THE PRACTITIONER'S TOOLBOX: THE IMPORTANCE OF ECONOMIC TOOLS

THE ROOT CAUSES APPROACH: ANALYSIS AND STRATEGIC ACTION

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Understanding the root causes of biodiversity loss can help conservation practitioners address the forces that undermine conservation objectives, particularly those forces that are more difficult to recognize and remedy (such as poverty and inequality, markets and politics, and social change and development). The root causes approach facilitates identification, assessment, and response to these underlying causes of biodiversity loss through analysis and strategic action.

A root causes analysis should be conducted once broad goals, conservation targets, and general threats have been identified. As a decision-making tool, a root causes analysis can also help differentiate forces that can be addressed effectively from those that lay beyond existing resources and expertise.

Key questions that a root causes analysis helps to answer:

- What are the driving forces of biodiversity loss at local, regional, national, and international levels?
- What are the linkages between these different factors, and how are they connected to the immediate pressures causing biodiversity loss?
- Where should resources be targeted to achieve the greatest impact?

The analysis should be carried out by a team of experts from the fields of environment, economics, and the social sciences and can be completed in stages over a period of a few weeks to a few months. Resource and time requirements will depend on the amount of existing information and capacity available.

The action phase of the root causes approach uses the results of the analysis to engage stakeholders in translating analysis into action for the short, medium, and long terms. The root causes approach requires reaching beyond the traditional partners and avenues for conservation activity to engage key stakeholders, research institutes, and individuals and groups with political influence. A number of activities (such as priority setting, feasibility assessments, and political mapping) will help guide and inform this process.

ENVIRONMENTAL VALUATIONS FOR CONSERVATION: A PROBLEM OF PURPOSE RATHER THAN PRECISION

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Conservation planning requires the use of economic tools like cost-benefit analysis. But to complete this type of analysis, monetary values of costs and benefits need to be identified. The problem is that only some costs and benefits have an existing market price. Coral reefs, for example, provide a variety of use values like fishing and tourism to which prices can be attached. Other uses for reefs, like protection from waves, have no market values. There are also non-use values that have no markets, such as the value of knowing that a resource continues to exist or will be in existence for the use and enjoyment of future generations.

If economic analysis only includes those values for which there are market prices, it will provide a distorted measure of the benefits of natural resources. For this reason, economists have developed the concept of Total Economic Value (TEV) that attempts to incorporate all values-use and non-use into the analysis.

While substantial progress has been made in developing methods for estimating monetary values of environmental resources, extreme caution should be exercised in using the results of valuation studies. A fundamental issue facing the user of environmental valuation data is that there is not just one set of economic values for a particular resource; there are many. Each one is appropriate in a particular context, and irrelevant in others.

It is essential that those using valuation studies have a clear understanding of what form of valuation is needed and how the estimated values are to be used. Without a clear understanding of how the estimated values are to be used and of what sorts of values are needed, disagreements over the precision of the method are probably irrelevant.

ECONOMIC INSTRUMENTS: CRITICAL TOOLS FOR ADDRESSING ECONOMIC FAILURES

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Economic failure is generally viewed as a driving force of biodiversity loss, and occurs when markets fail to set an appropriate price for a resource. Often, the price individuals pay to use a natural resource is lower than the true cost to society. As a result, users have an economic incentive to exploit resources excessively and unsustainably. The Convention on Biological Diversity estimates that around 60 percent of biodiversity loss results from economic failures.

Addressing economic failure requires introducing economic instruments that capture the value of biodiversity. Instruments such as taxes, user fees, permits, fines, and subsidy removal cause users to pay for the environmental and social costs they create, and hence encourage changes in behavior.

Taxes can be powerful tools for incorporating the true costs of biodiversity-degrading activities. Studies have shown, for example, that if a land use tax was used to force Indonesian palm oil producers to incorporate the social and environmental costs of palm oil production, they would shift production away from new areas and instead intensify production on existing areas.

Introducing market-based instruments is another way to change individual behavior at wider spatial levels. For instance, certification of sustainably harvested products like marine and forest resources has opened new markets for products that help conserve biodiversity, offering potentially lucrative and sustainable options for producer countries.

