

**CROSS-SECTORAL TOOLKIT FOR THE CONSERVATION AND
SUSTAINABLE MANAGEMENT OF FOREST BIODIVERSITY**

Acknowledgements

This toolkit builds on the excellent work of CBD partner organizations, in particular the United Nations Food and Agriculture Organization (FAO) and the Global Environment Facility (GEF).

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Foreword

Forest biodiversity has always been at the cross-roads of numerous political and economic interests. The Millennium Ecosystem Assessment reports that agricultural land is expanding in approximately 70 per cent of the countries examined. The pressures from sectors such as agriculture, mining, or energy on forest biodiversity require a cross-sectoral approach towards the conservation and sustainable management of forests.

This Technical Series Publication summarises information on policy approaches that aim to minimize the negative impacts of other sectoral policies on forests and forest biodiversity. This 'tool-kit' will help Parties and relevant organizations to identify policy responses to the growing pressure on forest resources from other sectors. It highlights the necessity of moving outside the forestry sector alone in creating meaningful policies that may reduce wide-ranging negative impacts on forest biodiversity, and it showcases opportunities to adopt a long-term view in economic development, in line with all three objectives of the Convention on Biological Diversity. The work draws on some of the earlier excellent work done by many of our partners, including the Centre for International Forest Research (CIFOR), the Food and Agriculture Organization (FAO), as well as the results of projects funded by the Global Environment Facility (GEF).

We consider this present version as a work that is well-along yet still in progress, as we intend to update the tool-kit intermittently and develop it into a dynamic web-based tool. We have only begun to address some of the sectors in which developments can affect forests and forest biodiversity. Other sectors such as transportation and health have yet to be incorporated. Nevertheless we trust that this publication will provide useful guidance and bring to the fore the many impacts, wanted and unwanted, that sectoral policies have on forest and forest biodiversity.

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1. INTRODUCTION

Policies in all sectors need to consider implications for biodiversity and integrate appropriate measures, if biodiversity is to be conserved over the long term. Biodiversity in forests is not only affected by actions under forest management regimes (planned or otherwise); policies and management actions in other sectors often have unintended, or even intended, consequences for forests and forest biodiversity. As policies in sectors that use forest products or forest lands result in expansion or contraction, there are effects on forests. For example, favourable taxation for gas and oil exploration may fragment or reduce forest area, noise and pollution from tourists may influence animal distributions, interest rates and currency valuation may affect how rapidly forests are logged, and subsidised forest clearing for agriculture reduces forest area. Each of these areas is subject to policy that may or may not consider forests in the making of such policies. For management and maintenance of forest cover to be a holistic consideration, governance in sectors other than forestry needs to understand the consequences, intended or otherwise, that result directly and indirectly from policy formulation. Policy formulation may then be altered to reduce impacts on forest biodiversity. Further, the globalisation of the forest sector including mergers among international companies, effects of invasive species, and multi-lateral trade agreements requires careful

policy analysis to ensure that impacts on forests and biodiversity are minimised. This document and associated web-based tool kit are meant to provide support and information with respect to cross-sectoral policies that can help to maintain forests and forest biodiversity, as governments seek a balance between conservation and meeting the needs of people.

The Food and Agriculture Organization of the United Nations (FAO) and the Global Environment Facility (GEF) have produced some key documents and references that have served as fundamental reference points for this tool kit. These resources are:

- “Cross-sectoral Policy Developments in Forestry” (ed. by Y.C. Dubé and F. Schmithüsen, CABI International and FAO, 2007);
- “Cross-sectoral Policy Impacts between Forestry and other Sectors” (FAO Forestry Paper 142, 2003);
- a website hosted by UNEP, GEF, and World Bank, under the ‘Biodiversity Support Planning Program’, online at: <http://www.unep.org/bpsp/TS.html>.

These sources of information and case studies are recommended as starting points for users of this tool kit. The tool kit is organised around some key thematic areas as follows:

Basic structure for cross-sectoral toolkit on forest biodiversity:

The toolkit Matrix		Sectors (each at several scales ¹)					
		Agriculture	Tourism	Mining	Spatial Planning	Energy	Finance
Tools (at different scales)	Case Studies						
	Laws						
	Codes of Conduct						
	Incentive Schemes						
	Policies						
	Market based instruments						

Policy can occur for, and affect, different scales, including international policies (e.g., CBD, Kyoto Protocol), regional processes (e.g. MCPFE, ASEAN, and TCA), to national policies and finally to local policies that influence individual communities directly. What is often missing is consistency among these various levels of policy, usually because of the lack of direct connection among government departments, or between levels of government. For example, a roads department may formulate a policy that actually affects biodiversity in forests but not consult with the environment department, despite an international agreement through a foreign affairs department to reduce loss of biodiversity. Many ideas and tools have been developed in recognition of the interdependence of sectors other than forestry on forests. This tool kit offers a window into these tools, which range from laws to suggestions for best practices that have proved to be highly successful, or unsuccessful, but which provide a set of options and concepts towards reducing cross-sectoral impacts on forest biodiversity.

Effective policies must react to an understanding of the root causes of forest loss, and these causes differ among regions and countries. For example, Wunder and Dermawan (2007) note that cattle-ranching has been the main cause of deforestation in Latin America, in southeast Asia the causes have been uncontrolled timber harvest, land-clearing for agriculture and mineral exploration, while in central Africa deforestation largely results from forest clearing for cash crops. Therefore, a policy, law, or tool that is effective under one set of circumstances may not necessarily be effective in another country. Hence, proper analysis is a key to the development of policies within forestry, and cross-sectorally, which will have positive effects on forest biodiversity.

In this regard, the impacts of public policies on the forest sector must be viewed within the context of dominant plans, goals and actions regulating issues of public concern (Schmithüsen, in FAO 2003). Cross-sectoral linkages between the forest sector and other sectors may have a direct, indirect, intended or unintended effect on landowners, forest users, government agencies and non-governmental organizations (NGOs). Often, unintended effects of cross-sectoral linkages only become apparent after implementation has taken place. Multi-level policy and legal frameworks influence political choices at the national and sub-national levels; impact decisions made by land users and land managers; and contribute to shaping rural and urban space. At the local and national levels, there is a need to identify the most

important linkages and to assess the positive and negative impacts of policies. Governments can help mediate among different societal actors, stakeholder interests and land use practices. Analysis is required to ensure that whatever tools are implemented, they are indeed going to be effective in protecting forest biodiversity (Schmithüsen, in FAO 2003).



Photo courtesy of D. Wilkie

Logging truck, Pacific Northwest, United States



Photo courtesy of Clabrin

Cattle farming in South America

More commitment is required within governments to ensure inter-departmental collaboration. In the absence of such cross-departmental cooperation, policy-makers become inwardly focused on their sector and tend to not consider impacts on other sectors. Shannon (in FAO 2003) speaks to the need for an outward-looking attitude and building the capacity to use information and experience to modify policies through an adaptive approach and stresses that stakeholder participation and transparency are two essential steps in addressing governance problems.

The FAO Workshop (2003) summarised the following as keys towards this end: “1.) promotion of spatial integration and a participation approach; 2.) improvement of information, monitoring and evaluation across sectors, using comprehensive policy and planning frameworks; 3.) creation of interdisciplinary and inter-ministerial chambers; 4.) promotion of integrated land management training and empowerment of the users and owners of land resources (human resource development); 5.) provision of incentives to local economic agents for the supply of public goods; 6.) formulation of policy should take an integrated territorial approach (e.g. rural development) rather than a sectoral approach (e.g. agriculture, forestry, etc.); 7.) policies should be directed towards outcomes rather than the sector. For example, in order to increase rural employment, subsidies should not be linked to specific production but rather to job creation; 8.) monitoring and cross-sectoral evaluation of all policies should be regular; and 9.) policies should be adaptive” and altered as required in response to results of regular monitoring for effectiveness.

Wunder and Dermawan (2007) listed nine major cross-sectoral policies plus one sectoral policy that have had the greatest positive or negative (perverse) impact on forests :

1. Neglect rural road building (perverse);
2. Sell gasoline at normal unsubsidised price (positive - reflects the true cost of energy and does not deflate the true cost of forest products);
3. Ignore smallholder agriculture while encouraging agro-industrial “white elephants” (perverse);
4. Stop moving or directing people into forests (perverse/debatable);
5. Promote urban labour absorption and rural to urban migration through urban spending (perverse);
6. Avoid large currency devaluations (debatable);
7. Liberalise the import of food and timber products (positive);
8. Increase logging taxes to effectively capture stumpage values (positive);
9. Reduce population growth through family planning programs (positive);
10. Create a rent-seeking environment where few people find it worthwhile to produce (perverse).

A clear policy option to ensure the sustainable development of forests and to assess the impact

of development of individual projects on forests is environmental impact analysis (EIA). An example is provided in the forest sector in Chile where an EIA was conducted prior to logging in the Tierra del Fuego region. This EIA included limits to logging and development of protected areas as benchmarks against which to measure sustainability (Gallardo 2007).

In summary, a key to protecting forests during sector development other than forestry is to understand the potential impacts through careful analysis and planning. This is not always easily done because of the myriad of interactions among factors and the often unexpected consequences of particular policies. Nevertheless, much forest destruction results from fairly straight-forward and predictable consequences of unplanned road building, poor law-enforcement, and clearing for unsustainable agriculture and pasturing. Over the long term, effective policies should focus on the causes of loss of biodiversity rather than on only addressing the effects. Most often, this requires careful analysis and consensus-building among the many stakeholders who use the forests.

II. KEY SECTORS AND LINKAGES TO FOREST BIODIVERSITY

National Forest Policies

Of course, it is most often policies at the national level that are primarily important, as these set direction and provide leadership for local government bodies. Schmithüsen (in FAO, 2003) provided a useful distinction among policy types, based on where they are focused (Table 1). To that list we also add a ‘national accounting and valuation’ of natural resources, which is discussed below. National forest policy (national forest program) that is tied to a national biodiversity strategy forms a strong national basis on which to protect forests and manage their development in a sustainable fashion. Once national direction is established, it appears that the most effective forms of policy to control the loss of forests and forest biodiversity are those that disseminate control to local levels. The national forest program or policy (NFP) cannot exist in isolation owing to the many impacts on forests from policies in other sectors, both positive and negative. FAO (1996) has provided some guidance in developing appropriate cross-sectoral linkages to ensure consistency between the NFP and other sector policies. These mechanisms especially refer to the need for formal

inter-ministerial collaboration, coordination in planning, and similarity among mandates of departments with respect to forest protection. In the absence of formal mechanisms to link policies across sectors unintended consequences of policies in one sector will increase forest loss and result in a loss of forest biodiversity.



Boreal forest, Quebec, Canada

Table 1. Types of policy instruments (from: Schmithüsen in FAO, 2003)

Policy type	Instrument
Regulative	Property rights Status of forest lands Resource protection Management obligations Landowner responsibility Planning
Market intervention	Public land management Public purchases Public insurance Compensation Incentives and grants Taxation, e.g., capital gains tax Public infrastructure
Market facilitation	Marketing boards, prices, tariffs Management agreements Marketing of environmental goods and services
Persuasion and information	Education and training Dissemination of information Extension services and technical assistance Research

Case Study: National Forest Policy in Uganda

Mpigi District lies around Lake Victoria basin of Uganda, and has a diverse tropical evergreen forest, extending for about 260 km². The forest in Mpigi District provides habitat for nearly 28% of the forest species in Uganda, hosting 20 mammal species, 190 bird species, and rare plant species found only in this district (e.g., *Crotalaria recta* and *Ficus wildemania*). This forest resource has provided forest products to satisfy wood demands in the capital Kampala. Although there are about 40 forest protected areas, the district faces pressure on forest resources due to growing forest resource demands and population growth. The district has an estimated 415,000 people. Agriculture, forestry, and fishing are the main economic activities in the district.

There have been frequent changes in the institutional arrangement for resource management involving different stakeholders. Forest policy in the 1940s gave the right to manage local forest reserves to local governments. But in 1967, the central government reserved the right to centrally manage forest reserves and resources. Due to recent trends in decentralizing local resource management, forest management rights were given back to local District Councils in 1993. In 1995, the resource management rights were once again reversed by allowing large forest reserves to be centrally managed, while reserving the right to resource management of small scale forest resources to local government (i.e., forestlands of 500 ha or less). To further clarify the responsibilities of each stakeholder, such as villagers, local government, and central government, a new Forest Policy was enacted in 2001 and National Forest Plan was completed in 2002.

Rights and benefit sharing arrangements are decided by engaging local government and institutions. The central government can lease forest land to developers, while local communities harvest freely for their daily requirements from the forest. However, commercial harvesting requires the issuance of permits from the central government. Fees collected from permits and penalties are shared among the central government and local and district governments. From local forests, 100% of the forest-related income goes to support local institutions. However, from designated national forests, 60% of revenue goes to the central government and 40% to the local government.

The lesson learned from this case study is that frequent changes in institutional arrangements that do not effectively engage local communities can lead to resource degradation. However, a well-defined

rights and responsibilities sharing agreement, based on effective participation and benefit-sharing with local stakeholders, can enhance resource conservation and sustainable use.

Case Study: Improved Forest Management in Kenya

Ramongi Hill Forest is one of the forested areas in Kenya located in the Bondo District of Nanza Province, on the northeast shore of Lake Victoria (00°06'23''S latitude and 34°04'10''E longitude). The forest is surrounded in the southwest by the Jusa, Oraro, and Usigu settlements of nearly 3,100 residents. The forest hosts a diverse flora and fauna, including more than 100 plant species. The dominant plant species in the forest include *Teclea simplicifolia*, *Haplocoelum foliolosum*, *Teclea trichocarpus*, *Strychnos henningsii*, and *Tarrena graviolens*. Residents within a 5 km radius depend on the forest for numerous uses, including 90% dependence on the forest for fuel wood.



Lake Victoria, Kenya

The forest is under the threat of cross-sectoral impacts of human activity from logging of high quality timber, settlement and unsustainable commercial extraction of forest resources. The practice of charcoal making is also exerting pressure on forest resources and biodiversity. To address this problem, there is collaboration between local stakeholders and International Forest Resources and Institutions (IFRI).

Historically, the forest is managed by the traditional norms, practices and, institutions of the Mijikenda people who used parts of the forest for spiritual purposes, burial and medicinal herb extraction. However, the recent increase in land demand for agriculture, demand for fire wood and construction

of housing has put pressure on traditional institutions and norms that preserved the forest across generations.

This case study looks at the impact of traditional local institutions on forest functioning by classifying forested land into “adjacent to swamp”, “sacred zone”, and “settlement”. The case study reveals that there is extensive use of forest products in the swamp and settlement forested lands as compared to land exclusively used for worship and ritual purposes. There is a better ecological functioning and regeneration in the forest protected by traditional institutions. The sacred forest resources are also a source of medicinal plants. Traditional institutions allow limited use of forest resources in the protected areas to cut only mature trees on forest edges with prior permission from village elders. This demonstrates the fact that local institutions and cultures can enhance the preservation of local resources through customary practices and managed access to forest resources even in the face of cross-sectoral pressures on the resource. This allowed the forest to be protected despite the growing pressure for forest resources for cooking, construction and agricultural purposes in the villages.

Two Case Studies: On Improved Local Governance in Tanzania

A. Forest Management in Tanga:

The Tanga Region of Tanzania constitutes the Kipumbwi and Sange villages. The region covers about 130 km of coast line extending from the border with Kenya in the north to the Sadani Game reserve in the south. The region has more than 150,000 inhabitants relying on numerous resources based economic activities. The two villages are also located near a mangrove forest of an estimated size of 416 hectares (ha). Kipumbwi is a major fishing village consisting of other smaller villages and with neighboring villages of Kwakibul, Sange and Stahabu.

Local institutions were weakened following centralized management system for many years. However, with the establishment of the Tanga Coastal Zone Conservation and Development Program sponsored by Tanga local government, municipality councils and the technical assistance from IUCN (World Conservation Union), an institutional development plan was put-in place. The observation was that there is ineffective protection and policing of coastal forests, lack of resources for rehabilitation of habitat and increasing pressure on coastal forest

from other sectoral activities. The lack of knowledge of mangrove management made local institutions ineffective in addressing sustainable eco-service use. Logging and intensive use of the forest deteriorated the resource base.



Mangroves, Tanga region, Tanzania

Use right conflicted and pressure on resources led to the creation of village organizations in 1995, and were supported by two programs – the Coastal Zone Conservation Development Program (TCZCDP) and the Mangrove Management Project (MMP), which introduced a restrictive protection plan by creating a mechanism where by ecosystem use had to be first permitted by village and district officers.

To establish use rights, villages neighboring adjacent mangrove forest (Kwakibuyu and Sange) were invited for a discussion on rights of use. This resulted in an agreement on the joint management of mangrove forests and ecosystem services and elected a committee to coordinate management efforts across villages. Equal access rights and equal ecosystem revenue sharing among villages is established to avoid revenue sharing boundary disputes. It was agreed to rename the ecosystem area KiSa, the initials of the two villages.

The institutions evolved with experience and the better understanding of the benefits of resource conservation across villages. Eventually, local governments also responded in assisting the new institutions that helped sustainable use of the mangrove ecosystem.

B. Mangrove Management in Zanzibar:

Zanzibar consists of two islands in the Republic of Tanzania, Pemba and Unguja. Zanzibar has a rich

mangrove forest ecosystem providing habitat for traditional fishing. Mangrove accounts for nearly 6% of the land cover of Zanzibar and 14% of the land cover at Pemba. There are 10 known local mangrove species.

The mangroves provide a functioning ecosystem for fish nurseries. They are also a major source of charcoal and wood supply. Wood demand for the housing market placed pressure on the mangrove ecosystem. In the face of increased demand for mangroves for charcoal, wood, and fishing, the lack of effective resource management, lack of enforcement, and the lack of knowledge regarding links between mangrove ecosystem health and economic interests in fishing, charcoal and wood supply put further strain on the resource.

Increasing awareness campaigns across villages resulted in the formation of community-based organizations aimed at achieving sustainable mangrove management. An initiative, for instance, proposed with consultation of stake-holders, a limit of 700 kg of charcoal per person per month to ensure ecosystem functioning. Mangrove cutting by non-villagers was also banned.

