

Scolec Té: A case of indigenous farmers participating in the international market for carbon services

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Background and Objectives

The Intergovernmental Panel on Climate Change has identified a likely gap of around 800 million tC per year between the greenhouse gas emissions of industrialized (Annex 1) countries under a “business as usual scenario” and the commitments that these countries have signed up to for the first commitment period (2008-2012) under the Kyoto Protocol (IPCC, 2000). Part of this gap is likely to be covered by emission reductions derived from projects undertaken in developing countries through an instrument known as the *Clean Development Mechanism* (CDM). According to Article 12 of the Kyoto Protocol, CDM projects are supposed to contribute to the sustainable development objectives of the host countries, and in many cases this will include poverty reduction or livelihood improvement in rural areas. Since afforestation and reforestation are among the activities that are eligible under the CDM, this gives rise to a number of important questions:

- “How should CDM land use projects engage rural communities in ways that enhance rural livelihoods and reduce poverty?”
- What are individual and communal rights *vis-à-vis* the generation and transfer of carbon assets?¹
- Will small farmers and communities be able to compete with large-scale forest industry projects?
- What types of monitoring, administrative and support activities meet the needs of local people and the requirements for generating carbon credits under the CDM regulations?”

As well as official carbon markets regulated by the institutions of the UN Framework Convention on Climate Change there is also a growing market, based upon voluntary commitments by private companies and individuals wishing to offset some of their environmental impacts, such as greenhouse gas emissions. Several of these initiatives have sought to identify projects that will sequester carbon in forestry projects “with a human face”. The possibility of alternative markets for carbon raises further important questions regarding the

¹ A *carbon asset* is defined as any quantifiable, verifiable reduction in greenhouse gas emissions that can be owned by a legal entity

options open to farmers and communities about how, when and under what terms they should engage in these markets.

The Scolel Té project in southern Mexico is one of the first projects to address these questions through practical engagement with potential carbon service providers (in this case small farmers and communities) on a pilot basis. The project began in 1996, following a six-month feasibility study by Mexican and British researchers in collaboration with representatives of indigenous farmers from the northern highlands of the state of Chiapas.

The specific objective of the first phase (1996 to 1999) was to research and develop the requirements of a system for planning and administering the production and sale of carbon services from small-scale landowners in a way that would be consistent with the improvement of rural livelihoods. The research project was financed by DFID's Forestry Research Programme and Mexico's Instituto Nacional de Ecología.

Alongside the research effort, there has been a parallel development of real carbon trading on a pilot voluntary basis with purchases of "prototype emission reduction credits" by the International Automobile Federation and other organizations.

The Project Site

Chiapas (Area = 7.5 million ha; Population 3.6 million) is the southernmost state of Mexico (see map). The majority of the rural population consists of small-scale indigenous farmers, most of whom live in and operate under communal land ownership of various forms. Individual families farm most of the agricultural land whereas forests and rangelands are managed by communal authorities. Subsistence agriculture, based on the *milpa* system, provides maize and beans, with coffee, cattle, and artisan or itinerant labouring providing supplementary income. The state was chosen as a site for the research project because of existing links between the researchers and local farmers organizations and because of the availability of data on carbon storage within a number of the key vegetation types found within the state.

Over the past 20 years there has been rapid population growth in most rural areas (around 4% per annum), which appears to be one of the factors responsible for widespread degradation of forest resources (de Jong et al, 1999). Highland areas have experienced thinning-out of pine-oak forests, with extraction of the timber quality pine trees, cutting of oak for charcoal and firewood and grazing by sheep. Lowland areas have suffered from significant wholesale clearance of moist tropical forest for cattle pasture. The resultant landscape is a complex patchwork of secondary vegetation and agriculture at various stages of regeneration and cultivation.

A recent study of the CO₂ emissions associated with land use change from the Scolel Té project catchment area (2.5 million ha), estimated that between 1974 and 1996 around 140 million tC was emitted. This is similar to the total emissions from the UK in one year (Hellier, Castillo & Tipper, 2002).

The project is currently active in over 20 communities in the central and northern highlands of Chiapas, and is expanding to other areas in the eastern lowlands.

