



# INCENTIVE AND MARKET-BASED MECHANISMS TO PROMOTE SUSTAINABLE LAND MANAGEMENT

FRAMEWORK AND TOOL TO ASSESS APPLICABILITY

APRIL 2012





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## ACKNOWLEDGEMENTS

The Global Mechanism would like to express its sincere thanks to the authors of this report, Muhammad Ibrahim, Jaime Echeverría, Claudia Sepulveda and Cristobal Villanueva of the Tropical Agricultural Research and Higher Education Center (CATIE), for their excellent work, as well as to the Global Mechanism's own expert team who coordinated and contributed to the report: Siv Oystese, Paule Herodote, Alan Gonzalez, Simone Quatrini, Kwame Awere, Elsie Attafuah, Sven Walter, Jorge Esteban Moreno, Jose Miguel Leiva, Alejandro Kilpatrick and Valeria Smarrini.

This work has been improved and fine-tuned considerably through piloting and using the framework and methodology in six countries and from lessons

learned and inputs and recommendations from experts and institutions undertaking the country studies. Sincere thanks to the International Institute for Environment and Development (IIED) and Isilda Nhantumbo in Mozambique; Patrick Matakala and Mwape Sichilongo in WWF Zambia; Bernard Foahom and his team at the Institute of Agricultural Research for Development (IRAD) in Cameroon; Riziki Shemdoe at the Ardhi University in Tanzania; and last, but not least, CATIE's own experts in the Dominican Republic and Guatemala, Jose Miguel Mendez and Elian Cotto. Thanks also to Markus Lehmann in the United Nations Convention on Biological Diversity (CBD) and Calvin James in the Caribbean Network for Integrated Rural Development (CNIRD) for their comments on the work.

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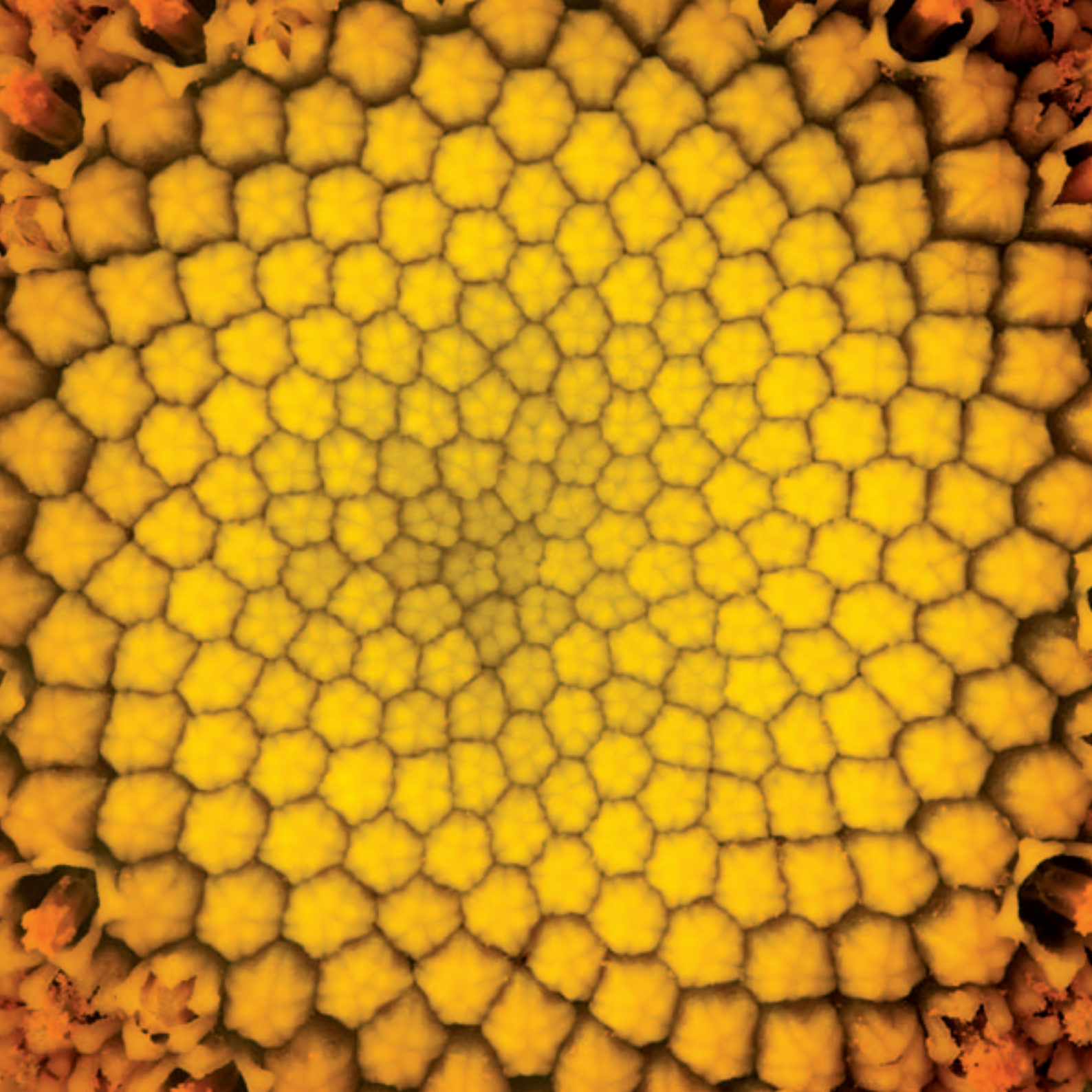
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## ACRONYMS

CATIE	Tropical Agricultural Research and Higher Education Center
CBA	Cost-benefit analysis
CDM	Clean Development Mechanism
EU	European Union
GM	Global Mechanism of the UNCCD
IMBM	Incentive and market-based mechanism
NGO	Non-governmental organization
PES	Payment for ecosystem services
REDD	Reducing Emissions from Deforestation and Forest Degradation
SLM	Sustainable land management
SLMP	Sustainable land management practice
UNCCD	United Nations Convention to Combat Desertification







## EXECUTIVE SUMMARY

This document presents an analytical framework and tool for how to use incentive and market-based mechanisms (IMBMs) to promote investments in sustainable land management practices (SLMPs).<sup>1</sup>

It describes land degradation and its drivers and how economic incentives together with appropriate policies can offer solutions to the problem. The paper presents a series of mechanisms that provide incentives for land users to invest in SLMPs. It also presents a methodology for evaluating the appropriateness or feasibility of using a particular economic mechanism to prevent land degradation and promote the adoption of sustainable land management (SLM) in a given country. It looks at some of the existing mechanisms and the requirements of each.

### **THE CONTEXT**

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Ratification of the United Nations Convention to Combat Desertification (UNCCD) by 193 countries reflects a global consensus about the need to prevent and reverse land degradation for development. However, implementation requires having financial means. Resources from traditional sources are essential, including investments by land users, governments and development agencies, in order to implement the UNCCD and SLM in general.

Land degradation is similar to other environmental problems in that its costs are borne by society in general. Just as greenhouse gas emissions from a factory affect the global climate and society as a whole, land-use decisions have on-site impacts as well as implications far beyond the site. For instance, soil erosion limits land productivity, and therefore it can result in reservoir siltation, leading to higher electricity generation costs and even diminished food security.

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<sup>1</sup> See definition on page 13.

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Land degradation sets off a series of impacts that go beyond its geographical location. Any reversal of the land degradation process should consider the benefits that society as a whole will receive in the form of improved food security and environmental health. The land user can therefore not be expected to pay the total cost of implementing measures to prevent land degradation. Consumers must recognize that they too are part of the solution, and they must be willing to contribute financially through the development of new markets.

Recently, economic and financial instruments known as IMBMs have been used to achieve development and environmental goals and promote land-use and technological changes. These are innovative finance mechanisms which usually complement international aid and local sources. In general, these mechanisms address environmental problems by using the same logic that drives traditional markets.

These mechanisms have been used to implement environmental policies throughout the world. For example, the Clean Development Mechanism (CDM) was set up to help achieve the goals of the United Nation's Framework Convention on Climate Change. CDM pays for interventions that reduce carbon emissions into the atmosphere, such as by improving the efficiency of a power plant or capturing methane in landfills and using it to generate electricity. Efforts to halt and reverse land degradation can benefit from

knowledge generated from experiences like this, which are tackling similar global issues.

Accordingly, the UNCCD Ten-Year Strategy 2008–2017 specifically calls for the identification and exploration of “innovative sources of finance and financing mechanisms” to combat desertification and land degradation, including from “the private sector, market-based mechanisms, trade, foundations and civil society organizations (CSOs)”. A recommendation from the UNCCD High-Level Policy Dialogue, held in Bonn, Germany in 2008, explicitly states that “governments, civil society and the private sector should together devise incentive systems for market-based funding mechanisms so as to encourage the restoration of its degraded land” (GTZ, 2008).

## THE MECHANISMS

This document describes IMBMs for SLM and a practical methodology for implementing these mechanisms in developing economies and guiding stakeholders through the feasibility evaluation and implementation processes. It starts with a brief review of the different mechanisms that have been proposed within the context of the UNCCD and other processes, and groups these according to the categorization of Scherr, White and Khare (2004).

The mechanisms described in this study are those that are considered to be particularly promising for addressing desertification, land degradation and droughts (see Table 1). Many more have recently been developed and used to address different environmental problems, and the principles and framework presented here could be used to evaluate those instruments as well.

**Table 1. Incentive and market-based mechanisms considered**

Mechanism type	Examples
Public payment schemes	<ul style="list-style-type: none"> <li>• Permanent conservation easements</li> <li>• Contract farmland set-asides</li> <li>• Co-finance investments</li> </ul>
Open trading between buyers and sellers under a regulatory cap or floor	<ul style="list-style-type: none"> <li>• Tradable development rights</li> <li>• Trading of emission reductions</li> </ul>
Self-organized private deals	<ul style="list-style-type: none"> <li>• Direct payments for environmental services</li> </ul>
Eco-labelling and certification of products and services	<ul style="list-style-type: none"> <li>• Marketing labels</li> <li>• Certification schemes</li> </ul>

## **METHODOLOGY FOR ASSESSING APPLICABILITY**

Successful implementation of a given mechanism depends upon many different factors. This paper presents a list of factors that influence the applicability of each of the mechanisms described; these are the conditions that need to be in place for successful design and implementation. This list is not comprehensive, but rather a practical guide to the main issues that a practitioner may encounter and the types of questions that need to be asked.

A particular mechanism may be a good option in one context but not in another. Some mechanisms demand very specific conditions, while others are more resilient to existing national circumstances. The success factors

are grouped into three major categories, or levels, with examples of each (see Table 2). For each of the mechanisms considered, each factor is then ranked according to its importance in order to create a table that shows the relative importance of the factor for the success of the mechanism.

Based on the table, a scorecard has been designed to establish the appropriateness of each mechanism in each country and each site-specific situation, comparing the requirements of each mechanism with the actual situation. The results identify which mechanisms are better suited to a particular situation and also highlight weak areas or capacities that need to be strengthened. They can therefore guide future development aid and public efforts. The scorecard acts as an initial screening,

**Table 2. Success factors at three levels**

<b>Level</b>	<b>Factors to be considered</b>
National	<ul style="list-style-type: none"><li>• Institutional capacity</li><li>• Governance</li><li>• Macroeconomics</li></ul>
Local	<ul style="list-style-type: none"><li>• Environmental know-how</li><li>• Type of production unit</li><li>• Land tenure</li></ul>
Economic	<ul style="list-style-type: none"><li>• Supply of environmental services</li><li>• Demand for environmental services</li></ul>

providing information about what aspects and issues need to be taken into consideration when evaluating the feasibility of using new economic instruments to halt and reverse land degradation.

The value of the exercise depends on asking the right questions and incorporating all the issues that arise into the design and implementation phases. Numerical scores are a guide within the overall process, and not necessarily the final word on the feasibility of a given instrument. A quantitative exercise such as the scorecard provides a tool for evaluating the appropriateness of each instrument in each context, and sets the stage for asking the relevant questions and discussing the issues necessary for the feasibility and design phases.





## 1. INTRODUCTION

A total of 194 countries have ratified the United Nations Convention to Combat Desertification (UNCCD), reflecting global consensus about the need to prevent and reverse land degradation for development. Financial resources and investments by land users, governments and development agencies are essential to implement the Convention and sustainable land management (SLM) in general.