User fees are a multipurpose economic instrument that can help capture biodiversity values and protect sensitive areas. For example, an economic analysis to set the optimal admission price for a variety of parks in Costa Rica determined that visitors were willing to pay more to enter protected areas than they were being charged. The subsequent increase in user fees helped reduce demand and increase revenues for the parks, relieving pressure on the heavily visited parks.

Appropriate economic instruments should be identified during the socioeconomic assessment process and their implementation should be monitored closely.

CONSERVATION PERFORMANCE PAYMENTS: EFFICIENT INVESTMENTS FOR ECOREGION CONSERVATION?

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Imagine that you live in a house that requires no air conditioning because of the shade provided by trees on your neighbor's property. A new neighbor moves in and wants to cut down the trees and install solar panels to reduce her electricity bills. Cutting the trees will require you to install air conditioning and pay higher bills. You decide you have two possible courses of action: You could create new investment opportunities for your neighbor, making her returns so high that she will not want to cut down the trees. Or, you could simply pay your neighbor the foregone savings in her electric bills to leave the trees standing. This would probably be far less expensive and would provide greater assurance that the trees would remain standing.

Many low-income nations tend to adopt the less direct, more development-oriented first approach. They attempt to use development interventions (such as encouraging activities like ecotourism) to indirectly protect ecosystems. These interventions, however, are hindered by the ambiguous incentives they generate, the complexity of their implementation, and their inability to address the short-term urgencies and landscape-scale focus of ecoregion conservation.

Paying individuals or communities directly for conservation performance (just as you pay your neighbor not to cut down the tress) may be simpler and more effective. The US Conservation Reserve Program, which spends $1.8 billion annually to set aside 12-15 million hectares of environmentally sensitive farmland, is one such approach.

Conservation payments could also prove effective in low-income nations. The best-known existing program is in Costa Rica, where landowners are paid $35 per hectare annually for the ecosystem services their land provides. But performance payments cannot be applied in areas that lack institutions that can allocate and enforce property rights, design and implement payment arrangements, and monitor ecosystem health. While these potential barriers must be addressed, conservation performance payments merit further exploration as a global conservation initiative.

CASE *In Point*

A Socioeconomic Assessment of Fisher Communities in Banda-Flores and Sulu-Suluwesi Ecoregions

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The Wallacea Ecoregion, which includes the Flores-Banda Seas and the Indonesian portion of the Sulu-Suluwesi Seas marine ecoregions, is threatened by a variety of unsustainable fishing practices that degrade the region's reefs. The goal of the Wallacea Program is to bring about the responsible management of Wallacea's reef fisheries resources. This goal will be pursued by developing and implementing a strategy for enhanced reef fisheries conservation in the Wallacea Ecoregion that will provide tools, resources, options, and incentives for improving reef fisheries management. The program will work with relevant stakeholders to develop the strategy, based on targeted biological, socioeconomic, and technical profiles of coral reef fisheries in the Wallacea Ecoregion. These in turn will support actions to foster good management and economic incentives for environmental responsibility in selected reef fisheries and, through communications of the results at pilot sites, throughout Wallacea and beyond.

To understand the forces driving unsustainable fishing behavior and to identify alternative livelihoods that comply with management regulations, the Wallacea Program is assessing the socioeconomic characteristics of fisher communities throughout the region.

The factors shaping the social and economic environment can be assessed at four levels: the household, the community, the nation, and the region. The Wallacea Program focuses mostly on the household and community levels, but a study of financial flows in the market for illegally captured marine products will take place at all four levels. For select products, the trade chain will be followed from producer to consumer, and information will be collected through visits to markets and interviews with transport and export companies.

The Wallacea Program is using a variety of tools to assess the socioeconomic forces at work in a selection of fishing communities in the Sulu-Suluwesi and Banda-Flores Seas. The financial costs and benefits of fishing, the flexibility of fishers to adopt new technologies or comply with rigorous management regulations, and the social network of fishers are assessed using a variety of complementary methods.