To boost awareness and knowledge, reading materials and simplified expositions are used to communicate key ecosystem impacts of unsustainable mangrove harvest. The traditional method of rotational harvesting is also promoted and sea weeds are also introduced as alternatives. The positive impacts of such initiatives include reduced pressure on mangrove, improved mangrove growth, and improved fish catchments.

Internal Economic Policies

Internal national economic policies play a major role directly and indirectly in the protection or loss of forest biodiversity. Governments have a wide range of options available to them, which if they are considered in terms of impacts on forests, can have positive effects on maintaining and developing forests sustainably. These policy options and their effects on forests are well-reviewed by Hyde (in FAO, 2003), who discussed impacts taxes, incentives, and regulations. For example, Hyde suggests that while income taxes have no effect on the value of forests, capital gains taxes can have direct impacts on forests by fostering investment into the sector. Similarly, the treatment of forested lands under property tax assessments will have effects on whether or not it is worthwhile to harvest a forest on private lands. Rural

poverty is a major contributor to unsustainable use of forests. Therefore in a broad sense, sound national economic policies that create wealth within countries may have great consequences for reducing forest loss.

An excellent case study of macroeconomic policy impacts on forests in Tanzania is provided in Monela and Abdallah (2007). A decision to reduce state control in favour of more local control and focusing policies towards providing an enabling environment, seem to be having positive effects. Nevertheless, these changes are not without problems that include a need for better inter-ministerial coordination, a need for improved definition of responsibilities, and clarifying power-sharing between national and local governments.

The use of economic incentive measures attempt to overcome these direct and underlying causes of biodiversity loss. Some broad categories of economic instruments for biodiversity conservation include (Emerton 2001):

- *Property rights*: deal with the fact that market failure is due in part to the absence of well-defined, secure and transferable rights over land and biological resources. By establishing property rights biodiversity markets and scarcity prices should emerge, and permit the users and owners of biological resources to benefit from conservation or be forced to bear the onsite implications of degradation.
- *Markets and charges*: entail trading in biodiversity goods and services and giving them a price (or adjusting their existing prices and markets) which reflects their relative scarcity, costs and benefits. Creating markets ensures that biological resources are allocated efficiently and put to their best use according to people's willingness to pay.
- *Fiscal instruments*: include various types of taxes and subsidies. They can be used to raise the relative price of biodiversity-degrading products and technologies in line with the costs of the damage they cause and discourage people from using them, and to decrease the relative price of biodiversity-conserving products in line with the benefits of conservation and encourage people to use them. Fiscal instruments are also a tool to raise budgetary revenues.

- *Bonds and deposits*: are product surcharges which shift the responsibility for biodiversity depletion to individual producers and consumers. They are levied on activities which run the risk of harming biodiversity, and require the person carrying out these activities to pay a bond or deposit before they start against the possibility of this damage occurring. By charging in advance for possible biodiversity damage, bonds and deposits provide funds for covering the costs of this damage and ensure that producers or consumers cover the cost themselves, and also presents an incentive to avoid biodiversity damage and reclaim the deposit or bond.

Case Study: Improved Use of Forests in the Solomon Islands



Island mangrove

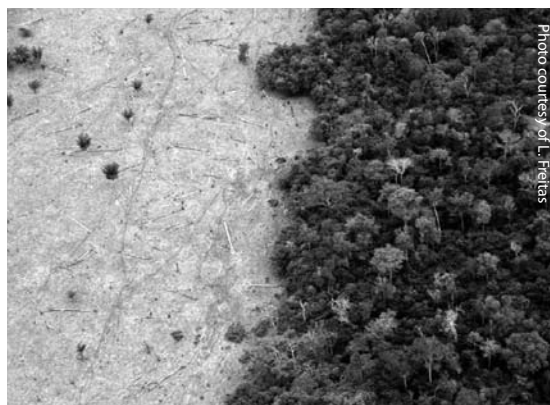
The Solomon Islands are located between 5° and 12° S latitude and 156° and 170° E longitude. The island is home to a wide variety of biodiversity and forest resources. The forest sector in the Island faced cross-sectoral impacts arising from macroeconomic instability. A national financial crisis, resulting from macroeconomic instability, encouraged among other things, timber exploitation as a significant source of supplemental income. This problem was compounded by natural resource degradation and industrial logging threatening communities.

In 1993, the Solomon Islands Development Trust, Greenpeace Australia-Pacific and the Imported Tropical Timber Group of New Zealand jointly established an eco-forestry project. The main goal of the project was to foster sustainable utilization of

ecosystem services and conservation of forest and ecosystem resources in the face of cross-sectoral impacts from financial instability. Through the joint collaboration with land owners, a training program for land owners is undertaken and extension support service is provided to monitor eco-timber producers. Village Eco-Timber Exporters (VETE) marketing organization was set-up in 1996 to facilitate village producers' access to international markets and in the Islands. International buyers in New Zealand and Australia agreed to pay premium price on timber products produced from sustainably managed indigenous forest resources. Within the first three years, VETE exported 1800 cubic meter of eco-timbers at a net profit of US \$466,000 to local communities. Participating communities encourage the use of lower standard timber to allow communities to export high quality timber for higher income. As a result, eco-timber production increased 80% and the income generated assisted in providing public services to local communities such as clean water, sanitation, schools, and transportation. The eco-forestry projects have provided an alternative to large-scale logging operations in the Solomon Islands that allowed utilization of forest products in a sustainable way to mitigate the ecosystem impacts from cross-sectoral economic instability.

Case Study: Incentive Measures in Ecuador

Comuna of Loma Alta is located in the Colonche Mountains of coastal Ecuador and comprises four villages – Loma Alta, El Suspiro, La Union, and La Ponga. In Loma Alta, communities own property rights to 6,842 ha of land. The members of what is called Comuna have a structured property right over land, including some forested lands. The Comunas has been recognized as the form of local institution since the Law of Comunas was instituted in 1936.



Deforestation in the Amazon rainforest

Despite the fact that there are property rights over land for some locations, the lack of local institutions that regulate the use and regeneration of the forest ecosystem endangered the sustainability of ecosystem services from the rain forest. Limited oversight and rule exists regarding the cutting of trees, hunting inside the forest ecosystem, and the cutting of forests for agricultural and pasture uses. The allocation of property rights to selected parts of the forest also makes sustaining a contiguous integral ecosystem difficult. Comparatively, the part of the forest that is not assigned property rights is the extensively exploited segment in the rain forest. As a result, Loma Alta forested lands deteriorated at a rate of 10 ha per year converted to agricultural cultivation and 30 ha per year to pasture uses.

Due to encroachment in to the forest, in 1986 the government of Ecuador designated a protected area. By 1987, the Ministry of Agriculture created a 1650 hectare land a protected forest area. However, a large amount of land still remained open for public access. Due to the attractiveness of *Carludovica palmata* (*Paja toquilla*), plants whose leaves are sold to make hats, a significant amount of land is cleared for this purpose. *Carludovica* is one of the highly valued agricultural commodities. Both forested lands with property rights ownership and public forested lands are cleared for high value agricultural production. This trend did not result in the maintenance of sustainable forest eco-service uses.

The fact that the four villages that benefit from the forest are located at some distance from the forest made regulation and enforcement costs high. This hampered proper transition towards the creation of local institutional capacity to preserve the resource. Furthermore, major stake-holders did not perceive the benefits of preservation to justify the perceived costs. Hunters do not have sufficient incentive to participate in sustainable practices as the activity did not contribute a significant proportion to their livelihood. Farmers and loggers extensively used the forest for a long time period, as the alternative economic incentive is strong compared to the perceived benefits of sustainable practices. People living outside the village also exploited the forest resources due to the absence of regulation and have little incentive to effectively participate in conservation efforts.

The lack of knowledge in terms of the relationship between sustainable ecosystem use and livelihoods, and lack of a concerted effort to support local institutions in initiating sustainability-enhancing

institutional practices, adversely affects the rain forest. This case study is a good example of how economic incentives in alternative activities with a lack of properly defined property rights and participatory sustainable resource management institutions can have an adverse effect on ecosystem management

Environmental Accounting

Proper forest valuation is often an impediment to sustainable forest management and the application of the ecosystem approach in forests, in the sense that it is difficult to assign true value to a forest that recognizes the many goods and services provided. To this end, the UN has prepared a handbook for environmental accounts called the SEEA (system of environmental and economic accounting) (UN et al. 2003). Indicators provided under environmental accounting provide information to policy makers on the dependence of the national economy on forests. Dubé et al. (2006) argue for regional and local accounting methods to provide assessments of the combined influences of public policies on forests. A proper valuation would include all of the goods and services provided by forests to local and national economies (clean water, oxygen, carbon-storage, recreation, fuelwood, etc.), many of which are non-market services.

Detailed forest accounts have been developed for several countries that can serve as examples. For example, Lange (in FAO 2003) has provided several examples and listed more than 12 countries with some form of holistic economic accounting for forests. While it is difficult to assign values to certain services from forests, case studies presented in Lange (in FAO 2003) suggest that non-timber values may exceed timber values. A further aspect to consider is loss of goods and services in the case of deforestation, because such losses may be rather important to local communities, especially in tropical forests. More recently, attempts have been made to include carbon accounting into national accounts in light of efforts to reduce global carbon emissions. This latter accounting will result in much higher valuation of tropical forests because they are largely responsible for carbon sequestration globally (e.g., Stephens et al. 2007). At the very least, forestry accounts can be of heuristic value in evaluating policies from other sectors on forest goods and services.

Agricultural, Pastoral, and Agro-Forestry Policies

Major impacts in the agricultural and agro-forest sectors have to do with loss of original forest cover on a permanent or semi-permanent basis for crops and pasture, or the replacement of natural forests with short-rotation tree crops such as oil palms. Government supported land-clearing for agriculture and pasturing of livestock has historically been a major cause of global deforestation, and various policy frameworks have abetted this situation over time. Subsidies in the agriculture sector have an effect of making agricultural land appear to be worth more than it might be, perhaps had it remained as forest, or was reforested (Hyde, in FAO 2003). Further, policy changes that affect the value or production of natural forest products (e.g., rubber, nuts, recreation, etc.) reduce the value of forests and increase the likelihood of deforestation for subsistence or commercial agriculture.

Decisions to alter land use from forest to agriculture should weigh the benefits to be obtained from a change against its costs. These costs include the cost of land-clearing, the lost benefits from continued use of the land in its present form and the costs of any external effects of the change such as reduced water flow and nitrification of aquatic environments. If the services provided by biodiversity were valued accurately and completely, and if prices of accurately reflected loss of all goods and services to society, then decisions to change land use would be optimal in the sense that expected benefits from the change would equal or exceed expected costs. However, this seldom happens (Pagiola et al. 1998). The benefits of biodiversity often do not often accrue to those deciding whether to conserve it. For example, the benefits of clean water are enjoyed by water-users downstream and because farmers do not receive any payments from downstream beneficiaries, they will not consider these benefits in their decision to clear or not clear land. Farmers often bear a disproportionate share of the cost of conservation (in terms of forgone agricultural income) but enjoy only a fraction of the benefits (Pagiola et al. 1998). Therefore, land users and governments tend to undervalue the services provided by biodiversity, resulting in common decisions that reduce forest biodiversity through the loss of forests.

In many countries, government policies, including those specifically in the agriculture sector as well as national economic policies, have often favoured agriculture over biodiversity. At the same time, the majority of developing countries have, until recently,

had policies that discriminate against agriculture in a variety of ways, such as overvalued exchange rates, protection of competing sectors, price controls and high direct taxation. Such policies discourage investments to improve productivity, necessitating land-clearing as the only way to increase production (Pagiola et al. 1998). In many countries, agricultural policies have explicitly promoted land-clearing for agricultural, despite the costs both in land-clearing and in terms of loss of biodiversity, with no consideration for the value of the lost goods and services provided by the forest systems. Pesticide use provides a particularly good example of a subsidized practice with highly negative consequences in agriculture as well as downstream.

Pagiola et al. (1998) and Angelsen and Kaimowitz (2001) identified some key areas to reduce the impact of agriculture on forest loss:

- Increase the implementation of strategies in the design of agricultural projects that reduce impacts by effective use of environmental assessments and by systematically applying policies to encourage compensatory actions, in some form, for natural habitats threatened by proposed project activities;
- Promote synergies between biodiversity conservation and agricultural development, built into project design;
- Use of environmental assessments as a tool to mainstream biodiversity in agriculture;
- Use agricultural investment and sector adjustment operations appropriately as instruments to support policy reform, institutional capacity, and awareness of the importance of mainstreaming biodiversity in agricultural development;
- Ensure that the impacts of new technologies and crops (especially non-endemics) are fully understood prior to implementation;
- Where possible, employ policies aimed at an increase production from farms as a means to avoid deforestation;
- Favour technologies that promote agricultural systems that provide environmental services similar to those of natural forests and do not impair ecosystem function.

To conserve biodiversity, it is important that policies subsidising conversion of forests are eliminated or improved to consider all costs. For example, policy reforms that improve intensification of production

can reduce pressure on remaining habitats. Many developing countries have already made great strides toward liberalising their economies and removing many of the past economic distortions. Ensuring property rights or the legal rights to make use of biologically diverse sites are secure would substantially change the way these sites are exploited by improving the chances that land users are able to appropriate at least some of the benefits of biodiversity. Similarly, increasing the security of tenure to agricultural land would reduce damage to biodiversity by reducing pressures to convert forests. If most of the costs of not conserving biodiversity are borne by local communities, delegation of authority to this level could significantly improve conservation. In many countries, community forestry management has improved the conservation of forests. Where agricultural expansion is inevitable, a number of planning actions can be taken to reduce effects of forest biodiversity loss, such as through the use of corridors between remaining habitats, limiting land use in areas adjacent to remaining natural areas (Pagiola et al. 1998), and assigning priority to protection of high value habitats.

In the agro-forest sector, policies that encourage products from native species and that discourage the use of alien invasive species are preferred. For example in Kenya, the invasive tree *Prosopis juliflora* that was introduced as a rapid-growing fuelwood has had negative consequences because it out-competes local native species and is virtually impossible to remove.

Case Study: Austria (from Gemmill, n.d.):

Austrian agriculture is characterised by a wide diversity of small farms, with almost half facing the challenging management problems of farming in mountainous regions. Whereas in most other European countries agricultural enterprises tend to be more intensive, in Austria an average farm is about 13 ha, and an average dairy farmer has seven cows. Instead of subsidising agricultural inputs, Austria offers its farmers incentive payments for such activities as practising organic agriculture, NOT applying agricultural inputs or using high-yielding, intensive farm practices, and maintaining natural areas on-farm. The total number of participants in the programme own 64% of Austria's agricultural and forest landholdings. Requests for support for organic farming have been the most popular form of participation. Austrian policy makers have concluded that the programme is a success, and key to this success has been the fact that it has been broadly inclusive of all agricultural land, and all

farmers. Farmers are now much more sensitive and aware of environmental and conservation issues. One of the primary benefits to the country, besides supporting its farming sector, is that a healthy, green farm landscape is a major tourist draw for Austria.

Case Study: Taxation and Agriculture in Costa Rica

Costa Rica has a rich biodiversity and forest reserve. In an attempt to curb the negative impacts of other sectors on biodiversity and to preserve biodiversity and forest resources, the country introduced an economic incentive system after the 1992 Rio de Janeiro convention. Costa Rica uses economic incentives as instruments to foster sustainable use of forest ecosystems and to effectively preserve forest biodiversity.

The environmental service payment program compensates forest owners for the provision of environmental services to other sectors, i.e., society in general, including watershed protection, biodiversity preservation, provision of environmental quality and greenhouse gas reduction.



Rangeland in Costa Rica

Historically, the economy of Costa Rica has been dependent on the agricultural sector, where large tracts of land were cleared for farming and pasture. This trend further accelerated with population growth in the country. As a result, between 1950 and 1994, 37% of forested land was cleared. To tackle the problem of deforestation and biodiversity loss, Costa Rica introduced a number of forest policies: Income Tax Deduction Program (1979) and Soft Credits Program (1983) aimed at providing financial incentives for the conservation and sustainable use of forests. The 1986 forest law initiated forest reserves and limited logging in environmentally sensitive locations. Subsequent laws, Forest Payments Title (1986) and the Forest Advance Payment Title (1988) further introduced incentive systems for sustainable forest ecosystems in Costa Rica. In 1990 and subsequently in 1994 and 1996, forest management incentive payments were reinforced to address limitations with previous legislation.

The incentive system compensates \$201.6/ha/year for forest protection, \$516/ha/year for reforestation, and \$314/ha/year for sustainable forest management practices as these measures provide services to other sectors. To facilitate incentive payments, a national environmental service fund for forestry was set-up. Part of the funding came from a 3.5% fuel tax, from the issuance of bonds, and from private sector contributions.

As a result of these initiatives, more than 280,000 ha of forested land was involved in the incentive based program. Regions like Huetar Norte have more than 66,500 ha of forested land, with additional 42,000 ha forested land in marginal lands. As a result, the region contributes 43% of wood supply in Costa Rica. In the years from 1998 to 2001, about 4,710 ha were reforested, with an additional 20,248 ha being given a protection status, and approximately 8,371 ha of forestland under a sustainable management scheme.

Costa Rica's experience provides an example of how incentive systems, adapted through participatory process, can reverse degradation and loss of forest biodiversity and lead to further expansion of the ecosystem base in ways that also generate income to local communities and provide environmental services to society.

Case Study: Improved Agro-Forestry in Costa Rica

Talamanca-Caribbean Biological Corridor is one of the ecosystem areas in Costa Rica created in 1992

covering an area of 2,800 km². It contains over 10,000 plant species, more than 350 bird species, 51 reptiles, and 59 mammal species, and accounting for over 90% of the nation's floral diversity.

The Talamanca corridor hosts national parks and wildlife reserves, but they are separated by agricultural lands. Inside and in the vicinity of the ecosystem area, over 25,000 people live with varying degrees of dependence on the ecosystem. Due to a decline in cacao price in the international market during the 1970s, the cacao industry suffered losses and the regional economy declined. As a result, large tracts of forested land were cleared to support additional agricultural plantations and many smaller farms were sold to large-scale producers. The extensive use of pesticides in plantations also contributed to ecosystem disturbances.

