

* Included in Social Capital Index; Cronbachs alpha = .7758
SUSTAINABILITY OR COLLAPSE?
AN INTEGRATED HISTORY AND FUTURE OF PEOPLE ON EARTH

EDITED BY ROBERT COSTANZA, LISA J. GRAUMLICH, AND WILL STEFFEN

Human history, as written traditionally, leaves out the important ecological and climate context of historical events. But the capability to integrate the history of human beings with the natural history of the Earth now exists, and we are finding that human-environmental systems are intimately linked in ways we are only beginning to appreciate. In Sustainability or Collapse?, researchers from a range of scholarly disciplines develop an integrated human and environmental history over millennial, centennial, and decadal time scales and make projections for the future. The contributors focus on the human-environment interactions that have shaped historical forces since ancient times and discuss such key methodological issues as data quality. Topics highlighted include the political ecology of the Mayans; the effect of climate on the Roman Empire; the “revolutionary weather” of El Niño from 1788 to 1795; twentieth-century social, economic, and political forces in environmental change; scenarios for the future; and the accuracy of such past forecasts as The Limits to Growth.

ROBERT COSTANZA is Gordon Gund Professor of Ecological Economics and Director of the Gund Institute for Ecological Economics at the Rubenstein School of Environment and Natural Resources at the University of Vermont. LISA J. GRAUMLICH is Executive Director of the Big Sky Institute for Science and Natural History and Professor of Land Resources and Environmental Sciences at Montana State University. WILL STEFFEN is Director of the Center for Resource and Environmental Studies and Director of the ANU Institute of Environment at the Australian National University and Chief Scientist at the International Geosphere-Biosphere Programme, Stockholm.
Integrated History and future Of People on Earth

Table 1. Basic characteristics of the current development model and the emerging sustainable and desirable “ecological economics” development model

<table>
<thead>
<tr>
<th></th>
<th><strong>Current Development Model: the “Washington Consensus”</strong></th>
<th><strong>Sustainable and Desirable Development Model: an emerging “Green Consensus”</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary policy goal</strong></td>
<td><strong>More:</strong> economic growth in the conventional sense, as measured by GDP. The assumption is that growth will ultimately allow the solution of all other problems. More is always better.</td>
<td><strong>Better:</strong> Focus must shift from merely growth to “development” in the real sense of improvement in quality of life, recognizing that growth has negative by-products and more is not always better.</td>
</tr>
<tr>
<td><strong>Primary measure of progress</strong></td>
<td>GDP</td>
<td>GPI (or similar)</td>
</tr>
<tr>
<td><strong>Scale/carrying capacity</strong></td>
<td>Not an issue since markets are assumed to be able to overcome any resource limits via new technology and substitutes for resources are always available</td>
<td>A primary concern as a determinant of ecological sustainability. Natural capital and ecosystem services are not infinitely substitutable and real limits exist</td>
</tr>
<tr>
<td><strong>Distribution/poverty</strong></td>
<td>Lip service, but relegated to “politics” and a “trickle down” policy: a rising tide lifts all boats</td>
<td>A primary concern since it directly affects quality of life and social capital and in some very real senses is often exacerbated by growth: a too rapidly rising tide only lifts yachts, while swamping small boats</td>
</tr>
<tr>
<td><strong>Economic efficiency/allocation</strong></td>
<td>The primary concern, but generally including only marketed goods and services (GDP) and institutions</td>
<td>A primary concern, but including both market and non-market goods and services and effects. Emphasizes the need to incorporate the value of natural and social capital to achieve true allocative efficiency</td>
</tr>
<tr>
<td><strong>Property rights</strong></td>
<td>Emphasis on private property and conventional markets</td>
<td>Emphasis on a balance of property rights regimes appropriate to the nature and scale of the system, and a linking of rights with responsibilities. A larger role for common property institutions in addition to private and state property</td>
</tr>
<tr>
<td><strong>Role of Government</strong></td>
<td>To be minimized and replaced with private and market institutions</td>
<td>A central role, including new functions as referee, facilitator and broker in a new suite of common asset institutions</td>
</tr>
<tr>
<td><strong>Principles of Governance</strong></td>
<td><em>Laissez faire</em> market capitalism</td>
<td>Lisbon principles of sustainable governance</td>
</tr>
</tbody>
</table>
Making the market tell the truth

