Complementary Environmental Service Reward Programmes for Sustainable Mosaic Landscapes in the Sierra Madre de Chiapas, Mexico

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Background

The Sierra Madre de Chiapas is of global importance for biodiversity conservation, hosting over 2000 species of plants, at least 600 species of terrestrial vertebrates and five Biosphere Reserves: the federally managed La Sepultura (decreed in 1995), El Triunfo (1990), Volcán Tacaná (2003), La Frailescana (1979), and the State Reserve Pico el Loro-Paxtal (2000). It is a water catchment area for urban centres, surrounding towns and agricultural plains; water channelled to the Grijalva River feeds the most important complex of hydroelectric power plants in the country. There is significant potential for carbon sequestration and storage, and for tourism.

Social context

Currently, over 27,000 inhabitants in about 760 settlements live in the Sierra Madre; most of these are located in the buffer zones of the Natural Protected Areas (NPA). Although the government granted land titles to local communities (*ejidos*) in the 1930s, land use options for existing communities are severely restricted as a result of the decree of the NPAs. The core zones of the NPAs (8.4% of La Sepultura and 21% of El Triunfo) are now devoted to biodiversity conservation with further activities limited primarily to research and education. In the buffer zones, communities must ensure that land use is sustainable: traditional slash-and-burn agriculture is permitted, but conversion of mature and advanced secondary forest is not.

Communities inhabiting the Sierra Madre have a high level of social marginality. According to the National Council of Evaluation of Social Development Policy (CONEVAL), poverty levels are about twice the national average.[1] Livelihoods depend largely on maize cultivation in slash-and-burn systems, shade coffee production, cattle grazing and timber harvesting. Between 2003 and 2007 rates of forest/agroforest cover loss have been low in the federally managed reserves (0.32% - 0.71%) but higher in the state reserve Pico el Loro-Paxtal (2.76%), where government involvement in reserve management is limited.[2]

Payments for environmental services

In view of the high poverty rates and land use restrictions, payments for environmental services (PES) are a promising mechanism to create sustainable income alternatives for local communities without risking negative impacts on the environment. In the following sections, we briefly review the main features of public and privately funded PES programmes.

1) ProArbol programme managed by the National Forest Commission (CONAFOR)

ProArbol is the federal policy for forest conservation and restoration, funded through the Mexican Forestry Fund. It

1 Own elaboration from CONEVAL data.
2 Some forest loss moght be due to landslides including those caused by Hurricane Stan in 2005, which may or may not have been influenced by land use.

Agroforests in the Sierra Madre de Chiapas. Photo: Yatziri Zepeda.

incorporates the Programme of Payments for Environmental Services (PES), which outlines programmes for the water fee funded Payments for Hydrological Environmental Services (PSAH 2003) and for developing Environmental Services Markets for Carbon Capture and Biodiversity and Improved Agroforestry Systems (CABSA 2004).

The goal of ProArbol is to provide economic incentives to forest owners to avoid deforestation, as well as to build capacity to develop environmental services markets. Land owners can make an application to PES through CONAFOR according to prescribed Operational Rules. In general, the conditions are: 1) the land should be located within already established eligibility zones, unless the owners can find external funds from ES users, 2) legal land tenure can be proved, 3) projects cover a minimum area of 500 ha for the Carbon Project Idea and 100-200 ha for other concepts. Depending on the type of forest, current payments are direct cash transfers (usually bank transfers) which range from US $22 to $29 /hectare/year over a five-year period. Participants are obliged to return payments in case of non compliance – unless it can be proved that failure to comply is due to some uncontrollable factor.

From 2003 to 2008, CONAFOR has paid US $380 million to over 3200 communities and small land owners under the afore-mentioned PES programmes, benefitting 1.75 million hectares of mountain and lowland forest.[3] In spite of the government's considerable efforts to promote PES, several flaws have been identified. In the case of PSAH, which is currently the most relevant form of government administered PES in the Sierra Madre, the main problems are that 1) most beneficiary areas are at low risk of deforestation; 2) contracts tend to be assigned to better organised and relatively wealthier communities; 3) the five-year duration of the contract makes long-term benefits for livelihoods and conservation questionable, and 4) there is no adequate training for technicians and beneficiaries.[4]

In order to better understand the current situation of PES in the Sierra Madre, we carried out an analysis of the results of ProArbol 2009. In that year, out of a total of 327 PES applications submitted in the state of Chiapas, only 182 (55.6%) met all the requirements according to the operational rules, and of these only 36 were approved (11% of all applications). The others were rejected, mostly due to insufficient funding (around 40% of the rejected proposals);[5] because the area did not meet the minimum size requirements (20%); there was no proof of land tenure (15%) or legal representation (8%), or because the area was not in an eligible zone (7%).

For forest carbon projects, the current operational rules establish that proposals must be aligned to the Clean Development Mechanism or the Voluntary Carbon Standard. Since these rules were established in 2006 there has been a dramatic decrease in the number of applications submitted, and an increase in those rejected. Out of the 12 project applications submitted nationally in 2009, only two were approved in the state of Oaxaca. The high rates of rejections can be explained by the lack of technical capacities and lack of accountability amongst certified project developers, and consequently the poor quality of the proposals: their accreditation and payments are not dependent upon performance. Until local capacities to develop forest carbon projects are enhanced, poorer communities will have limited ability to access carbon markets under the CONAFOR PES scheme.

2) Non-governmental programmes providing access to voluntary carbon markets

Besides the government run PES scheme, several market based mechanisms provide environmental service rewards to land users in the Sierra Madre. These rewards are provided either in return for increased carbon sequestration or for sustainable environmental management in agricultural (especially coffee) production.