As a result, a number of initiatives were started to provide alternative agro-forestry and organic farming practices, to enhance economic viability while protecting biological diversity and forest resources. The Nature Conservancy and Asociación (ANAI) initiated shaded crop agro-ecosystems as a biodiversity protection alternative and conducted educational activities for local communities. Disease resistant cocoa varieties that require less application of pesticides were also distributed to reduce the negative impact of chemicals on ecosystem health. Other projects promoted the use of organic production alternative around ecosystem corridors to protect biodiversity and enhance sustainability. The Talamanca Small Farmers' Association (APPTA) was created to promote the sale of organic cocoa and farm products through developing access to local and international markets for organic products. Other diversified commodities produced organically are also promoted to reduce dependence on one crop that can adversely affect the ecosystem through cross-sectoral links, especially in times of price decline.

The case study in this ecosystem indicates that the use of multiple crops reduced erosion, reduced pesticide dependence, while increasing the associated agro-forest biodiversity. For example, shaded cacao agro-ecosystems provided forest cover and habitat for species and for numerous bird species. The agro-ecosystem also improved the health of the protected areas as a buffer for a functional ecosystem between reserves and parks. By the year 2000, more than 1,000 members of the community obtained organic certification accounting for more than 200 ha of production land area.

Case study: Improved Agro-Forestry Management near the Calakmul Biosphere Reserve in Mexico

Calakmul Biosphere Reserve (CBR) is one of the richest forest ecosystems located in Mexico's southeastern State of Campeche. The reserve, which constitutes 723,185 ha of forested land, is part of the ecosystem of lowland tropical forests called *El Gran Petén*. The reserve is created in 1989 and was recognized as a UN Biosphere Reserve in 1993. The Calakmul region is located in the Yucatán Peninsula at 19° 15' N to 17° 45' N latitude and 90° 10' W to 89° 15' W longitude. The forest in this region is a transition between the humid forest of Petén and the drier scrub of Yucatán. The region is rich in biodiversity, hosting more than 147 vertebrates and at least 18 plant species, and a number of endangered animal and plant species.

The functioning of the reserve is affected by limited biological survey of the reserve, no buffer zone in some areas, and the segmentation of the reserve by a highway. Large increases in population in and around the reserve also put pressure and affected the proper functioning of the reserve. Migration from other regions and dependence on subsistence agriculture that requires clearing of forest also resulted in degradation inside the reserve.

Historically, after the Revolution in 1910, Mexico instituted a communal land system (ejidos) that today overlaps with land right in the reserve. Close to 52% of the land in the reserve is ejidos and private land, as a result an estimated 4,000 people live inside the CBR, and an estimated 6,500 people own land inside the CBR but live outside the reserve. From the 1940 to the 1980s, large portion of the land in the area was under large scale logging companies. Due to massive migration into the area, population growth is estimated at 9.3%. In the 1990s, with the decline in timber resource, agriculture became a relevant economic activity in the region resulting in further clearing of forested land for cultivation and subsequent loss of biodiversity. The lack of clear property rights, the overlapping of property rights and reserves, and the absence of strict conservation enforcement resulted in resource decline and deteriorating ecosystem functioning.

At the national level, policies aimed at raising agricultural production to fight poverty through land tenure programs indirectly promoted forest clearing as production goals out-weighed conservation needs. Even though Environmental Law requires access to the reserve only to those inhabitants that existed

before 1989, there are new settlements with access to forest services, partly due to expansive agrarian reform. Conservation initiatives are challenged by other sectoral policies in agriculture, such as agricultural and livestock subsidy and easy access to timber industry.

The local institutional failure, lack of effective implementation of forest and environmental legislation, unintended consequences of other sectoral policies that promoted migration, agricultural expansion and timber extraction created a distortion that impacted the functioning of the ecosystem and the loss of biodiversity in the reserve. As a result, a number of local and international initiatives have undertaken to correct some of these distortions. In 1990, the Union of *Ejidors* was created by the government to support and promote sustainable use of the forest reserve. The organization represented more than half of the stake-holders in the reserve and bridged the communication between locals and central government. International efforts such as *Bosque Modelo* funded by the Canadian and Mexican governments and the *Pronatura Península de Yucatán* aimed at improving agricultural productivity and income form sustainably managed forest ecosystem. An Integrated Conservation and Development Program (ICDP) were also supported by WWF, WRI, TNC, and the Model Forest Network. Green fertilizers have also supported in reducing chemically intensive agricultural production. More than 1000 ha of forested land are under sustainable practices and knowledge from these projects is spreading to other areas.

This case study demonstrates the effect of local and national policy distortions and impact on forest sustainable management and functioning and the benefit of participatory management of forests that can enhance local income with sustainable resource use.

Conservation of Landscape-Level Diversity in Agro-Forestry

Key principles or best practices for the conservation of landscape-level diversity, wild biodiversity in agricultural landscapes and knowledge systems for agro-biodiversity are (Gemmill n.d.):

- Farm resource management practices can be modified to enhance habitat quality in and around farmlands.
- Conservation and management of biodiversity will be optimized by varying degrees of agricultural intensification on

a landscape. Thus, National Biodiversity Strategies and Action Plans (NBSAPs) should promote policies that will maintain the diversity of land use across the landscape.

- NBSAP planners need to recognize and utilize traditional practices as a component of the knowledge system that support conservation and management of agrobiodiversity.
- NBSAP planning needs to take account of the fact that different ecologic and socio-economic differences between farmers make it easier for some to manage biodiversity than others and that these difference are widening, thus new instruments for conservation may be needed.
- Protected areas - of a different scale and management than conventional protected areas, may be desirable near farming areas and grazing land.
- Conservation and management of biodiversity will be optimized by varying degrees of agricultural intensification on a landscape. Thus, NBSAPs should promote policies that will maintain the diversity of land use across the landscape.



Christmas tree farm

Energy Sector Policies

Global and national energy supplies, especially fossil fuels, continue to dominate political agendas and have resulted in a wide range of negative impacts on forest biodiversity, through exploration, road building, pipelines, and upsetting the global carbon balance. Fossil fuel energy booms have usually resulted in considerable deforestation, much of it resulting indirectly from the wealth created from energy (Wunder and Dermawan 2007). Often the

indirect causes result from the building of roads that result in an increase in timber harvesting that may be uncontrolled. On the other hand, in some countries, an oil boom has meant greater urbanization and increased forest cover on abandoned agricultural areas, such as in Gabon, as people leave rural areas to seek employment in the energy sector (Wunder and Dermawan 2007). Hence, as with other sectors, careful planning based on an analysis of effects, as the energy sector is developed, is an important consideration to protect forests from excessive and random use.

Bio-Energy Policies



Oil palm plantation

As governments consider mechanisms to store carbon to offset burning of fossil fuels, forests are becoming important as a tool that is readily available to reduce atmospheric carbon, either through avoided deforestation or reforestation. Further, the biofuels industry is a rapidly developing sector. In this latter regard, the book entitled “Bioenergy from Sustainable Forestry: Guiding Principles and Practice” (J. Richardson et al., 2002) provides detailed information on policy development for sustainable bioenergy production. The forest industry can play a major role in sustainable energy development and Schmithüsen et al. (2007) suggest three key policy areas: promotion of renewable energy sources, improvement of waste management and emission control, and climate change.

The wood fuel sector will continue to grow, placing increased pressure on forests. Roos (2002) notes that few countries have explicit forest energy policies, despite the long-term importance of fuelwood in many countries and the emerging biomass fuel industry that includes globally-traded wood fuels. Nevertheless, guidance is available through

various associations, for example the ‘Roundtable on Sustainable Palm oil Development’ maintains a website providing policy advice with respect to sustainable development. Important policy tools in the bioenergy sector include: capital and tax subsidies, taxation, guaranteeing market access, regulations, policies to encourage partnerships (e.g., between industry and government), research into improved products and methods, eco-labelling and green pricing, and public education (Roos 2002).

Land-Use Planning and Infrastructure Development Policies

Although there are many aspects of public infrastructure, with respect to impact on forests, development of roads has the single greatest impact. Often this is as a result of poor or non-existent land-use planning. Access to forests can produce effects such as unmanaged commercial forestry, land-clearing for agriculture, illegal logging, destruction of game populations and unplanned harvesting of wood for fuel. On the other hand, effects can be positive in terms of values achieved from the forest in a sustainable way. For example, on Sumatra in Indonesia, roads constructed to enhance transportation of rubber sap resulted in increased benefits to local communities through increased markets for their sap (Miyamoto 2007). On the other hand, in population villages with high populations, significant forest area was converted to rubber plantations, reducing natural forest goods and services, suggesting cross-sectoral impacts that could have been better planned. A key tool in land-use planning is the ‘environmental impact assessment’.

Tourism Policies

Tourism can result in various kinds of impacts on forest biodiversity that can be positive or negative, ranging from direct effects, such as disturbance to animals and trampling of sensitive habitats, protection of sensitive areas, and local employment, to indirect effects on local communities, such as displacement or improved local infrastructure. Policies that favour tourism over forest development may create concerns for local populations, primarily if local people are excluded from benefits derived from tourism developments. Unless the local population profits from maintaining forests for tourism, disregard for preserving the protected area or forest values by local communities often occurs. Therefore, policies that favour local employment and local benefits from parks or preserves and the associated

tourism will enhance the conservation aspects (Hyde, in FAO 2003). For example, encouragement of small tourist lodges can provide local employment and enable local participation in the benefits from ecotourism. This kind of development can provide an understanding that protection of forests and forest biodiversity can result in tangible economic benefits within local communities.

Biodiversity and tourism planning are complex, inter-disciplinary and inter-sectoral exercises. Integrating and harmonising them is a challenge, especially when there is a need to include the private tourism sector, NGOs, local communities, and financial institutions. Australia, for example, has developed a national strategy to support sustainable tourism as a tool for conserving biodiversity and for improved use of natural areas. The “National Tourism Strategy” was developed in 1992 to enhance community awareness of the economic, environmental and cultural significance of tourism. The Strategy’s environmental goal is to provide for sustainable tourism development by encouraging responsible planning and management practices consistent with the conservation of Australia’s natural and cultural heritage (UNDP, GEF, UNEP, n.d.). In Canada, the Canadian Tourism Commission (CTC) developed a vision and mission via a 20-member team of industry experts and then presented these to a broad range of industry stakeholders, provincial and territorial governments, and destination marketing organisations, in order to achieve a consensus on a shared perspective on Canadian tourism. The CTC has commissioned studies on sustainable tourism, including: “*A Catalogue of Exemplary Practices in Adventure Travel and Ecotourism*”, also “*Best Practices in Canada’s Tourism Industry: Partnerships, and Best Practices in Natural Heritage Collaborations: Park Agencies and Eco-Adventure Operators*” (UNDP, GEF, UNEP, n.d.).

Several countries have established mechanisms for inter-sectoral coordination of biodiversity and tourism. In each case, activities should have representation from government and non-government institutions, including the tourism industry, local community organisations and NGOs. The main objectives of a Biodiversity Conservation Planning/Sustainable Tourism coordination body might include (Ceballos-Lascurain, 1998):

1. Policy Coordination at both national and regional levels

- Develop short and long term plans as a joint effort among the government, private sector,

- and NGOs (including local communities);
- Coordinate efforts of conservation NGOs (both national and international), bi- and multi-lateral development agencies, the private sector, local communities and other interested parties, so as to avoid redundancy, conflicts and confusion;
- Develop appropriate international cooperation within the corresponding region with the aim of establishing related policies and information exchange.

2. Setting and Maintaining Performance Standards within the Industry

- Compile and exchange information on biodiversity conservation planning, ecotourism and other modes of sustainable tourism;
- Contribute to safeguard natural areas from unplanned and uncontrolled development;
- Promoting Codes of Conduct for Tourists, Tour Operators and Hotels;
- Establish specific training programmes for tourism enterprises and protected areas staff.

3. Promoting equitable sharing of Benefits arising from tourism/biodiversity activities

- Establish methods and mechanisms that may allow the active involvement of resident human populations in sustainable tourism projects;
- Strive for tourism to become a lucrative and sustainable activity that will foster socio-economic development;
- Generate economic support for conservation of natural areas (including protected areas) and for the development of sustainable tourism (including ecotourism), fostering the socio-economic advancement of local communities.

Among the best tools available to ensure sustainable tourism practices are: environmental impact assessment, third-party certification schemes, 'green hotels, proper waste management practices, and financial incentives. An example of the latter is from Belize, where The Protected Areas Conservation Trust (PACT), which began operations in 1996, and was designed to collect an airport departure tax from tourists as they leave the country. The money is held by the trust and distributed directly to protected areas for projects that focus on protected area enhancement and ability to conserve including education programs and infrastructure development. The PACT money is not intended for government administrative purposes.

The following list is for best practice guidelines (from: UNDP, GEF, UNEP):

- Biodiversity planners should, with tourism operators, prepare tourists before they arrive at sensitive locations, by providing introductory information, environmental guidelines, etc. on the people and ecosystems to be visited in pre-departure packages (including use of the Internet), *en route* briefing and even on arrival.
- Similarly, biodiversity planners should ensure that they provide appropriate "biodiversity" materials for use in public sector environmental education and ecological awareness (including tourists, the tourist industry and the local communities).
- Help to prepare tour guides working in natural areas, so that they know how to handle and educate tourists. Teaching of environmental sciences, local culture, interpretative skills, foreign languages, and first-aid are particularly important.
- Generate an emotional and spiritual connection for the visitor. Community members working as greeters and interpreters can go a long way to inspiring visitors to act responsibly, and help visitors to better enjoy and value the destination.
- Distribute pamphlets at key entrance and distribution areas (hotels, airports, petrol stations, etc.), not only at the destination site. All information material should include a section on local regulations, threats to local biodiversity, and required tourist behavior (including respect for local cultures).
- Avoid introduction of alien species, both vegetable and animal, by informing tourists of the severe threat this creates for protected areas and by performing routine inspections.
- Carry out regular monitoring of impacts, using local communities and tour operators where appropriate.
- Provide a means for guests to support local conservation and community development efforts.
- Encourage the teaching of biodiversity conservation/tourism interaction in tourism schools.
- Set up specific environmental educational programmes for the entire staff of a hotel or a tour operating company, identifying good practice examples and duplicating successful models.

- Use the Internet and other communication systems to disseminate biodiversity conservation principles to the whole tourism industry, as well as sustainable tourism standards to biodiversity conservation planners.
- Stakeholders should be involved in all aspects of project design.
- Ecotourism projects should only be approved with the full support of local stakeholders, i.e. following full consultation and participation in both design and profit-sharing.
- Technical, planning, managerial, legal and financial assistance may be required at the beginning of ecotourism projects. Government agencies can play the role of “honest broker” between local communities and private operators.
- Plans for tourism projects should include training and capacity building to increase the role of local communities and should allow for career development.
- Diversify the socio-economic benefits associated with the project as much as possible — this will increase stakeholder “buy-in” and reduce market sensitivity.

Case Study: Dana Wildlands Reserve, Jordan

Jordan has a variety of wildlife and other species, with a total managed conservation area of over 1000 km² monitored by Royal Society for the Conservation of Nature (RSCN). Dana Wildlands Nature Reserve is a 300 km² protected area under managed conservation in southern Jordan. The reserve is surrounded by communities whose livelihood depended on the reserved ecosystem, particularly pastoralists. The main challenge for these communities initially was the establishment of the nature reserve with out their consultation and the resulting impact on their livelihood.

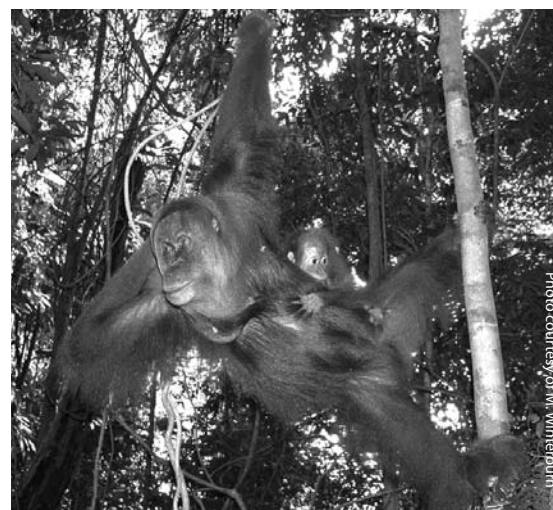
Following the 1992 Convention on Biodiversity, a major effort was undertaken to create a sustainable reserve system that have the capacity to allow local communities to participate in meaningful ways and in way that not only sustain the ecosystem, but also allows local communities to drive benefit from the ecosystem services. The key stakeholders of this new initiative were RSCN, the World Bank, Global Environmental Facility (GEF), the Ministry of Planning, and other stake holders.

The new initiative addressed two key aspects of conservation: one, development of income

generating services for local communities around conserved ecosystems, and two, restructuring of the ecosystem management institutions to generate more capacity and financial ability to initiate participatory conservation programs. The first set of initiative, i.e., income generating activities around Dana Nature Reserve created opportunities for local communities to generate financial benefits from the reserve to compensate restrictions imposed on grazing of animals in ways that improve ecosystem sustainability. Production and marketing opportunities for ecosystem services, such as plant product processing, herbal production, ornamental products production and ecotourism services were created. This enabled the creation of nature based small-scale enterprises that generated income for local communities while using ecosystem services in a sustainable manner.

From 1994 to 1997, the ecosystem service generated more than \$260,000 and added another 38 jobs to local communities. Local communities have become increasingly supportive of the Dana Nature Reserve initiative as a result of these initiatives and a participatory ecosystem service sharing scheme with resulting ecosystem based economic incentives.

Case Study: Improved Ecotourism in Sumatra, Indonesia



Orang-utans in Bukit Lawang, Indonesia

Bukit Lawang is one of the active ecotourism villages in North Sumatra of Indonesia located west of Medan city. Bukit Lawang village hosts an orang-utan rehabilitation center. The center was created in 1973 with support from WWF and Indonesia’s Nature Conservation Service. The aim was to rehabilitate the

decline of orang-utan, which was widely targeted and traded. Rehabilitated species are then re-integrated in to the forest ecosystem. The rehabilitation center has become a major tourism attraction starting 1974. In 1976, about 4,000 tourists visited the center, which increased to 11,325 by 1989, and over 18,000 visitors by 1992. The number since then has rapidly increased. By 1997, over 8,000 visitors came to the rehabilitation center on weekends.

