

Incentive measures for the conservation and sustainable use of biodiversity

Incentive measures seek to address the underlying causes of biodiversity depletion, particularly the fact that some individuals or organisations benefit from exploiting biodiversity without covering the full costs borne by society as a whole. Article 11 of the Convention on Biological Diversity (CBD) requires that *"each contracting party shall, as far as possible and as appropriate, adopt economic and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity."*

Removal of perverse incentives

The removal or reform of perverse incentives (i.e. policies which encourage biodiversity losses) is the first priority. Perverse incentives can include subsidies, tax relief and below-cost resource pricing in the agricultural, energy,

forestry, fisheries, mining and transport sectors, as well as marketing restrictions and seed distribution systems which encourage a narrower range of agricultural species and varieties. Their reform can be a very cost-effective approach to biodiversity conservation and sustainable use, sometimes generating additional economic benefits. Obstacles to their reform or removal may include opposition by stakeholders (from small farmers to multinational companies) who benefit from the *status quo*, lack of financial transparency and problems in identifying indirect impacts on the environment.

Economic incentives

Economic incentives seek to address economic causes of resource depletion, such as inappropriate prices, unclear ownership of biological resources and the often high but short-term returns available from over-exploitation of resources, and thereby to encourage sustainable use of biodiverse resources. They include:

- Well-defined and secure property rights (common, private or state), including rights of exclusion. These are an incentive for sustainable resource use as they give greater security over future use and allow for long-

What is an incentive?

According to the CBD *'An incentive is a specific inducement designed and implemented to influence government bodies, business, non-governmental organisations, or local people to conserve biological diversity or to use its components in a sustainable manner. Incentive measures usually take the form of a new policy, law or economic or social programme.'*

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Subsidies to support the development of export-based monoculture agriculture can lead to the loss of small-scale biodiverse mixed farming systems (this picture shows a field in Cameroon which combines yam and cassava cultivation).

term planning. They are a necessary, rather than sufficient condition, as the economic return also needs to be higher than from alternative uses. This normally requires additional marketing of resources, for example through ecotourism or fair trade practices in order to increase the value of biodiversity.

- The potential of bioprospecting deals combined with intellectual property rights (IPRs) has received much attention (see BB3). But developing mechanisms for assuring the IPRs of local and indigenous communities is a complex political, institutional and legal challenge, and the potential for new discoveries may be limited by diminishing discovery rates.
- Promotion of alternative income-generating activities aimed at reducing exploitation pressures is commonly a major component of conservation and development projects. However, such activities have often been additional to, rather than instead of, past unsustainable activities. An approach more promising than direct substitution of activities (e.g. livestock-keeping to reduce bushmeat hunting) is to focus on increasing the economic return for labour and other inputs into conservation and sustainable use activities.

The impact of economic incentive measures is uncertain, and they are often complex and difficult to implement. Great caution is needed. They are as likely to lead to over-exploitation as to sustainable management or conservation, and should be complemented by regulatory measures, at least in the short-term.

Regulation and market-based instruments

Regulation allows governments directly to enforce or restrict biodiversity-depleting activities.

Standards, quotas and trade restrictions can be clearly documented, are legally-binding and are important in safeguarding biodiversity because they fix the maximum levels of resource depletion. Examples include emissions standards, game hunting quotas and international instruments such as CITES (see BB20). However, standards and quotas may frequently be ignored, and under these circumstances market-based instruments (MBIs) may be economically more efficient and flexible.

Fiscal MBIs, like taxes, fees and charges, give the user more choice over the level of resource use than is provided by regulations, while narrowing the gap between costs to individuals and to society (which include costs to the environment). Fiscal levels can be changed more easily than regulatory standards, and they can generate revenue for environmental activities. Examples include access fees for protected areas, pollution taxes and trophy fees from game hunting.

Other MBIs are based on trade in new forms of property rights. For example:

- Tradable permits, such as fishing and hunting quotas, combine the regulatory and market approach. Tradable permits encourage economic efficiency of resource use, since they are supposed to be traded until allocated to those able to realise the highest value. Permits distributed to local communities can become an important source of income.
- Forest-based carbon-offset trading involves a country or company which emits CO₂ paying another country or resource manager to absorb CO₂ in biomass growth, thereby gaining carbon credits to set against its own emissions. Forest conservation is a possibility under the Clean Development Mechanism (CDM) of the Kyoto Protocol, if ratified. The real concern for biodiversity, however, is that the CDM could encourage fast-growing tree monocultures, possibly leading to clearance of natural biodiversity-rich forests in the process.
- Tradable development rights work by compensating landholders for non-development or non-exploitation of land through purchase of the development rights (e.g. by a conservation organisation), or by providing them with development rights in less sensitive areas. In the former case the landowner retains the right to ecotourism or other sustainable land-uses.

It is an obvious caveat that MBIs depend on well-functioning markets, and these are notoriously absent in much of the tropical world. The more economically efficient measures tend to be complex, and politically and administratively demanding. In consequence, changes in political commitment and both administrative and technical capacity building are usually required for the effective implementation of MBIs. Another constraint is that the regulations, and the reasons for them, are often poorly understood by local communities.