Among several NGO initiatives to provide land users with access to voluntary carbon markets, we focus here on the most advanced model: the Scolel'Te project, designed and implemented from 2007 by the cooperative Ambio and other partners.[6] Ambio manages the BioClimate Fund, which oversees a trust fund from sale of carbon credits and disburses payments to communities over long-term monitoring periods. The Scolel'Te project uses the Plan Vivo system (participative planning) to certify carbon projects with farmers in conservation friendly coffee growing communities in Chiapas and Oaxaca.[7] Conservation activities include reforesting or recuperating under-used plots of lands, maintaining community reserve areas and sustaining high nature value, shade-grown coffee agroforestry.

Ambio provides training in land use "modules" (such as reforestation, live fences, or improved conservation of community forest areas), technical support, infrastructure (nurseries) and monitoring to participating land users. Currently, the project is operating in eight communities across 120 ha land, and 56 producers have committed to selling 5,875 tCO_2. From 1997 to 2006, the fund sold over 77,000 credits[8] over 30 years at a price of US $3.27/$tCO_2$ eq; over 60% (US $2.18/$tCO_2$ eq) is allocated directly to farmers, and the rest is used to cover project administration. Payments to individual farmers for carbon are approximately US $280/ha (Corbera 2007).

3 Personal communication with Erika Martínez Guevara, Biodiversity Markets Analyst, CONAFOR, Chiapas, 2009
4 The government of Mexico, with the support of the World Bank and the Global Environmental Facility, is already implementing pilot projects to strengthen the PES national scheme.
5 Own elaboration from CONAFOR data.
6 The University of Edinburgh and El Colegio de la Frontera Sur, San Cristobal de las Casas; project supported by Conservation International.
7 Plan Vivo, www.planvivo.org, helps farmer design their own management plans for carbon sequestration and storage.
8 www.ambio.org. Buyers include Formula 1, the race car association, which has purchased Scolel'Te credits (around $100,000 per year) since 1997.

With the production of conservation coffee, the project has completed various studies and management plans and has verified the best practices implemented on 159 plots belonging to 143 farmers. In 2008, the "conservation coffee and carbon" model was scaled up to ten more communities with further expansion planned. However, there is still a challenge in identifying buyers, and Ambio could possibly garner a higher price per credit if they were to target buyers who particularly value the multiple benefits of Plan Vivo certificates (climate change mitigation, poverty alleviation, and biodiversity conservation in the unique mountain environment of the Sierra Madre). These difficulties are partly linked to the lack of a strategic marketing plan and of funds to implement it.[9]

3) Premium markets for commodities

The ES provided by forests and well-managed farms benefit not only local communities but also generate regional and global benefits for which consumers are increasingly willing to pay. Environmental certification has become an important mechanism to provide land users with rewards in the form of price premiums, more favourable sales contracts, technical support and other benefits for the environmental services that they provide through good farm management. Prominent among these services are avoided deforestation, conservation and restoration of riparian buffer strips, avoidance of water contamination e.g. with residues of coffee processing and pesticides, and the use of shade canopies in coffee farms, all of which provide benefits for landscape carbon stocks, water quality and biodiversity. While many of these benefits are relevant to lowland and mountain sites, the soil and water protection resulting from these practices are particularly beneficial in mountain watersheds such as those of the Sierra Madre.

Several opportunities for the development of premium markets are available in the Sierra Madre: Xate palm leaf (*Chamedorea sp.*) production under forest shade; sustainable cattle practices; sustainably harvested wood; shade grown coffee and cocoa. Premium markets for agricultural commodities are an important form of rewarding environmental services because they are applicable in situations where the opportunity costs of non-use of an area are too high, and where environmental best practices can help increase the biodiversity value and environmental service provision from agricultural areas.

Since certification programmes for shade-grown coffee and cocoa, silvopastoral systems and non-timber forest programmes have been discussed extensively in the literature already, we limit our discussion here to stressing the importance of taking them out of their traditional niche and into the mainstream market. If this happens, they will be an ideal complement to environmental service rewards for sustainable land use (e.g. the PES scheme of CONAFOR, or carbon-reforestation programmes of Ambio). In the Sierra Madre, environmentally conscious sourcing programmes such as Starbucks' Coffee and Farmer Equity (C.A.F.E.) have already made major advances in this direction.

Conclusions

While just a few years ago, environmental service payments seemed to be a new and somewhat exotic idea, land users, government agencies and NGOs working in the Sierra Madre de Chiapas are now facing the challenge of how to coordinate and maximise synergies among various available PES programmes. In view of the complementarity of the three payment types reviewed above, the coordination of these reward mechanisms could result in a comprehensive package of incentives for the sustainable management of the mosaic landscapes that are typical for the Sierra Madre and other mountain ecosystems, rather than just incentivising one or another element of the landscape.

Presently, the government managed PES programme seems to be best suited to provide communities with additional income for conserving forest areas under relatively low threat, while Solel'Te provides incentives and capacity building for the restoration of deforested areas, such as low-value pastures, and community level land use planning. Various commodity certification programmes, in turn, help ensure the use of environmentally friendly practices in farm areas, especially those used for coffee production. If all these reward mechanisms were offered to communities in combination through a coordinated negotiation process involving government and non-government stakeholders (led e.g. by watershed committees), a comprehensive benefits package for sustainable landscape management, and thus the conservation of a unique mountain environment, would ensue. Coordinating these different environmental service reward types may thus be the key to reaching the previously elusive goal of providing rewards for sustainable mosaic landscapes.

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9 Personal communication with Brian Gurr, Agroforestry Products Specialist, Conservation International, San Cristobal de las Casas, 2009.