There was adequate buffer between the rehabilitation center and Bukit Lawang separated by dense forest. Rapid increase in tourists and visitors, however, resulted in numerous development activities that reduced the size of the buffer forest. The rapid increase in ecotourism resulted in noise, litter and the increased risk of epidemic diseases. Additionally, rehabilitated apes failed to self-support in the rainforest due to human feeding and human dependence. As a result of these developments, the Ministry of Forestry decreed the orang-utan center to close down as a rehabilitation center.

The rapid increase of ecotourism also contributed to biodiversity damage resulting from the overuse of trails as well as reduced the habitat area for animal species. Similarly, local targeting of species for sale to tourists and to local markets threatened the sustainable rehabilitation of species in the ecosystem. Animals wandering outside the ecosystem are targeted for sale in nearby communities.

Rapid tourism expansion also led in the 1980s and 1990s to the development of hotels, restaurants, and other tourism-related enterprises. The use of local construction material from river beds and forests diminished the quality and value of the ecosystem as a tourism site.

This case study informs that tourism development can proceed much faster than local readiness to institute sustainable ecotourism that can support local economic development while maintaining ecosystem and biodiversity health. There is increasing realisation that land-use zoning by functional category, monitoring, institutional coordination and organization, and outlining local responsibilities of development and conservation are keys to revitalizing Bukit Lawang as a sustainable ecotourism center.

Case Study: The Importance of Local Benefits from Ecotourism in Indonesia



Komodo Dragon

Komodo National Park (KNP) is located in the Lesser Sunda Islands of Indonesia between 119°30"E longitude and 8°35"S latitude in the province of East Nusa Tenggara. The park is known for its Komodo monitor, *Varanus komodoensis*. The number of individuals remaining of this species is almost 3000 members. After the introduction of KNP in 1980, tourism flow to the area has increased. Due to transportation facilities and retail services, the town of Labuan Bajo has particularly benefited from tourists.

To measure the relationship between the benefits of tourism and support for conservation, a survey was conducted in the town of Lesse Sunda. The survey indicated that 30% of households in the area are dependent on tourism income. In general, support for conservation was very high, and people have good knowledge and awareness on the link between the KNP and their livelihoods. However, a significant proportion believes that tourism in the area is eroding traditional customs. The survey in the case study area revealed that the attitude towards ecotourism was dependent on whether people benefited from ecotourism related activities or not. Those households that benefited from ecotourism had positive attitude and good awareness of the links between ecotourism and local livelihoods, while those that had no benefit from the activity tended to have a negative view of ecotourism.

This case study clearly demonstrates the relevance of stake-holder participation and benefit-sharing to promote awareness and conservation. Communities that succeed in sharing benefits of ecotourism have much better success in terms of positive attitude to ecotourism and forest biodiversity protection.

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- Schmithüsen, F., V. Sasse, and C. Thoroé. 2007. Public policy impacts on European forest sector development. Pages 163-173 in Y.C. Dubé and F. Schmithüsen (eds.), *Cross-sectoral Policy Developments in Forestry*. CABI International and FAO.
- Stephens, B.B., K.R Gurney, P.P Tans, C. Sweeney, W. Peters, L. Bruhwiler, P. Ciais, M Ramonet, P. Bousquet, T. Nakazawa.; S. Aoki, T. Machida, G. Inoue, N. Vinnichenko, J. Lloyd, A. Jordan, M. Heimann, O. Shibistova, R.L. Langenfelds, L.P. Steele, R.J. Francey, and A.S. Denning. 2007. Weak northern and strong tropical land carbon uptake from vertical profiles of atmospheric CO₂. *Science* 316: 1732-1735.

UNDP, GEF, UNEP, n.d. Integrating biodiversity into the tourism sector.
<http://www.unep.org/bpsp/Tourism/Tourism%20Synthesis%20Report.pdf>

United Nations, European Commission, International Monetary Fund, Organization for Economic Cooperation and Development, and World Bank. 2003. Integrated environmental and economic accounting. UN, New York.

Wunder, S., and A. Dermawan. 2007. Cross-sectoral tropical forest cover impacts: what matters? Pages 1-13 in Y.C. Dubé and F. Schmithüsen (eds.), Cross-sectoral Policy Developments in Forestry. CABI International and FAO.

Annotated bibliography and websites (active as of December 2007)

'Search by' index:

Region: (region, tropical, or international)

Country

Sector: (forestry, agriculture, energy, tourism, finance, fisheries, water, mining)

Tool type: (management practice, best practice, policy, law, incentive, economic instrument, code of conduct, guideline, case study)

Keywords

Important contributions marked with *

Cross-Sectoral Publications:

Wunder, S. 2007. Are Direct Payments for Environmental Services Spelling Doom for Sustainable Forest Management in the Tropics? *Ecology and Society*. Vol 11 (2):23. <http://www.ecologyandsociety.org/vol11/iss2/art23/>

Abstract: Over the past several decades, significant donor funding has been directed to sustainable forest management in the tropics, in the hope of combining forest conservation with economic gains through sustainable use. To date, this approach has produced only modest results in terms of changed silvicultural and land-use practices in this area. Direct payments for environmental services (PES) have been suggested as a promising alternative but still remain widely untested in the tropics. This paper first provides a conceptual assessment of PES, comparing the main features of this practice with those of other conservation instruments. Second, the paper discusses a series of critical questions that have been raised about both the environmental and livelihood impacts of PES. It is concluded that some *ex ante* judgments about the effects of PES may have been overly critical, and that, based on preliminary assessments, there is good reason to continue experimental PES implementation for purposes of consolidating our knowledge.

Region: tropical

Country:

Sector: forestry

Tool: incentive

Keywords: payments, environmental services, land use, tropics

Louis, I. 1995. Strategies for biological diversity conservation: interpreting the concept. *Malaysian-Forester* 56(3/4): 117-125.

Abstract: The term conservation is used to cover all the processes whereby natural resources and the environment are sustainably managed and kept available through renewal. It is not in any way an independent activity to be pursued separately from other planning processes for socioeconomic development. A conservation strategy

is a framework for a holistic and cross-sectoral approach to natural resource utilization and is based on three equally important and mutually supporting objectives: the maintenance of essential ecological processes; the preservation of biological diversity; and the sustainable human use of species and ecosystems. Conservation recognizes that success in conserving biological diversity not only depends on biological aspects but is also affected by social, economic and political arenas. It also has local, national, regional and global dimensions. A strategy for biological diversity must therefore employ a full spectrum of actions including protection, restoration, enhancement and sustainable utilization so as to meet human needs. It must also undertake research, inventory, assessment, planning, monitoring, interpretation, marketing, awareness, training and education. Biological diversity strategies should also be targeted at: spurring institutional and policy reform to address the root causes of the loss of biological diversity; fostering agreements on long-term plans to defend, understand and use wisely biological resources; stimulating increased international cooperation on the conservation of biological diversity; and promoting the development and application of new financing mechanisms for conserving biological resources. The paper addresses the efforts being made, through conservation strategies, to assist people in sustainable utilization of natural resources, with emphasis on biological diversity.

Region: Asia
 Country: Indonesia
 Sector: forest management
 Tool: policy, financial mechanism
 Keywords: sustainable use, conservation, policy

*Schmithüsen, Y.C., and F. Dubé. 2007. Cross-sectoral Policy Developments in Forestry. FAO and CABI. Wallingford, UK. 264pp.

Preface: The book is to improve awareness and understanding of potential positive and negative impacts of policies outside the forest sector on sustainable forest management and lead to more harmonized policies among forestry administrations and other sectoral agencies.

Region: Asia, Africa, Europe, America
 Country: Ethiopia, Ghana, Mozambique, Nigeria, Tanzania, China, India, Indonesia, Nepal, Thailand, Netherlands, Romania, Turkey, USA, Argentina, Chile, Mexico
 Sector: forestry, energy, agriculture, financial, agro-forestry, mining, NTFP, non-timber
 Tool: policy, financial mechanism, best practice, policy, law, incentive, case study
 Keywords: sustainable use, conservation, policy, development, impacts, cross-sectoral, non-timber, land management, community

Dubé, Y.C., G.-M. Lange, and F. Schmithüsen. 2006. Cross-sectoral policy linkages and environmental accounting in forestry. *Jour. of Sustainable Forestry* 23: 47-66.

Abstract: It is important to analyze cross-sectoral policy linkages and to quantify their effects by using the system of integrated environmental and economic accounting in order to ensure effective integration of forestry into national development. This paper reviews relevant policy linkages in the forestry sector, policy applications of forestry accounts, and challenges to their implementation. It argues for the need to develop regional or local accounting methods providing social, environmental, and economic data to allow assessment of the combined impacts of different public policies. It emphasizes the urgency of strengthening the management capacity of public agencies in dealing with complex policy networks addressing sustainable and multifunctional forest management.

Region: International
 Country:
 Sector: forest management
 Tool: environmental account
 Keywords: environmental accounting, policy, sustainable,

Broadhead, J and Y.C. Dubé. 2002. Cross-sectoral policy impacts in forestry. Paper submitted to the XII World Forestry Congress, Quebec City, Canada. <http://www.fao.org/docrep/article/wfc/xii/0179-c1.htm>

Abstract: This paper presents a summary of results from a survey of cross-sectoral policy impacts between forestry and other sectors. The aims of the survey were to unearth and collate examples of cross-sectoral policy impacts involving forestry and to test a theoretical framework for classifying the examples. The survey

was held in summer 2001 through interviews and questionnaires and forms part of a work program of the FAO Forestry Department Policy and Institutions Branch that will culminate in a substantive forestry paper in 2003. The survey revealed that public policy from nearly all areas has impacts on forestry. It is therefore clear that forestry should engage with all relevant sectors and policy areas to achieve its goals. The results also suggest that the main factors determining the effects of public policy on forests at the national level are the abundance of forest itself, national income and the level of institutional capacity and political support for sustainable forest management. It is therefore recommended that policy-makers and foresters increase awareness of the multiple functions that forests perform for multiple stakeholders and of the close interdependence with sustained production in other sectors. In addition to greater management integration, the need to identify policy instruments and institutional arrangements to better promote non-commodity outputs of forests is also stressed. Finally, more studies are recommended to better understand practical problems facing sustainable forest management and cross-sectoral integration in order to develop policy instruments and institutional arrangements that allow efficient, equitable distribution of benefits to multiple stakeholders.

Region: International

Country:

Sector: forest management, fisheries, transport, tourism, agriculture, mining, industry

Tool: law, policy,

Keywords: cross-sectoral, policy, NTFP

Schmithüsen, F., K. Bisang, and W. Zimmermann. 2001. Cross-sectoral linkages in forestry: review of available information and consideration on future research. FAO, Forest Policy and Forest Economics Dept. <http://www.fao.org/docrep/003/aa002e/aa002e00.htm>

Abstract: The purpose of this paper is to review available information on public policies and cross sector linkages which are important in the context of forest conservation and forestry development. The paper identifies alternative methodological approaches for further investigations and discusses their usefulness for case studies at country and regional levels. Cross-sector linkages are defined as influences from public policies others than forest policy which have an immediate or indirect influence on the behaviour of land owners, forest users, governmental agencies and non-governmental organisations, and through such agents on forest land uses and sustainable forestry practices. The definition puts emphasis on policy formation and implementation processes. It enhances analysis of the combined outcomes and impacts from laws and policies that address economic, social and environmental issues that influence political decisions on forests and forestry development . With regard to subsequent country specific studies on relevant external policies and on specific linkages with national forest policy programs the paper proposes an integrative research approach based on a combination of elements such as content analysis of relevant legislation, policy programs, and sector studies; interviews with experts and representatives from the forest administration; and interviews with and/or participating observation of users, land owners and forestry managers.

Region: International

Country:

Sector: forest management, fisheries, transport, tourism, agriculture, mining, industry

Tool: law, policy,

Keywords: sectoral, policy,

Tikkanen, I., P. Gluck, and H. Pajuoja. 2002. Cross-sectoral policy impacts on forests. Proc. European Forestry Inst. No. 46.

http://www.efi.int/attachments/publications/proc46_net.pdf

A symposium exploring cross-sectoral impacts in forest and other sectors.

Region: Europe

Country: Norway, Finland, Greece, Portugal, EU.

Sector: forest management, fisheries, transport, tourism, agriculture, mining, industry

Tool: law, policy, case study

Keywords: sectoral, policy,

Angelson, A., and D. Kaimowitz. 1999. Rethinking the causes of deforestation: lessons from economic models. CIFOR. *World Bank Observer* 14 (1).

<http://lead.virtualcentre.org/en/dec/toolbox/grazing/defcause.pdf>

Abstract: This article, which synthesizes the results of more than 140 economic models analyzing the causes of tropical deforestation, raises significant doubts about many conventional hypotheses in the debate about deforestation. More roads, higher agricultural prices, lower wages, and a shortage of off-farm employment generally lead to more deforestation. How technical change, agricultural input prices, household income levels, and tenure security affect deforestation—if at all—is unknown. The role of macroeconomic factors such as population growth, poverty reduction, national income, economic growth, and foreign debt is also ambiguous. This review, however, finds that policy reforms included in current economic liberalization and adjustment efforts may increase the pressure on forests. Although the boom in deforestation modelling has yielded new insights, weak methodology and poor-quality data make the results of many models questionable.

Region: International

Country:

Sector: Ropads, agriculture, forestry

Tool: law, policy,

Keywords: sectoral, policy, deforestation

Sawathvong, S. 2003. Participatory land management planning in biodiversity conservation areas of Lao PDR. Doctoral dissertation. Dept. of Forest Resource Management and Geomatics, SLU. *Acta Universitatis agriculturae Sueciae. Silvestria* vol. 267. <http://diss-epsilon.slu.se/archive/00000173/>

Abstract: The forest policy in Lao PDR has developed under the framework of international conventions. The protected area system has been established with the aim of conserving healthy and diverse forests. Rehabilitation and reforestation policies are important complements. The former “rules by decree” approach has been replaced by a set of laws and regulations. This thesis presents and discusses a management approach for biodiversity conservation areas in Lao PDR. As part of that, it highlights the significance of appropriate policies and legislation as a base for sustainable management, discusses various interdisciplinary and interactive planning methods tested in case studies, and analyses the use of non-timber forest products as part of a strategy for sustainable management of biodiversity conservation areas. The integration of techniques from social sciences and natural sciences is emphasised to encourage local participation in managing the conservation areas.

Region: Asia

Country: Lao PDR.

Sector: forest management, protected areas

Tool: law, policy, case study

Keywords: sectoral, policy, NTFP

Dovers, S. 2002. Governance: to integrate or disintegrate? *Proc. Coast to Coast 2002*. <http://www.coastal.crc.org.au/coast2coast2002/proceedings/Settingthescene/Governance-to-integrate-or-disintegrate.pdf>

Introduction: This paper offers a perspective on Australia’s progress with ecologically sustainable development (ESD), and especially on the evolution of integrated approaches to resource and environmental management. The need for integration is well known in environmental management, but I will take this theme further and deal with underlying issues of governance. The issues dealt with are relevant across the ESD policy field and apply to coasts, forests, urban planning, climate change, energy, biodiversity, and so on.

Region: Austral-Asia

Country: Australia

Sector: forest management, energy, urban planning

Tool: law, policy, case study

Keywords: sectoral, policy, integrated approaches

Swiderska, K. 2002. Mainstreaming biodiversity in policy and planning: a review of country experience. IIED. http://www.iied.org/NR/agbioliv/bio_liv_documents/Mainstreamingbiodiversity1.pdf

Abstract: This report examines the constraints to, and opportunities for, mainstreaming biodiversity in development policies, plans and programmes, and how NBSAPs can more effectively address the challenge

of mainstreaming. Part I provides an introduction to the issues, and examines some of the lessons emerging from experience with NBSAPs and sectoral integration based on a review of selected literature. It also presents new thinking on sustainable development strategies, whose main purpose is to integrate environmental, social and economic objectives. Part II reviews experience with biodiversity planning and mainstreaming in more detail in a number of countries: Pakistan, India, South Africa, Ghana, Burkina Faso, Namibia and Tanzania. It focusses on: lessons from earlier conservation strategies and environmental plans; how recent NBSAPs have approached the challenge of mainstreaming; ways to improve coordination and synergies between different environment related plans; and the role of strategies for sustainable development as mechanisms to facilitate coordination and mainstreaming.

Region: Africa, Asia

Country: Pakistan, India, South Africa, Ghana, Burkina Faso, Namibia, Tanzania

Sector: cross sectoral, multi-sectoral

Tool: law, policy, case study

Keywords: NBSAP, cross sectoral, policy, integrated approaches, EIA,

*Lesniewska, F. 2005. Laws for forests. IIED. <http://www.iied.org/pubs/pdf/full/13505IIED.pdf>

Abstract: The guide's aim is to arm the reader with a basic understanding of key international legal instruments that relate to forests. It introduces the reader to the main purpose of each instrument. Tables within the annexes then show to which specific sections of legislation an appeal might be made if any one of these broad ethical principles is contravened. The guide therefore serves to identify how marginalised people might appeal to the agreed texts of international law in their fight for social and environmental justice.

Region: International

Country:

Sector: cross sectoral, multi-sectoral

Tool: law, policy, convention

Keywords: convention, CBD, UN, human rights, cross sectoral, policy

Monela, G.C. 199 . Country case study on cross-sectoral linkages in Miombo forest development in the United republic of Tanzania. <http://www.fao.org/forestry/webview/media?mediaId=4500&langId=1>

Abstract: This study examines the framework of competing policies and stakeholders in which forestry is placed. It traces the impacts of different policies on forestry through a balanced synopsis of how forestry is integrated with external policies. The plight of forestry and the causes of forest decline are also discussed, in conjunction with the position of forestry within the public policy arena. The study furnishes a concrete case from the United Republic of Tanzania forest sector.

Region: Africa

Country: Tanzania

Sector: forestry, energy, agriculture, land use, tourism

Tool: law, policy, NFP, case study

Keywords: policy, community, forest loss, cross-sectoral

Ollonqvist, P. 2006. National forest program in sustainable forest management. Working Papers. of the Finn. For. Res. Inst. 38:14-27. <http://www.metla.fi/julkaisut/workingpapers/2006/mwp038-02.pdf>

Abstract: This paper discusses the forest policy agenda, National Forest Program (NFP), developed through an international process from 1992 on, towards a transparent national forest policy formation for Sustainable Forest Management (SFM). This new policy agenda “ a generic expression for a wide range of approaches to the process of planning, programming, and implementing forest activities in countries” (UN-IPF 1996) has been introduced towards the formation of SFM policy replacing Progressive Timber Management (PTM) policy through the adoption of a new agenda.