The Scolel Té Project

The project began in 1994, with researchers from the University of Edinburgh and El Colegio de la Frontera Sur in Chiapas receiving funding from the EU and Mexican government to conduct an initial appraisal of the technical options for sequestering carbon in agroforestry systems (de Jong et al., 1995). The researchers established a “stakeholder group” of interested farmers drawn mainly from one of the farmers unions operating in the region – the Union de Crédito Pajal Ya Kac’ Tic.

From the start, the approach adopted by the Scolel Té stakeholders differed from that of previous studies, which had focused on broad estimates of the biological or economic potential of carbon sequestration in tropical regions from the industrial country perspective. Rather than asking how much carbon could be sequestered at a given cost, the Scolel Té study and the subsequent project took as their point of departure the land use activities that communities and individual farmers were seeking to implement and then asked how the carbon benefits could be packaged and marketed in order to provide capital to fund implementation.

During the short study the researcher and the stakeholder group identified four key principles that were to inform the design of the subsequent project, and the planning system that evolved during the first 4 years of operation:

- **Transparency.** Both producers and purchasers of carbon services require a clear understanding of their roles, rights, and responsibilities.
- **Simplicity.** Producers of small quantities of carbon assets require simple, standardised procedures for planning, registering, implementing, and monitoring carbon sequestration activities
- **Flexibility.** Producers wish to provide different amounts of carbon services from different types of forestry systems at different times. The capacity for implementation may take time to scale up.
- **Evidence-based.** Overall quality and credibility of the system should be based on verifiable, documented evidence in the form of field data, accounting records, published literature, and official statistics.

These principles are thought to be of equal importance to both participating farmers and purchasers of carbon services.

The feasibility study also quantified the carbon sequestration benefits of a number of agroforestry and forest management practices that were identified by the participating farmers as potentially attractive and useful for communities in the areas studied. Some of these systems are listed in Table 1.

Table 1. Approximate carbon sequestration potential of some forest restoration and agroforestry systems appropriate to the highlands and lowlands of Chiapas, Mexico (from de Jong et al, 1995)

<i>System</i>	<i>Summary description</i>	<i>Long-term additional carbon storage (tC/ha)*</i>
Lowland Areas (<1,500 m.a.s.l.)		
Taungya	Cultivation of small plantations of high value hardwood trees such as Spanish cedar, intercropped with maize for the first 4 years	120 – 150
Enhanced regeneration of damaged forest	Liberation thinning and interplanting of secondary vegetation to encourage the restoration of valuable forest trees	80-120
Highland Areas (>1,500 m.a.s.l.)		
Pine-oak restoration	Regeneration of degraded pine-oak forests through stock control, selective interplanting	70-100
Pine Plantations	Establishment of plantations of pine on disused pastures	70-120

* calculated as the average increase in above-ground and harvested product carbon stocks over a 100-year period, relative to the pre-existing vegetation.

The Mechanism and its Institutions

Having identified some of the main technical opportunities and conditions for acceptable operation, the project team set about establishing a pilot project that could begin to undertake carbon trading on an experimental basis and learning by experience. The project name *Scolel Té* was chosen by the initial participants – farmers from 6 Tzeltal communities and 4 Tojolobal communities in the municipalities of Chilón and Comitán. *Scolel Té* is a Tzeltal expression, but also understood by most Tojolobals, meaning “the tree that grows”.

A trust fund, the *Fondo Bioclimatico* was set up to act as the project bank account and clearing house for the carbon credits generated by the farming systems. At present the Fondo is a non-incorporated entity overseen by a management committee that includes representatives of farmers organisations, a local research institute and the Edinburgh Centre for Carbon Management. A local company of foresters, agronomists, community advisors, and administrators known as *Ambio* carries out day-to-day administration and technical work.

A set of initial operating procedures, covering administrative, planning, monitoring and transaction functions was devised and put into action. After some initial trials, these procedures were consolidated into a management system, and given the name the *Plan Vivo* system.