Recently, economic and financial instruments, known as incentive and market-based mechanisms (IMBMs), have been used to achieve development and environmental goals and promote land-use and technological changes. IMBMs are innovative financing mechanisms that promote investments and involvement by a range of stakeholders in development, sustainable practices and nature conservation, and that usually complement international aid and national financial sources. They have been used successfully to implement development and environmental policies throughout the world. Efforts to halt and reverse land degradation could certainly benefit from the use of such mechanisms and the knowledge generated from these experiences.

As well as benefiting other development and environmental issues, IMBMs can be used to ensure SLM by providing incentives for land users to shift from unsustainable to sustainable land management practices (SLMPs). Incentives may consist of direct monetary payments, technical assistance or even market access. It is believed that reimbursing local producers for part of the costs of replenishing their natural capital could help reverse land degradation processes.

The potential of IMBMs has been recognized by the Parties of the UNCCD; a recommendation from the UNCCD High-Level Policy Dialogue held in Bonn, Germany in 2008 explicitly states that “governments, civil society and the private sector should together devise incentive systems for market-based funding mechanisms so as to encourage the restoration of its degraded land” (GTZ, 2008).

The UNCCD Ten-Year Strategy 2008–2018 also calls for the identification and exploration of “innovative sources of finance and financing mechanisms” to

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combat desertification and land degradation, including from “the private sector, market-based mechanisms, trade, foundations and [civil society organizations] CSOs, and other financing mechanisms for climate change adaptation and mitigation [and] biodiversity conservation” (Outcome 5.4).

The Global Mechanism of the UNCCD (GM) is mandated to improve the effectiveness of financing for UNCCD implementation and the sustainable management of dry and degrading land, and to promote the mobilization of additional resources. The GM has a central responsibility in achieving UNCCD Outcome 5.4, including by identifying and exploring market-based mechanisms.

As part of these efforts, the GM – in collaboration with the Tropical Agricultural Research and Higher Education Center (CATIE) – has produced this paper to build a comprehensive understanding of: the challenges of land degradation; how IMBMs can encourage investments in SLM and the adoption of SLMPs by land users; and how to promote the use of IMBMs (chapter 2). The paper presents a set of potential mechanisms that can provide incentives for SLM (chapter 3) and a methodology and scorecard system to select the most suitable mechanisms within a specific country and site context based on a set of success factors and enabling conditions (chapter 4 and 5).

The framework and tool has been piloted and used in six countries and some of the lessons learned from these countries are also presented in chapter 6.

The target audience for this document includes governments, mid- and high-level personnel in the finance and line ministries and development agency programme officers and CSOs who are stakeholders in the design and implementation of economic/financial schemes to reduce land degradation.





## 2. LAND DEGRADATION AND ITS DRIVERS

Concern about the consequences of land degradation on agricultural productivity, food security and other development and environmental issues has led governments, development agencies and global organizations to encourage soil conservation and restoration. This includes preventing land users from undertaking degrading activities and compelling them to restore land they have degraded. Some countries have adopted legislation and regulations to promote conservation practices, while others have opted to subsidize the use of particular practices.

However, results have often fallen far short of expectations. Land-use rules have proved exceedingly difficult to enforce because of the vast spatial dispersion of agricultural and extraction activities and the often weak enforcement powers available to governments in developing countries. Subsidies have often succeeded in stimulating the adoption of conservation measures, but farmers frequently abandon these measures — and sometimes even destroy conservation structures — once subsidies cease (Lutz, Pagiola and Reiche, 1994). Other

efforts to encourage conservation have achieved only token cooperation from farmers (Enters, 1997).

### **2.1. DEFINITIONS**

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Given the drylands' vulnerability to degradation and dryland communities' dependence on the land, the UNCCD focuses on land degradation in arid, semi-arid and dry sub-humid areas. The UNCCD (1994) defines land degradation as:

“Reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns...”

These processes include soil erosion, deterioration of soil properties and long-term loss of natural vegetation. Sustainable land management (SLM) has been identified as a comprehensive approach to tackle these challenges, with the potential of making very significant and lasting differences in the short, medium and long term. TerrAfrica has defined SLM as:

“...the adoption of land use systems that, through appropriate management practices, enable land users to maximize the economic and social benefits from land while maintaining or enhancing the ecological support functions of the land resources”.

## **2.2. SITUATION**

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Desertification is a global phenomenon that affects all continents to varying degrees. The hardest hit are the developing countries, where land degradation is coupled with poverty in all its dimensions. Today, it is estimated that about 1 billion people are threatened by land degradation. The situation is particularly dramatic in Africa, where about 60 per cent of the population depends on agriculture, and 46 per cent of the land is at risk of degradation or is already severely degraded. The problem also exists in temperate climates; for example, about 27 per cent of the land in Italy is considered to be vulnerable to desertification (GM, 2008).

The Millennium Ecosystem Assessment provides an idea of the extent of the problem and highlights the urgency of dealing with desertification and the degradation of drylands. For example, it recognizes that 10–20 per cent of all drylands are already degraded, according to the most credible studies. Drylands are home to more than 2 billion people, and they cover 41 per cent of the Earth's land area.

## **2.3. CAUSES**

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Land degradation results from climatic variations and human activities; its causes are multiple, interrelated and complex. Land users – including farmers, extractive industries and others – make land-use decisions according to their own objectives, production possibilities and constraints (i.e. farm-level costs and benefits). Land users are generally interested in maximizing their profits rather than in providing benefits to society as a whole, and are thus not willing to pay the full cost of halting land degradation. While land-use decisions are made at the private level, they entail important social consequences.

This dichotomy explains why land degradation occurs: the land users who make land management decisions incur only part of the costs of bad land management decisions, while society incurs the rest. In addition, land users would have to pay the costs of reducing degradation and implementing SLMPs.

The temporal distribution of the costs and benefits of SLMPs also drives land degradation; costs tend to occur in the short term, and benefits in the long term. Land users may occupy the land only temporarily, and are thus not interested in making investments today to avoid land degradation in the future. Furthermore, many of the world's land users have a high discount rate, meaning that they have a strong temporal preference for the present. This tends to diminish the attractiveness of implementing SLMPs because benefits occur in the future, while most costs must be borne in the present.

When considering SLMPs, land users face a critical question: Do the long-term benefits of reduced degradation make the costs worth bearing? Even when the answer is yes, there are other constraints that might prevent the adoption of a given practice. For example, the private benefits of switching to a conserving practice may be insufficient; the degrading practice may cause little damage; the conserving practice may not be a significant improvement; low prices might make the productivity improvements insufficient to justify the costs; poverty or credit constraints might prevent the required investments; or insecure tenure might dissuade farmers from undertaking investments that will only produce benefits in the future. Agro-ecological and socio-economic conditions vary substantially, so it is not surprising that the extent of SLMP adoption varies as well (Pagiola, 1994).

The problem may be exacerbated if the land user is not tied to a particular piece of land, as is the case with migrant populations or community land users. In these cases, the incentives for the current user to be a good steward of the land are reduced, because long-term productivity gains are meaningless. In these cases, the land user usually faces "perverse incentives" that force them to engage in undesirable behaviours (see section 5.2).

SLMPs generate benefits that are enjoyed by society as a whole, and share some of the same characteristics as other public goods. Once they are implemented, everyone benefits, but this also makes it difficult to exclude those who do not wish to pay for them. As a result, SLMPs are used less often than they should be.

While SLMPs typically generate benefits that go beyond the land on which they are implemented, the land user usually does not receive any rents from the investment. For example, land users engaging in SLMPs in a watershed may improve the water quantity and quality upstream to the benefit of water users downstream (e.g. for farm irrigation or hydroelectric power generation). Other examples include the restoration of degraded lands, reforestation, agroforestry and alternative tilling practices which can increase the carbon stock in biomass and enhance soil carbon or lead to carbon substitution.

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There are cases where adoption of improved land management practices also makes sense from a strictly private standpoint. This occurs when the on-site benefits compare well with the costs. In these cases, the land user should be interested in adopting these practices; indeed, if the practices are not being implemented, the reasons are not economic. Various other constraints may prevent the adoption of these practices (e.g. low institutional capacity, lack of credit, misguided policies, monopolistic markets or distorting subsidies). In these cases, adequate policies, market information, training, capacity building, credit schemes and technology transfers could reverse land degradation.

#### **2.4. IMPACT**

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Land degradation has many on-site and off-site impacts. On-site, the productivity of the land is reduced or even eliminated through salinization and erosion. Off-site impacts include landslides, siltation of water storage facilities and increased quantities of suspended sediments in waterways. Land degradation, including deforestation, accounts for at least one-fifth of global greenhouse gas emissions, and consequently contributes to climate change. Marginal land areas will suffer most of the expected impacts of climate change, precisely where people are least capable of adapting to them.

The destruction of forested areas and the lack of forest management practices result in carbon dioxide being released into the atmosphere, as it is not stored in the biomass or preserved in durable goods. It is estimated that degrading areas reduce the amount of carbon sequestered or removed from the atmosphere by close to 1 billion tonnes per year (IPCC, 2000; Houghton 2008). According to IPCC (2007), land degradation and land-use change are responsible for nearly 20 per cent of global emissions. Failure to implement practices such as generating energy from methane or organic matter represents a lost opportunity for reducing the carbon footprint of rural production systems while generating economic value.

#### **2.5. SOLUTIONS**

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As discussed, many of the causes of land degradation are economic. Although the best approaches and incentives vary across geographical locations and socio-political situations, the economic logic behind land degradation is the same everywhere: the land steward needs to reap enough benefits to justify investing in land conservation activities.

To halt and reverse land degradation, the economic and financial incentives for land users around the world must be changed. If land users realize that there is a direct and tangible benefit from investing in sustainable land use practices, they may do so.

To invest in SLMPs, land users need incentives that recognize and reflect the value of environmental services generated for society as a whole. An incentive may consist of direct monetary payments, technical assistance or preferential market access. The point is that the land user must share in the benefits, and not only the costs, of improved land management techniques.

Financial and economic mechanisms try to do this by designing incentives that allow land users to benefit directly from reductions in land degradation rates, and consequently from reductions in externalities. Such mechanisms are called “incentive and market-based mechanisms” because they provide incentives for SLMPs and are often based on market mechanisms.

Ecosecurities (2005) has an interesting view of what is required for reducing and reversing land degradation:

“Under current agricultural pricing schemes, it is practically impossible for rural producers to cover both the total costs of production and those of replenishing the natural capital. This in turn creates pressures on land use leading to the expansion of the agricultural border and thus generating land degradation and desertification problems, resulting in an increased level of rural poverty.

Therefore, if local producers could be reimbursed for part of the costs of replenishing

their natural capital, the above-mentioned degradation processes could be reverted. In order to achieve this, fresh resources are needed so as to allow for a more efficient use of rural energy, the improvement of agricultural and forestry practices, as well as for the conservation and expansion of forested areas through contractual arrangements between local producers and the parties who would benefit from these actions. Fortunately, the value of the services provided by nature is being recognized, however there still exists the challenge of mainstreaming them into existing markets.”

Although this is simple in theory, numerous problems arise in practice. For example, in a watershed it is often extremely difficult to associate changes in costs and benefits downstream with specific changes in land use upstream. This is because the planners usually have only very limited information on the land users’ actual costs and benefits, and the land user has strong incentives for misrepresenting these. Also, the on-farm costs and off-farm benefits are likely to vary substantially according to site-specific factors.

## 2.6. SCENARIOS

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The implementation of SLMPs will have benefits and costs at the private and social levels. As mentioned before, the land user, by definition, decides what land management practices to use and pays for them. The user benefits from adopting SLMPs, but so does the rest of society in terms of reduced externalities.

Benefits and costs accrue at the private and public levels in many different ways. However, most fit into one of the following three scenarios:

**1. SLMPs are profitable<sup>2</sup> for the local land user/manager.** Although SLMPs would generate positive net benefits for the land user, they are not being implemented because of barriers or constraints such as lack of information, technology or technical assistance; lack of credit; or perverse incentives such as subsidies. Removing these barriers would be the most efficient way of encouraging the adoption of SLMPs.

In this case, the land manager should be interested in implementing at least some measures, as he/she would get a positive return on the investment. The government's role should be limited to eliminating the barriers to adoption, such as those related to the time preferences of the land user.

If the SLMPs also generate clearly identifiable benefits for society as a whole, a case could be made for proper compensation to complement farm income.

**2. SLMPs are not profitable for the individual land user/manager, but are in society's interests.** Such benefits can occur at the local, national or global level.

