Sessions 11-12
Overview of Economics of World Forestry

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Flow

1. Introduction
2. Future Environmental and Forestry Challenges
3. Meeting the Challenges
4. How will Societies Respond?
5. Sources of Inefficiency
6. Global Forest Economics – Trends
7. Global Forest Economics – Public Policy
8. Case studies 1, 2, 3

1. Introduction

- The Self-Extinction Premise
  - Some Historic Examples
    - The Roman empire
    - The Mayan civilization – Evidence from the Easter island

The second case study, Easter Island, shares some remarkable similarities with the Mayan case and the Malthusian vision. Easter Island lies some 2,000 miles off the coast of Chile. Current visitors note that it is distinguished by two features: (1) its enormous statues carved from volcanic rock and (2) a surprisingly sparse vegetation, given the island's favorable climate and conditions, which typically support fertile soil. Both the existence of the imposing statues and the fact that they were erected at a considerable distance from the quarry suggests the presence of an advanced civilization, but to current observers it is nowhere in evidence. What happened to that society?

According to scholars, the short answer is that a rising population, coupled with a heavy reliance on wood for housing, canoe building, and statue transportation, decimated the forest (Brander and Taylor, 1998). The loss of the forest contributed to soil erosion, declining soil productivity, and, ultimately, diminished food production. How did the community react to the impending scarcity? Apparently, the social response was war, and ultimately, cannibalism.

2. Future challenges

1. The Climate Change

- Greenhouse effect
- Greenhouse gas and human activities
- Climate change has an important moral dimension – Third world will be hit the worst, due to the activities of the first world
- Climate change and international coordination; the latter is by no means a given.

2. Water Accessibility

- Increasing water stress
- Non-uniformly distributed water stress
- Demand for water and human activities

3. Meeting the challenges

- International Cooperation

- Resilient Market System

4. Response of society

- Positive feedback loops
  - Positive feedback loops refer to those in which secondary effects tend to reinforce the basic trends. For example, emissions of methane and global warming.

- Negative feedback loops
  - A self-limiting process
    - for example, the Gaia hypothesis proposed by Professor John Lovelock

- The Role of Forest Economics, providing solutions to climate change, biodiversity loss, water scarcity, and population explosion

- The Use of Models
  - Simplified characterization of reality
  - The use of models
  - Experimental economics, Ecological economics, and Econometrics

4. Response of society…

Question:

Does the normal reaction of the price system to a resource shortage provide an example of a positive or a negative feedback loop? Why?

5. Sources of inefficiency – global forestry trends

Perverse Incentives for the Landowner

- Perverse incentives create inefficient and unsustainable outcomes especially with respect to privately owned forests.
- The value of a standing forest as wildlife habitat or ecosystem function is an **external cost**. Failure to recognize social values will result in inefficiencies.
- External costs of timber harvesting may not be adequately considered by the private landowner.

Perverse incentives stemming from Government policies

- Government resettlement programs have also encouraged deforestation by facilitating the movement of migrants into agriculture.
- Concession agreements are another source of inefficiency. Concession agreements define the terms under which public forests can be harvested

5. Sources of inefficiency – global forestry trends

Perverse Incentives for Nations

- Deforestation involves trans-boundary or global externalities.
  - Biodiversity: Deforestation is a major source of species loss. Many benefits of species preservation are external to the country with the forest.
  - Climate change: Deforestation contributes to climate change, but the benefits of leaving the trees standing are largely external. The costs, however, are largely internal
  - Public owned forests are sometimes seen as a means of providing land to peasants.
  - Poverty and deforestation can reinforce each other through positive feedback loops.
  - At the national level, large debts in many developing countries encourage the overexploitation of resources in order to raise foreign exchange to finance the debt.

5. Global forestry economics - Sustainability

- Profit-maximizing decisions may not be efficient due to externalities.
- Efficiency and sustainable forestry are not necessarily compatible.
- Practices aimed at sustainable forestry that is also economically sustainable had led to a focus on rapidly growing trees and plantation forestry.
- Plantation forestry is controversial

5. Global forestry economics – other public policy measures…

1. Debt-for-nature swaps
   - An agency, usually a non-governmental organization, purchases developing country debt, typically at a discount if repayment by the developing country is unlikely.
   - The non-governmental organization then “trades” (cancels) the debt back to the developing country in exchange for an environmental action such as the protection of a tropical forest.
   - An example is Madagascar, where the Conservation International, the Missouri Botanical Garden, and the World Wildlife Fund negotiated nine commercial debt-for-nature swaps, which generated $11.7 million in conservation funds (1987-89)
2. Extractive reserves
   - Areas reserved for indigenous peoples to engage in traditional hunting and gathering activities
3. Conservation easements and land trusts.
   - A conservation easement is a legal agreement between a land owner and a land trust or a government agency. Conservation easements can be sold or donated

5. Global forestry trends – other public policy measures

4. The World Heritage Convention requires 1% of contributions to UNESCO to be put into a World Heritage Fund, to protect cultural and natural environments of "outstanding universal value."
    - Ratifying countries can have their natural properties of outstanding value added to the World Heritage List and apply for funds to help protect these sites
5. Royalty payments grant payments to biologically rich countries for all products developed from species in those countries.
    - These royalties are incentives for countries to preserve their biological diversity. Pharmaceutical companies have been making payments based on shared profits.
6. Carbon sequestration credits
    - This approach attempts to internalize the carbon-absorption benefit externality by giving forest owners credit for the additional carbon they remove from the atmosphere. This credit is tradable.