Region: Europe

Country: Finland, Sweden, United Kingdom

Sector: forestry

Tool: law, policy, NFP, case study

Keywords: policy, cross-sectoral, NFP

Australia Dept. of Agric., Fisheries, and Forestry, and World bank Program on Forests. 2003. Implementing the proposals for action of the IPF and IFF. http://www.profor.info/pdf/IPF_IPFFtext.pdf

Abstract: the booklet is meant to be a helpful tool for national policy makers, practitioners and interested stakeholders to increase the implementation of the international consensus on the actions needed to facilitate the management, conservation and sustainable development of all types of forests. It could also be used for enhanced co-ordination of actions in the framework of national forest programmes and other forest -related policy processes.

Region: Austral-Asia, international

Country: Australia

Sector: forestry, energy, agriculture, land use, tourism

Tool: law, policy, NFP, international law

Keywords: policy, community, forest loss, cross-sectoral, IPF/CPF, traditional knowledge,

Bass, S. 2001. Change towards sustainability in resource use: lessons from the forest sector. IIED Mining, Minerals and Sustainable Development No. 5. http://www.iied.org/mmsd/mmsd_pdfs/lessons_forestry.pdf

Abstract: If the forest problem is one of entrenched policy and institutional inequities – which many recent well-meaning initiatives have not really been able to tackle – where can we point to real progress since Rio? What pressures are building up that need to be dealt with? And what ideas are emerging for the future? The following brief ‘report card’ reflects key findings from IIED’s collaborative research with government institutions, NGOs and private sector groups in many countries, especially through its two recent programmes ‘Policy that works for forests and people’ and ‘Instruments for sustainable private sector forestry’.

Region: International

Country:

Sector: forestry

Tool: law, policy, NFP, international

Keywords: policy, community, forest loss, cross-sectoral, globalisation, certification, UN

World Bank. (Leitman, J., T. Brown, and M. Boccucci.) 2005. Saving Indonesia’s forests: strategy for the World Bank 2006-2009.

http://www.acheh-eye.org/data_files/english_format/issues/issues_environment/environment_logging/env_logging_2006/env_logging_2006_10_21.pdf

Indonesian legislation establishes clear goals for the forest sector: economic output, equitable distribution of benefits to improve people’s welfare, watershed protection, and conservation. These goals are consistent with the Bank’s policy on forest management, which is built on three interrelated objectives: harnessing the potential of forests to reduce poverty, integrating forests in sustainable economic development, and protecting global forest values. However, Indonesia is not succeeding in meeting these goals, especially in the areas of sustainability and equity. The Bank’s objective is to assist the Government of Indonesia (GOI) to deliver on its own stated forest management goals and commitments and to promote wider policy dialogue among forest sector stakeholders.

Region: Asia

Country: Indonesia

Sector: forestry, energy, agriculture, land use, tourism, finance

Tool: law, policy, NFP

Keywords: policy, community, forest loss, cross-sectoral, plantations, monitoring, enforcement

*FAO. 2003. Cross-sectoral policy impacts between forestry and other sectors. Y.C. Dubé and F. Schmithüsen (eds.). Forestry Department Paper 142. <http://www.fao.org/docrep/006/y4653e/y4653e00.htm>

Contents (5 chapters): 1. Understanding cross-sectoral policy impacts; 2. A mosaic of national and local contexts; 3. Economic considerations on instruments and institutions; 4. Monitoring and measuring cross-sectoral impacts; 5. Mechanisms for coordination.

Region: International

Country: Brazil, Mali, Mexico, Italy, Romania, Tanzania, Thailand

Sector: forestry, energy, agriculture, land use, tourism

Tool: law, policy, NFP, incentives, taxation, accounting, case study

Keywords: policy, community, forest loss, cross-sectoral, indicators, national accounting

*Broadhead, J. 2002. Cross-sectoral impacts in forestry – examples from within and outside FAO. FAO report. <http://www.fao.org/docrep/meeting/004/aa003e/aa003e00.htm>

Abstract: Forests and forestry are frequently subject to influences of external policy the scale of which exceeds the effects resulting from policy within the forestry sector itself. The influence of public policy on the development of the forestry sector, sustainable forest management and ultimately rural development has been recognised for many years. One of the basic principles of the Tropical Forests Action Plan in 1985, and later on, National Forest Programmes, was a holistic and intersectoral approach. This theme continued at UNCED in 1992 and in discussions on the causes of deforestation and forest degradation at the Intergovernmental Panel on Forests (IPF) and subsequently the Intergovernmental Forum on Forests (IFF). The involvement of governments and international organisations in creating and directing policy influencing forests and forestry, other than to enable markets to function freely, may be justified by the following considerations (adapted from Whiteman and Mendelsohn, 2000): Markets have failed to capture externalities associated with forests. These include biodiversity conservation, climate change mitigation, and the needs of local forest users, soil and water protection, recreation and aesthetic values; forests may suffer from common property problems; equity issues abound where forests contribute to poverty alleviation. Government involvement does not, however, increase benefits to society where policies fail to reflect the values held by the stakeholders. Thus there is a need in forestry for efficient policy to account for the considerations above whilst avoiding accidental or deliberate deviation from the purposes of involvement.

Region: International

Country:

Sector: forestry, energy, agriculture, land use, tourism, mining, transport

Tool: law, policy, accounting

Keywords: policy, community, forest loss, cross-sectoral, poverty, deforestation

Lange, G.M. 2004. Manual for economic and environmental accounts for forestry: a tool for cross-sectoral policy analysis. Forestry Dept. Working Paper.

<http://www.fao.org/docrep/007/j1972e/j1972e00.htm>

Foreword: The purpose of the current manual on Environmental and Economic Accounts for Forestry (EEAF) is to strengthen cross-sectoral policy analysis - promoting its use by regional or local institutions at sub-national level - by providing a tool for better monitoring and evaluation of cross-sectoral linkages, and for integrating forest goods and services into national economic development. The target audience includes policy analysts and decision-makers in government ministries at national and local levels, universities and research organizations, NGOs and other citizen groups. The manual is meant to be user-friendly and therefore strike a balance between the technical aspects of forest accounting and a clear explanation of how forest accounts can be used by each stakeholder in formulating policy.

Region: International

Country:

Sector: forestry

Tool: law, policy, national accounting

Keywords: policy, community, forest loss, cross-sectoral, environmental accounting, forest valuation

FAO. 2005. Anglophone Africa Workshop: cross-sectoral policy planning in forestry. Nairobi, Kenya. <http://www.fao.org/forestry/webview/media?langId=1&mediaId=13082>

Abstract: Recognizing the importance of intersectoral coordination at all stages of the policy cycle, the purpose of the workshop was to collect and share current country information and knowledge on cross-sectoral policy planning, propose policy instruments or institutional arrangements to enhance it, and identify related-capacity-building needs. More specifically, the workshop aimed to identify and develop cross-sectoral approaches that could be used in the context of national forest programme formulation and implementation and to foster an intersectoral policy dialogue among Anglophone African countries.

Region: Africa

Country: Ethiopia, Ghana, Lesotho, Malawi, Mozambique, Namibia, Nigeria,

South Africa, Sudan, Tanzania, Uganda, Zambia
Sector: forestry, agriculture,
Tool: law, policy, NFP, case study
Keywords: policy, community

FAO and Min. Agric. of Czech Republic. 2004. Trends in forest use and conservation – policy options for action. Proc of FAO/Czech Republic forest policy workshop. <http://www.fao.org/docrep/MEETING/007/AD744E/AD744E00.HTM>

Purpose: The purpose of the forestry policy workshop¹ is to review current and emerging issues facing the development of the forestry sector in Central and Eastern Europe (CEE), discuss policy implications and identify practical policy options for action. This will be achieved by: reviewing policy implications/options of major trends in forest use and conservation in Europe in general and the CEE sub-region in particular, discussing the need for improved cross-sectoral policy coordination, presenting environmental and economic accounts for forestry to better monitor and evaluate cross-sectoral linkages and integrate forest goods and services into national economic development and, promoting environmental services of forests through successful country experiences.

Region: Europe
Country: Albania, Bosnia/Herzegovia, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia and Montenegro, Slovakia, Slovenia
Sector: forestry
Tool: law, policy, national accounting, NFP, incentives, case study
Keywords: policy, forest loss, cross-sectoral, NFP

Sayer, J. and S. Maginnis. (eds.) 2005. Forests in landscapes. Earthscan. London, UK.

Synopsis: Recent innovations in Sustainable Forest Management and Ecosystem Approaches are resulting in forests increasingly being managed as part of the broader social-ecological systems in which they exist. *Forests in Landscapes* reviews changes that have occurred in forest management in recent decades. Case studies from Europe, Canada, the United States, Russia, Australia, the Congo and Central America provide a wealth of international examples of innovative practices. Cross-cutting chapters examine the political ecology and economics of forest management, and review the information needs and the use and misuse of criteria and indicators to achieve broad societal goals for forests. A concluding chapter draws out the key lessons of changes in forest management in recent decades and sets out some thoughts for the future.

Region: International
Country: Canada, USA, Russia, Australia, Congo, Central America, India
Sector: forestry, agriculture
Tool: law, policy, incentives, case study
Keywords: policy, cross-sectoral, indicators

UNECE and FAO. 2006. International forest sector institutions and policy instruments for Europe: a sourcebook. Geneva Forest and Timber Discussion Paper 43. <http://www.unece.org/trade/timber/docs/dp/dp-43.pdf>

Abstract: Provides an overview of the institutional landscape with relevance to forest sector policies in Europe. 43 major international, inter-governmental, private and non-governmental as well as research institutes are introduced, and their multiple activities are presented. Following a brief description of each institution, this report provides relevant information on international policies, policy instruments, programmes and publications that could have an impact on the future development of the forest and forest industry sector in Europe. The information contained in this paper is based on the World Wide Web and a broad review of existing literature.

Region: Europe, International
Country:
Sector: forestry, agriculture, energy
Tool: law, policy
Keywords: policy, cross-sectoral, indicators, international process

J. Young, A. Watt, P. Nowicki, D. Alard, J. Clitherow, K. Henle, R. Johnson, E. Laczko, D. McCracken, S. Matouch, J. Niemela and C. Richards. 2004. Towards sustainable land use: identifying and managing the conflicts between human activities and biodiversity conservation in Europe. *Biodiversity and Conservation* 14: 1641-1661.

Abstract: Conflicts between biodiversity conservation and human activities are becoming increasingly apparent in all European landscapes. The intensification of agricultural and silvicultural practices, land abandonment and other land uses such as recreation and hunting are all potential threats to biodiversity that can lead to conflicts between stakeholder livelihoods and biodiversity conservation. To address the global decline in biodiversity there is, therefore, a need to identify the drivers responsible for conflicts between human activities and the conservation of European biodiversity and to promote the management of these conflicts. Here, the drivers of biodiversity conflicts are analysed in a European context for five habitat types: agricultural landscapes, forests, grasslands, uplands and freshwater habitats. A multi-disciplinary approach to conflict management is described, with active stakeholder involvement at every stage of conflict identification and management as well as a range of other approaches including stakeholder dialogue and education, consumer education, improvement of political and legislative frameworks, financial incentives, and planning infrastructure.

Region: Europe

Country:

Sector: forestry, agriculture, fisheries

Tool: law, policy, incentives

Keywords: policy, cross-sectoral, planning

Blomley, T. 2006. Mainstreaming participatory forestry within the local government reform process in Tanzania. IIED gatekeeper Series No. 128. <http://www.iied.org/pubs/pdf/full/14536IIED.pdf>

Summary: Devolving institutional responsibilities to local governments for implementing participatory forestry must be accompanied by devolved responsibilities for budgets, disbursing and financial accounting within existing structures and systems. Financial management arrangements that make local governments accountable to other line ministries only disempower locally elected councils.

- Funding for forestry activities must be tailored to the needs of individual areas through the use of transparent funding allocation criteria such as forest cover, poverty index and size, as well as more general aspects such as district capacity, good governance and effectiveness.
- Forest revenues are an important source of “untied” income for local governments. This causes a potential conflict of interest as district councils hold the key to transferring forest management (and revenue collection responsibilities).
- Mechanisms are needed for neighbouring administrative units (village, wards or district councils) which share common forest resources to harmonise forest management and use. These should not take decision-making power away from lower level management units, but should be tools for dealing with village to village conflicts, and for agreeing on resource-wide management actions.
- Limited capacity at local government levels means incentives are needed for district councils to outsource forestry services to competent local service providers. The users of these services should also, as much as possible, be involved in choosing the service providers. Without this, the pace of rolling out forestry services will ultimately be hindered by the staffing and capacity of local government structures.
- Raising the awareness of local forest users, managers and locally elected forest management committees about their rights and responsibilities is an effective investment for ensuring downward accountability of community-level forest management institutions.

Region: Africa

Country: Tanzania

Sector: forestry

Tool: law, policy, incentives, case study

Keywords: policy, planning, community

Matiru, V. 2002. Kenya country report: analysis of existing initiatives and policy and legal framework in Kenya. IUCN and WWF. <http://assets.panda.org/downloads/kenyaflr.pdf>

Summary: Need to involve key stakeholders in developing strategies for introducing forest land restoration. Work with existing initiatives. Create linkages with institutional strengthening initiatives. Need to take into

consideration existing political realities. Build the capacity of stakeholders in forest land restoration.

Region: Africa

Country: Kenya

Sector: forestry

Tool: law, policy, case study

Keywords: policy, planning, forest restoration

Tanzanian Specialist Organization on Community Natural Resources and Biodiversity Conservation. 2001. Forest landscape restoration: Tanzania country report. IUCN and WWF. <http://www.unep-wcmc.org/forest/restoration/docs/TanzaniaFLR.PDF>

Summary: Tanzania in 1998 approved a revision of its forest policy of 1953. The new National Forest Policy of 1998 vests the responsibility of managing Tanzania forest resources sustainably under the forest sector in collaboration with other stakeholders. The policy places emphasis on participatory management and decentralization. The overall goal of the new policy is “to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations”. Main changes on management of forest ecosystems made by the forest policy of 1998 that support FLR include: The replacement of natural forests by exotic plantations and establishment of monoculture plantations will be minimised; Principles of multiple-use forest inventories will be developed and biodiversity conservation and management guidelines incorporated in the management plans of industrial plantations; Local communities will be encouraged to participate in management of industrial plantations through JFM and management of un-reserved forest areas through CBFM. Management of industrial plantation will incorporate other land uses like wildlife, eco-tourism, environmental conservation, beekeeping etc through co-ordinated strategic planning. EIA will be conducted for all industrial plantations to halt pressure that reduces forest functionality. Helping villagers (communities) to select and set aside degraded and village forested areas to be conserved and managed as village forests. Experience has shown that many of the causes to forest degradation and deforestation in Tanzania emanate from non-forest sectors, such as agriculture, livestock, land use, energy, minerals and others. Effective conservation of forests therefore requires cooperation of other sectors. To enhance, multi-sectoral cooperation in conservation of forests a total of 13 national sector policies and three overall national development strategies were analysed using a pre-prepared logical framework as a tool. Initiatives of implementing the forest policy were also analysed, covering the National Forestry Programme and seven specific field forestry projects in Lindi, Coast and Kilimanjaro regions.

Region: Africa

Country: Tanzania

Sector: forestry, tourism, agriculture, energy, mining

Tool: law, policy, incentives, NFP, case study

Keywords: policy, planning, cross-sectoral, community, NFP, degraded forest, plantations

Bogahawatte, C. 2003. Forest policy, non-timber forest products and the rural economy in the wet zone forests in Sri Lanka. Inter. Deve. Research Centre, Econ. and Envir. prog. for SE Asia. Research Rept. <http://www.idrc.ca/uploads/user-S/10536133690ACF213.pdf>

Summary: This study discusses the role of the NTFP to the rural economy of the wet zone conservation forests in Sri Lanka. It shows that the economic value of the NTFP to the villagers in the vicinity of the forests, measured by income from sales of the products or by the opportunity cost of the time spent in forest product collection, is relatively small when compared to gross income received from farm and off-farm activities. Furthermore, there is no significant difference in the income derived by villagers living near or far from the forests. In spite of this seemingly low importance of NTFP to the rural economy, majority of the respondents have signified willingness to participate in efforts to manage and protect the forest resources. This could be due in part to the important role of the forest and NTFP in some religious practices of the people; the forest is also recognized as important for its aesthetic and recreational value to the community. Nonetheless, the study pointed out the people expect some benefits from their participation in the form of employment to forest-management undertakings, and continuous access to some NTFP that are important to their livelihood. They also expect to receive rural infrastructure support in the form of road developments and assistance in building their temples. In addition, they do expect government counterparts from the forestry department to do their share in the implementation of the Forestry Sector Master Plan (FSMP) -

such as giving technical assistance and material support to the people.

Region: Asia

Country: Sri Lanka

Sector: forestry, agriculture

Tool: law, policy, incentives, case study

Keywords: policy, planning, community, NTFP

Sunderlin, W.D. 2006. Poverty alleviation through community forestry in Cambodia, Laos, and Vietnam: an assessment of the potential. For. Policy and Economics 8(4): 386-396.

Abstract: The article recommends three core policies to fully realize the potential of poverty alleviation through community forestry: (1) control illegal logging and forest sector corruption; (2) locate community forestry sites where there are abundant forests; and (3) boost forest income through improved access rights, tenure, and benefit sharing, and removal of anti-poor regulations.

Region: Asia

Country: Laos, Cambodia, Vietnam

Sector: forestry

Tool: law, policy, incentives, case study

Keywords: policy, planning, community, illegal logging

Cudjoe, D.N. 2005. Integrating forest biodiversity and poverty alleviation in local forest based enterprises: a case study of the wood-carving industry in Ghana. Tropical Resources Bull. 24: 86-92.

<http://www.yale.edu/tri/pdfs/bulletin2005/086Bull05-Cudjoe.pdf>

Conclusion: Ecocraft provides an important example of an alternate wood source, demonstrating the possibility of an industrial ecology relationship between woodcarvers and timber concessionaires, if given the necessary logistical and financial support by the Forestry Commission and donor organizations such as the UNDP-GEF.