In this case, funds should be mobilized from the beneficiaries to the land user, who would switch methods of production. Economic and financial mechanisms should be applied to mobilize fresh resources because the SLMPs make sense only from society's perspective (i.e. the national and global perspective), and the land manager will not be interested in implementing measures without compensation. Only then would the land manager be willing to invest in reducing or halting land degradation and generating benefits for society.

Any programme seeking to provide financial compensation for "good behaviour" (i.e. reducing land degradation) should focus on this scenario, which illustrates the "agency problem": land users face incremental costs for reducing degradation that are not properly shared by those who benefit.

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2 Total benefits are larger than total costs.

**3. SLMPs are not profitable, even considering their social impacts.** There are cases when even the social impacts, including environmental aspects, do not make it sensible to encourage SLMPs and prevent land deterioration. In these cases, other solutions or strategies are needed. It would not make sense to mobilize fresh resources for programmes that will not generate net benefits to society. However, if a certain instance of land degradation is deemed to be unacceptable for some special circumstances (e.g. cultural, ecological, national), then the framework proposed below could also be used to ascertain the feasibility of using economic and financial mechanisms.

## **2.7. SUCCESSFUL POLICIES**

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The key requirement for implementing successful policies is having effective national government leadership that is responsive to the concerns and interests of primary stakeholders and that is willing to take action.

Given the wide variety of policies and agro-economic conditions, it is difficult to predict whether a given policy will tend to encourage or discourage conservation (LaFrance, 1992; Pagiola, 1996). Also it is important to understand how different policy mixes function and their impacts on adoption of sustainable practices. Designing policies that will successfully and sustainably increase the adoption of SLMPs requires consideration of two distinct but closely related questions:

1. *What would society like the land users to do?*  
Even when society has clearly articulated social goals, such as sustainable development, it is often difficult to translate these goals into specific actions by individual land users, especially given the site-specific characteristics of agricultural production and land degradation and the weakness of available data on land-user practices.

To understand what society would like farmers to do, it is necessary to conduct a broad analysis of the benefits and costs (including the damage) of the different activities and land-use options. This is difficult because of the variety of products and methods found in agriculture and other land-use sectors; while many cultivation practices degrade the soil, they may also generate income and help reduce poverty, at least temporarily. It is not easy to prescribe a set of products, or even production technologies, without careful study.

2. *What will land users do under different conditions?*

Actions to slow or arrest degradation through changed crop and management practices or the adoption of conservation techniques are likely to be costly – directly through investment, or indirectly in terms of foregone production. Any subsidies received from the government for the adoption of conservation practices become part of the revenues from the concerned activity.

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Government policies or market failures that distort observed market prices can result in substantial divergences. For example, if government policies keep the prices of agricultural commodities low, as has historically been the case in developing countries (Monke and Pearson, 1989; Schiff and Valdés, 1992), the social value of these commodities will be higher than the market price observed by farmers. This will make investments to prevent land degradation and desertification less attractive.

Until recently, most developing countries had policies that were not helpful to the agriculture sector. These include over-valued exchange rates, protection of competing sectors, price controls and high direct taxation. Analysis of a sample of 18 developing countries found that from 1960 to 1984, the agriculture sector transferred an average of 46 per cent of agricultural gross domestic product to other sectors of the economy, through taxes and other fiscal mechanisms (Schiff and Valdés, 1992). It has often been thought that these distortions have tended to discourage conservation by constraining cash flow at the farm level and making land conservation less attractive (Southgate, 1994).

When policy-induced price distortions are the primary cause of farmers' failure to adopt socially optimal conservation measures, the appropriate intervention would be to remove these distortions. Doing so would be a win-win policy reform, in that it would improve both overall efficiency and conservation.

Additional constraints may prevent land users from adopting conservation measures that are privately profitable (scenario 1 above). The constraints that are most frequently mentioned include lack of credit, resources and knowledge; poverty; and tenure insecurity (Ervin, 1986; Wachter, 1992; Pagiola, 1995). In cases where such constraints are preventing land users from adopting conservation practices, the appropriate intervention is to remove them.









## 3. INCENTIVE AND MARKET-BASED MECHANISMS TO PREVENT LAND DEGRADATION

Because land degradation is usually an economic problem, a way to solve it would be to modify the economic incentive structure that land users face. One way to do that would be to use IMBMs in combination with proper legislation and adequate land-use policies. These mechanisms use financial and economic incentives to modify the behaviour of producers and promote SLMPs. Scherr, White and Khare (2004) offer four classifications for the wide range of available schemes:<sup>3</sup>

**1. Public payment schemes** for private land and forest owners who implement SLMPs which maintain or enhance ecosystem services: Public funds are used to promote certain types of land use or practices which are expected to provide or improve an environmental service. In these cases, the demand is represented by the government, which decides what kind of activities to encourage and where.

**2. Open trading** between buyers and sellers under a regulatory cap or floor for the level of ecosystem services to be provided: In this case, the government's role is to set a mandatory level for an environmental service (such as clean air or water quality), which must be provided. Affected parties can then either comply with the requirement or pay others to help achieve the goal (i.e. supply the service) at a lower cost. The cap or floor set by the government creates a demand and allows buyers and sellers to trade.

**3. Self-organized private deals**, in which the individual beneficiaries of ecosystem services contract directly with the providers of these services: These direct deals are between off-site beneficiaries and the land users responsible for providing the services.

**4. Eco-labelling and certification of products and services**, assuring buyers that the production processes involved or the services

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3 Clearly, a mechanism could fit into more than one class.

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they are being offered have a neutral or positive effect on ecosystems: Eco-labelled products and services often can gain preferential treatment, access to certain markets and better prices, as consumers are willing to pay more for them. However, the transaction is via an intermediary, rather than directly between the buyer and the seller.

Even though most of these mechanisms have been designed to conserve and protect forest ecosystems, most can be easily applied to land management and to promote the adoption of SLMPs. Table 3 provides a brief description of the mechanisms considered in this document. For more information about each of the mechanisms, see Appendix 1.

**Table 3. Description of incentive and market-based mechanisms**

1. PUBLIC PAYMENTS	
MECHANISM	DESCRIPTION
A. Permanent conservation easements	This is a guarantee that a tract of land will not be used or farmed. It usually involves an annotation in the property title or at the land registry office. In Montana in the United States, the Nature Conservancy (a non-governmental organization (NGO) based in Virginia) has established agreements that protect 50 miles of river and close to 35,000 ha of the Blackfoot River Valley.
B. Contract farmland set-asides	Landowners give up the right to use part or all of their farmland, in exchange for payments. In Costa Rica, the national forestry fund pays close to US\$50/ha/year to landowners who promise to preserve existing forests or allow natural regeneration. Currently, there are nearly 200,000 ha under this programme.
C. Co-financed investments	Government pays part of the investments needed to achieve a certain land use or to promote production practices (e.g. afforestation, sustainable forest management, SLMPs).
D. Payments for proven investments in land conservation	Government provides a payment based on the investments made, per unit of area. China's four wastelands policy (see Box 1) is a variation of this mechanism. The government makes in-kind payments of land rights to those who commit to preserving soil resources.
E. Subsidies	Government provides direct subsidies to those who implement SLMPs or other environmental technologies (e.g. water treatment plants, energy-efficient light bulbs, soil conservation equipment). These subsidies could be in the form of non-monetary arrangements, such as providing technical assistance, and the provision of seeds and plants.
F. Taxes, tax breaks, environmental fees	Environmental or green taxes may be levied on bad practices which then can be used to correct or modify existing land-use practices. Schemes such as the Green Dot in Germany impose a payment per unit of packaging in order to encourage reductions in solid waste. Charges on the effluents from domestic and industrial water users in Colombia and Costa Rica will finance water clean-up projects and reduce effluents at the source. China's soil erosion control fees charge developers for environmental damage. Some states in Brazil allocate value-added tax (VAT) revenues according to environmental criteria through an "ecological VAT".

**Table 3. Description of incentive and market-based mechanisms (cont.)**

<b>2. OPEN TRADING UNDER REGULATION</b>	
<b>MECHANISM</b>	<b>DESCRIPTION</b>
G. Conservation banks	This involves permanently protected private or public land that is managed with conservation objectives. Parcels used for conservation purposes are managed by the bank, which sells credits to projects that will have an impact on the environment. Each bank uses the money to protect natural resources such as water, endangered species, farmlands, natural beauty, forestlands or historical or archaeological sites (see Box 2).
H. Tradable development rights	This approach allows the development of a certain amount of land, on condition that land of a similar type and quality is restored as a compensation measure. This has been used mainly in the United States, but with limited success (Messer, 2007).
I. Trading of emission reductions or removals (or other environmental benefits)	This mechanism sets a total pollution goal/allowance (or reduction) and distributes pollution permits to the amount of the total allowance. Parties can use, give, buy or sell their allowances. This includes carbon-trading mechanisms, such as the Clean Development Mechanism (CDM), the financial arm of the United Nations Framework Convention on Climate Change.

<b>3. SELF-ORGANIZED PRIVATE DEALS</b>	
<b>MECHANISM</b>	<b>DESCRIPTION</b>
J. Purchase of development rights	An interested party buys the development rights for a given piece of land to be dedicated to a particular use, such as forest management or conservation. For example, a hydropower generator could purchase the development rights to an area that protects water quality (i.e., an area that needs protection to prevent increased sediment load and siltation).
K. Direct payments for environmental services <sup>i</sup>	The users of environmental services pay the providers directly. For example, a hydropower generator interested in minimizing erosion and siltation pays upstream farmers who implement SLMPs. In Costa Rica, a tax on gasoline provides funds that are used to pay forest owners who commit to preserving their forests. In other areas, land users are provided technical assistance and other inputs that improve the land.
L. Conservation concessions	One party provides another with a concession to use a territory for conservation processes. These work in the same way as forestry or mining concessions, guaranteeing that the land will be protected, at least during the period considered.

<sup>i</sup> In some cases, this mechanism can be similar to contract farmland set-asides.

4. ECO-LABELLING AND CERTIFICATION OF PRODUCTS AND SERVICES	
MECHANISM	DESCRIPTION
M. Marketing labels	<p>Payment for ecosystem services is embedded in a product/service, or a market develops for products produced sustainably. Products are sold to consumers or retailers who prefer to support suppliers that are good environmental managers. For example, the Rainforest Alliance conserves valuable forestland by promoting sustainable farming practices for coffee, cocoa and black tea in Côte d'Ivoire, Ethiopia and Kenya. Another example is the voluntary partnership agreements that Ghana and the Republic of Congo recently signed with the European Union (EU) to ensure that timber exports are legally harvested and can be allowed entrance into the EU market. The agreement stipulates that all timber products must be harvested in ways that protect the country's forests. The EU is engaged in negotiations for similar agreements in other countries, including Cameroon, Ecuador Gabon and Viet Nam.</p>
N. Certification schemes	<p>This is a procedure whereby a third party provides written assurance that a product, process or service complies with certain standards (ISO 1996). Compliance with the standards is certified by verification methods recognized and approved by a third-party certification body or certifier that has no direct interest in the economic relationship between the supplier and the buyer. These standards can be established:</p> <ul style="list-style-type: none"> <li>• with the government, e.g. the International Federation of Organic Agriculture Movements (IFOAM) and the International Organization for Standardization (ISO);</li> <li>• by NGOs, e.g. the Forest Stewardship Council (FSC) and the Rainforest Alliance; or</li> <li>• by the industry, including exporter/retailer groups, e.g. European Good Agricultural Practice (EUROPEGAP).</li> </ul>

## BOX 1. CHINA PROMOTES SUSTAINABLE LAND MANAGEMENT PRACTICES

Soil erosion affects more than 350 million ha in China; about 8 per cent of the country's cultivated land is affected by intensive water erosion (Yang, 1994, cited in Bennet, 2009). The benefits of controlling soil erosion are estimated at more than RMB 3.9 billion per year, considering only the reduced cost of cleaning canals and reservoirs and the higher yields from improved water management. The Chinese Government, worried about land degradation in general and soil erosion in particular, has implemented the following two mechanisms to promote SLMPs:

- China's four wastelands policy gives farmers contracts for using a given piece of land and rights to the economic benefits generated from the crops, trees or grasses planted on it. In exchange, the land user must engage in land management practices that control soil erosion and maintain soil and water quality. Land with slopes of more than 25 degrees is not to be used for cultivation. This policy offers national benefits of reducing erosion and local benefits of increasing local ownership of the land.
- To prevent and control erosion, provincial and local governments make wide use of soil erosion control fees for developers. The Water and Soil Conservation Law of the People's Republic of China provides the framework for these schemes by making enterprises and businesses responsible for controlling the soil erosion generated by their activities. If they are unable to do this, the appropriate authority does it for them and charges the enterprise for the expenses incurred. Finance bureaus, pricing authorities and water management authorities set the fees at the provincial or national level.