The *Plan Vivo* system functions as follows:

Most contact between the *Fondo* team and local communities is arranged through the numerous farmers’ organizations and other organizations that operate in the region. Following preliminary discussions with the contacts in these organizations, meetings with communities or groups are arranged. Frequently the groups participating in the initial meetings are self-selected farmers who are either active in the local organization or have a specific interest in the carbon project. At these initial meetings the basic concepts of climate change, carbon sequestration by vegetation, and carbon service provision are introduced and the terms and conditions associated with carbon transactions through the *Fondo* are explained.

Only once sufficient understanding and consensus have been reached, will the community be accepted onto the active program of the *Fondo*. Working either individually or in groups, farmers produce simple plans describing the type of forestry or agroforestry systems that they wish to develop, where they will be situated, what vegetation and current practices will be modified, and how much labour and materials they will need. The *Fondo* provides training and support during this planning process, to help farmers consider the various options that may be possible within the area and to ensure that the relevant information is included on the plan. This level of detailed planning is meant to ensure that farmers develop the type of forestry systems that will be beneficial and sustainable in the long run but also feasible to implement in the short term.

Completed plans are submitted to the *Fondo Bioclimatico*, usually via a village representative who by this time will have received some training to ensure that the basic details have been properly completed. The *Fondo's* technical team reviews these plans, judging whether the proposed activities are technically feasible and also estimating the future carbon sequestration benefit of each plan. This evaluation is facilitated by grouping plans according to 'technical specification': detailed descriptions of the ecological and technical requirements for most of the activities implemented in the project area. Technical specifications also include estimates of carbon sequestration potential and guidelines for monitoring. The maintenance and improvement of technical specifications is a task that goes on in parallel to the mainstream process of the *Fondo* and involves scientific and technical input as well as information gleaned from the monitoring and internal review of activities.

Once a plan has been approved, an 'offer letter' is issued to the applicant, setting out the results of the evaluation, the amount of carbon expected to be sequestered, and the terms and conditions for receiving payment for the delivery of carbon services. At the current time, the main conditions are:

- Applicants should implement the activities as set out in the plan;
- The applicant agrees to make "reasonable efforts" to ensure the permanence of the forestry / agroforestry system proposed (permanence is defined as a 100 year timeframe);
- 5% of the value of timber products will be ceded to the Fondo in the event of non-continuation with the scheme;
- Any changes to the plan have to be approved by the technical team;
- Applicants are to facilitate and assist in the monitoring procedures of the *Fondo*; and
- Any problems with implementation should be reported to the technical team.

If applicants agree with the terms and conditions, they are given 'active status'.

To try to match the supply and demand for carbon services the *Fondo* has structured its transactions, as follows. Activation of a Plan Vivo triggers the creation of an individual or group 'carbon account', and a corresponding money account in the *Fondo*. The account owners are issued with a passbook, in which the following types of transactions are logged:

- forward agreements, whereby the Fondo agrees to purchase a specific quantity of carbon from the account holder within a certain timeframe, at a specific price. If this carbon is generated by the account holder within the agreed timeframe, then the seller is committed to sell and the purchaser is committed to buy; and

- actual transactions, which include the crediting of carbon to the account following the completion of monitoring and debits of carbon associated with sales. When carbon is debited from the account, the farmer is credited in the money account and may withdraw cash from the Fondo.

Table 2 illustrates the information contained in the passbooks, which are issued to all new participants within the Fondo.

Table 2. Information contained in passbooks for the *Plan Vivo* system

Name of owner:									
Zone:									
Code:									
Forward Purchase Agreement									
Amount of C (t)		Price (\$/tC)		Buyer		Date of Delivery		Signed & Dated	
65.4		8		FIA		1998 - 2003			
Account Transactions									
		Carbon Account (tC)				Price of C US\$/tC	Money Account (\$)		
Date	Type of transaction	C added	C sold	Buyer	Balance		\$ added	\$ withdrawn	Balance
	C sale		21.8	FIA	-21.8	8	175	0	175
	\$ Withdrawal							175	0
	C Monitoring	38			16.2				
	C sale		21.8	FIA	-5.6	8	175		175
	\$ Withdrawal							175	0
	C Monitoring	38			32.4				
	C sale		21.8	FIA	10.6	8	175		175
	\$ Withdrawal						175	175	0

Similar passbooks are used by some farmers in the area for deposit accounts at the local banks. However, many farmers find it difficult to understand the details of the current accounting system and the administrative team is still working on ways to make this simpler. The issue of carbon accounting is one area of the project where we are still exploring the trade-offs between allowing maximum flexibility for the participants while making the system transparent and understandable.