In general, privatization is NOT the answer, because most ecosystem services are public goods. But we do need to adjust market incentives to send the right signals to the market. These methods include:

• Full cost accounting (i.e. www.trucost.org, www.earthinc.org

• Ecological tax reform (tax bads not goods, remove perverse subsidies)

• Ecosystem service payments (a la Costa Rica)

• Impact fees for development tied to real impacts

• Environmental Assurance bonds to incorporate uncertainty about impacts (i.e. the Precautionary Polluter Pays Principle - 4P)

• Expand the “Commons Sector”

See:

Welcome

Trucost is an environmental research organisation working with companies, investors and government agencies to understand the impacts companies have on the environment. Trucost is an independent organisation founded in 2000.

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Tools for Investors >>

Also available through RREV

Tools for Companies >>

Received a Company Data Sheet?

MORE INFO

News

22nd February 2007

Trucost is delighted to have won the Sustainable and Ethical Investment and Asset Management Category at the City of London Corporation's Sustainable City Awards 2006/7.

19th February 2007

GLG Partners have launched a long-only fund filtering the greenest companies from its $1.5bn European Equity Strategy. The fund uses Trucost data to find the companies in each sector with lighter environmental footprints.

19th February 2007

French sustainability research centre Novethic’s most recent newsletter L’Essentiel de l’ISR examines Trucost. It talks about the company as a global resource for investors wanting to integrate the environment into the investment process.

29th January 2007

Trucost research reveals that less than half of the world’s largest electric utilities disclose their carbon emissions to investors.

17th January 2007

Trucost announces a major upgrade to Trucost Online for 2007.

18th January 2007

Trucost is to release an updated briefing on the carbon efficiency of European airlines and the implications of their inclusion in the EU ETS. The announcement follows the appearance of Simon Thomas, Chief Executive,
Adaptive Institutions Consistent with the Vision

Lisbon Principles of Sustainable Governance:

1. Responsibility
2. Scale-Matching
3. Precaution
4. Adaptive Management
5. Full Cost Allocation
6. Participation

THE NEW COMMONS SECTOR

Global
• Earth Atmospheric Trust

National
• American Permanent Fund
• Children’s start-up trust
• Universal health insurance
• Copyright royalty fund
• Spectrum trust
• Commons tax credit…

Regional
• Regional watershed trusts
• Regional airshed trusts
• Mississippi basin trust
• Buffalo commons
• Vermont Common Asset Trust…

Local
• Land trusts
• Municipal wi-fi
• Community gardens
• Farmers’ markets
• Public spaces
• Car-free zones
• Time banks…
# Key Features of Corporate, State, and Commons Sectors

<table>
<thead>
<tr>
<th>CORPORATIONS</th>
<th>STATE</th>
<th>COMMONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key functions</strong></td>
<td>Defining, assigning, balancing rights</td>
<td>Sharing gifts and preserving them for future generations</td>
</tr>
<tr>
<td>Making things; seeking short-term profit</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key institutions</strong></td>
<td>Legislature; Executive; Judiciary</td>
<td>Ecosystem trusts, permanent funds, open access commons, intergenerational pacts, community commons</td>
</tr>
<tr>
<td>Corporations; labor unions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Key human actors</strong></td>
<td>Directors; Politicians; Trustees</td>
<td></td>
</tr>
<tr>
<td>Share owners</td>
<td>Voters (donors)</td>
<td>Future generations, living citizens equally, nonhuman species, communities</td>
</tr>
<tr>
<td><strong>Accountable to</strong></td>
<td>Win most votes (raise most money)</td>
<td>Preserve asset; live off income, not principal; follow the precautionary principle; the more beneficiaries the better</td>
</tr>
<tr>
<td>Maximize profit; distribute earnings to existing shareholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Algorithms</strong></td>
<td>Win most votes (raise most money)</td>
<td>Preserve asset; live off income, not principal; follow the precautionary principle; the more beneficiaries the better</td>
</tr>
<tr>
<td><strong>Time horizon</strong></td>
<td>Next quarter; Next election; Next generation</td>
<td></td>
</tr>
<tr>
<td><strong>Ownership regime</strong></td>
<td>One dollar, one share; One person, one vote (one dollar, one vote)</td>
<td>One person, one share</td>
</tr>
<tr>
<td><strong>Transferable ownership</strong></td>
<td>Yes; Voting rights: No Property: Yes; Beneficial rights: No Usage rights: Yes</td>
<td></td>
</tr>
<tr>
<td><strong>From each according to . . .</strong></td>
<td>Voluntary purchases; Taxes</td>
<td>Voluntary usage</td>
</tr>
<tr>
<td><strong>To each according to . . .</strong></td>
<td>Share ownership; Political power</td>
<td>Equal ownership</td>
</tr>
</tbody>
</table>
Earth Inc.