Programme	Supply	Demand	Economics
1. China's four wastelands policy	Farmers willing to engage in SLMPs in exchange for land-use rights	Government willing to exchange land rights for erosion control	National benefits of reduced erosion  Local benefits of increased local ownership of the land
2. Soil erosion control fees	Relevant authorities to control soil erosion caused by private enterprises	Developers and businesses unable to control soil erosion  The unit that generated the erosion	Polluter-pays principle applied to soil erosion

Source: Michael Bennet. 2009. Markets for ecosystem services in China: an exploration of China's "eco-compensation" and other market-based environmental policies. *Forest Trends*.









## 4. SUCCESS FACTORS AND ENABLING CONDITIONS

Once a specific land degradation problem has been identified and economic instruments are being considered to promote SLMPs, a number of factors need to be considered. Conditions in the field determine an IMBM's success or failure in preventing land degradation. This section outlines the factors that facilitate the implementation of economic or financial instruments to solve a given land management problem.

The absence of a success factor for a particular case should not be interpreted as a fatal flaw or a reason for abandoning the economic instrument. Rather, this analysis may indicate which areas and capacities need to be strengthened. For example, if information about the economic benefits of SLMPs is lacking, then a first step could be to generate this kind of information to feed the decision-making process.

Each IMBM requires a minimum set of conditions, which occur at three different levels:

- **National context:** The first level of analysis examines conditions within the country. These include the institutional and regulatory framework, governance, environmental awareness, personal income, prevailing economic climate and important social issues. The national situation constitutes a first filter that needs to be considered in any case. Even if a project is local in scope, there are relevant issues at the national level, like legislation.
- **Local site-specific conditions:** These include the circumstances in the areas where the expected changes in land-use practices will occur. They encompass the environmental conditions (e.g. the climate, life zone, existing vegetation and perceived threats), the productive landscape (e.g. crops, land tenure) and other social issues, such as land users' education level and capacity to organize themselves.

- **The economics of each application:** A positive social economic return for any type of intervention will guarantee its long-term success. Aspects to be considered include the cost structure (the supply) of the different production systems, the benefits expected from SLMPs and the demand for the particular environmental services. Questions to be asked include: How is the land currently used? What is the opportunity cost? What benefits are expected from implementation? Who receives the benefits? What are the costs of implementation and administration?

The following sections detail the specific factors that need to be considered at each level.

#### **4.1. NATIONAL/LOCAL CONTEXT**

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The national context looks at the country-level conditions that could influence the choice of instrument. It includes aspects related to the strength of the country's institutions, the ability of its government to govern (governance), its economic climate, its regulatory framework and environmental awareness.

##### **4.1.1. Institutional capacity**

Strong institutions and good governance favour all of the instruments considered. However, some are more sensitive to difficult conditions on the ground than others. For example, public payments and open trading under regulation require a relatively high degree of good governance and capacity compared with self-organized private deals. The following indicators are relevant to the national situation:

- If public institutions have good capacity to deal with day-to-day challenges and are able to implement significant projects from the beginning to the end, there will be a certain degree of continuity when programmes and policies are implemented. It is positive if the institutions dealing with land management issues are respected and have at least adequate means to fulfil their tasks.
- Universities, research centres and NGOs can provide technical backstopping in fields related to SLMPs (e.g. agriculture, forestry, soil science,

hydrology). Introducing new practices will be easier if there are institutions studying land degradation and its consequences and developing innovative ways to farm, particularly if those institutions are located close to the land users.

- If local extension agents, staff of government agencies and technical colleges and producers are already familiar with the technologies to implement SLMPs, economic instruments might be easier to implement. Also, if agricultural producers and other land users and stakeholders are knowledgeable about SLMPs and aware of the different options and technologies, they can engage with other players in testing various mechanisms.

#### 4.1.2. **Governance**

A functional government that can bring about change at the national level and provide support to private initiatives is a necessary condition for all of the mechanisms considered, especially in those cases with a national scope. For example, sometimes appropriate legislation will need to be passed to implement national projects. Land degradation may affect a significant part of the national territory, so a clear vision of the problems and solutions and the means and political will to bring them about are key success factors. The following are important aspects to look for:

- Government has a clear strategic vision regarding desertification and land degradation. A UNCCD

National Action Plan has been completed, and development plans include land degradation as a priority. If this were the case, then the important step of defining priority areas, both thematic and geographical, would have already been taken and information regarding the issues, possible solutions and critical areas would be available to feed the evaluation and design phases.

- The government is able to carry out important national projects and decisions and pass useful legislation. This aspect relates to a government's willingness to spend political capital to promote economic and financial instruments to implement SLMPs. In most instances, green fees and taxes increase the price of services such as water or gasoline, which is usually not a popular result. Governments with a green agenda or strong environmental positions might be more willing to implement IMBMs.
- There is adequate understanding of and information about the expected benefits of SLMPs. The general public and relevant target groups know about the issues related to desertification and land degradation; they demand solutions and are willing to support initiatives to recover their costs of implementation.
- Corruption is not a major issue, and will not hamper efforts to reduce land degradation or result in the misallocation of funds. It is well known that people are reluctant to participate in these

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schemes if they have doubts about their legitimacy and whether the funds are being applied correctly.

- The public is aware of the problems associated with land management and there are spaces (e.g. councils, development associations, churches, forums, municipalities) to discuss and propose solutions to them. In Central America, for example, local development associations and municipalities have been instrumental in implementing payment for ecosystem services (PES) schemes, mainly water-related ones.

#### 4.1.3. **Macroeconomics**

It is better to implement financial/economic instruments in stable emerging economies that are growing at sustainable rates than in ones that are shrinking or where national income is being eroded. Stability in economic indicators (e.g. prices) is necessary for sound investments in SLMPs to yield the expected benefits. A volatile economic situation gives mixed signals and makes it difficult to evaluate the benefits and costs of SLMPs and the application of a particular instrument. Such a climate also discourages investments with long-term perspectives, such as SLMPs. The following issues should be considered:

- Economic orientation (or economic freedom) allows the implementation of market-based instruments as a means for solving environmental problems. Countries that closely control the economy by

limiting trade, business or property rights are not good candidates to implement these instruments. These schemes are based upon the idea that environmental services have economic value and that markets need to recognize that value.

- A more favourable climate is one in which there is a long-term vision of economic issues. Governments may be reluctant to implement any measures that could be perceived as reducing competitiveness in the short term (e.g. green taxes). If prices of inputs (e.g. energy or water) must be increased in the short term in order to sustain SLMPs that generate benefits in the long term, governments and the private sector might be unwilling to support the use of economic instruments. On the other hand, if an economy is driven by nature tourism and other activities that respect and are dependent upon the environment, the government and the public may favour implementing measures oriented to internalize the benefits generated by SLMPs.
- It is helpful if there is willingness to increase the cost of using natural resources or other goods and services. This relates to the previous two issues and the public's demand for a solution to a given environmental problem. If there were strong public support for solving an environmental problem (e.g. water pollution), water-treatment fees would be feasible. Also, if the economic benefits from implementing a solution were very important, then

## BOX 2. MALUA WILDLIFE HABITAT CONSERVATION BANK IN SABHA, MALAYSIA

Innovative economic instruments have been used to increase the supply of environmental services, such as through wildlife habitat conservation. These schemes generate important lessons and provide an interesting model for promoting SLMPs. The Malua Wildlife Habitat Conservation Bank (or Malua Biobank) seeks to restore and protect 34,000 ha of formerly logged land to provide shelter to orang-utans, clouded leopards, pygmy elephants and hundreds of bird species. Located near the Danum Valley Conservation Area, these ecosystems comprise lowland and freshwater swamp forests and represent a crucial buffer between primary forests and expanding oil-palm plantations.

The Malua Biobank sells biodiversity conservation certificates, each of which represents 100 m<sup>2</sup> of forest restoration and protection, at US\$10 each. Buyers also agree that they are not buying offsets for damage to the forest that they may cause somewhere else. Proceeds from the sale of certificates are expected to endow a trust fund to permanently protect biodiversity while generating a return on the investment. The goal of the project is to make rainforest conservation a sellable product that can compete with other land uses. So far, 21,500 credits have been sold. Many companies that rely on palm oil as an input for manufacturing food and cosmetic products or for generating energy have become increasingly aware of the destruction of the area's natural habitats. They would prefer to be seen as part of the solution rather than part of the problem, and the Malua Biobank programme gives them the opportunity to do this by aligning the interests of economic development with those of rainforest conservation. Other buyers of certificates could include NGOs interested in supporting rainforest conservation.

Programme	Supply	Demand	Economics
Malua Biobank	Logged, degraded areas near protected areas, to serve as buffers	Private companies doing business in Malaysia and seeking to improve their images by contributing to tropical forest conservation	Endangered habitats that attract interest and willingness to pay  Important biodiversity resources

Sources: Shetty, Priva. 2009. Controversial palm-oil plan may save the orang-utan. *New Scientist*, 2718: [www.newscientist.com/article/mg20327183.700-controversial-palmoil-plan-may-save-the-orangutan.html](http://www.newscientist.com/article/mg20327183.700-controversial-palmoil-plan-may-save-the-orangutan.html); [www.maluabank.com/index.htm](http://www.maluabank.com/index.htm); and New Forests, Malua Wildlife Habitat Conservation Bank launches in Sabah, Malaysia: [www.newforests.com.au/news/pdf/press/20080814\\_malua\\_biobank\\_release.php](http://www.newforests.com.au/news/pdf/press/20080814_malua_biobank_release.php).

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the government and even the private sector might be in favour of them. And, if governments face budget deficits, they might find it appealing to implement solutions that provide fresh financial resources.

- Tackling land degradation should be an economic priority. IMBMs may be effective when land degradation: is considered an important issue from an economic perspective; reduces output, displaces people, increases poverty and reduces human development; threatens endangered ecosystems; and restricts access to market.
- Practical examples showing the economic benefits associated with implementing improved land management practices will go a long way towards raising public awareness. For example, in Costa Rica, the national electric utility teamed up with CATIE, a research institute, to estimate the economic damages of land degradation in terms of foregone electricity production. This prompted the co-financing of investments to reduce land degradation.
- If personal income is growing, people may be more willing to pay for environmental services or purchase certified products with green labels. In areas with higher personal income, there may be reduced opposition to the internalization of benefits at all levels – from local water users in a village to sophisticated buyers of organic coffee in developed countries. Diminishing incomes in general, and low

income in particular, could hamper implementation of IMBMs.

#### 4.1.4. **Regulatory framework**

A credible and effective regulatory framework is needed in order to successfully implement economic and financial mechanisms that promote the adoption of SLMPs. This includes national and international regulations (e.g. international treaties, multilateral environmental agreements, and environmental conventions like the UNCCD). These schemes need to work in tandem with regulations and command and control measures (i.e. measures which use a punitive approach to enforce environmental regulations). A good legal base characterized by the following factors will make it easy to implement sound instruments:

- The constitution and other laws recognize citizens' right to a healthy environment. Support from the cornerstone of a legal system facilitates the implementation of any economic/financial instrument. An easier road may lie ahead if there is a constitutional mandate to protect natural resources, a particular ecosystem or the environment in general.
- National legislation deals with the problem of land desertification or degradation, and the country is a signatory of the United Nations conventions on climate change and desertification.



- There is a well-defined environmental regulatory framework that considers compensation for environmental impacts.
- The concept of environmental services is defined in legislation which is explicit about halting land degradation.
- An important aspect of the regulatory framework is the land tenure regime, which is often defined at the national level. Well-developed land tenure systems will facilitate the implementation of those mechanisms that involve land-use restrictions and that operate on a per-unit-of-area basis. National or regional land-registry systems will allow for the quantification of areas and provide much needed information for adequate monitoring and evaluation.

#### 4.1.5. **Environmental awareness**

Public awareness about environmental issues and adequate definition and recognition of environmental or ecological services are positive factors for implementing IMBMs. The political will to find and implement solutions increases when problems matter to people. Consumers will also be willing to pay more for products that improve the issues they care about. More support can be harnessed when the social impacts of unsustainable land management practices are well documented, especially the effects and economic costs of land degradation on affected industries, sectors or people. A first step towards raising public support is

describing and explaining the causal links between land degradation and other economic activities, in physical terms. When these impacts are measured in monetary terms, they are more likely to capture the attention of policy-makers, business leaders and those in charge of public finances (all of whom are potential “buyers”).