Region: Africa

Country: Ghana

Sector: forestry

Tool: policy, incentives, case study

Keywords: policy, planning, community, NTFP

*Nasi, R. n.d. Guide to best practices for sectoral integration: Integration of biodiversity into national forestry planning. UNDP/UNEP/GEF Biodiversity Planning and Support Programme.

<http://www.unep.org/bpsp/Forestry%20Guide.pdf>

Summary: A good forest biodiversity policy should: be clearly stated and easily accessible; provide shared vision, but avoid over-complexity; clarify how to integrate or choose between different and often conflicting objectives; help determine how costs and benefits should be shared between groups, levels (local to global) and generations; provide signals to all those involved on how they will be held accountable; define how to deal with change and risk, when information is incomplete and resources are limited; Increase the capacity to implement decisions effectively; and produce forests that people want, and for which they are prepared to manage and pay.

Region: International

Country:

Sector: forestry, tourism

Tool: law, policy

Keywords: policy, planning, NBSAP, NFP, CBD

*UNEP. 2004. The use of economic instruments in environmental policy: opportunities and challenges. Economics and Trade Branch, 2003/9.

<http://www.unep.ch/etb/publications/EconInst/econInstruOppChnaFin.pdf>

Summary: Threats to human health and environmental quality continue to grow worldwide. Patterns of industrial production, as well as the use of natural and land resources, are important contributing factors. While environmental problems vary in their details, they generally involve either overuse of a natural resource or emission of damaging pollutants. Transitioning to more sustainable use patterns is both difficult

and expensive even under optimum conditions. Developing countries face the added challenges of severe funding constraints, weak institutional capacity, and a dependence on environmental and natural resources for economic development. Policy options to address these problems fall into two general categories: command and control (CACs) and market-based economic instruments (EIs). EIs encompass a range of policy tools from pollution taxes and marketable permits to deposit-refund systems and performance bonds. The common element of all EIs is that they operate on a decentralized level through their impact on market signals. Under most scenarios, they shift the costs and responsibilities associated with pollution back on to the polluter more efficiently than do CACs, which rely on mandated technologies and/or pollution reduction targets applied universally across polluters. Although the policy approaches differ and are often contrasted against each other, in reality the two often operate alongside each other. Governments may, for example, mandate caps on allowable pollution for a region or country and use market-oriented approaches such as tradable permits to allocate the allowable emissions in an efficient manner. A combination of factors seems to explain the current dominance of CAC approaches throughout the world despite the benefits of EIs. These include: a lack of understanding of how EIs work to protect the environment and how to choose the appropriate instrument; political interests that seek to minimize control costs via regulation; and a preference for keeping the status quo. Opportunities for much greater environmental and economic gains are therefore lost. This report aims to provide policy makers, especially in developing countries, with practical guidance on deciding which types of EIs are likely to work in addressing specific environmental problems. It describes how EIs modify incentives to pollute, the process of introducing EIs into the existing policy regime, the supporting conditions needed for them to work, and the potential effects of EIs on important societal factors such as poverty and sustainable development. The paper also introduces a number of template-based tools to assist policy makers assemble disparate data in a more efficient and structured way. These tools will enable policy makers to refine their understanding of a particular environmental challenge, to more quickly identify appropriate policy options, and to more effectively tailor these solutions to local conditions.

Region: International

Country:

Sector: forestry, financial, trade

Tool: law, policy, incentives

Keywords: policy, planning, economic instrument, trade

OECD. 1999. Handbook of incentive measures for biodiversity: design and implementation. OECD Publishing.

Abstract: Governments need to implement appropriate policies to ensure both the private and the public goods values of biological diversity are realised. Unless the users of biological resources are given incentives to sustainably use these resources, valuable biodiversity will continue to be lost. Because of the inherent complexity of biological systems, and the range of pressures that act on them, a “bundle” of carefully-designed and complementary incentive measures are often necessary to provide the appropriate signals to prevent biodiversity loss. This unique Handbook draws on the experiences described in 22 case studies to develop a comprehensive step-by-step process for identifying and implementing appropriate incentive measures for biodiversity conservation, and the sustainable use of its components. It identifies the incentive measures that are most suitable for particular ecosystems, and for addressing the specific sectoral pressures in effect, describing both the advantages and the disadvantages of each incentive measure. A wide range of incentive measures are described, including both the more common economic and regulatory incentives, and also the necessary framework conditions, such as scientific and technical capacity building, education and awareness raising, and the involvement of local populations and other stakeholders.

Chapter : 1997. Implementation of economic incentive measures to promote the conservation and sustainable use of biodiversity in the Biebrza Valley, with special attention to the Biebrza National Park, Poland.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-pl-01-en.pdf>

Region: International

Country: (Poland)

Sector: forestry, agriculture

Tool: law, policy, incentives

Keywords: policy, planning, finances

Government of Australia. 2000. Incentives for biodiversity conservation in regional planning. Presentation to CBD COP 6.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-australia-en.doc>

Abstract: Over the past decade, the Australian Government has based its approach to incentives for conservation and sustainable use of biodiversity on priorities identified in the National Strategy for Conservation of Australia's Biodiversity (1994), the National Framework for Natural Resource Management (NRM) Standards and Targets and the Environment Protection and Biodiversity Conservation Act (1999). Its current priority is to improve biodiversity conservation through regional NRM planning processes. Governments and Regional NRM groups are dealing with the major issues of salinity and water quality and are constantly seeking creative ways to integrate natural resource management, in ways that can protect biodiversity and support the natural resources based sector of the national economy.

Region: Australasia

Country: Australia

Sector: forestry, water

Tool: law, policy, incentives, case study

Keywords: policy, planning, community

Aguilar, J., E. Quintanar, C. Illsley, Tand . Gómez. Incentives to Peasant Creativity and Research for the Conservation and Efficient Management of Biodiversity in the Center Mountain Region of the State of Guerrero, Mexico. UNEP, Presentation to CBD COP 5.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-mx-guerrero-en.pdf>

Abstract: The Program for Peasant Management of Natural Resources is based on a strategy that seeks to impel processes that promote consciousness, organization and action in peasant communities, parting from a peasant viewpoint of the natural and social surroundings. The objective is to carry out sustainable use and management practices of natural resources in the short, medium and long terms, in 14 communities in the centre-mountain region of Guerrero. This is being done through a close collaborative effort between a regional peasant organization, the SSS Sanzekan Tinemi, and a civil association, the Group for Environmental Studies. It includes actions at regional, community and family levels, oriented towards the reinforcement of people's capacities as much as towards the implementation of projects or technical-material actions in participatory ways. The strengthening of local capacities includes activities such as: regional inter-community meetings to discuss different issues; diagnosis and anticipatory community land use planning processes; strengthening of communal and regional institutions and legislations; stimulating creativity and experimentation of peasant ideas, etc. Technical aspects include projects and vegetation management actions: ecological conservation areas; nurseries and reforestation that include native species for multiple uses and efficient firewood use; environmental studies for designing and implementing management plans for non-timber forest species of economic value, such as palm (*Brahea dulcis*) and agave; a series of actions directed at land-use planning and regulation of grazing lands, as well as several actions oriented to soil and water conservation. The actions of different institutions, governmental and on-governmental, of municipal, state and federal level, come together through the program. Some offer financial support, others knowledge or social or political support.

Region: North America

Country: Mexico

Sector: forestry, agriculture

Tool: law, policy, incentives, case study

Keywords: policy, planning, community

Veríssimo, A., Y. Le Boulluec Alves, M. Pantoja da Costa, C. Riccio de Carvalho, G. C. Cabral Born, S. Talocchi, and R.H. Born. 2002. Payment for environmental services in Brazil.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-prisma-en-02.pdf>

Summary: Our study seeks to confirm whether existing or potential CES instruments in representative regions of Brazil covered by the case studies in this report can be effective in pursuing sustainable development objectives. To be successful, such instruments would need to balance environmental restrictions and social and economic demands of actors living in these territories. In general terms, the actors considered were rural communities, residents of quilombos, subsistence river bank dwellers, traditional communities, farmers and extractivists. We analyze the risks and opportunities of introducing CES mechanisms for these actors and their respective land base. The study also aims to assess the conditions necessary for CES to be not merely

another instrument or process of social exclusion that benefits only large corporations and hegemonic sectors of society. Finally, we propose recommendations and suggestions covering both our own interpretations and perspectives of the actors mentioned above. Our efforts in carrying out this project were always oriented by the following questions: Question 1) Can payment for environmental services (PES) be an instrument to benefit farmers, rural communities and indigenous communities that practice environmental conservation and/or sustainable development? Question 2) If yes, what conditions should exist and what opportunities and conditions already exist for these actors to participate in the management and share the benefits of resources deriving from CES?

Region: South America

Country: Brazil

Sector: forestry, agriculture, NTFP

Tool: law, policy, incentives, case study

Keywords: policy, planning, community, environmental services, NTFP

Panayotou, T. 1995. Economic instruments for environmental management and sustainable development. UNEP, Envir. and Econ. Unit. Economic Series Ppr. No. 16.

http://www.biodiversityeconomics.org/applications/library_documents/lib_document.rm?document_id=294§ion_id=12

Summary: The objective of this monograph is sevenfold: (a) to explore the analytical foundations as well as the scope and role of economic instruments in environmental management (Chapters 2 and 3); (b) to review the experience of developed countries and assess its relevance to developing countries (Chapter 4); (c) to document the experience of the developing countries which have applied economic instruments to the management of different resource and environment sectors (Chapter 5); (d) to explore the applicability of economic instruments to the protection of the global commons and their implications for developing countries (Chapter 6); (e) to analyze the special circumstances of developing countries and the way in which they could influence the applicability and selection of economic instruments (Chapter 7); (f) to delineate the modalities for introducing economic instruments in developing countries and transitional economies and to assess the institutional and human resource requirements and financial implications (Chapter 8); and (g) to formulate a strategy for the successful introduction of economic instruments in developing countries.

Region: International

Country:

Sector: finance, trade

Tool: policy, incentives, economic instruments, taxation

Keywords: policy, economic instruments, taxation

Cross-sectoral Websites:

***GEF - Website of integrative cross-sectoral studies:**

<http://www.unep.org/bpsp/TS.html>

Summary: This website provides information to assist national biodiversity planners with sectoral integration of National Biodiversity Strategy and Actions Plans (NBSAPs) into the broader national development framework. UNEP commissioned a series of thematic studies, each focussed on one aspect of sectoral integration in the areas of: agriculture, fisheries, forestry, tourism, environmental assessment, and biodiversity planning.

Region: International

Country:

Sector: agriculture, fisheries, forestry, tourism

Tool: law, policy, incentives, NBSAP

Keywords: policy, planning, cross-sectoral, NBSAP

Scottish Biodiversity Duty Law:

<http://www.biodiversityscotland.gov.uk/pageType2.php?id=6&type=2&navID=28>

Scottish Biodiversity Duty Law action plan:

<http://www.biodiversityscotland.gov.uk/duty/index.htm>

Summary: In 2004 the Scottish Parliament passed a new law, the Nature Conservation (Scotland) Act 2004,

giving all public bodies in Scotland a duty to “further the conservation of biodiversity” as they carry out their work. This means that all public bodies now have a duty to think about their impact on the natural world. Public bodies must reduce any negative effects for biodiversity, and look for ways of benefiting biodiversity in the way they go about their business.

Region: Europe

Country: Scotland

Sector: agriculture, forestry, tourism, energy

Tool: law, policy

Keywords: policy, planning, cross-sectoral

Norwegian cross-sectoral biodiversity action plan:

http://www.regjeringen.no/Rpub/STM/20002001/042EN/PDFS/STM200020010042000EN_PDFS.pdf

Summary: To ensure the conservation and sustainable management of biological diversity, legislative and economic instruments must be coordinated. They must also focus on areas that are of great value for biodiversity. The new management system for biodiversity will help Norway to make progress towards a number of goals:

- the conservation and sustainable use of biological diversity
- simplifying the public administration and making it more effective
- the transfer of more authority and responsibility from the central to the municipal level
- making it easier for decision-makers to weigh up different public interests
- making planning processes more cost-effective
- making land-use management more predictable, for example for the Ministry of Transport and Communications, Ministry of Defense, Ministry of Local Government and Regional Development and Ministry of Trade and Industry

Region: Europe

Country: Norway

Sector: government, agriculture, fisheries, forestry, tourism

Tool: law, policy, economic instruments

Keywords: policy, planning, cross-sectoral, economic instruments

Ireland’s action plan to integrate biodiversity concerns cross-sectorally:

<http://www.botanicgardens.ie/gspc/ireland/guidelines.pdf>

Summary: These guidelines are intended for use by Government Departments and relevant state agencies to assist in the production of Sectoral Biodiversity Action Plans and to provide background information on biodiversity and the Convention on Biological Diversity (CBD). The Guidelines outline the need for Sectoral Biodiversity Action Plans, offer suggestions on the process that should be followed and indicate the main issues that should be addressed. Sectoral Biodiversity Action Plans are required under the National Biodiversity Plan, which was adopted by Government in 2002.

Region: Europe

Country: Ireland

Sector: government

Tool: law, policy, NBSAP

Keywords: policy, planning, cross-sectoral, NBSAP

Malawi’s principles for cross-sectoral integration of policies for biodiversity:

http://www.malawi.gov.mw/Mines/EnvironmentalAffairs/nep/Crosssect_objectives.htm

<http://www.sdn.gov.mw/~paulos/environment/policy/NEP4.htm>

Summary: To create and strengthen the institutional mechanisms needed to implement a National Environmental Policy. Environmental management needs a powerful voice not only for advocacy for environmental protection and conservation, but also to ensure effective cross-sector coordination. This can best be achieved through establishment of a high level institution within the government administrative structure.

Region: Africa

Country: Malawi

Sector: government

Tool: law, policy

Keywords: policy, planning, cross-sectoral

MCPFE: Workshop on exchanging country experiences in the national forest program (nfp) processes on the practical application of the MCPFE approach to NFPs in Europe

<http://www.mcpfe.org/documents/meetings/2004/ws>

Summary: The international discussion on national forest programs (nfp) started at Conference on Environment and Development (Rio de Janeiro, 1992). It was continued under the auspices of Intergovernmental Panel on Forests and Intergovernmental Forum on Forests (IPF/IFF) and is still high on the agenda of United Nations Forum on Forests (UNFF). In 1997 IPF encouraged countries to develop, implement, monitor and evaluate national forest programmes. Many governments have readjusted existing forest policy or developed nfps in order to achieve the primary goal of modern forest policy that is sustainable forestry.

Region: Europe

Country: Finland, Poland, EU, Switzerland,

Sector: forestry

Tool: law, policy, NFP

Keywords: policy, planning, cross-sectoral, NFP

WWF summary of cross-sectoral efforts in various areas:

<http://www.worldwildlife.org/bsp/programs/bcn/index.html>

Summary: Funded by the USAID-led United States-Asia Environmental Partnership (US-AEP), the program provided implementation grants to twenty community-based projects in seven countries across Asia and the Pacific. The program, which closed in September 1999, not only documented its conservation impact, but also generated a significant amount of data, analysis, and experience surrounding the conditions under which enterprise-based approaches are most effective for the conservation practitioner. Site leads to multiple publications and case studies.

Region: Asia, Africa, Central America, Europe

Country:

Sector: agriculture, forestry, tourism

Tool: law, policy, incentives, planning

Keywords: policy, planning, cross-sectoral, NTFP, adaptive management

World Bank: Bhutan land management project:

<http://web.worldbank.org/external/default/main?pagePK=64027221&piPK=64027220&theSitePK=306149&menuPK=306182&Projectid=P087150>

Summary: The project will provide approaches, tools, and interventions to reverse damage to land due to weak policies, overgrazing, forest degradation, and unsustainable agricultural practices of the past. The effort will also help support decentralized decision making on land management issues and help broaden the sources of livelihood and well being of selected local communities in Bhutan.

Region: Asia

Country: Bhutan

Sector: agriculture, fisheries, forestry

Tool: law, policy, incentives

Keywords: policy, planning, cross-sectoral, environmental assessment, community

International Institute for Environment and Development (IIED): Forestry and land use project (country projects): (multiple publications and websites)

<http://www.iied.org/NR/forestry/projects/forest.html>

Summary: The project has sought to develop a preliminary framework through which to identify key problem areas in practice and which national and international policies and agreements might be most apposite to address them. Partners are currently being sought to test whether clearly articulated forest ethics can catalyse change in areas where there are clear discrepancies between field level realities and the values and norms enshrined in policies and agreements.

Region: Africa, Asia

Country:

Sector: forestry, agriculture

Tool: law, policy, incentives

Keywords: policy, planning, cross-sectoral, illegal logging, community, NTFP

St. Lucia: Forest biodiversity country report:

http://www.slubiodiv.org/The_Project/Information/Printed_Materials/Country_Study_Report/country_study_report.html

Summary: Many gaps have been identified, some of which include, out-dated vegetation classification, inadequate legislation, lack of specific biodiversity programmes, inadequate formal inter-departmental collaboration and also inadequate formal governmental and non-governmental collaboration and financial resources and a lack of routine monitoring programmes.

Region: Caribbean

Country: St. Lucia

Sector: agriculture, fisheries, forestry

Tool: law, policy, case study

Keywords: policy, planning, cross-sectoral, monitoring

Biodiversity and UNESCO:

<http://unesdoc.unesco.org/images/0015/001514/151402e.pdf>

Summary: Presents numerous case studies under UNESCO for integration of biodiversity into various sector policies.

Region: International

Country:

Sector: agriculture, fisheries, forestry, tourism

Tool: law, policy, education

Keywords: policy, planning, cross-sectoral, preserves, community

Estonia biodiversity plan:

<http://www.envir.ee/orb.aw/class=file/action=preview/id=1995/Estonian+National+Biodiversity+Strategy+and+Action+Plan.pdf>

Summary: How Estonia implements the CBD including cross-sectoral policies.

Region: Europe

Country: Estonia

Sector: forestry

Tool: law, policy, incentives, NBSAP, NFP

Keywords: policy, planning, cross-sectoral, NBSAP, NFP

FAO Forestry Department - cross-sectoral policy linkages

<http://www.fao.org/forestry/site/crosssectoral/en/>

Links to multiple documents and summaries.

