

Which market-based instruments to preserve forest biodiversity?

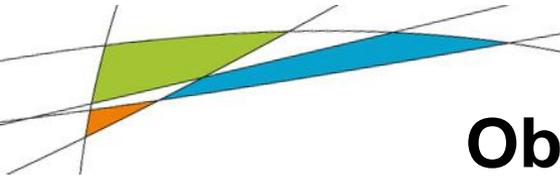
Elodie BRAHIC

CEMAGREF – Bordeaux, France

International Symposium

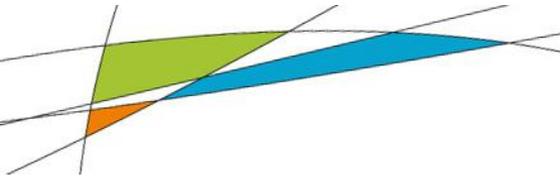
How to both harvest and preserve forests more or better?

Paris, 26-28 May 2010



Objective of the communication

- **Analysis of the international literature on economic incentive experiences to preserve forest biodiversity and to maintain or increase environmental services provided by forests**
- **Review the market-based instruments that encourage forest owners to preserve biodiversity on their land.**
- **Synthesis of a bibliographic report (2010), *Forest Action Plan* (National Strategy for Biodiversity, Ministry of Food, Agriculture and Fishing)**

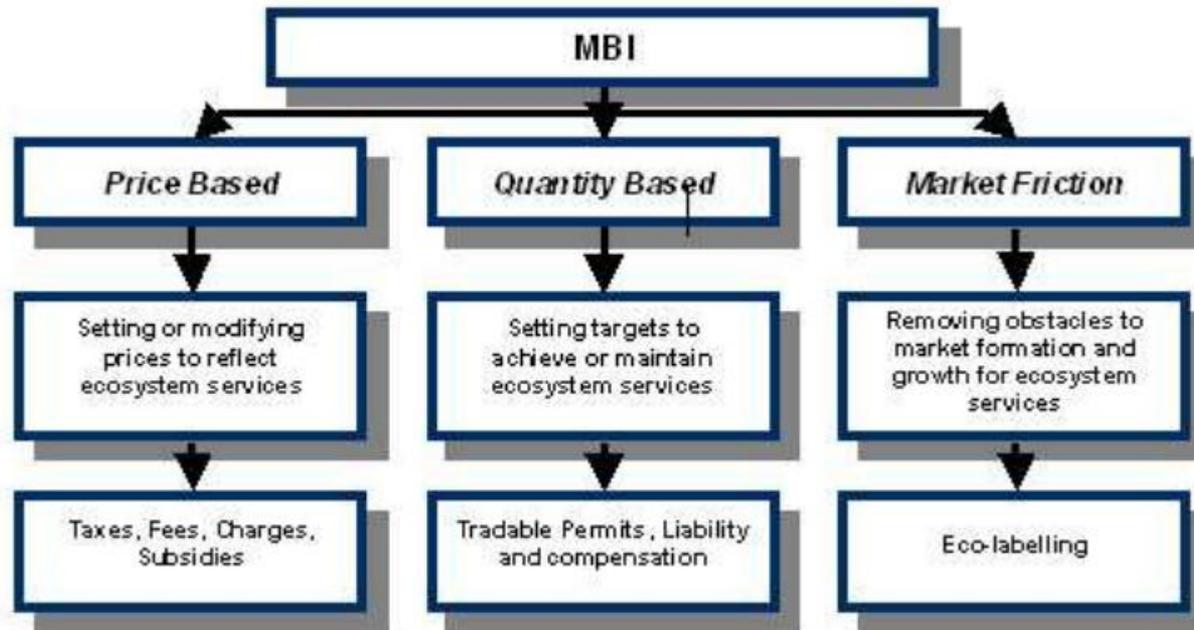


Introduction

- **Non-sustainable use of goods and services derived from biodiversity (→ market failure, public goods)**
- **Response: Regulation by the public sector**
 - **To protect endangered species, natural areas rich in species (national parks, natural reserves, red list of threatened species)**
- **Budgetary constraints**
 - **Choice of measures and strategies based on their environmental effectiveness and monetary efficiency**
 - **Increasing amount of attention on market-based instruments that offer new, less expensive perspectives to achieve conservation objectives**

Market-based instruments: definition, examples

“Market-based instruments seek to address the market failure of ‘environmental externalities’ either by incorporating the external cost of production or consumption activities through taxes or charges on processes or products, or by creating property rights and facilitating the establishment of a proxy market for the use of environmental services” (European Environment Agency).