Recently the private sector has also supported environmental causes through corporate social responsibility programmes. These programmes seek to promote social causes and the public good in those areas affected by a company’s operations. Clearly, some companies should be interested in SLMPs because it is good for their operations, but others are motivated because they want to actively support public causes. The existence of corporate social responsibility initiatives that deal with the environment are an indication that there could be demand for, and interest in, SLMPs.

There is no point in trying to halt degradation if there are no available solutions that land users can implement right away, or if the solutions are in conflict with local cultural practices. It is helpful if planners have an idea of readily available solutions – agricultural production technologies that halt or reverse land degradation. These usually depend on the existence of agriculture research centres, such as universities and strong public institutions (i.e. agriculture departments).

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## 4.2. SITE-SPECIFIC CONTEXT

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While the national context is the first level to assess in determining the feasibility of applying a given instrument in a particular country, many mechanisms are implemented on a site where the land is being degraded (e.g. a watershed or a section of it). It is therefore important to understand the local circumstances and to collect information about the type of ecosystem, people's livelihoods, land tenure and other aspects that are crucial in determining the chances for success of a proposed mechanism.

Numerous variables can be used to characterize the site-specific context (i.e. the physical land area, the inhabitants and the land users where the degradation is taking place). This section examines several of the building blocks presented by the Department for International Development (DFID) in describing the livelihood approach.

### 4.2.1. Ecosystem type and current land uses

The mechanism used must be appropriate to the type of ecosystem (e.g. dry forest, desert, arid or semi-arid); different ecosystem types (or life zones) provide different benefits. At an early stage, it is very important to consider the biophysical characteristics of the area where the SLMPs will be carried out. For instance, if the goal were carbon sequestration, growing underbrush or regenerating pastures would be a better option than protecting existing forests. However, in areas with high

rates of deforestation, the latter would be preferred. A first step is to map ecosystem services on the landscape and understanding linkages with livelihoods. A second tier of studies would include economic valuation of land and ecosystem services that are complementary to these efforts.

### 4.2.2. Environmental know-how

Having practical know-how about possible solutions to land degradation and desertification is essential when implementing a compensation scheme. The following situations would be very favourable:

- Good knowledge about SLMPs and their capacity to generate environmental services and what benefits are expected from the SLMPs exist. For example, carbon sequestration, water management, preserving scenic beauty and biodiversity may require that land users implement specific activities. This can include preserving riparian forests adjacent to national parks could generate biodiversity benefits, while low-tillage practices integrated with the use of biomass to generate electricity could have impacts on the carbon balance of a given production unit.
- There is local knowledge about which production systems have little environmental impact and preserve land resources.

- There are land-zoning projects, other larger schemes (e.g. biological corridors) or other special-use areas that reduce land degradation and desertification. These projects could facilitate the development of innovative finance mechanisms in different ways. For instance, a new project could associate with other initiatives to take advantage of development aid already directed to the area. Examples include the Mesoamerican Biological Corridor, which is a multiple agency initiative to link protected areas in Central America, and Africa's Great Green Wall, which attempts to stop the increase of desertification while recovering vegetation cover and promoting sustainable development from Mauritania to Djibouti.
- There is enough information about the land's capacity to sustain different production systems. This will save time and effort, and could serve as the basis for selecting locations and production systems to promote.

#### 4.2.3. **Local capacities**

SLMPs are implemented in different types of production units. Existing capacities in the following areas play an important role in determining the success of any scheme:

- infrastructure (e.g. energy, information technology, water access) and other assets which can make it easier to implement innovative schemes and share information;
- social capital (e.g. networking, education, participation in organized groups/formal structures, leadership among local stakeholders, trust, reciprocity and interchanges); and
- spaces where citizens can participate freely and have their opinions and interests heard (e.g. councils, development associations, churches, forums, municipalities).

#### 4.2.4. **Land tenure**

Land tenure is a critical factor because clear and formal ownership of the land is usually essential for the implementation of some IMBMs. Although innovative arrangements can overcome limitations in some cases, it is important to consider whether the following factors are present:

- The land-tenure regime is solid. There are clearly established and separable rights to the land, even if it is publically or community-owned. While some instruments require solid property rights, they do not exist in many countries. In Tanzania, for example, migrant land users are not linked to a particular piece of land. In many countries, the land is not privately owned but belongs to the state, the community or, like in certain areas in Zambia, the chief of an area; in these cases, there are legal frameworks regulating land-user rights. Legal registration and property titles can be used to identify individual land plots. Most mechanisms involve changes in

the way the land is used, and thus some verification measures are needed. If individual properties were not credibly registered, then monitoring and evaluation would be very difficult. Furthermore, in some cases the land itself could become a type of guarantee or collateral to a transaction.

- In order for the economic mechanisms to work, innovative approaches are needed to address areas with weak land-tenure regimes. One approach could be to focus on the individual using the land, and not on the land itself, to make that person responsible for following the agreed clauses. Another solution could be community-based conservation arrangements creating local incentives where land is owned by the community.

#### **4.3. ECONOMICS OF SUSTAINABLE LAND MANAGEMENT PRACTICES**

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Last but not least, the costs and benefits of each case of SLMPs need to be explored. The economics refer to the supply (costs) and the demand (benefits) of SLMPs and the expected ecosystem services produced by these practices. This section presents the different economic aspects of demand and supply that must be considered to determine the feasibility of implementing a given instrument.

##### **4.3.1. Demand**

- The implementation of SLMPs may generate or maintain environmental services that are important to producers and consumers. The greater the importance of these services for a group of people, the likelier that these services could be mainstreamed into a market. For example, the chance that an IMBM would work would increase if there were hydropower plants that relied on multi-year water storage facilities subject to siltation or if water utilities faced higher treatment costs as water quality decreased. Conversely, the absence of a major interested party could render the most interesting initiative useless.
- The economic value of ecosystems is a major issue that needs to be considered here. Any credible studies that measure, in physical or economic terms, the benefits generated by SLMPs would certainly be beneficial. These studies could be very useful in shaping public opinion and raising the interest of private-sector stakeholders and government officials.
- If the intended users (buyers) have an “adequate” or higher income level, they will be more willing to pay for environmental amenities. It is unreasonable to expect people living in poverty to be interested in paying for the environmental services they receive from others. On the other hand, wealthy consumers have demonstrated an interest in paying premiums

for ecologically friendly products; ecological sensitivity has a role in shaping preferences, and it too has been correlated to personal income. Low per capita income makes it difficult to increase the prices for water, electricity or gasoline in order to direct finances towards compensation schemes.

- If land users can expect important on-site net benefits (or user benefits) from implementing SLMPs in the short to medium term, their interest and participation can be anticipated. If benefits to the land user occur in the long term, their motivation may not be as high because land users usually prefer the short term, especially in degraded areas. This should be seen as an opportunity to advance incentive schemes that will deliver short-term benefits.
- Probably the most important factor to consider is whether large off-site benefits can be expected; no mechanism will achieve anything without clear expected benefits for potential buyers. Therefore it is very important to consider what benefits will be generated for society as a whole and for individual stakeholders as a result of implementing SLMPs in the targeted areas. If these benefits are large (i.e. there is significant demand for SLMP services), it is more likely that a market mechanism could be established. This could be established at a later stage in more detail; however, it is important to have a general idea about the expected benefits (e.g. in terms of reduced siltation of water reservoirs, significant capacity to store carbon or important landscape or cultural values).
- There may be a greater demand for IMBMs if there are important wealth-generating activities (e.g. export industries, ports, hydroelectric projects, irrigation dams) that are affected by the lack of SLMPs. This is linked to the previous issue and reflects the potential demand that may emerge from such activities. There is a need for quantitative studies that measure the expected benefits from implementing sound land management practices, marketing, relationship development and lobbying.
- Consider the ratio of the intervention area to the total expected off-site benefits. This analysis compares the expected benefits of the SLMPs (e.g. the number of families served by a utility) with the total area covered by the programme interventions. If only a few families are expected to pay for the reforestation of thousands of hectares, market instruments will not be very useful or even feasible. If there are a large number of beneficiaries compared with the programme area, the chances for success will increase. This is the case in rural watersheds that supply water for electricity or irrigation.
- If the public and other users are aware of the damage being caused by current practices, they will be more likely to be willing to pay

for SLMPs. When the people are not aware, it may be necessary to carry out studies to demonstrate the economic value of the damage. This issue relates to the government's willingness to raise fees for water services, for example.

- It will be easier to implement green charges if people are used to paying for public services – such as water for domestic consumption, irrigation and hydroelectricity. When public services are free or heavily subsidized, it is very difficult to use them as payment or collection vehicles. For example, users in many countries obtain irrigation water free of charge or for only a nominal fee based on the area and amount utilized.

#### 4.3.2. **Supply**

- The supply of SLMPs relates to the feasibility of implementing them at a reasonable cost. Land users who are causing land degradation must be willing to switch to environmentally friendly practices in exchange for reasonable compensation or an attractive alternative. Although this is not always the case, there are many examples where land is being used to plant low-yield, low-margin crops at significant environmental costs. Those areas should be the priority targets of any scheme directed at compensating land users for modifying their practices.

### **BOX 3. IDEAL ECONOMIC CONDITIONS**

The economics of SLMPs can include many different combinations of supply and demand conditions. Optimal conditions include:

- a single large beneficiary (e.g. hydroelectric plant, irrigation project) or many small beneficiaries (e.g. important cities, consumers);
- a low cost per unit of water, energy or any other product used as a payment vehicle;
- a low opportunity cost of the land;
- an imminent environmental problem;
- local awareness; and
- strong political will to find a solution.

- It is possible to improve cultural practices at a reasonable cost. SLMP technologies or land-use options that can be adopted by land users and will have a perceptible effect on valuable environmental services must be available. If practices become very expensive, their adoption rates will be low and they will be abandoned as soon as development or public funds run out.
- The social cost of implementing SMLPs will be reduced if the opportunity cost of the land is not very high. The opportunity cost is the value of the next-best alternative that is foregone as the result of making a decision. For example, if a user generates high income from a piece of land, the opportunity cost of that land is high, because the user would require high compensation for using the land for something else. This is a relative concept, but it clearly would be very difficult to persuade land users who are extracting high yields from the land to modify their behaviour if the change in land-use practice would imply a reduction in the land available for other uses/crops. A low opportunity cost of the land in targeted areas makes it easier for a programme to work, and guarantees a degree of participation among current land users. This is particularly true for permanent conservation easements, contract farmland set-asides and direct payments for environmental services.
- There are, however, very profitable crops that generate significant negative environmental impacts. Grape growers in South Africa, for instance, tend to encroach into high-biodiversity areas. In the Panamá Canal, there are pineapple plantations that lack sustainable practices but are a very profitable use of the land. In those cases, alternative policies and means should be explored. However, a high opportunity cost of the land does not necessarily preclude the use of economic instruments. It only raises the price of the expected environmental benefits and makes it a bit more difficult to join the supply and the demand. However, as long as there is growing interest in the benefits produced by implementing SLMPs, the demand could be sufficient to compensate for the higher opportunity costs of the land.
- In an area where land users are poor or have reduced personal income, any expected payment may be attractive to them, and its impact on reducing poverty will be high. This will increase participation and place added value on reducing land degradation, making it more attractive for international development organizations. This is the case in rural areas of most of the developing world. In the same way that increasing incomes favour the demand, low-income levels favour the supply.

#### BOX 4. PAYMENT FOR WATERSHED SERVICES IN SOUTH AFRICA

Two PES programmes in South Africa aim to maintain hydrological services while alleviating poverty by promoting the development of small businesses. Both programmes provide jobs to people who find it hard to find work, and both bring environmental benefits at a low cost and by drawing funds from the private sector.

**The Working for Water Programme (WfW)** started in 1995 as a public works initiative hiring unskilled workers, the unemployed and traditionally underprivileged segments of the population (i.e. rural women and physically challenged individuals). These workers remove invasive plant species, which have colonized about 10 per cent of the country's total land area and use an estimated 7 per cent of water resources. Most activities are carried out on public land, but the programme also finances work in private areas, giving priority to small-scale farmers and critical areas.

The government has tried to promote voluntary payments into the programme from private actors and municipalities; some have contributed and pilot projects are being undertaken. About 80 per cent of the funds come from the national public budget through a poverty alleviation fund. The rest comes from the Department of Water Affairs, foreign donors, municipalities and the private sector. The total budget in 2009 was about US\$130 million.