As a risk control measure, the owners of accounts are required to keep a positive carbon credit on their books amounting to 10 percent of the total amount sold. This 'risk buffer' is likely to be reviewed over time.

The current system of crediting of carbon to the accounts of producers is designed for the voluntary market, which generally claims the carbon benefit at the time of forest establishment (as opposed to following carbon uptake). These *ex-ante* credits are assigned to the producer's carbon account in three stages over the first 10 years of management. The Edinburgh Centre for Carbon Management is currently developing a system for converting *ex-ante* carbon credits to *ex-post* credits (the latter should be compatible with the carbon accounting framework of the CDM). In general, 20 percent of the carbon credits expected to accrue from a plan is allocated to the farmer once the plan has been activated in order to provide a source of working capital. Typically, about 50 percent of the total effort for the establishment and maintenance of forestry systems is concentrated in the first 18 months. Once a system reaches 10 years of age the benefits, in terms of production of fuelwood, poles, and non-timber products typically exceed the annual costs of maintenance.

Further credits of carbon to account holders are made following annual monitoring exercises. Monitoring is structured as follows:

- Annual monitoring of all sites by local teams drawn from participants in the Fondo. Monitoring team members are given short (1-2 days) training on the specific indicators to be monitored and allocated to a series of sites. It has become common practice for participants in one village to monitor sites in a neighboring village. Labour costs for monitoring are paid for from the technical and administrative budget of the *Fondo*.
- The *Fondo*'s own technical staff repeat sample 10-20 percent of sites, depending on the experience of the local team, to check the consistency and accuracy of measurements;
- Procedures for independent verification of the monitoring system are currently being developed on the basis of recommendations arising from a recent study of the Plan Vivo system by SGS verification services.

Developments and refinements of the system of planning and administrative system are discussed at stakeholder meetings, held every 6 months. These meetings are also used to discuss strategic issues such as the supply and demand for carbon credits, international policy developments, and local events.

Development of the Project

Over the past 6 years, the Scolel Té project has steadily expanded from a rather vague concept to a small but viable business based on the development and commercialization of carbon assets. There are currently over 400 individual participants from about 30 communities, representing four different ethnic groups and a wide range of agro-ecosystems. The drop-out rate has been under 5% for the past 3 years.

The participants in the Fondo are currently selling carbon at US\$ 12 per tC (US\$3.3 per tCO₂). The expected income from the sale of carbon services for 2002 is expected to be around US\$180,000. This sale price broadly reflects the startup costs of most of the forestry systems being established by the participants but also takes account of prices of carbon being quoted from other projects in the forest sector (these range from \$ 1 to 4 per tCO₂).

While the project is recognized by the Mexican and US Government's under their respective pilot programmes "activities implemented jointly for the mitigation of climate change", in legal terms, the units being exchanged are non-statutory papers, on a par with gift vouchers, tokens or loan notes that may be issued by any company. There is no corresponding change of sovereignty of carbon credits between governments (as would occur under the mechanisms of the Kyoto Protocol).

Of the sale price, sixty per cent goes directly to farmers and communities to invest in implementing the forestry and agroforestry activities set out in their plans. Forty percent of the sale price is used to cover the costs of technical support for farmers (including training, assessment of management plans, identification of seed sources, supervision of preparatory work and liaison with regulatory institutions), administration of individual carbon accounts and Fondo accounts, liaison with purchasers, and monitoring and reporting. There is some scope for increasing the percentage going direct to farmers as the business increases in scale, however comparisons of "administrative costs" between projects should be drawn with some caution, since social forestry / agroforestry activities require considerable cost allocations to technical support to small, often dispersed groups of farmers.

An independent economic assessment of the benefits of the forestry systems encouraged by the project conducted by DTZ Pieda (DTZ Pieda, 2000) found that discounted benefits for most participants could lie in the range of -\$109 to +\$1,689 per hectare, taking into account all labour inputs and carbon credit sales but excluding possible associate benefits such as soil conservation, income diversification and the availability of secondary forest products (bromeliads for ceremonial use, medicinal plants and fenceposts). On average, this represents a modest but significant improvement to local incomes (these range from \$300 to \$1,800 per year, per family).