Source: Bräuer et al. (2006)

Which instrument for which context?

Table 1. Status of the use of economic instruments

| Countries | Price based instruments (PB) | Subsidies (SU) | Reform or removal of perverse subsidies (PS) | Market creation or assignment of property rights (MC) | Liability instruments (LI) | Others (e.g. voluntary agreements) | <i>Total Instruments listed</i> |
|---------------------------------|------------------------------|----------------|--|---|----------------------------|------------------------------------|---------------------------------|
| Inland water | 41 | 23 | - | 3 | 2 | 1 | 70 |
| Marine and coast | 12 | 11 | - | 7 | 4 | - | 34 |
| Agriculture | 5 | 57 | 3 | - | - | 1 | 66 |
| Forest | 14 | 56 | 1 | 1 | - | 4 | 76 |
| Mountain | 7 | 16 | - | - | 2 | - | 25 |
| Dry and sub-humid land | - | - | - | - | - | - | - |
| Species management | 12 | 27 | - | 5 | 3 | 2 | 49 |
| Other; ecotourism, mining, etc | 26 | 44 | 3 | 4 | 4 | 4 | 85 |
| Total instruments listed | 117 | 234 | 7 | 20 | 15 | 12 | 405 |

OCDE (2008) – Study on the use of economic instruments in 20 OECD member countries

Which instrument for which context?

| Field of application | | Taxes / Charges | Subsidies /support | Tradable permits | Eco-labelling | Financial mechan. | Liability & Comp. | Total |
|----------------------|---|-----------------|--------------------|------------------|---------------|-------------------|-------------------|------------|
| | | A | B | C | D | E | F | |
| Flora | 1 | 7 | 1 | 2 | 0 | 0 | 0 | 10 |
| Fauna | 2 | 35 | 4 | 19 | 1 | 0 | 0 | 59 |
| Habitat / Ecosystems | 3 | 57 | 56 | 12 | 5 | 4 | 1 | 136 |
| Total | | 99 | 61 | 33 | 6 | 4 | 1 | 205 |

Distribution of market-based instruments in the database of Bräuer *et al.* (2006)

Subsidies: tree-planting, woodland support, land-use and agri-environmental measures...

Taxes/Charges: user fees for national parks, hunting and fishing permits, charge for wildlife use, logging permits, land-use tax, forestry tax...

Tradable permits: tradable fishing and hunting quotas, biodiversity offsets

Eco-labelling: forestry certification (Forest Stewardship Council)

Payments for environmental services

- **Broad definition of market for forest ES (e.g. in Landell-Mills and Porras, 2002):**

“Any transaction where financial compensation, or sometimes in kind, is offered to suppliers of an environmental service”.