The programme has eliminated invasive plants in about 1.9 million ha, currently at a rate of about 160,000 ha per year, and it employs about 30,000 people on a part and full-time basis. Water flow volumes and the timing of flows have improved by significant margins in virtually all cases in areas affected by WfW.

**The Working for Wetlands Programme (WfWet)**, which began in 2000, is similar. It is administered by the South African National Biodiversity Institute and seeks to employ the same type of individuals as WfW to restore wetlands. However, wetland restoration requires specialized planning and engineering and careful environmental considerations, so WfWet also includes highly qualified personnel. It is funded in a similar way to WfW, through the poverty alleviation fund, foreign donations and conservationist groups. Its total budget in 2009 was approximately US\$10 million. WfWet has implemented 50 projects across the country and employs about 2,000 people.

Programme	Supply	Demand	Economics
WfW WfWet	Underemployed segment of the labour force Lands to be improved	Water users Biodiversity interests	Low cost of labour Environmental benefits (water and biodiversity)

Sources: Paul Ferraro. 2007. *Regional review of payments for watershed services: sub-Saharan Africa*. Virginia Tech; [wetlands.sanbi.org/](http://wetlands.sanbi.org/); and Hugo van Zyl, Independent economic researchers.





## 5. METHODOLOGY

When considering the implementation of a mechanism to reduce or halt land degradation, it is very important to simultaneously consider the instrument and the circumstances. Each mechanism presented in Chapter 3 is designed to work better under specific national and local conditions and to solve particular problems. The issues, criteria and factors that influence success in using economic mechanisms to halt or reduce land degradation were presented in Chapter 4, describing an ideal scenario or situation. This chapter presents an analytical approach to assess many variables, interactions and subjective factors to assist in determining the applicability of each mechanism in a given country or site context.

The analysis would include four elements:

- a quantitative scorecard tool ranking the applicability of the IMBMs in a given context according to a set of pre-defined success factors;
- a qualitative assessment of which mechanisms could achieve the set goal, based on variables that are not possible to measure and lessons learned from using other mechanisms;
- a cost-benefit analysis (CBA) of the mechanisms, considering, for example, transaction costs and who is receiving and paying what price for what ecosystem service; and
- additional analyses, including legal and institutional analysis of the mechanisms on the short list.

The analysis also should consider and consult closely with other complementary processes, studies or activities (e.g. economic valuation, SLM mapping, political mainstreaming).

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## 5.1. SCORECARD TOOL

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A scorecard tool has been developed to: (1) help determine which of the IMBMs are more appropriate in a country or site-specific context; (2) establish the minimum conditions under which each of the mechanisms could achieve its goals; and (3) identify deficiencies that government and cooperation agencies could address in future development efforts. Differences between the required and existing conditions can be established using a simple quantitative approach. The scorecard can be used together with a checklist of questions to help identify and rank the strength or presence of the success factors and enabling conditions in the country.

The idea behind the scorecard is quite simple: success factors for implementation affect each of the IMBMs differently. Some require a better legal system, others more institutional capacities. This information is captured in a factor weight table which provides the baseline and shows the requirements of each mechanism.

The scorecard may be used at different levels, depending upon the scale and type of the land degradation and desertification issues that need to be tackled. It can be used at the national level to identify applicable IMBMs for the country or at the site level to identify IMBMs as a response to a specific problem in a geographical area. The work done at each level should be supplemented with economic cost/benefit analyses and valuation studies to identify how to best use the mechanisms based on the

outcomes of the screening exercise, transaction costs, the price of the ecosystem services in the site and legal, regulatory and governance issues.

The methodology may be used as a guide during workshops so that participants can have an orderly discussion of the issues that affect implementation of an economic instrument to solve a land degradation problem. It may also be used by a smaller group of technical experts (e.g. consultants or public officials) who wish to design IMBMs.

The methodology is not supposed to provide definite answers or give a final ranking of all the mechanisms in a given context, but rather present a framework for systemizing the discussion and pointing out the different issues. While it guides the user with a quantitative assessment of the country situation, it also is qualitative in nature, which allows the guidance of stakeholders' consultations and helps to promote lively discussions.

There are always unavoidable subjectivities when carrying out a quantitative evaluation of this sort, especially because many of the variables are not measurable and the values depend on the opinions of the people participating in the process. The value of this exercise lies mainly in the process that needs to be followed and the questions that are asked to obtain the numbers in the scorecard. During this process, important issues will arise, and the experts will have a better idea about which mechanisms would work under different circumstances to solve the

land management problems. A guided discussion will guarantee that no important issues are left out and that most relevant topics are included. Another value of the methodology is that it can be effective in generating a simple message that can easily be communicated to the target audience.

At this stage a series of questions may further enrich the discussion: Can an existing situation be improved? Can a mechanism's original design be modified to suit the particular situation being considered? Is it realistic

to expect users to pay for the expected services from SLMPs?

In the end, users of this tool should have a better understanding of which mechanisms should be discarded during this stage, which mechanisms are feasible, how to implement them and their chances for success. As an example, table 4 illustrates the scorecard results from Zambia. The positive, green colored numbers indicate that the respective mechanisms would work well in the given context.

**Table 4. Scorecard results – the example of Zambia**

	Permanent conservation easements	Contract farmland set-asides	Co-financed investments	Payments for proven investment in land conservation	Subsidies	Taxes, tax breaks, environmental fees	Conservation banks	Tradable development rights	Trading of emission reductions or removals	Purchase of development rights	Direct payments for environmental services	Conservation concessions	Marketing labels	Certification schemes	
<b>NATIONAL/LOCAL CONTEXT</b>															
Institutions	-1	-1	1	1	-1	-1	2	-1	-1	1	0	1	0	0	
Governance	-1	-1	2	2	0	0	2	-1	-1	0	0	0	1	0	
Macroeconomics (economic freedom)	0	0	0	0	1	1	-2	-2	-2	-1	0	-1	-1	-1	
Regulatory framework	1	1	1	0	0	-1	0	-1	-1	0	1	1	1	1	
Environmental Awareness	1	1	1	-1	-1	1	-1	-2	-2	1	-1	0	-1	-1	
<b>SITE SPECIFIC CONTEXT</b>															
Ecosystem type	-1	0	1	1	2	1	-1	1	1	2	0	1	0	0	
Environmental	-1	-1	-1	-1	1	1	0	-1	-1	-1	0	0	1	1	
Production Units / land economics	2	2	0	0	2	2	1	0	0	1	1	2	0	0	
Land Tenure	0	1	2	2	2	3	0	0	0	1	2	0	3	3	
<b>ECONOMICS OF SUSTAINABLE LAND USE PRACTICES</b>															
Demand	On site benefits	1	1	0	0	-1	-1	0	2	2	1	1	0	2	2
	Off site benefits	-1	-1	0	-1	0	0	-2	-2	-2	-2	-1	-1	-2	-2
	Awareness/payment culture	-1	-1	0	0	1	1	-1	-2	-2	0	-2	0	-2	-2
Supply	Low Opportunity cost	-1	-1	2	1	2	2	0	1	1	-1	0	0	2	2
<b>RESULTS</b>		-2	0	9	4	8	9	-2	-8	-8	2	1	3	4	3

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## 5.2. QUALITATIVE ASSESSMENT

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The quantitative results need to be compared with the circumstances in the field and incorporated into a decision-making process. There are many qualitative aspects that should have emerged from the discussions that need to be taken into consideration, including obstacles to implementation. Thus, the quantitative results of this screening should be combined with other criteria in the decision-making process. At this point, the group will have narrowed the feasible IMBMs down to a few, which will save time and focus the discussions only on those mechanisms which are feasible.

Some of the qualitative aspects are related to a particular moment in time (e.g. an environmentally conscious government, an international agreement or a very specific market opportunity). The political will to implement solutions to land degradation problems is, however, hard to measure, and that is why the involvement of local professionals is valuable at this stage. In this sense, it is critical that the timing to implement any IMBM fits within the national or local context. Usually when there are a number of favourable factors for solving a specific land management problem, time is limited and the opportunity should be taken at once. All these issues are difficult to quantify, but they can be sensed by the trained observer and established by informed staff and consultants.

Others issues that need to be considered include the existence of perverse incentives,<sup>4</sup> agricultural practices that are very deeply rooted in the culture, asymmetric information among stakeholders and even the lack of adequate and cost-effective technologies.

There are different types of perverse incentives which have been defined as "...policies or programmes that induce unsustainable behaviour harmful to biodiversity, often as unanticipated (and unintended) side effects of policies or programmes designed to attain other objectives." These perverse incentives include environmentally harmful subsidies, including producer subsidies that reduce the cost of inputs such as fertilizers and pesticides, and consumer subsidies derived from undervaluation of natural resources. There are also policies and laws that result in inappropriate land management decisions, including some related to resource or land access (Convention on Biological Diversity, 2010).

Perverse incentives may reduce the effectiveness of IMBMs, so it is very important to identify and remove them before implementing the selected mechanisms. However, some of these perverse incentives are very hard to eliminate, since they usually benefit powerful lobbies and are sometimes seen as the normal way of doing business.

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4 Incentives that promote the incorrect behavior such as settlement policies or subsidies that result in land degradation.

This problem is not exclusive to poor countries; usually rich nations grant large subsidies to agriculture that generate adverse environmental effects. According to a report by the Organisation for Economic Co-operation and Development (OECD), its 31 members paid a total of US\$253 billion in subsidies to their agricultural producers in 2009 (OECD, 2010). The reasons behind subsidies are usually complex and difficult to eliminate. That is why it is worth pursuing a strategy to reform harmful incentives, such as by moving from subsidies for planting trees towards payment for ecosystem services.

### **5.3. COST-BENEFIT ANALYSIS**

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After the quantitative and qualitative screening has taken place, a short list of two or three mechanisms should have been established. At this point, a CBA must be carried out for each option. This is very important because there are different benefits and costs and different recipients of each depending upon the chosen mechanism. For example, conservation banks and PES schemes could benefit different stakeholders and in different ways. Furthermore, each particular case is different in terms of the distribution of benefits and costs.

Issues that must be considered in the CBA include:

- What are the transaction costs?
- Who receives the benefits and who bears the costs?

- Who is providing the service? And who is paying or compensating for it?
- What is the economic cost of setting up the IMBM (e.g. baseline studies, CBA, legal-institutional aspects, facilitation, negotiations)?
- What is the expected size of the programme in terms of dollars, number of participants and geographic scope?
- How much would need to be paid by environmental services' "users" (e.g. via a water fee or environmental tax, or premium for certified products)?
- How much, or what, would participants get for modifying their practices and adopting SLMPs?
- What are the social and private costs and benefits of different land-use options?
- What are the social and private costs and benefits for the "buyers" of an ecosystem service and society?

This analysis will provide an additional point of comparison and a clearer picture about the implications of choosing a specific mechanism. It will put together all the numbers in terms of payments, expenditures, distribution of benefits, scale and other factors that are needed by decision makers.

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#### **5.4. ADDITIONAL ANALYSIS**

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The final step involves carrying out additional legal and institutional analyses of the mechanisms in the short list.

From a legal standpoint, issues must be considered such as: the legitimacy of the proposed mechanisms to raise and spend funds; limitations to the use of the land; and binding compromises of land users and operating manuals. Every country has different rules and regulations regarding the collection and use of funds that might be considered public. Environmental rules could also come into play regarding minimum standards and command and control regulations that ought to work in tandem with any selected IMBM.

The institutional analysis comprises an evaluation of needed capacities and the definition of implementation arrangements. The roles and duties of the different participants should be studied and clarified at this stage. The participation of relevant stakeholders – including the beneficiaries and ecosystem service providers – is key for the success of any initiative, and so a significant effort needs to be made to identify them and involve them in the process.



## 6. TESTING THE METHODOLOGY

The analytical approach to assess the role that IMBMs can play in promoting SLMPs and tackling land degradation was piloted through national studies and stakeholder consultations. The overall objective of the studies was to identify opportunities to promote IMBMs for SLM and to elaborate recommendations for implementation. Specifically, the studies:

- identified existing best practices on IMBMs related to SLM;
- identified the IMBMs which are most appropriate and applicable in the national context using the scorecard tool and a qualitative assessment;
- provided recommendations for mainstreaming SLM into ongoing initiatives, upscaling good practices, developing new programmes and/or creating enabling conditions; and
- raised stakeholder awareness about the range of IMBMs, how they can be effectively used to

promote investments in SLMPs and the conditions for their successful application.