Funding instruments

Environmental, conservation or trust funds are blunt financial instruments, in the sense that they do not provide direct incentives to the resource user. They can be valuable where biodiversity or natural habitats contribute a great deal to the public good, and where the scope for economic incentives or regulation is limited (as in the conservation of biological resources without any recognised commercial value). However, they can result in inefficient resource allocation. They have been successful when managed by independent organisations that have built effective, responsive and focused programmes, based on broad consultative processes. Examples of these funds include:

- the Global Environmental Facility (GEF)

Stakeholder involvement

Depletion of biodiversity often leaves poor groups worse off, but efforts to protect biodiversity may also cause losses to local populations through restrictions on use of resources. In designing and implementing incentive measures, attention should be paid to promoting fair and equitable sharing of costs and benefits arising from biodiversity conservation and sustainable use. Stakeholders who depend on local resources for their livelihood, and who are often the *de facto* stewards of the resource, need to be compensated for losing income and opportunities as a result of conservation activities.

The private sector has a significant role in managing and using biological resources. Incentive measures affect a wide range of private sector activities, especially those in the agriculture, forestry, fisheries, biotechnology, pharmaceutical and energy sectors. It is essential to incorporate private sector interests and expertise in the development of incentive measures aimed at sustainable resource use.

Costa Rica's experience with market-based instruments

Costa Rica has been a pioneer in using MBIs to promote biodiversity conservation. In recent years, new institutional frameworks have been established for the commercial sale of rights to exploit forest genetic resources, carbon sequestration services and rights to watershed protection. In 1982, Merck & Co. and the National Biodiversity Institute (INBio) entered into a long-term bioprospecting deal, in which Merck made a one-off payment of \$1 million, and will pay an undisclosed share (probably 1–3%) of the profits of any drug developed, while keeping the patent rights. Carbon trading is also seen as a means of financing biodiversity conservation: Certifiable Tradable Offsets have been sold on the Chicago Stock Exchange and the proceeds used to help finance the country's protected area programme.

In the area of fiscal MBIs, private forest owners conserving their forests are entitled to environmental service payments of \$280 per ha over a five year period in recognition of the carbon, hydrological, biodiversity and aesthetic benefits. The money to pay for this is raised through a combination of 'polluter and beneficiary' pays taxes, including a vehicle fuel 'eco-tax', a tourist tax and a 'forest conservation' tax on hydropower and water companies.

which covers the 'incremental costs' of providing global biodiversity benefits over and above national costs and benefits;

- provision of national funds for the environment, including capital endowment funds, national environmental taxes (an MBI) and debt-for-nature swaps.

International funding instruments are an important mechanism to capture the global 'willingness-to-pay' for conservation and sustainable use approaches, and to ensure that global benefits arising from biodiversity are met with global funding. They aim to bring national benefits and costs closer to global

It is a challenge to make the conservation of long-term values of biodiversity, such as climate regulation, viable. Instruments such as environmental funds, covering the incremental costs over and above national costs and benefits, provide a means of ensuring this.



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Underlying causes of biodiversity loss and suggested policy responses

<i>Underlying causes</i>	<i>Policy response</i>
Market failures leading to unsustainable patterns of production and consumption	Address externalities (costs of commerce born by others) through economic incentives, regulation and market-based instruments
Open access leading to over-exploitation	Establish and clearly define property and use rights
Policy failures (e.g. subsidies to activities which exert pressure on biodiversity)	Remove or reform perverse subsidies

Source: adapted from OECD 1999

benefits and costs. This transfer of resources is necessary because most biodiversity is concentrated in tropical countries with insufficient funds, and there may be costs from lost opportunities to biodiversity conservation and sustainable use approaches.

Framework for incentives

Incentive measures function within a broader set of existing incentives, derived from a complex interaction of society's laws, policies, property rights, social conventions, cultural norms and levels of compliance. The effectiveness of incentive measures will therefore depend on a supportive framework, including institutional reform, capacity building, information, education and awareness-raising. For example: weak inter-sectoral coordination (e.g. between mining and forestry activities) can seriously impede conservation and sustainable use policies. Lack of information can impede objective decision-making, and enlightened education and awareness-raising may be significant in influencing public support in favour of biodiversity conservation, and sustainable use.

Conclusions

Emerging principles lay emphasis on: the identification and removal of perverse incentives; effective regulation to support positive incentives; the best incentives address underlying causes of biodiversity loss, but are usually the most complex to implement. From an economic perspective, the main underlying causes of biodiversity loss are failures in markets, resource ownership and policy. They can be addressed through a combination of regulations, MBIs and incentive measures. The CBD has (through its Conference of the Parties) encouraged countries to review existing legis-

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lation and policies so as to identify and promote biodiversity incentives, and invited them to share experiences in using different incentive measures.

Further information

- Global Environment Facility
<http://www.gefweb.org>
- IUCN economics unit
<http://www.economics.iucn.org>
- OECD (1999) *Handbook of Incentive Measures for Biodiversity: design and implementation*. Paris: OECD
- WWF-MPO (1999) *Socioeconomic Root Causes of Biodiversity Loss: an analytical approach paper for case studies*.
<http://www.panda.org/resources/programmes/mpo/library/>
- reference to other Biodiversity Briefs is denoted as (see BB#).

Website

All Biodiversity Development Project (BDP) documents can be found on the website:
<http://europa.eu.int/comm/development/sector/environment>