The Earth is our business and your business too. Most people have a basic understanding of how a business works. If you own part of the business, then you’re entitled to a share of the profits. As an owner you’ll want to take good care of the assets of the business and to plan for the future so your business doesn’t collapse. You’ll also want to maximize your profit, or in other words, the benefit you receive from the business. Imagine the Earth as a business and you’re a shareholder. We’re all shareholders. Future generations are entitled to a share too. How do we maximize the benefit every shareholder receives from the Earth? How do we maximize human wellbeing? Earth, Inc. helps answer this most important question.

Board of Directors
- Robert Costanza
- Crea Lintihac
- Shuang Lu
- Matt Sayre

Advisory Board
- Peter Barnes
- Paul Hawken
- John Kassell
- David Orr

Earth News

Protecting our common asset: The Earth
An article by Dr. Robert Costanza in the Rutland Herald. More>

An Earth Atmospheric Trust: A proposal to stop global warming and end poverty
Internationally renowned experts call for the creation of the Earth Atmospheric Trust. More>

Ecosystem Goods and Services Series: Valuation 101


The amount of water impounded behind dams quadrupled since 1960, and three to six times as much water is held in reservoirs as in natural rivers.
Emissions Paths to Stabilisation

Source: Stern review on the economics of climate change, 2006
Comparison of Economy-wide Climate Change Proposals in 110th Congress 1990-2050

- Bush Administration
- Kyoto Protocol
- Business As Usual
- Bingaman-Specter draft (With Price Cap)
- Bingaman-Specter draft (No Price Cap)
- McCain-Lieberman
- Kerry-Snowe
- Olver-Gilchrest
- Sanders-Boxer Waxman

Stabilize at 450-550 ppm

Dotted lines indicate extrapolations of Energy Information Administration projections

Modified: May 10, 2007
Creating An Earth Atmospheric Trust:  
A system to stop global warming *and* reduce poverty  
Peter Barnes, Robert Costanza, Paul Hawken, David Orr, Elinor Ostrom, Alvaro Umaña, and Oran Young

1) **Set up a global cap and trade system** for greenhouse gas emissions – all greenhouse gas emissions from all sources.

2) **Auction off all emission permits** – and allow trading of permits

3) **Gradually reduce the cap to follow the 450 ppm target** (or better). The price of permits will go up and total revenues will increase as the cap is reduced.

4) **Deposit the revenues into a trust fund**, managed by trustees appointed with long terms and a mandate to protect the asset (the climate and atmosphere)

5) **Return a fraction of the revenues to everyone on earth on a per capita basis.** This amount will be insignificant to the rich, and much smaller than their per capita contribution to the fund, but will be enough to lift all the world’s poor out of poverty.

6) **Use the remainder of the revenues to enhance and restore the asset.** They could be used to fund renewable energy projects, research and development on renewable energy, payments for ecosystem services such as carbon sequestration, etc.

**Special features and cautions**

1) Do not allow revenues to go into the general fund of any government
2) Appoint trustees based on their qualifications and understanding of the purposes and details of the trust, not their political affiliations
3) Make all operations and transactions of the trust transparent by posting them open access on the internet
4) Make trustees accountable for their actions and decisions and subject to removal if they are not managing the trust for the benefit of the beneficiaries (all current and future people)
Thank You
Sign on to the Earth Atmospheric Trust at:
www.earthinc.org