Region: International

Country:

Sector: agriculture, fisheries, forestry, tourism

Tool: law, policy

Keywords: policy, planning, cross-sectoral

Agriculture and Agro-forestry Publications:

Perz, S.G. 2004. Are agricultural production and forest conservation compatible? Agricultural diversity, agricultural incomes and primary forest cover among small farm colonists in the Amazon. *World Development* 32 (6): 957-977.

Abstract: This paper presents an empirical analysis that addresses recent work seeking “win-win-win” scenarios for economic development, poverty reduction and environmental sustainability. I focus on arguments for “productive conservation” in forest frontier regions, namely raising rural incomes while

conserving the forest resource base. The analysis examines the impacts of agricultural product and income diversity on agricultural incomes and primary forest cover. The findings show that net of other factors, more diversified farms have higher agricultural incomes, but not significantly less forest cover. This finding is consistent with recent work in other study sites and suggests that initiatives promoting agricultural diversity can at least partially make production and conservation compatible objectives.

Region: South America

Country: Brazil

Sector: agriculture, forestry

Tool: law, policy, incentives

Keywords: policy, planning, cross-sectoral

Bray, D.B., C. Antinori, and J.M. Tores-Rojo. 2006. The Mexican model of community forestry management: the role of agrarian policy, forest policy and entrepreneurial organization. *For. Policy and Economics* 8(4): 458-469

Abstract: The Mexican case provides a model for the world-wide devolution of forest lands to local communities, and shows that community initiatives and policy support can result in common property regimes that can organize to compete in the marketplace and deliver social, economic and ecological benefits.

Region: Central America

Country: Costa Rica

Sector: agriculture, forestry, tourism

Tool: law, policy, incentives, case study

Keywords: policy, planning, cross-sectoral, community

Mackenzie, S, H. Baulch, B. Pisupati, and B. Dharmaji. 1999. Biodiversity, adaptation, livelihoods and food security: lessons from the field for policy-makers. IUCN Regional Biodiversity Program, Asia. Unpubl. paper at: <http://regionalcentrebangkok.undp.or.th/documents/whatsnew/IUCNcasesstudies.pdf>

Summary: This publication introduces some of the most critical issues in climate change, biodiversity conservation and sustainable development, and explores important linkages among these topics (Part 1). The study clearly illustrates that conservation measures, ranging from agro-biodiversity conservation, designation of protected areas, introduction of no-fishing zones and forest protection measures, must also take into account the fact that poverty and livelihood issues are often intertwined with conservation issues and must be dealt with in tandem. The key linkages documented in this paper are illustrated using case studies of projects that have achieved multiple benefits. Using these case studies, the paper proposes a series of recommendations on how to move from an appreciation and improved understanding of these linkages towards a more supportive policy environment.

Region: Asia, Africa

Country:

Sector: agriculture, forestry, tourism

Tool: law, policy, incentives, case study

Keywords: policy, planning, cross-sectoral, community

Masso, J.F. 2005. Participatory forest management for sustainable forest development: lessons learnt in conservation and management of Udzungwa Mountain Forest, Iringa, Tanzania. Tanzania Min. of Natural Resources and Tourism. Paper to ReNed Conference on ecosystem services and development in developing countries.

http://www.tanzaniagateway.org/docs/Abstract_forest_manag_for_sustainable_community_dev_in_udzungwa2005.pdf

Abstract: In the montane forest areas, national and global interest to preserve catchment values (i.e., electricity production, agriculture, fishing and livelihoods) and biodiversity means that the government has banned wood resource extraction. Because of this, opportunities to provide economic incentives for montane forest managers through direct utilisation of the resource are limited and it remains to be seen whether other non-economic incentives can sustain long-term commitment in these biodiversity rich areas. A central issue in the PFM debate, is that communities are given responsibility of government (stewardship of a national resource) in exchange for ecosystem services – but in reality there are very few benefits in montane forests to share with those communities in exchange for the costs incurred and the support from

the authorities is insufficient to ensure sustainability of the management and, thus, also of the resource use. As a consequence PFM can probably not work in the longer term unless additional benefits to swing the costs/benefits ratio can be identified and made to work. Payments for ecosystem services (in this instance water and biodiversity) would represent an opportunity to increase the benefits and moral support for effective management. At present, however, there is no political will or international pressure to implement fair payments for managing nationally (and globally) important ecosystem services. The future of the unique Eastern Arc forests is therefore uncertain.

Region: Africa

Country: Tanzania

Sector: agriculture, fisheries, forestry, water

Tool: law, policy, incentives, case study

Keywords: policy, planning, cross-sectoral, community, ecosystem services

FAO. 2002. Biodiversity and the ecosystem approach in agriculture, forestry, and fisheries. Nat. Res. Mngt and Envir. Dept. Rome.

<http://www.fao.org/docrep/005/y4586e/y4586e00.HTM>

Abstract: A series of presentations and discussions covering grasslands in South Africa, agro-pastoral systems in Nigeria, rice-fish ecosystems in Cambodia, organic agriculture systems in 16 locations and 10 countries (Bangladesh, Brazil, Cuba, Germany, Indonesia, Italy, Mexico, Peru, Spain, South Africa), mahogany forests in Mexico, medicinal plants in India, soil systems in six locations and five countries (Australia, Brazil, India, Mexico and Sahel), apple pollination in the Himalayas, rice ecology in Asia and ingenious agricultural systems in five countries (Asia, French Guyana, Slovakia, Tanzania, Tunisia). The ecological relationships and intrinsic mechanisms involved in the food web were illustrated for both aquatic and terrestrial environments. More specifically, natural population regulation of pests in rice fields and nutrient cycling in soil ecosystems were illustrated. Knowledge of ecological processes was shown in these cases to replace either excessive dependence on, or the lack of, external inputs. The understanding of ecological relations and functional groups (rather than of individual species) can unlock new potentials. About 40 percent of the world's lands are occupied by agriculture as compared to no more than 12 percent of lands occupied by reserves and protected areas. To be successful, wildlife conservation needs well connected areas and agricultural practices with positive externalities affecting both natural and semi-natural ecosystems. Well managed agro-forest ecosystems have demonstrated the potential of agriculture to restore and maintain biodiversity at gene, species and ecosystem levels, through sustainable management of existing systems and restoration of degraded systems.

Region: Africa, Asia, Central America, Europe

Country: South Africa, Nigeria, Cambodia, Mexico, Australia, Brazil, India, Peru, Spain

Sector: agriculture, forestry, water, agro-forestry

Tool: law, policy, incentives, case study

Keywords: policy, planning, cross-sectoral, community, NTFP, protected areas, wildlife

Pagiola, S., J. Kellenberg, L. Vidaeus, and J. Srivastava. 1998 Mainstreaming Biodiversity in Agricultural Development. Finance and Development 38-41.

<http://www.worldbank.org/fandd/english/0398/articles/060398.htm>

<http://www.worldbank.org/fandd/english/pdfs/0398/060398.pdf>

Abstract: The expansion and intensification of agriculture have been major contributors to the loss of biodiversity worldwide. As agricultural production continues to rise to meet the growing demands of the world's population, it is critical to find ways to minimize conflicts and enhance complementarities between agriculture and biodiversity. Policies are required that internalise the externalities associated with agricultural production and that provide the conservation of resources equal footing with agricultural production.

Region: International

Country:

Sector: agriculture, forestry

Tool: law, policy, incentives, property rights

Keywords: policy, planning, cross-sectoral, environmental services

Blann, K. 2006. Habitat in agricultural landscapes: how much is enough? Defenders of Wildlife. Washington, DC, USA. http://www.biodiversitypartners.org/pubs/Ag/DRAFT_04-10-06.pdf

Summary: Conserving native biodiversity in agricultural landscapes will likely require a combination of: limiting further conversion of native landscapes; Restoring some converted lands to native vegetation; and implementing more eco-friendly agricultural practices on a substantial percentage of active farm acreage.

Region: North America

Country: USA

Sector: agriculture

Tool: policy

Keywords: policy, planning, wildlife

Kerkhoff, -E; Sharma, -E. 2006. Debating shifting cultivation in the Eastern Himalayas: farmers' innovations as lessons for policy. Kathmandu, Nepal: International Centre for Integrated Mountain Development (ICIMOD).

Abstract: The research presented in this book identifies farmers' traditional shifting-cultivation practices in the eastern Himalayas and more recent indigenous innovations that contribute to the benefits this farming system has to offer. Following an introduction in part 1 of the book, part 2 provides a summary of the particular characteristics of shifting cultivation and farmers' innovations as identified during the course of the research project. These findings are presented in four chapters, each focusing on one of four major benefits identified, namely: (1) shifting cultivators conserve more forests on their land than any other farmers, and make it productive at the same time; (2) biodiversity conservation is favoured in the forest and farm management practiced in shifting cultivation; (3) shifting cultivation is a storehouse of species of commercial value and innovative organic farming practices; and (4) social security is one of the main functions of local institutions of shifting cultivators. Part 3 looks at the lessons for policy that were extracted by comparing case studies at a regional level. This comparison proved to be a useful exercise both for identifying the benefits of shifting cultivation, and for defining policy options that will help these benefits to be harnessed. These findings are summarized in the policy issues and recommendations formulated by participants at a regional policy dialogue workshop, and the full text of the 'Shillong Declaration for Shifting Cultivation in the Eastern Himalayas'. The final chapter provides a brief glimpse of the future and a summary of policy developments in progress.

Region: Asia

Country: Nepal

Sector: agriculture, forestry

Tool: policy, case study

Keywords: policy, planning, community

Plieninger, T. 2007. Compatibility of livestock grazing with stand regeneration in Mediterranean holm oak parklands. *Journal for Nature Conservation*.15: 1-9.

Abstract: Successful regeneration of holm oaks is the key to the conservation of the outstanding biodiversity levels in Spanish dehesa parklands. However, low densities of regeneration were measured in this study. The threshold for livestock stocking levels supporting regeneration was below all figures presently found in the dehesas. In the analysis of stand structure, a positive relationship between tree age and the age of agro-silvo-pastoral use of the dehesas was detected. This suggests that the forest cycle has been disrupted, and stands may dissolve gradually. Regeneration failure is an implicit component of this agroforestry system. An analysis of long-term abandoned dehesas situated at roadsides showed that holm oak stands are able to recover if grazing and cultivation are set aside. In a mail survey, managers of private large landholdings highly appreciated having holm oaks on their land, both for income- and non-income-related motivations, e.g. for the preservation of real estate value or family tradition. Land managers identified over-maturity of stands and regeneration failure among the top five problems of dehesas. Conservation policy should be directed towards incentive schemes, environmental education, and technical assistance.

Region: Europe

Country: Spain

Sector: agriculture, forestry

Tool: policy, incentives, taxation

Keywords: policy, planning, pasture

Schroth, G., and C.A. Harvey. Biodiversity conservation in cocoa production landscapes: an overview. *Biodiversity and Conservation* 16: 2237-2244.

Abstract: Cocoa agroforests that retain a floristically diverse and structurally complex shade canopy have the potential to harbour significant levels of biodiversity, yet few studies have documented the plant and animal species occurring within these systems or within landscapes dominated by cocoa production. In this special issue, we bring together nine studies from Latin America, Africa and Asia that document the contribution of cocoa agroforestry systems to biodiversity conservation, and explore how the design, management and location of these systems within the broader landscape influence their value as habitats, resources and biological corridors. Tree diversity within the cocoa production systems is variable, depending on management, cultural differences, location and farm history, among other factors. Animal diversity is typically highest in those cocoa agroforests that have high plant diversity, structurally complex canopies, and abundant surrounding forest cover. In general, both plant and animal diversity within cocoa agroforests is greater than those of other agricultural land uses, but lower than in the original forest habitat. There are several emerging threats to biodiversity conservation within cocoa production landscapes, including the loss of remaining forest cover, the simplification of cocoa shade canopies and the conversion of cocoa agroforestry systems to other agricultural land uses with lower biodiversity value. To counter these threats and conserve biodiversity over the long-term, land management should focus on conserving native forest habitat within cocoa production landscapes, maintaining or restoring floristically diverse and structurally complex shade canopies within cocoa agroforests, and retaining other types of on-farm tree cover to enhance landscape connectivity and habitat availability.

Region: Central America, Africa, Asia

Country:

Sector: agriculture, forestry

Tool: policy

Keywords: policy, planning, community

Dahlquist, R.M., M. P. Whelan, L. Winowiecki, B. Polidoro, S. Candela, C. A. Harvey, J. D. Wulforst, P. A. McDaniel and N. A. Bosque-Pérez. 2007. Incorporating livelihoods in biodiversity conservation: a case study of cacao agroforestry systems in Talamanca, Costa Rica. *Biodiversity and Conservation* 16:2311-2333.

Abstract: Over the past two decades, various organizations have promoted cacao agroforestry systems as a tool for biodiversity conservation in the Bribri-Cabécar indigenous territories of Talamanca, Costa Rica. Despite these efforts, cacao production is declining and is being replaced by less diverse systems that have lower biodiversity value. Understanding the factors that influence household land use is essential in order to promote cacao agroforestry systems as a viable livelihood strategy. We incorporate elements of livelihoods analyses and socioeconomic data to examine cacao agroforestry systems as a livelihood strategy compared with other crops in Talamanca. Several factors help to explain the abandonment of cacao agroforestry systems and their conversion to other land uses. These factors include shocks and trends beyond the control of households such as crop disease and population growth and concentration, as well as structures and processes such as the shift from a subsistence to a cash-based economy, relative prices of cacao and other cash crops, and the availability of market and government support for agriculture. We argue that a livelihoods approach provides a useful framework to examine the decline of cacao agroforestry systems and generates insights on how to stem the rate of their conversion to less diverse land uses.

Region: Central America

Country: Costa Rica

Sector: agriculture, forestry, agro-forestry

Tool: policy, incentive, case study

Keywords: policy, planning, cacao

*Angelsen, A. and D. Kaimowitz (eds.). 2001. *Agricultural technologies and tropical deforestation*. CABI, International, Wallingford, UK.

Abstract: The final chapter of the book offers a set of policy recommendations. It presents some typical win-win outcomes, including technologies suited for forest poor areas, labour intensive technologies promoting intensification to replace land extensive farming practices, and promoting agricultural systems that provide environmental services similar to those of natural forests. It also discusses some typical win-lose outcomes of

situations with trade-offs: technologies which require little or displace labour, new products for large markets with abundant labour, eradication of diseases that limit deforestation, and technological progress in forest margin areas with rapidly growing labour forces. The chapter also relates the issues this volume discusses with the current trend towards greater economic liberalisation and globalisation and with the overall policy objectives of poverty reduction and economic growth.

http://www.cifor.cgiar.org/publications/pdf_files/Books/BAngelsen0101E0.pdf

Region: tropics

Country: USA, Costa Rica, Brazil, Ecuador, Bolivia, Zambia, Ethiopia, Côte d'Ivoire, Philippines

Sector: agriculture, agro-forestry

Tool: management practice, best practice, policy, law, incentive, market based instrument, code of conduct, case study

keyword: technology, economics, policy, deforestation, globalization

Carter, M. 1998. A revolving fund for biodiversity conservation in Australia. OECD, Group on Economic and Environmental Policy Integration, 7th Meeting, Paris, 1998.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-oecd-16-en.doc>

Abstract: The study examines the role played by the Revolving Fund for Nature, administered by the Trust for Nature (Victoria), in the protection of lands of conservation significance, particularly those with remnant or heritage vegetation. The Revolving Fund purchases lands with conservation significance, places a covenant on them specifying the allowable and prohibited activities that can be undertaken on them, thus ensuring the future maintenance of the identified conservation values, and resells the lands to a sympathetic private owner whose use of the lands will be bound by the covenant. The regained capital is then used to finance the purchase of further lands, which again have a covenant placed on them before resale to sympathetic purchasers and the process is repeated again. The success of the Fund relies largely on its ability to recapture all or most of the original capital purchase cost for the lands, and to pass on responsibility for land management to owners who are committed to a conservation ethic. The Fund is unique in that the Trust for Nature was formed through government legislation and is provided with some public funding but also attracts funds from non-government sources.

Region: Austral-Asia

Country: Australia

Sector: agriculture, forestry

Tool: policy, incentive, funding

Keywords: policy, planning, conservation

Unknown. 2000. Benefit Sharing Arrangements in the Mankote Mangrove, Saint Lucia.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-lc-01-en.pdf>

Abstract: The Mankote Mangrove had been used for charcoal production from 1960. When Mankote was declared a protected area in 1986 as the largest contiguous tract of mangrove, an initiative was launched to save the mangrove and maintain the incomes of charcoal producers. A management plan for the mangrove was adopted which attempts to respect existing popular uses and attitudes, while fully involving users in the decision-making process. As a result of an extensive dialogue, a set of rules for the sustainable use of the mangrove have been agreed upon by the informal cooperative of the charcoal producers and the relevant governmental agencies. The presence of the cooperative has allowed authorities to manage the area cost-effectively through a strategy of user participation rather than direct involvement. The group's participation in the project has been directly linked to the benefits they have been able to reap as individuals through their involvement, including an increased and more secure supply of wood for charcoal. Due to this collaborative effort, by the 1980s the overall trend of degradation of the tree cover had been reversed. The conditions behind this reversal are ascribed to the shift from an open-access policy to a communal property regime. Indeed, the management plan represents a recognition of the stakeholder rights of subsistence users, even those without legal rights to the resources being exploited. The major lesson from the case-study is that integrated conservation-development projects have good potential to be effective if they can lead to the avoidance of open-access conditions, and to specification of property rights.

Region: Caribbean

Country: St. Lucia

Sector: forestry

Tool: policy, case study

Keywords: policy, planning, mangrove, community, fuelwood

Emerton, L. 2000. Community-based incentives for nature conservation. IUCN paper for CBD COP 6.

<http://www.cbd.int/doc/case-studies/inc/cs-inc-iucn-09-en.pdf>

Abstract: This IUCN resource kit describes practical steps and methods of identifying and using economic incentives for community-based nature conservation, and illustrates these with a set of real-world case studies from Eastern Africa. It is targeted primarily at conservation and development managers engaged in the design and implementation of field-level programs and projects.

Region: Africa

Country: Kenya, Tanzania

Sector: agriculture, forestry

Tool: policy, incentive, case study

Keywords: policy, planning, community

Rosa, H., S. Kandel, L. Dimas, N. Cuellar, and E. Mendez. Compensation for Environmental Services and Rural Communities - Lessons from the Americas and Key Issues for Strengthening Community Strategies. The Salvadoran Research Program on Development and Environment (PRISMA).