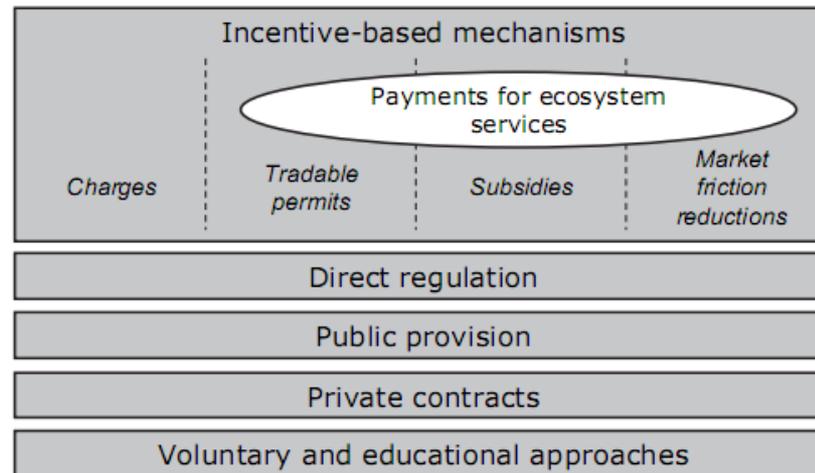


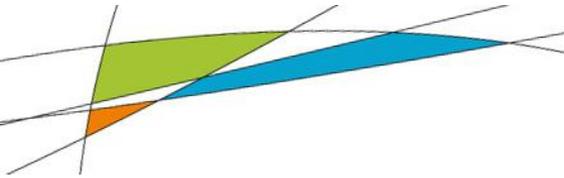
Fig. 1. Locating PES as an incentive-based mechanism within a broader suite of environmental policy instruments.

Source: Jack et al. (2008)



Why paying for environmental services?

- Land uses generate a variety of environmental services (e.g., high levels of vegetative cover help to regulate water flows, thereby reducing flooding risk and soil erosion).
- The landowners receive no compensation for such services and ignore them when making decisions about the use of their land.
→ Suboptimal decisions from a social perspective
- Idea: the beneficiaries of ES should pay a compensation to landowners in return for adopting practices that protect the ecosystem and associated services.
- PES are direct, contract, voluntary, contingent on results (Wunder, 2005)
- PES are efficient... but not always environmentally effective

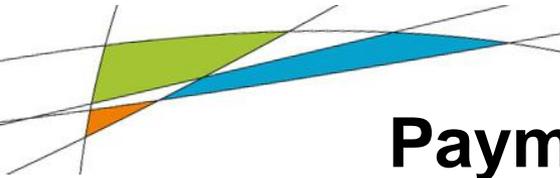


- **ES cannot be traded on a market such as directly consumable forest product**
- **They depend heavily on governmental policies and rarely start with spontaneous actions of the private sector.**
- **The success of a PES, and ultimately the achievement of the biodiversity targets, depends on the project characteristics and the context in which it is established:**
 - **the link between land uses and the provision of ES must be scientifically proved,**
 - **the ES must be clearly defined,**
 - **one should check whether the land use is consistent with the provision of ES,**
 - **payments must be flexible and accessible to all potentially interested agents.**



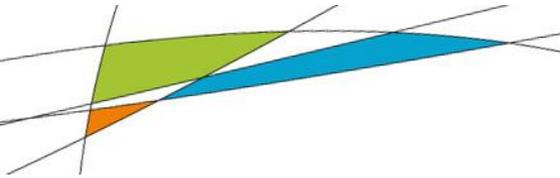
What environmental services? How to pay for?

- **Environmental services considered as having the highest commercial potential:**
 - **biodiversity protection,**
 - **carbon sequestration,**
 - **protection of watersheds,**
 - **scenic beauty.**
- **Over 300 markets have been identified in these areas (Landell-Mills and Poras, 2002; Platais and Pagiola, 2002a).**
- **PES through conservation or restoration projects.**



Payments for biodiversity protection

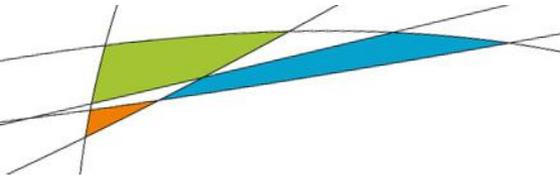
- **Biodiversity protection: protection of valuable ecosystems, natural habitats, species or genetic resources.**
- **Market dominated by the public sector.**
- **Most used options (Landell-Mills and Porras, 2002):**
 - **Protected areas,**
 - **Bioprospecting rights,**
 - **Biodiversity-friendly products.**
- **Land markets are increasingly used to acquire easements or concessions for conservation and development rights relating to lands that provide natural habitats.**



Application case 1

Costa Rica: A program to restrict landowners' activities to certain land uses (new plantations, sustainable forest, conservation of natural lands...).

