

Silvopastoral: Colombia, Costa Rica and Nicaragua

Regional Integrated Silvopastoral Ecosystem Management Project (RISEMP)

GEF/World Bank Regional Project

SUMMARY

The project aims to introduce silvopastoral (forest grazing) systems to rehabilitate degraded pastures to protect soils, store carbon, and foster biodiversity, and distil lessons for policy making on land use, environmental services and socio-economic development. It is funded by the Global Environment Facility (GEF) and the World Bank. Pilot sites are in Costa Rica, Nicaragua and Colombia.

Specifically, the project aims to i) evaluate the potential of silvopastoral land uses as providers of environmental services and socio-economic benefits for the communities; ii) develop incentives and mechanisms for PES that would result in benefits for farmers and communities; and iii) provide policy recommendations about using more sustainable techniques in intensive livestock activities.

This will be achieved by: i) implementing activities to improve the ecosystems, ii) promoting the dissemination of information and providing technical assistance, iii) institutional capacity building, iv) payments for environmental services (PES) and monitoring and evaluation of PES performance.

Acronyms: CATIE: Tropical Agriculture Research and Higher Education Centre. CIPAV: Centre for research on sustainable agricultural production systems. GEF: Global Environmental Facility. FAO: Food and Agriculture Organisation. FONAFIFO: Costa Rican Forestry Fund

MATURITY OF THE INITIATIVE

Project to run from 2002-2007.

DRIVER

CATIE's interest in improving the performance and reducing the environmental impact of cattle farming: "Livestock production constitutes the second-largest land use in Latin America; hundreds of thousands of families depend fully or partly on livestock for income and for their food. "If you want to have an impact on sustainable land use in Latin America, this is where you look." Muhammad Ibrahim, project coordinator, quoted in Sheck, R.S. (2006)

STAKEHOLDERS

Supply

In Colombia: Rio La Vieja Watershed (a tributary of the Cauca River), in the departments of Valle del Cauca and Quindio. The Quindio cattle farming committee is the local partner.

In Nicaragua: small and medium-scale cattle farms Bul Bul, Blanco-Matiguás River (131 participants: 29 receiving only payments, 75 receiving payments and technical assistance and 27 participants in the control group).

In Costa Rica: cattle farmers in the watersheds of the rivers Barranca, Jesus Maria and Guacimal.

Demand

Local users (of water protection benefits) are not contributing. International demand for carbon and biodiversity benefits covered by the GEF, World Bank and the FAO.

Intermediary

Different according to the country: In Costa Rica, for example, FONAFIFO is the intermediary.

Facilitator

Funding: World Bank, GEF and FAO.

Technical assistance: CATIE, Costa Rica; CIPAV in Colombia and the Nitlapán Institute in Nicaragua.

MARKET DESIGN

Service

- water quantity through increased infiltration and reduced run-off and soil erosion.
- water quality through waste management using biodigestors that convert manure into fertilizer and biogas.
- Biodiversity enhancement in pastures by increasing tree cover and live fences.
- Carbon sequestration through increased on-farm forest cover (storage both in the soil and in standing trees)

Commodity

Improved Management Practices: implementation of sustainable silvopastoral systems that include: 3-layer vegetation cover (trees, bushes and pasture), fast-growing timber-producing trees, live hedges and other multipurpose bushes (such as nitrogen-fixing fodder, for example) and shaded pastures.

Payment mechanism

Intermediary-based transactions (NGO) -each implementing agency coordinates the application of the programme in their country (potentially engaging with other local institutions and organizations); *retail-based market:* part of the initiative is also aiming at adding value to the cattle farming activity by fostering the production of meat sold under ecological (organic) or social (fair-trade, Kosher, animal welfare) labels.

Terms of payment

In kind: technical assistance and training to small and medium-scale farmers; *in cash:* annually paid "incentives for Eco-Services". Payment levels are calculated according an index of environmental service provision as indicated by land use practices on each farm. For example degraded pasture has zero points, natural pasture with no trees has 0.2, natural pasture with high tree density has a score of 1. Farmers are paid for improvements in score over their baseline at the beginning of the programme to a maximum of US\$ 4,500 per farm in Costa Rica and Nicaragua, and US\$ 6,000 in Colombia, over the duration of the project (4 years).

Funds involved

Total Project Cost US\$ 8.7 million (GEF Grant US\$ 4.8 million)

ANALYSIS OF COSTS AND BENEFITS

Economic

Goals: To support policy formulation and decision-making; and to design guidelines for environmental policy on agroecosystems.