In the Dominican Republic, Guatemala and Tanzania the screening tool was used in stakeholder consultations with a range of national experts, while in Cameroon a small group of experts applied the tool. Workshops had the advantage of bringing along expertise, building partnerships, establishing links with likely participants and engaging in advocacy. The small group approach was helpful also and had the advantages of lower cost, less time and greater focus. In all cases, presentations were delivered about the land management problems and the scorecard was filled out with the help of participants.

In each country, different land management problems were tackled and interesting results were obtained. The following sections summarize the results for each case, emphasizing the main findings, opportunities, challenges and potential responses to these.

## 6.1. CAMEROON

Despite having adopted in 2006 a National Action Programme to implement the Convention, Cameroon is still struggling to adopt innovative financing mechanisms to support the fight against desertification. The opportunities lying in innovative financing mechanisms for the mobilization of resources related to SLMPs are well-known and so is their role as suppliers of ecosystem services. However, such services are underexploited because they are not ascribable to market value. Therefore, in Cameroon, the work of identifying potential and applicable IMBMs was undertaken in order to mobilize financial resources towards the adoption of SLMPs, maintain and restore the natural ecosystems of Central Africa and realize the associated benefits.

Staff from the Government of Cameroon, the GM, the Institute of Agricultural Research for Development (IRAD) and CATIE participated in analysing the different IMBMs, using the scorecard to guide the discussions. The analysis was conducted on an essentially national scale, but it also considered the three priority agro-ecological zones, as specified in the National Action Programme – the Sudan-Sahelian zone, the Guinean high-savannahs and the agro-ecological zone of the Western Highlands – as well as the forest land across the country.

A number of mechanisms were considered feasible and could be implemented if proper conditions allowed. Mechanisms that were determined to have good potential for implementation in the country, regardless of the targeted area, include:

- co-financing of investments (these are not yet implemented and future implementation will depend on the priority given by the government to the issue of SLMPs);
- subsidies (mobilization of some funds for financial and technical support to farmers' organizations is already in place); and
- taxes (these are already widely employed).

Mechanisms with favourable potential for implementation in specific areas include:

- payments for proven investments in land conservation;
- conservation concessions; and
- marketing labels and certification schemes.



In terms of the geographical location, mountain and coastal areas were deemed the most appropriate.

Mechanisms with a low potential for implementation include permanent conservation easements, contract farmlands set-asides, conservation banks, tradable development rights, trading of emission reductions or removals, purchase of development rights and direct payments for environmental services. The main reasons that these were deemed to be unsuitable to meet the specific needs of the country include their strongly commercial dimension, the current land tenure management in Cameroon and the long-term dimension of the expected results.

Challenges in Cameroon include improving the political priority of land degradation and increasing awareness of the problems and possible solutions. This could be achieved by conducting outreach and training to improve knowledge of the ecosystem services for all stakeholders involved in the implementation of SLMPs; mainstreaming SLMPs into the governmental agenda and strategy; and disseminating knowledge about the economic benefits derived from SLMPs. Studies that measure the economic costs of inaction ought to be publicized or commissioned. Also, sharing successful experiences about instruments such as PES systems should advance SLMPs in the public agenda. Scientific research in all areas related to land management should increase and be directed to potential markets, such as the carbon market.

Other beneficial conditions would be: improved access to SLMPs, with special reference to carbon markets and clean technologies; synergy with the implementation of development strategies; adoption of a strategy to mobilize financial resources to support SLMPs; and the effective involvement of all stakeholders at all levels.

## **6.2. DOMINICAN REPUBLIC**

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The Dominican Republic faces a serious challenge to reverse land degradation which, by some estimates, affects 70 per cent of its territory. A workshop was carried out to discuss the feasibility of using IMBMs to help solve land degradation and desertification issues. The scorecard was completed, a preliminary assessment was carried out and next steps were proposed.

Three groups were organized: one dealt in general with the institutional context, one with the Sabana Yegua region and one with the Artibonito region. These areas have very high degrees of land degradation and some are at risk of desertification. Participants were surprised to learn about all the different initiatives to promote SLMPs that were taking place in the Dominican Republic, most of them supported by development aid.

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At the national level, the mechanisms with more potential included:

- permanent conservation easements;
- land set-asides;
- co-financing of investments; and
- payments for proven investments in land conservation.

This is consistent with the results obtained for the Sabana Yegua region, where co-financing of investments and conservation concessions are considered feasible instruments. On the other hand, the group working with the Artibonito region considered that the mechanisms most likely to work would be subsidies, conservation banks and the purchase of development rights. It became evident that some of the IMBMs were already being used in the Dominican Republic, in different forms and combinations. They are usually part of development aid projects or programmes, but also are supported by the government.

The groups considered that complicated and more recent types of instruments would be difficult to implement. These include, for example, environmental taxes and trading of environmental services, which were deemed to be inappropriate for the Dominican Republic. An interesting result is that the groups considered the

different socio-economic conditions of each region to select the different instruments. For example, the Artibonito region is very poor, and subsidies were seen as a much-needed mechanism since it was not reasonable to expect that land users would be willing to pay for SLMPs.

There is ample opportunity to implement IMBMs for the promotion of SLM in the Dominican Republic. There are many favourable conditions for adopting these instruments at a wider scale, including the current operation of several initiatives and funds; support from many bilateral and multilateral institutions; the presence of local knowledgeable NGOs; and a stable government.

However, the challenges of widespread application and sustainable sources of income for the future still remain. Currently, the Government supports many efforts, and it is complemented by development aid. Nonetheless, the country needs to find internal sources that are constant and not subject to political fluctuations.

### 6.3. GUATEMALA

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About 12 per cent of Guatemala's area is prone to desertification. There are two areas where the problem is particularly severe: the Petén and the Western Dry Corridor regions. As a result, a workshop was carried out to explore the use of IMBMs to improve land management practices. Seventeen participants from government, NGOs, academic institutions and development agencies used the scorecard to evaluate the possibility of using these instruments and selected those that seemed more feasible.

It became evident that Guatemala had quite a few mechanisms in place, with different emphasis, and different formats. A very prominent government programme of forestry incentives called PINFOR (Plan de Acción Forestal-Ogden Rodas) has been supporting reforestation activities throughout Guatemala, and lately has started to promote the conservation of existing forests through different initiatives.

The work group considered the following mechanisms to be promising:

- co-financing of investments;
- payment for proven investments in land conservation;
- subsidies;

- conservation banks;
- direct payments for environmental services;
- conservation concessions; and
- marketing labels and certification schemes.

Out of these, three were selected as the most feasible: conservation banks, direct payments for environmental services and marketing labels and certification schemes.

According to the participants in the workshop, progress is needed on several fronts if these mechanisms are to contribute to better land management in Guatemala. First, the economy needs to stabilize and grow so that real incomes remain at least stable. Second, more knowledge is needed about the consequences of land degradation, including its economic and social costs, to raise the public attention to the issue. Then, capacities must be increased in the public institutions in areas related to the application of market-based instruments.

However, there are significant opportunities in Guatemala, including the importance of protecting watersheds for the water supply of Guatemala City and generating electricity. Furthermore, there is a strong NGO sector with links to international organizations, and the government has been learning by implementing different programmes to improve land management.

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#### **6.4. TANZANIA**

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Tanzania has experience with different types of IMBMs, including permanent conservation easements, subsidies, taxes, tax breaks and environmental fees. There are a variety of public and private payment mechanisms already in place. For example, the Community-based Forest Management (CBFM) and Joint Forest Management (JFM) initiatives, funded publicly, and self-organized private deals such as the Equitable Payments of Watershed Services (EPWS). Furthermore, Tanzania is participating in the Reducing Emissions from Deforestation and Forest Degradation (REDD) initiative, whereby nine Tanzanian NGOs have been granted funding by the Norwegian Government to pilot the REDD mechanism in different agro-ecological zones of the country.

In Tanzania, the scorecard was applied during a workshop with representatives from different government offices, NGOs, international agencies and academic institutions. It was used to identify and categorize existing experiences and to identify applicable IMBMs that could tackle two main problems at the national scale: declining water quality and quantity; and deforestation. The results were subsequently used to carry out a more detailed analysis of seven agro-ecological zones. The main findings are summarized in Table 42.

Clearly, there are challenges. Land tenure, which has been mentioned throughout this document, is very relevant in Tanzania. The geographic elusiveness of shifting cultivation and grazing makes it hard for some IMBMs to operate. And, as mentioned above, most mechanisms are designed to work where land tenure is well-defined. In this case and others where property regimes are weak, one option is to shift the focus from the land where the degradation takes place to the individual who engages in these practices. This would mean providing incentives to achieve changes in individuals' behaviour.

**Table 5. Main findings by agro-ecological zone in Tanzania**

AGRO-ECOLOGICAL ZONE	MAIN FINDINGS
Coastal	IMBMs that are likely to work better in addressing water shortages are direct payments for environmental services and permanent conservation and easements for the wildlife management areas.
Arid	Recommended mechanisms that are likely to work better and reduce overgrazing are the compensation concessions and the contract land set-aside.
Semi-arid	Recommended mechanisms are direct payments for environmental services and payment of proven investments, both to deal with soil erosion.
Plateau	Proposed mechanisms include direct payments for environmental services, trading of emissions (e.g. through REDD) and permanent conservation and easements to support wildlife management areas and reduce deforestation, the main environmental problem.
Southern and Western Highlands	Recommended mechanisms are subsidies and co-financing, with the main environmental problem being shifting cultivation.
Northern Highlands	Recommended mechanisms include direct payments for environmental services and trading of emissions (REDD) to avoid bush fires, the main environmental issue in this region.
Alluvial plains	Recommended mechanisms are subsidies and trading of emissions (REDD) to reduce the negative impacts associated to population pressure.





## 7. CONCLUSIONS AND LESSONS LEARNED

This paper presented a methodological framework to identify opportunities for promoting IMBMs for SLM. In the countries where the framework has been used, the conclusion is that it has been a good basis for discussion about the application of IMBMs to tackle land degradation and desertification issues. All cases benefited from the systematic framework of analysis offered by the scorecard approach. Lessons showed that the scorecard tool can be applied in workshops – where there are the additional benefits of networking and broader participation – or in small technical groups.

It was helpful to identify the most relevant issues associated with each mechanism and enrich the decision-making process. In other cases, informing participants about different options to promote investments in SLM through IMBMs was valuable. Furthermore, the process provided an opportunity to share information among stakeholders. For example, in some countries it was interesting for participants to discover that there were many instances where IMBMs were already being applied in their own countries.

After the national analysis was undertaken in the pilot countries, an expert workshop was held in CATIE's offices in Costa Rica to discuss the application of the methodological framework. From these discussions, some trends became clear. Some mechanisms were seen to have strong potential in most countries, such as public payment mechanisms (e.g. co-financing of investments and subsidies), direct PES schemes to promote SLMPs and the use of marketing labels and certification schemes. However, there were particularities in each country.

Land tenure is a theme that deserves attention. It is very important to consider the local reality in terms of the way land is owned, transferred and used. Creative ways need to be found to accommodate existing land regimes, which are usually not very solid in Africa and some regions of Latin America. Recognizing this reality early on will increase the chances of success.

Another lesson learned has to do with the opportunity cost of the land and the ecological importance of a site. For example, in Tanzania there are occasions where

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migrant people use areas that are essentially public property, affecting areas of very high ecological value which are home to endangered species. Some herders have a significant capital stock in their animals, and thus the opportunity cost of modifying their land-use practices is very high. In these cases, a concerted effort is needed between governments and the international community.





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## APPENDIX 1. MECHANISM PROFILES

MECHANISM A:	PERMANENT CONSERVATION EASEMENTS
Objective:	To permanently limit the development on a property by a voluntary agreement with the landowner.
Description:	A guarantee that a tract of land will not be used or farmed. It usually involves an annotation in the property title or at the land registry office. In Montana, United States, the Nature Conservancy, a non-governmental organization (NGO) based in Virginia, has established agreements that protect 50 river miles and close to 35,000 ha of the Blackfoot River Valley.
Applications:	<p>Conserving patches of forest with biodiversity and natural resource benefits.</p> <p>The landowner can develop specific activities and uses for the property, such as agriculture, forestry and recreation. Industrial, commercial and residential development is usually limited.</p>
Advantages:	<p>Private ownership remains, and the land can be sold or leased.</p> <p>The landowner can use the land for appropriate productive activities, according to the area, and receive economic benefits.</p> <p>Flexible; the easement may cover portions or an entire property.</p> <p>The landowner receives an income tax deduction for the easement's value.</p>
Disadvantages:	Land with conservation easements may be worth less on the open market than unrestricted and developable properties.
Special considerations:	Landowners agree to sell or donate certain rights related to the property, while a public agency or private organization holds the right to enforce the agreement. It is voluntary but legally binding.