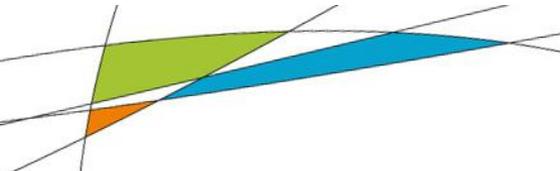
- Funding provided by the government (FONAFIFO, 3.5% income tax on sales of fossil fuels), the World Bank (a loan of 32.6 million\$) and Global Environment Facility (a grant of 8 billion\$).
- In return, landowners give up their right to FONAFIFO on environmental services for 5 years, and undertake to manage or protect their forest for 20 years.
- Results: Between 1999 and 2005
 - the lands under contract have increased,
 - the loss of 72 000 ha of forests in biodiversity priority areas has been prevented.



Application case 2

China: the *Natural Forest Conservation Program*

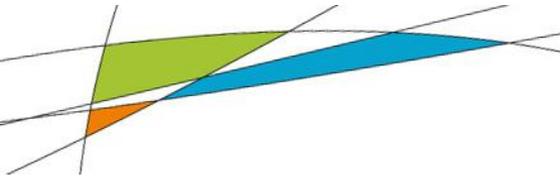
- To protect and restore natural forests through logging bans and afforestation incentives.
- Largely funded by government (mainly to cover economic losses caused by changes in timber harvesting and management of forest companies).
- Results: Between 1998 and 2003
 - areas suffering from soil erosion have declined by 6%;
 - the amount of wood harvested from primary forests has decreased by 41%, which has reduced carbon emissions;
 - and habitat of fauna and flora was improved.



Application case 3

Australia: the *Bush Tender program*

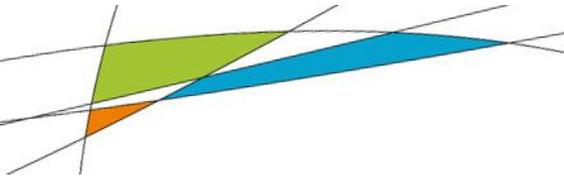
- Auction system for biodiversity conservation contract on private lands.
- Steps of the auction:
 - Landowners submit a bid (i.e. an action plan that meets the objectives of the conservation agency and a price);
 - a score is assigned to each bid (Biodiversity Benefits Index = *Biodiversity Significance Score, Habitat Services Score, price*);
 - bids are classified according to the BBI;
 - the best value bids are accepted until the funds run out.
- Results:
 - retention of large trees or fallen timber;
 - control of rabbits and weeds;
 - supplementary planting or revegetation.



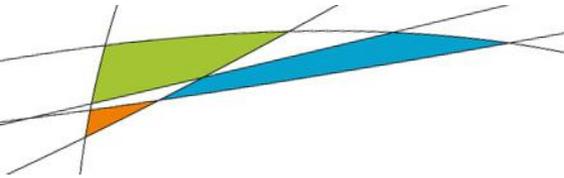
Conclusion

- Different instruments lead through regulation enforcement or through voluntarism to the preservation of the biodiversity :

| Goods and services derived from biodiversity | Mechanisms used to preserve biodiversity |
|--|---|
| Genetic resources | Bio-prospecting rights, Research permits |
| Species and ecosystem | Regulation, Subsidies, Tax benefits, Conservation easement, Development rights, Land acquisition, Management contract, Biodiversity offsets |
| Services provided by forests | |
| ➤ Flood control, Erosion control | Protection of ecosystem (<i>via</i> regulation, tax benefits, payment for environmental services) |
| ➤ Water quality | Taxes, Watershed management contracts, Protected areas, Water rights, Credits (water quality, salinity) |
| ➤ Carbon sequestration | Carbon offsets, Certified Emission Reductions, Emission Reduction Units |
| ➤ Hunting and fishing licensing, International fisheries | Individual Transferable Quotas |
| ➤ Eco-tourism | Entrance rights, Ecotourism concessions, Land lease / Land acquisition, Natural resource management agreements |
| Market products | Eco-labelling |
| ➤ Wood and non-wood products | |



- **Market-based instruments offer new perspectives to achieve biodiversity preservation objectives at a lower cost than regulatory measures.**
 - **In the markets for forest environmental services, payment mechanisms used are unsophisticated (intermediary-based transactions, direct negotiation).**
 - **More sophisticated payment mechanisms are more efficient but are less used.**
- **In the context of budgetary constraints, research should focus on procurement auctions, which are one of the most efficient payment mechanisms.**



Thanks for your attention...