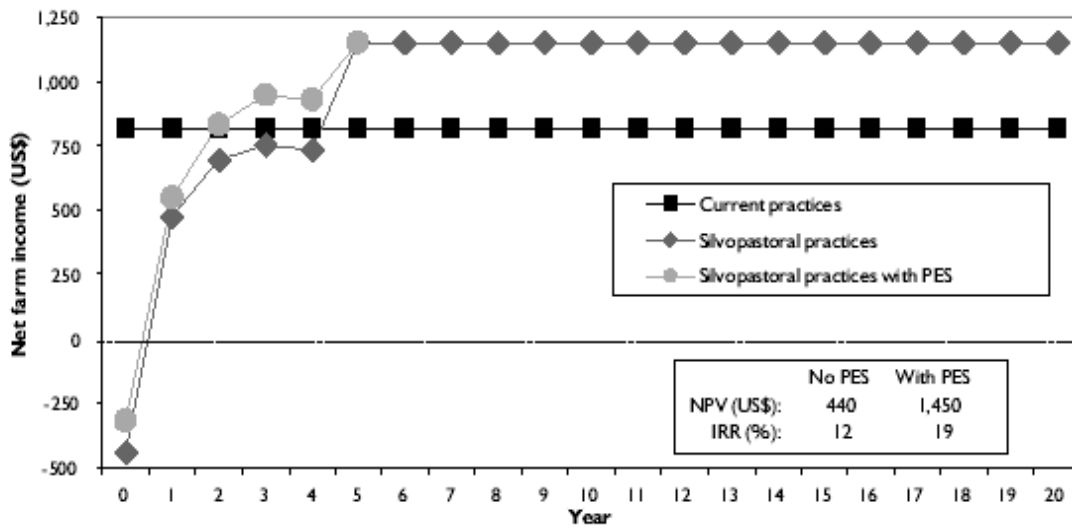
Outcomes (up until 2004).

- Participating farmers receive an average of US\$ 580 per farm;
- 5% increase in productivity of the farms;
- Development of methodologies to determine the effects of incorporating these systems into farm production, revenue and labour;
- Identification of barriers to the adoption of these environmentally friendly practices for cattle farming and design of policy proposals to overcome them;
- Guidelines for management of PES also in preparation.

i) [Initial] costs: during the four years, the high initial investment costs of implementing a silvopastoral scheme will reduce the economic benefits drawn by the farmer (example of some costs, in the case of the site in Colombia, in US\$/ha: establishing a protein bank: 960, live fencing: 700, planting 100 trees in improved pasture: 55;).

ii) However, once the trees grow sufficiently to provide *benefits*, due to the greater availability of high quality fodder and shade from the trees, milk production is expected to increase by 50% and expenses for fertilizers and pesticides, as well as irrigation water use and soil erosion are expected to fall.

iii) Due to the aforementioned time-lag the project also aims to provide PES, which will get the profitability of the silvopastoral systems up to the level of the traditional ones by the second and will increase profits by 50% by the fifth year.



Effects of PES on the profitability of silvopastoral systems. Source: RISEMP project document (World Bank, 2004. pp 9)

Environmental

Goals:

Monitoring of environmental services.

Improvement in available information on the potential of silvopastoral systems to deliver environmental services and economic benefits.

Learn lessons from the application of compensation mechanism and from the participants' response to the incentives for the conservation of biodiversity and carbon sequestration.

Technical support in drawing up regulations to minimize the negative environmental impacts of conventional cattle farming and stimulate the change towards more sustainable practices for this activity.

Outcomes (up until 2004)

- 1,950ha of new sustainable silvopastoral systems set up in six watersheds in the three countries;
- 46% reduction in degraded pasture lands, 275% increase in pastures with trees and creation of 570km of live hedges;
- Sequestration of 15,600 tonnes of carbon;
- Development of methodologies to measure impacts on biodiversity, carbon sequestration and water quality/quantity.

Perceptions of environmental benefits: "Where we have trees by the river, we see more and cleaner water," states Carbajal "Many springs in the area had dried up a lot as farmers cut the forest around them. Now they are planting again and noticing that the springs give more water." cited in Sheck 2006

Social

Goals:

Technical capacity building of local institutions.

Knowledge transfer on integrated management of ecosystems and development of sustainable cattle farming.

Outcomes (up until 2004)

- 288 participating farmers.
- Farmers are now more aware of the potential of integrated management systems to deliver environmental services.

LEGISLATION ISSUES

No information available.

MONITORING

Monitoring is a very important component of this project as it aims to pilot the application of PES systems to silvopastoral practices. In this way, monitoring involves not only the delivery of the environmental service per se, but also the assessment of the extent to which the project is changing farmers' behaviour. In order to do this, land-use changes carried out by a group of similar but non-participant farmers are also being monitored (*control groups*).¹

In addition, the participants are divided in two groups: one receiving only payments, and the others receiving payments and technical assistance. Every other year, farmland use changes and family welfare will be assessed in each household.

MAIN CONSTRAINTS

Avoiding perverse incentives: Considering that only incremental improvements in the environmental services generated are compensated, there was the risk of generating perverse incentive as farmers could have lowered their environmental services levels intentionally (e.g. cutting down existing trees) in order to increase their incremental change, or discouraged non-participants from improving their practices, in the hope of a higher reward once they entered the scheme. For that reason, the initial plan was modified to allow for an initial one-off payment to be made according to the baseline level of environmental services already being provided as indicated by the baseline environmental service index score. Payment was US\$10 per baseline point, up to a maximum of US\$500 per farm (World Bank, 2004).

MAIN POLICY LESSONS

No information publicly available as yet

OTHER INFORMATION

CONTACTS

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LINKS

Project information in:

CATIE, Costa Rica:

http://www.catie.ac.cr/bancoconocimiento/P/ProyectosSILVOPASTORILES_panfleto/ProyectosSILVOPASTORILES_panfleto.asp?CodSeccion=31

Instituto Nitaplán, Nicaragua: <http://www.uca.edu.ni/institutos/nitlapan/index.html>

CIPAV, Colombia: <http://www.cipav.org.co/>