<http://www.cbd.int/doc/case-studies/inc/cs-inc-prisma-en-01.pdf>

Abstract: The report presents the findings of the “Payment for Environmental Services in the Americas” project (1999-2003). The notion of paying or compensating for environmental services arises from different perspectives or interests. Thus, compensation mechanisms are variously seen as financial instruments for conservation; an option to ensure climate change mitigation at the lowest cost; an option to ensure environmental services of local or regional interest, such as regulation or filtration of water flows; and a possibility to strengthen rural livelihoods and revaluing rural landscapes, their diversity of practices and ecosystems. From an ethical perspective, compensation schemes that do not fully integrate the social objective of directly benefiting communities with the environmental objective of guaranteeing the provision of environmental services can turn into instruments of exclusion. On the other hand, compensation strategies planned and implemented from the perspective of indigenous and peasant communities can contribute to strengthening their livelihoods and to the improved management of rural spaces.

Region: Central America, South America

Country: Costa Rica, Mexico, El Salvador, Brazil

Sector: agriculture

Tool: policy, incentive, compensation, case study

Keywords: policy, planning, community, environmental services

Schroth, G., G.A.B. Da Fonseca, C.A. Harvey, C. Gascon, H. L. Vasconcelos, and A.N. Izac. 2004. Agroforestry and Biodiversity Conservation in Tropical Landscapes. Island Press

Region: International

Country:

Sector: agroforestry

Tool: policy, incentive, compensation, case study

Keywords: policy, planning, community, environmental services

Agriculture Websites

FAO – Biological Diversity in Food and Agriculture

http://www.fao.org/biodiversity/forests_eco_en.asp

Summaries and links to documents and sites.

Region: International

Country:

Sector: agriculture

Tool: law, policy, incentive

Keywords: policy, planning, community

World Agroforestry Centre

<http://www.worldagroforestrycentre.org/>

cross-sectoral linkages:

- http://www.worldagroforestrycentre.org/es/focal_areas_linkages.asp
- http://www.worldagroforestrycentre.org/es/es_at_icraf.asp

Summary: In much of the less developed region of the world, agroforestry is at the centre of this complex and problematic relationship between human societies and the natural environment. First, agroforestry is an important land use in many of the countries that have the greatest environmental assets – countries like Indonesia, Thailand, China and Nepal. Second, many of the regulations, policies and financial incentives put in place to protect threatened forest resources also shape the incentives of farmers to grow trees on their own farms. Third, agroforestry systems generate goods and services of value to local farmers, as well as environmental benefits of resource conservation and system resilience. Agroforestry has the potential, therefore, to simultaneously address the world's greatest challenges regarding environmental conservation and poverty alleviation.

Region: International

Country:

Sector: agriculture

Tool: law, policy, incentive

Keywords: policy, planning, community

Tourism Publications

Browne, S.A. 2006. Engaging the tourism industry in forest management planning: an evaluation of Ontario's resource stewardship agreement process. M.A. Thesis, Simon Fraser University, Burnaby, BC, Canada.

<http://ir.lib.sfu.ca/retrieve/2802/etd2110.pdf>

Summary: Presents a case study of formal resource use agreement in Canada.

Region: North America

Country: Canada

Sector: tourism

Tool: policy, agreement

Keywords: policy, planning

Ontario Ministry of Natural Resources. 2001. Management guidelines for forestry and resource-based tourism. Queen's Printer, Toronto, Canada.

http://www.mnr.gov.on.ca/mnr/forests/foresttourism/doc/tourism_guidelines.pdf

Summary: Guidelines for use in planning forest management to protect tourism values and tourist establishments. To ensure the continued effectiveness of forest management plans forest management guidelines should be evaluated. Resource-based tourism values and the methods used to protect these values are most often determined through discussions and negotiations between the resource-based tourism industry and forest management planner. Tourism values are quite different than other values that are the subject of forest management planning guidelines. Those features of the forest important to the tourist industry are not readily inventoried and are not supported by strong science. In fact many of the values used by the tourist industry are business specific; that is to say what may be important to one tourism business may be of relatively little importance to another. The means, then, of determining the effectiveness of these Guidelines must consider the effectiveness and efficiency of negotiations with the understanding that neither party to these negotiations may be entirely happy with the negotiated outcome but at the least they have what they require to pursue their business interest.

Region: North America

Country: Canada

Sector: tourism

Tool: policy, agreement

Keywords: policy, planning

Fadeeva, Z. 2003. Exploring cross-sectoral collaboration for sustainable development: a case of tourism. PhD. thesis, University of Lund. <http://ask.lub.lu.se/archive/00013917/01/Zina.pdf>

The research is built on the European project that the author co-coordinated from 1997 to 2000. The goal of this project, titled, “The Emerging Paradigm of Sustainable Tourism: A Network Perspective” (EMPOST-NET), was to investigate several cases of sustainable networking for SD in tourism in order to develop a clear description of why these networks developed, how they functioned and what lessons can be learned from them. This research was also performed in order to generate elements of theory for understanding and explaining the functioning of such collaborative networks for SD in tourism. The research aim was to investigate different kinds of collaborative network initiatives that were being taken by multiple actors in the field of tourism, in order to make more effective progress toward sustainable development..

Region: Europe

Country:

Sector: tourism

Tool: policy, agreement

Keywords: policy, planning

Tourism Websites:

Finland Forest Tourism – reducing impacts

<http://www.forest.fi/smyforest/foresteng.nsf/efaccf76be3390ebc2256f26004ed8a7/1bae080ffb37aab8c225733a0032b8cf?OpenDocument>

Summary: Forestry and tourism are often assumed to be opposing one another when it comes to operating at the same forest area. It is often unnecessary, as with robust planning both sources of livelihoods fit into the same forests. However, insufficient statistics on tourism’s effects on employment make such planning difficult.

Region: Europe

Country: Finland

Sector: tourism

Tool: policy

Keywords: policy, planning

UNEP Tourism Guidelines to reduce impacts on forests

<http://www.uneptie.org/pc/tourism/policy/home.htm>

Summary: UNEP, as an intergovernmental organization, assists governments to produce effective policies and implementation programmes. From multilateral environmental agreements to national governments, through local authorities and regional organizations, UNEP’s Tourism Programme provides support by developing principles and offering technical assistance to destination management organizations interested in using the Local Agenda 21 frameworks and by producing environmental standards.

Region: International

Country:

Sector: tourism

Tool: policy

Keywords: policy, planning

Energy and Biofuels Publications

Totten, M, and J. Buchanan. 2007. Opportunities and threats related to global biofuels expansion.

http://www.fbds.org.br/Apresentacoes/15_John_Buchanan_CI_CELB.pdf

Summary: 1. Biofuels could become major global commodity (and climate- and biodiversity-friendly) 2. First Principle -- Do No Harm -- Avoid removal of existing, intact ecosystems (forests, peatlands, grasslands) in developing or procuring any bio-feedstocks and fuels. 3. Concentrate biofuel crop production on degraded and abandoned lands. 4. Require and apply best practices in growing and processing feedstocks. 5. Use biodiversity information and planning tools such as web-based landscape mapping resources and

IBAT (Industry Biodiversity Assessment Tool). 6. Offset ecological impacts through private or public sector funding for protection of key biodiversity areas. 7. Certify practices and results.

Region: International

Country:

Sector: energy

Tool: policy, best practices, certification

Keywords: policy, planning, best practices

Rigelato, R., and D.V. Spracklen. 2007. Carbon mitigation by biofuels or by saving and restoring forests? *Science* 317: 902.

<http://www.sciencemag.org/cgi/content/full/317/5840/902?ijkey=MEjkEcdxIVtps&keytype=ref&siteid=sci>
Abstract: If the prime object of policy on biofuels is mitigation of carbon dioxide-driven global warming, policy-makers may be better advised in the short term (30 years or so) to focus on increasing the efficiency of fossil fuel use, to conserve the existing forests and savannahs, and to restore natural forest and grassland habitats on cropland that is not needed for food.

Region: International

Country:

Sector: energy

Tool: policy

Keywords: policy, planning, forest restoration, biofuels

Rajagopal, D., and D. Zilberman. 2007. Review of environmental, economic and policy aspects of biofuels. World Bank, Deve. Res. Group, Sustainable Rural and Urban Deve. Team. Policy Research Working Paper 4341.

http://www-wds.worldbank.org/servlet/WDSContentServer/WDS/IB/2007/09/04/000158349_20070904162607/Rendered/PDF/wps4341.pdf

Abstract: The world is witnessing a sudden growth in production of biofuels, especially those suited for replacing oil like ethanol and biodiesel. This paper synthesizes what the environmental, economic, and policy literature predicts about the possible effects of these types of biofuels. Another motivation is to identify gaps in understanding and recommend areas for future work. The analysis finds three key conclusions. First, the current generation of biofuels, which is derived from food crops, is intensive in land, water, energy, and chemical inputs. Second, the environmental literature is dominated by a discussion of net carbon offset and net energy gain, while indicators relating to impact on human health, soil quality, biodiversity, water depletion, etc., have received much less attention. Third, there is a fast expanding economic and policy literature that analyzes the various effects of biofuels from both micro and macro perspectives, but there are several gaps. A bewildering array of policies – including energy, transportation, agricultural, trade, and environmental policies – is influencing the evolution of biofuels. But the policies and the level of subsidies do not reflect the marginal impact on welfare or the environment. In summary, all biofuels are not created equal. They exhibit considerable spatial and temporal heterogeneity in production. The impact of biofuels will also be heterogeneous, creating winners and losers. The findings of the paper suggest the importance of the role biomass plays in rural areas of developing countries. Furthermore, the use of biomass for producing fuel for cars can affect access to energy and fodder and not just access to food.

Region: International

Country:

Sector: energy, agriculture, forestry

Tool: policy

Keywords: policy, biofuels

Kutas, G., C. Lindberg, and R. Steenblik. 2007. Biofuels at what cost?: Government support for ethanol and biodiesel in the EU. IISD, Global Studies Initiative. Geneva.

http://www.globalsubsidies.org/IMG/pdf/Global_Subsidies_Initiative_European_Report_on_support_to_Biofuels.pdf

The word 'biodiversity' appears once in this assessment of European biofuel policies.

Region: Europe

Country:

Sector: energy, agriculture

Tool: policy

Keywords: policy, biofuels

WWF. 2007. Rainforest for biodiesel?

http://www.wupperinst.org/uploads/tx_wibeitrag/wwf_palmoil_study_en.pdf

An assessment of the global situation with respect to planting oil palms, including planting on degraded lands, discussed with respect to biodiversity and CO₂.

Region: International

Country:

Sector: energy, agriculture, forestry

Tool: policy

Keywords: policy, biofuels, reforestation, palm oil

Richardson, J., R. Björheden, P. Hakkila, A.T. Lowe, and C.T. Smith (editors). 2002. Bioenergy from sustainable forestry: guiding principles and practice. Kluwer Academic Publishers, Dordrecht, The Netherlands.

Summary: A multi-authored book with sections on production of energy from forest biomass with sections on environmental sustainability, social implications, and policy and institutional factors.

Energy and Biofuels Websites:

Conservation International – biodiversity in oil and gas development

http://www.celb.org/ImageCache/CELB/content/energy_2dmining/ebi_2epdf/v1/ebi.pdf

Summary: The juxtaposition of energy needs and biodiversity values has led to some difficult challenges for both the energy industry and the conservation community. For energy companies, the challenge is to find a way to meet the public demand for abundant, low-cost oil and gas products and, at the same time, meet society's expectations for corporate social and environmental responsibility, including biodiversity protection. Many leading companies are finding strategic, operational, reputational, and financial benefits to including biodiversity conservation in their decision-making, policies and operations. For conservation organizations, the challenge is to be a strong voice for biodiversity conservation while working with industry to find the balance between the potential threats that oil and gas development represents and the opportunities for harnessing the influence, expertise and resources of energy companies for conservation efforts.

Region: International

Country:

Sector: energy

Tool: policy, certification, EIA

Keywords: policy, oil, gas, certification

UK Biofuels Partnership

<http://www.lowcvp.org.uk/index.asp>

Summary: Industry website with news items and links on reducing carbon emissions from vehicles.

Region: International

Country: UK

Sector: energy

Tool: policy

Keywords: policy, biofuels

EU at the UN: Biofuels policies

http://www.europa-eu-un.org/articles/en/article_7162_en.htm

Summary: Biofuel production can benefit farmers both in Europe and the developing world. But it also pays to be a realist: biofuels have their own impact on the environment and have to be managed sustainably. Biofuel policy is not ultimately an industrial policy or an agricultural policy - it is an environmental policy, driven above all by the greenest outcomes.

Region: International

Country:

Sector: energy, agriculture

Tool: policy

Keywords: policy, biofuels

Institute for European Environmental Policy: biofuels

http://www.ieep.eu/publications/pdfs/eu_policy/clim_and_energy_27_april_2007_biofuels_consultation.pdf

Summary: 1. How should a biofuel sustainability system be designed? 2. How should overall effects on land use be monitored? 3. How should the use of second-generation biofuels be encouraged? 4. What further action is needed to make it possible to achieve a 10 per cent biofuel share?

Region: Europe

Country:

Sector: energy, agriculture

Tool: policy

Keywords: policy, biofuels, monitoring

FAO: bioenergy and the MDGs

<http://www.fao.org/docrep/008/j5135e/j5135e01.htm>

Many factors converge in making bioenergy a key component and a viable opportunity in the struggle towards the achievement of the Millennium Development Goals (MDGs). Although the sustainable access to energy is not treated as a priority in itself in the MDGs, most of them have a direct energy implication

<http://www.fao.org/docrep/003/x9192e/x9192e02.htm>

Wood energy in Africa workshops

Region: International

Country:

Sector: energy

Tool: policy

Keywords: policy, biofuels, fuelwood

International Energy Agency

<http://www.iea.org/textbase/nppdf/free/2007/biomass.pdf>

These *Good Practice Guidelines* do not analyse the technologies or costs of a bioenergy plant but endeavour to identify the potential issues for bioenergy project developers that will need to be overcome during the complex planning and consultation process. For example a cogeneration plant at a sugar mill in Australia took two years to develop and required 17 separate legal contracts to be negotiated. It is hoped that a greater awareness of the potential barriers by fuel suppliers, developers, planners, consenting authorities, policy makers and other stakeholders from the outset will aid the consultation process.

Region: International

Country:

Sector: energy

Tool: policy, guidelines, best practices

Keywords: policy, biofuels

Round Table on Sustainable Palm Oil Production

<http://www.rspo.org/>

General information and various publications to guide reducing impacts from palm oil production.

Principles and criteria for sustainable production

[http://www.rspo.org/resource_centre/RSPO%20Principles%20&%20Criteria%20for%20Sustainable%20Palm%20Oil%20\(final%20public%20release\).pdf](http://www.rspo.org/resource_centre/RSPO%20Principles%20&%20Criteria%20for%20Sustainable%20Palm%20Oil%20(final%20public%20release).pdf)

Summary: Best practice guidelines to reduce environmental impacts.

Region: International

Country:

Sector: energy

Tool: policy, best practices

Keywords: policy, biofuels

Annex 1: Selected CBD resources

The CBD has provided a series of documents to provide guidance on the use of economic measures for biodiversity planning, and the main focus is on incentive measures including:

1994 OECD, Economic Incentive Measures for the Conservation and Sustainable Use of Biological Diversity: Conceptual Framework and Guidelines for Case Studies, Organisation for Economic Co-operation and Development, Paris

1996 UNEP/CBD/COP/3/24, Sharing of Experiences on Incentive Measures for Conservation and Sustainable Use

1997 UNEP/CBD/SBSTTA-3/Inf.17, Incentive Measures to Promote the Conservation and the Sustainable Use of Biodiversity:

Framework for Case Studies 1998 UNEP/CBD/COP/4/18, Design and Implementation of Incentive Measures

1999 OECD, Handbook of Incentive Measures for Biodiversity: Design and Implementation, Organisation for Economic Cooperation and Development, Paris

2000 UNEP/CBD/COP/5/14, Compilation of information on incentive measures received from Parties, Governments, and relevant organizations

2000 UNEP/CBD/COP/5/15, Further Analysis of the Design and Implementation of Incentive Measures

2000 UNEP, Use of Incentive Measures for the Conservation and Sustainable Use of Biological Diversity, United Nations Environment Programme, Nairobi.

2001 UNEP/CBD/SBSTTA 7/11, Proposals for the Design and Implementation of Incentive Measures.

CBD Publications Database: <http://www.cbd.int/information/library.shtml>

Information Database on Incentive Measures: <http://www.cbd.int/incentives/case-studies.shtml>

Technology Transfer and Cooperation Information Database: <http://www.cbd.int/tech-transfer/info-database.shtml>

Annex 2: A selection of policies that work to maintain biodiversity in association with agriculture and agro-forestry include (Gemmill, n.d.):

Policy 1: Declare a national policy for sustainable agriculture that relates to the NBSAP.

Encouraging resource-conserving technologies and practices

Policy 2: Establish a national strategy for IPM

Policy 3: Prioritise research into sustainable agriculture

Policy 4: Grant farmers appropriate property rights

Policy 5: Promote farmer-to-farmer exchanges

Policy 6: Offer direct transitional support to farmers

Policy 7: Direct subsidies and grants toward sustainable technologies

Policy 8: Link support payments to resource conserving practices

Policy 9: Set appropriate prices (penalise polluters) with taxes and levies

Policy 10: Provide better information for consumers and the public

Policy 11: Adopt natural resources accounting

Supporting local groups for community action

Policy 13: Encourage the formation of local groups

Policy 14: Foster rural partnerships

Policy 15: Support for farmers' training and farmer field schools

Policy 16: Provide incentives for on-farm employment

Policy 17: Assign local responsibility for landscape conservation

Policy 18: Permit groups to have access to credit

Reforming external institutions and professional approaches

Policy 19: Encourage the formal adoption of participatory methods and processes

Policy 20: Support information systems to link research, extension and farmers

Policy 21: Rethink the project culture

Policy 22: Strengthen the capacity of NGOs to scale up

Policy 23: Foster strong NGO-government partnerships

Policy 24: Reform teaching and training establishments

Policy 25: Develop capacity in planning for conflict resolution and mediation