5. Global Forestry Economics – Case study 1

Producing Sustainable Forestry through Certification

The Forest Stewardship Council (FSC) is an international, not-for-profit organization headquartered in Oaxaca, Mexico. The FSC was conceived in large part by environmental groups, most notably the World Wide Fund for Nature (WWF). The goal of the FSC is to foster "environmentally appropriate, socially beneficial, and economically viable management of the world's forests." It pursues this goal through independent third-party certification of well-managed forests.

The FSC has developed standards to assess the performance of forestry operations. These standards address environmental, social, and economic issues. Forest assessments require one or more field visits by a team of specialists representing a variety of disciplines, typically including forestry, ecology/wildlife management/biology, and sociology/anthropology. Additionally, the FSC requires that forest assessment reports be subject to independent peer review. Any FSC assessment may be challenged through a formal complaints procedure. FSC-certified products are identified by an on-product label and/or off-product publicity materials.

Although the FSC is supported by a broad coalition of industry representatives, social justice organizations, and environmental organizations, it is opposed by some mainstream industry groups, particularly in North America, and by some landowners' associations in Europe. One unresolved issue is how to include small and medium-sized landholdings in this certification process since conventional certification is expensive.

Source: The Forest Stewardship Web site: http://www.fsc.org (accessed November 11, 2010).

5. Global Forestry Economics – Case study 2

Does Pharmaceutical Demand Offer Sufficient Protection to Biodiversity?

The theory is clear—incentives to protect plants are stronger when the plants are valuable to humans. Is the practice equally clear?

The case of Taxol is instructive. Derived from the slow-growing Pacific yew, Taxol is a substance that has been proved effective in treating advanced forms of breast and ovarian cancers. As of 1998, it was the best-selling anticancer drug ever.

Since the major site for this tree was in the old-growth forests of the Pacific Northwest, the hope of environmental groups was that the rise in the importance of Taxol might provide both sustainable employment and some protection for old-growth forests.

In fact, that is not how it worked out. The Taxol for the chemical trials was derived from the bark of the tree. Stripping the tree of its bark killed it. And supplying enough bark for the chemical trials put a tremendous strain on the resource.

Ultimately, the private company that marketed Taxol, Bristol-Squibb, developed a semi-synthetic substitute that could be made from imported renewable tree parts.

The Pacific yew, the original source of one of the most important medical discoveries in the twentieth century, was left completely unprotected. And the industry that had grown up to supply the bark collapsed. In the end, its value proved transitory and its ability to support a sustainable livelihood in the Pacific Northwest was illusory.

Source: Jordan Goodman and Vivian Walsh. *The Story of Taxol: Nature and Politics in the Pursuit of an Anti-Cancer Drug* (New York: Cambridge University Press, 2001).

5. Global Forestry Economics – Case study 3

Trust Funds for Habitat Preservation

How can local governments finance biodiversity preservation when faced with limited availability of both international and domestic funds? One option being aggressively pursued by the World Wildlife Fund involves trust funds. Trust funds are moneys that are legally restricted to be used for a specific purpose (as opposed to being placed in the general government treasury). They are administered by trustees to assure compliance with the terms of the trust. Most, but not all, trust funds are protected endowments, meaning that the trustees can spend the interest and dividends from the funds, but not the principal. This assures the continuity of funds for an indefinite period.

Where does the money come from? Many nations that harbor biodiversity preserves cannot afford to spend the resources necessary to protect them. One possibility is to tap into foreign demands for preservation. In Belize, the revenue comes from a "conservation fee" charged to all arriving foreign visitors. The initial fee, $3.75, was passed by Belize's parliament in January 1996, raising $500,000 in revenues each year for the trust fund. Similar trust funds have been set up in Mexico, Honduras, and Guatemala.

Income from the trust funds can be used for many purposes, including training park rangers, developing biological information, paying the salaries of key personnel, and conducting environmental education programs, depending on the terms of the trust agreement.

Biodiversity preservation that depends on funds from the general treasury becomes subject to the vagaries of budgetary pressures. When the competition for funds intensifies, the funds may disappear or be severely diminished. The virtue of a trust fund is that it provides long-term, sustained funding targeted for the protection of biodiversity.

In 2004, Belize joined with Mexico, Honduras, and Guatemala to form the Mesoamerican Reef (MAR) fund, a regional financing mechanism. It was created to strengthen the alliance among the four country-specific trust funds. The MAR fund is unique as the first environmental fund in the Western Hemisphere to transcend national boundaries and encompass an entire ecoregion. The fund supports projects related to improving water quality, ecotourism, sustainable fisheries, and strengthening public institutions.

Source: Barry Spergel. "Trust Funds for Conservation," *FEEM Newsletter* Vol. 1 (April 1996): 13–16 and the World Wildlife Foundation's website on conservation trust funds at http://www.worldwildlife.org/what/howwedoit/conservationfinance/conservationtrustfunds2.html (accessed November 18, 2010)

5. Global Forestry Economics – Question

Compare forest certification and the certification of organic produce in terms of the relative degree to which each type of certification could, by itself, produce an efficient outcome.

5. Global Forestry Economics – Answer

Certification is especially effective when the benefits being protected by the certification process are directly received by the purchaser. It is less effective when conveying benefits that do not directly affect the purchaser. Both certification systems convey a considerable amount of information that is about externalities. For forests, for example, it can convey whether the wood is sustainably harvested, but sustainably harvested wood is apparently indistinguishable from unsustainably harvested wood in terms of its ability to be used to build a house, construct furniture, etc. The real benefits are indirect and psychological—knowing that the harvesting process is not degrading the environment. Organic-produce certification produces many of those same indirect psychological benefits, but in addition this form of certification conveys some information (the absence of pesticide residues, for example) that directly can affect the consumer. For this reason, organic-produce certification is probably a bit more likely to produce a more efficient outcome all other things being equal.

End of session

Thanks