The following are some of the methods being used:

- *Personal interviews* with fishers with fishers using each of the major gear types used in the focal area to assess the costs of operation and estimates of fishers' average gross income
- *Logbooks* distributed to a selection of fishers using most gear types to quantify the average daily catch with each type of fishing gear and the uncertainty around this average during one month
- *Questionnaires* distributed to groups of fishers, buyers, and other stakeholder groups to assess perceptions about the effects of fishing and other factors, such as coral bleaching, on their livelihoods
- *Informal discussions* with fishers, buyers, scientists, government officials, and others to obtain price information and background information about area development, legislation, and fishing patterns
- *Direct observations* at major fish landing sites to gain objective estimates of the total catch landed each day, species composition of catches, prices, and marketing systems

A similar approach has been effective in identifying the costs and benefits of destructive fishing practices in Indonesia. The characteristics, impacts, and economic costs and benefits of blast fishing were studied at two scales: individual fishing households and Indonesia as a whole. The study determined the economic costs to society were four times higher than the private benefits from blast fishing in areas with a high potential to benefit from the tourism and coastal protection values of healthy reefs.[1]

[1] C. Pet-Soede, H.S.J. Cesar and J.S. Pet. "An economic analysis of blast fishing on Indonesian coral reefs." Environmental Conservation. 26(2):83-93.1999.

CASE *In Point*

The GREEN Program: Strengthening Capacity to Integrate Economics Into Ecoregion Conservation Planning

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The goal of GREEN (Green Economics for the Environment) is to increase the effective use of economic tools for conservation by engaging programs in a learning-by-doing process. Through training workshops, GREEN helps conservation practitioners identify, design, and implement economic tools for biodiversity conservation. The training sensitizes participants to where and how economic approaches will add value to conservation work and when technical expertise is needed. GREEN workshops provide participants with living examples of how and where economic approaches work. GREEN is collecting a portfolio of these examples to disseminate to ecoregions, organizations, and institutions worldwide.

GREEN Marine Workshops

In December 2000, GREEN held workshops in Indonesia and the Cook Islands for staff working on fisheries and coral reef conservation. Participants received training in economic methods, completed basic root causes analyses, and identified where economic tools might be useful for conservation in their programs.

Workshop participants found that economic tools could help:
- ◆Explain why natural resources are exploited
- ◆Provide tools to support conservation aims
- ◆Quantify losses and gains
- ◆Analyze issues and devise appropriate responses
- ◆Identify how some solutions may give incentives to act inappropriately

"The workshop helped me know what I should be asking of planners and decision makers." --Bali workshop participant

Since the workshops, WWF Indonesia has begun integrating economics into their conservation planning process. In addition to socioeconomic assessments, they are looking into initiating pilot activities that will introduce performance payments, establish micro-credit systems, and introduce tourism fees in marine areas. GREEN will help provide technical assistance and specific expertise and financing for the design and implementation of these activities.

GREEN's Long-Term Commitment

Experience has shown that integrating economics into socioeconomic assessments and other aspects of conservation planning requires more time and resources than a workshop can provide. GREEN workshop participants have indicated that follow-up technical assistance and training in economic assessments is needed, as are financial resources to support pilot activities that test the application of economic tools. While GREEN provides long-term support to workshop participants, partnerships with universities, research institutions, and NGOs can also help support the integration of economic tools into conservation plans.

GREEN is committed to adaptive learning. Future GREEN initiatives will build on the experiences and feedback generated by past participants. The next GREEN workshop (focusing on freshwater) will actively engage the University of Queensland as a technical partner, and will focus discussion and training around specific ecoregion conservation examples.

Recommended Resources

Workshop Report: Green Economics for the Environment, Integrating Economics into Biodiversity Conservation in Marine Ecoregions, WWF-Conservation Strategies Unit & WWF-Asia Pacific Program, December 2000.

Wants, Needs and Rights: Economic Instruments and Biodiversity Conservation: A Dialogue, Sheng, F., WWF-Macroeconomics Program Office, May 2000.