All purchasers of carbon from the Fondo are currently acting on a voluntary basis, with no tax or legal incentives available. The largest purchasers of carbon credits are the International Automobile Federation (FIA), who uses the project to offset the direct emissions associated with Formula 1 and the *World Rally Championship*. Other purchasers include the *World Economic Forum*, rock group *Pink Floyd*, and the carbon trading company *Future Forests*.

The *Plan Vivo* system employed by the *Fondo BioClimatico* is currently being tested in two other pilot projects; one in southern India and one in Mozambique. One advantage of this approach is the ability to initiate an active carbon trading system at a very small scale. The system appears to be robust enough to function on minimal resources – each project functions with a core administrative and technical staff of 2-4 people, with periodic support and advice from the co-ordinating agency (ECCM). In Chiapas, the system was developed during a time of considerable rural tension and conflict and appears to have been accepted by a wide range of political and ethnic groupings.

At present it is still early to make a judgement as to the long-term sustainability of the systems initiated by the Scolel Té project. However, the experience to date gives some grounds for optimism: there is a significant and growing interest on the part of communities and organisations within the region (as well as in neighboring states and countries) to participate in the project or to replicate its systems. We are also confident that the farmers and communities who have participated in the project have put much more effort into planning and preparation of their forestry activities than was the case with previous state or aid funded afforestation and forest management programmes.

An important by-product of the project has been the level of training and empowerment produced by exposure to the ideas associated with trading in environmental services. Many farmers have learned specific technical skills, such as surveying, mapping, financial planning, and silviculture. Some of the farmers' representatives have had the chance to engage in international conferences and workshops on climate change mitigation, and have gained a deeper understanding of the linkages between international policies and local development issues

Within local NGOs, there is now a far greater understanding of the implications of international instruments such as the Clean Development Mechanism, and there is a growing awareness that rural stakeholders need to think strategically about how they should develop and use potential carbon assets arising from the management of agricultural and forestry ecosystems.

Comments from individual participating farmers can also give an indication of the kind of benefits arising from the project, that are difficult to analyze in quantitative terms:

“Restoring this woodland means that my family will not have to walk so far to collect wood for cooking. We will also have a good supply of fenceposts and beams, which are getting very difficult to find these days”

Farmer in Jusnajáb, nr Comitán

“If these cedros grow as well as the ones in the next village then by the time my son is old enough to go to college, they should be worth enough to pay for his fees and upkeep

Famer in Muquenal, nr Palanque

References

De Jong, B.H., Michael A. Cairns, Neptalí Ramírez-Marcial, Susana Ochoa-Gaona, Jorge Mendoza-Vega, Patricia K. Haggerty, Mario González-Espinosa and Ignacio March-Mifsut. 1999. Land-use Change and Carbon Flux between the 1970s and 1990s in the Central Highlands of Chiapas, Mexico. *Environmental Management* 23(3): 373-385.

De Jong, Ben H.J., G. Montoya-Gómez, K. Nelson, L. Soto-Pinto, J. Taylor & R. Tipper; 1995. Community forest management and carbon sequestration: a feasibility study from Chiapas, Mexico. *Interciencia* 20(6): 409-416.

Hellier, G. Castillo, M.H., Tipper, R (2002) The causes of land use change and CO₂ emissions from Chiapas, southern Mexico. Paper in submission to *Mitigation and Adaptation Strategies for Global Change*.

DTZ Piedad (2000) *An evaluation of FRP's Carbon Sequestration Project in Southern Mexico*. DTZ Piedad Consulting Report for UK Department for International Development.

IPCC (2000), *Land Use, Land-Use Change, and Forestry*. Watson, R.T., I.R. Noble., Intergovernmental Panel on Climate Change. Cambridge, University Press, UK.

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Further information

The Plan Vivo website: www.planvivo.org

The Scolet Te website: www.eccm.uk.com/scolete

ECOSUR website: www.ecosur.mx

ECCM website: www.eccm.uk.com