MECHANISM B:	CONTRACT FARMLAND SET-ASIDES
Objective:	To leave a proportion of farmland uncultivated or in non-agricultural use, by agreement with the landowner.
Description:	Landowners give up the right to use part or all of their farmland, in exchange for payments. In Costa Rica, the national forestry fund pays close to US\$50/ha/year to landowners who promise to preserve existing forests or allow natural regeneration. Currently, there are nearly 200,000 ha under this programme.
Applications:	Reducing the large and costly surpluses produced in a region. Used in Europe as part of the Common Agricultural Policy.  Well-suited to dealing with land degradation.  Providing some environmental benefits following considerable damage to agricultural ecosystems and wildlife.
Advantages:	Private ownership remains, and the land can be sold or leased.  The landowner can use the land for appropriate productive activities, according to the area (and including agricultural use), and receive economic benefits.
Disadvantages:	By definition, it is not useful for covering an entire property.  Landowners may perceive that the main goal is to limit the supply of agricultural products and increase their prices.  Land with set-aside easements may be worth less on the open market than unrestricted and developable property.

MECHANISM C:	CO-FINANCE INVESTMENTS
Objective:	To promote investments in sustainable land-use management where private incentives are not enough. Useful where there is a rationale for changing land-use practices and the benefits are spread to society as a whole.
Description:	Government pays part of the investments needed to achieve a certain land use or to promote production practices (e.g. afforestation, sustainable forest management, SLMPs).
Applications:	Where producers are willing to implement land conservation techniques but lack the financial capacity to invest in new equipment and systems.

Advantages:	Landowners assume part of the financial cost, which promotes a culture of cost sharing and reduces the moral hazard. Promotes public-private partnerships.
Disadvantages:	The joint-venture process can be complicated, and there is risk of non-compliance by one of the parties.
Special considerations:	Should be for a limited period, after which responsibility is given to the private side.

MECHANISM D:	PAYMENTS FOR PROVEN INVESTMENTS IN LAND CONSERVATION
Objective:	To recognize landowners' current efforts in land conservation.
Description:	Government provides a payment based on the investments made, per unit of area. China's four wastelands policy is a variation of this mechanism. The government makes in-kind payments of land rights to those who commit to preserving soil resources.
Applications:	In areas in and around land conservation projects.
Advantages:	A good way of compensating past and present financial efforts. Flexible; payments may be directed to many other forms of land conservation and are not restricted to specific land uses.
Disadvantages:	Public funds are destined to current conservation projects, which can reduce the funds for new projects. Requires that private individuals are already engaged in land conservation.
Special considerations:	<i>Ex-post</i> payments for current conservation investments.

MECHANISM E:	SUBSIDIES
Objective:	To transfer public funds to land users or players implementing SLMPs, involved in land conservation projects or applying environmentally friendly technologies. To guarantee a larger public objective.
Description:	The government provides direct subsidies to those who implement SLMPs or other environmental technologies (e.g. water treatment plants, energy-efficient light bulbs, soil conservation equipment).
Applications:	In the start-up phase of an environmental services market or regulation.
Advantages:	Easy to implement. Flexible.
Disadvantages:	If the subsidy is not narrowly targeted to only inputs for conservation activities, it is likely to affect activities far beyond its intended scope, thus imposing substantial budgetary costs and creating inefficiencies elsewhere in the economy.  Tends to stick.
Special considerations:	It is useful to establish an expiration date at the beginning of the subsidy.

MECHANISM F:	TAXES AND TAX BREAKS (INPUTS, PRACTICES)
Objective:	To discourage current practices by taxing the activities which generate environmental bad practices.
Description:	Environmental or green taxes levied on bad practices that can be used to correct or modify existing land-use practices. Schemes such as the Green Dot in Germany impose a payment per unit of packaging to encourage reductions in solid waste. Charges on the effluents from domestic and industrial water users in Colombia and Costa Rica will finance water clean-up projects and reduce effluents at the source. China's soil erosion control fees charge developers for environmental damage. Some states in Brazil allocate value-added tax (VAT) revenues according to environmental criteria through an "ecological VAT".
Applications:	Funds generated by the environmental or green taxes levied on bad practices may finance efforts to correct and modify existing land-use practices.  Potential for solving land degradation issues.  Reducing environmental pollution.

Advantages:	<p>In broad application, can be used to favour or discourage many different activities.</p> <p>At an optimal level, a tax can correct market failures.</p> <p>Can promote research and development for clean technologies and environmentally friendly practices.</p>
Disadvantages:	<p>Introduces distortions in the economy that may have impacts beyond the targeted activities.</p> <p>Governments may perceive them as an easy way to collect funds, and overlook their economic function.</p> <p>Tax levels may not be optimal.</p> <p>Requires an efficient control policy, which may not exist if government is weak.</p>

MECHANISM G:	CONSERVATION BANKS
Objective:	To conserve land through bank sale of conservation credits to projects that will have a negative impact on the environment.
Description:	Permanently protected private or public land is managed with conservation objectives. Parcels used for conservation purposes are managed by the bank, which sells credits to projects that will have a negative impact on the environment. Each bank then uses the money to protect natural resources, such as water, endangered species, farmlands, natural beauty, forest lands or historical or archaeological sites.
Applications:	Ideal where real estate development is booming.
Advantages:	<p>Banks may specialize in building a portfolio of land for conservation purposes, reducing the overall cost.</p> <p>Flexible.</p>
Disadvantages:	<p>This approach is complicated; it may generate opposition from parties that do not like the concept of compensation.</p> <p>Impacts may occur in areas not covered by the mechanism.</p> <p>Intensive use of information. Not functional in small economies without well-established banking systems.</p>

MECHANISM H:	TRADABLE DEVELOPMENT RIGHTS
Objective:	To control potentially damaging land uses. Rights to develop a determined amount of land are given away (or auctioned) and then traded among the different users.
Description:	Allows the development of a certain amount of land, on condition that a similar type and quality of land are restored as a compensation measure. This has been used mainly in the United States, but with limited success (Messer, 2007).
Applications:	Allows the development of a certain amount of land in a watershed, on condition that a similar type and quality of land is restored as a compensation measure.
Advantages:	Gives the private sector an important role in decisions regarding its own production methods. If an appropriate environmental goal has been established at the beginning of market development, the mechanism will assure a maximum level of welfare for society.
Disadvantages:	Requires a well-established institutional and legal framework and high levels of governance. Application can be complicated and requires capacities that are difficult to find in many rural economies.

MECHANISM I:	TRADING OF EMISSION REDUCTIONS OR REMOVALS
Objective:	To achieve a determined reduction of emissions (or any other environmental goal) at the lowest possible cost for society and the economy.
Description:	Sets a total pollution goal/allowance (or reduction) and distributes pollution permits to the amount of the total allowance. Parties can either give or use their own allowances or they can buy or sell allowances. Includes carbon-trading mechanisms, such as the CDM, the financial arm of the United Nations Framework Convention on Climate Change.
Applications:	Land degradation or other environmental problems where a natural resource is scarce. Reducing carbon dioxide emissions.
Advantages:	Flexible; benefits from market incentives. Efficient if the maximum amount of pollution allowed is appropriate.



Disadvantages:	<p>Application can be difficult as it needs an institutional and legal framework.</p> <p>Intensive in baseline information.</p> <p>Impacts may happen in areas not covered by the mechanism or be qualitatively different.</p>
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MECHANISM J:	PURCHASE OF DEVELOPMENT RIGHTS
Objective:	To preserve a patch of land or force it out of production, to achieve the expected benefits.
Description:	An interested party buys the development rights for a given piece of land to be dedicated to a particular use, such as forest management or conservation. For example, a hydropower generator could purchase the development rights to an area that is needed to protect water quality (i.e. an area that needs protection to prevent increased sediment load and siltation).
Applications:	Where there is little institutional capacity or a limited legal framework, a simple system of purchasing development rights may achieve the desired goal at very reasonable costs.
Advantages:	<p>Simple application which paves the way for future development of more sophisticated instruments (such as trading of emission reductions).</p> <p>More effective than traditional zoning approaches.</p> <p>Assures a quick flow of resources when needed.</p>
Disadvantages:	Not optimal from society's point of view: could generate some perverse incentives.

MECHANISM K:	DIRECT PAYMENTS FOR ENVIRONMENTAL SERVICES
Objective:	To compensate those who generate positive externalities by changing their land use or production methods.
Description:	The users of environmental services pay the providers directly. For example, a hydropower generator interested in minimizing erosion and siltation pays upstream farmers who implement SLMPs. In Costa Rica, a tax on gasoline provides funds that are used to pay forest owners who commit to preserving their forests.
Applications:	Very useful when a concrete environmental impact could be avoided by adopting certain practices.
Advantages:	Flexible implementation, as transactions are between private agents. Proper incentives for land conservation. Public relations benefits spillover to the markets for traditional goods and services.
Disadvantages:	Can be temporary, short-term enterprises.

MECHANISM L:	CONSERVATION CONCESSIONS
Objective:	For conservation purposes. One party provides another with a concession to use a territory for conservation processes.
Description:	One party provides another with a concession to use a territory for conservation processes. These work in the same way as forestry or mining concessions, guaranteeing that the land will be protected, at least during the period considered.
Applications:	Useful for conserving large tracts of land, including idle lands.
Advantages:	Takes advantage of the capacities of each participant. Most concessions are granted to NGOs specializing in conservation activities. Owner is compensated financially. As private agreements, they are simple and quick.
Disadvantages:	As private endeavours, they can be temporary. Using the land in a traditional way may be much more profitable than giving the concession.

MECHANISM M:	MARKETING LABELS
Objective:	To obtain market access for products and services which are generated in an environmentally sustainable way.
Description:	Payment for ecosystem services is embedded in a product/service, or a market develops for products produced sustainably. Products are sold to consumers or retailers who prefer to support suppliers that are good environmental managers. For example, the Rainforest Alliance conserves valuable forest land by promoting sustainable farming practices for coffee, cocoa and black tea in Ethiopia, Côte d'Ivoire and Kenya. Another example is the voluntary partnership agreements that Ghana and the Republic of Congo recently signed with the EU to ensure that timber exports are legally harvested and can be allowed entrance into the EU market. The agreement stipulates that all timber products must be harvested in ways that protect the country's forests. The EU is engaged in negotiations for similar agreements in other countries, including Cameroon, Ecuador, Gabon and Viet Nam.
Applications:	Where goods and services in very competitive markets need to be differentiated. For goods and services with significant environmental impacts.
Advantages:	Can generate an added value from otherwise very homogeneous goods and services, such as inputs, commodities and wood products. Can fetch higher prices on the market. Provides incentives for and promotes investments (e.g. price premiums, access to particular markets) in environmental protection and adequate land-use management by producers and companies. Creates environmentally conscious consumer groups that are willing to pay for goods and services that respect environmental (and social) standards.
Disadvantages:	May require a credible and established certification system. Price differences may inhibit or reduce the demand for the environmentally friendly product. Not useful in non-competitive markets with low purchasing capacity.

MECHANISM N:	CERTIFICATION SCHEMES
Objective:	To generate a price premium and/or gain access to markets by establishing environmental production standards and verifying that the processes and production practices for goods and services comply with these. (May or may not be associated with labelling.)
Description:	<p>A procedure whereby a third party provides written assurance that a product, process or service complies with certain standards (ISO 1996). Compliance with the standards is certified by verification methods recognized and approved by a third-party certification body or certifier that has no direct interest in the economic relationship between the supplier and the buyer. These standards can be established:</p> <ul style="list-style-type: none"> <li>• with the government, e.g. the International Federation of Organic Agriculture Movements (IFOAM) and the International Organization for Standardization (ISO);</li> <li>• by NGOs, e.g. the Forest Stewardship Council (FSC) and the Rainforest Alliance;</li> <li>• by industry, including exporter/retailer groups such as European Good Agricultural Practice (EUROPEGAP).</li> </ul>
Applications:	<p>For goods and services in need of distinction.</p> <p>For goods and services with high environmental impacts.</p>
Advantages:	<p>Allows the environmental contributions of products and services to be measured against agreed standards.</p> <p>Allows the monitoring and fast-tracking of environmental practices in the production cycle.</p> <p>Facilitates the management and issuance of eco-labels.</p>
Disadvantages:	<p>The certification process can be costly.</p> <p>The certification process can be biased by conflicts of interest.</p>