Project Economics Handbook: Economic Instruments in the Design of Integrated Conservation and Development Projects, McNally, R. & Mabey, N., WWF-UK Economics and Global Policy Unit, July 1999

Towards Sustainable Financing of Protected Areas: Learning from a Business Approach, Inamdar, A. & de Merode, E.l, The Environment and Development Group, Oxford, December 1999.

Root Causes of Biodiversity Loss: An Anlytical Approach, Stedman-Edwards, P., WWF-Macroeconomics Program Office, 1998.

Assessing Root Causes: A User's Guide, Robinson, D., WWF-Macoreconomics Program Office, 1999.

Global Habitat Protection: limitations of development interventions and a role for conservation performance payments, Ferraro, P., 2000. Department of Agricultural, Resource and Managerial Economics Working Paper no. 2000-03. Cornell University, Ithaca, NY

Challenges in Sustaining Protected Areas and National Parks: a preliminary review of entry fees and economic valuation in Malaysia, Yeo, B. & Ng, A., WWF-Malaysia. June 2000.

An Economic Analysis of Blast Fishing on Indonesian Coral Reefs, C. Pet-Soede, H.S.J. Cesar and J.S. Pet. *Environmental Conservation* 26(2):83-93, 1999.

Web Links

WWF Ecoregion Conservation Intranet Site
http://intranet.wwfus.org/erbc/index.htm
(for access, contact erbcinfor@wwfus.org)

WWF International's A/P GREEN Program,
http://www.intranet.panda.org
home>knowledge areas>Asia/Pacific>regional programmes>green economics

WWF International's Macroeconomics Program Office
http://www.panda.org/resources/publications/sustainability/mpo

IUCN Biodiversity Economics Site
http://www.biodiversityeconomics.org

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WWF

WWF's mission is the stop the degradation of the planet's natural environment and to build in which humans live in harmony with nature, by:
- ◆conserving the world's biological diversity
- ◆ensuring that the use of renewable resources is sustainable
- ◆promoting the reduction of pollution and wasteful consumption

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Sharing Across Boundaries

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Economics and Ecoregion Conservation: The Burning Questions

Economics is an essential tool for biodiversity conservation. Called green economics when applied to the conservation of natural resources, economics helps conservationists identify the economic causes of biodiversity loss, assess the costs and benefits of biodiversity loss, and define market- or policy-based incentives to overcome threats to biodiversity. This document reviews how to integrate economics into ecoregion conservation and shares some of the ideas and lessons that have emerged from WWF economic initiatives (such as GREEN and Root Causes). It also presents innovative ideas for using market- and policy-based economic incentives to encourage conservation behavior.

How is economics relevant to ecoregion conservation?

Scaling up conservation requires an increasing use of economic tools. At an ecoregional scale, complex economic forces can interact to cause biodiversity loss. For instance, everyone in coastal areas from local fishers and village dwellers to hotel owners and tourists are motivated by their own incentive structures. Government policies (such as taxes, subsidies, and fishing quotas) and demand for products provide the basis for these structures. Understanding and responding to these complex structures is critical to successful conservation, and economic tools provide an effective way to analyze and address them.

Why should conservationists integrate economics into their conservation work?

Economic tools can help conservationists provide incentives for resource users to behave in ways that satisfy both their self-interest and the goals of conservation. It is important to understand where and how to use the variety of economic tools available and when expertise or increased institutional capacity is needed.

How can economic considerations be integrated into assessments for conservation action?

To better understand the forces driving negative conservation behavior, and to help identify potential solutions, economic data should be assessed independently from and together with social and cultural information. Specifically, cultural, social, and economic information can help determine why individuals over- or under-utilize natural resources. And information about people's perceptions of changes in markets is as important as the market trends themselves, and should also be included in the economic assessment.

How are root causes analysis and economics related?

A root causes analysis helps identify the level at which threats to biodiversity should be addressed. Then, economic tools can be used to counter the threats. For example, a root causes analysis of degraded mangroves in Pakistan determined that increases in government subsidies on irrigation water led to a reduced flow of water to the mangroves. The decreases in water and silt flowing to the delta added to the mangroves' degradation. Economic tools that could be used to counter this threat include reducing or eliminating the government subsidy and imposing a tax on water.