COL 013/2000

USING CARBON BONDS TO PROMOTE SUSTAINABLE DEVELOPMENT IN THE ANDES

Status:	**Project Idea**
Submitted to:	**Canadian Climate Change Development Fund (CCCDF) / CIDA**
Proponents:	**International Development Research Centre www.idrc.ca**
	Condesan www.condesan.cgiar.org
	CIAT www.ciat.cgiar.org
Country:	**Colombia**
Duration:	**3 years**
Budget:	**$2,700,000**
Date:	**November 3, 2000**

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INTRODUCTION:

Carbon bonds may develop into one of the major tools for transferring funds from the industrialized nations to the third world. The most likely course is that these funds will be transferred to either government agencies to manage (e.g. plant trees) or vía NGOs to individual landowners (for CO2 fixed) or industrialists (for CO2 emissions reduction). In neither scenario however, will these funds also play a social and economic role in income generation and poverty alleviation. The only way to achieve that goal is by using these new funds to start a process, one by which the public and private sector unite to meet the twin objectives of improved environmental quality and social equity.

The Consortium for Sustainable Development in the Andes (CONDESAN) has pioneered novel approaches (the CONDESAN fund) to joint public-private ventures for rural development in the Andean zone. IDRC has funded its research and methodology development via a policy project, the results of which are now attracting interest from other donors, Colombian government and private enterprise. This experience could be of considerable use to the Canadian Climate Change Development Fund (CCCDF) because CO_2 capture in the complex landscapes of the tropical highlands will require careful reconciliation, via transparent processes of planning and negotiation, of a range of economic, social and environmental objectives, trade-offs and interests.

In this pilot project we plan to assist municipal round tables in the Colombian coffee-zone to implement a land use management plan and portfolio of projects that will be financed by a coalition of downstream beneficiaries, entrepreneurs, and local producers. Through a transparent

process of coalition building, the project will employ CCCDF resources as the guarantee (primer) to secure counterpart funds from the Coffee Federation, HidroMiel Electric Company, the Colombian Government, and local entrepreneurs. Together these funds will be used to help modify land use patterns, intensify local farming systems, link producers with markets, and create employment for the poorest citizens. Specific outcomes that are in line with the objectives of the CCCDF include sequestering 40,000 tons of CO_2per year through reforestation, renewal of coffee plantations, and improved land management practices; reduction of 10,000 tons of CO_2 equivalent emissions by reducing burning of land, changing fuel use and modifying animal diets.

PILOT SITE:

The work will be undertaken in the municipality of Pensilvania in the Central Cordillera of Colombia (Caldas Dept, Manizales). The municipality includes 51,300 hectares and approximately 5,400 families (70% rural) of which 20% are classified as indigent. The traditional crops of coffee (11.4% of the area), extensive beef systems (45%) and timber plantations (6%) cannot generate sufficient capital to allow poor producers to intensify their production systems. Families lack the money to renew their coffee plantations, which generate over 70% of their income.

Pensilvania does have a strong social and institutional fabric. The municipio has three round tables, one for each of its three zones. Individual villages are represented at the round tables by 96 “Juntas de Accion Comunal”, where they participate in discussions related to social problems, and via which municipal resources are assigned to specific activities, notably education. A number of producers’ organizations exist for coffee, black raspberry and passion fruit, and these are associated to a municipal producers’ organisation that provides a legal framework for their activities. Some fifty residents are shareholders in the local forestry industry (although the real value of their shares has not increased for twenty years).

CONDESAN has considerable experience with the producer groups in Pensilvania, via its IDRC-funded project which established the CONDESAN fund. The fund tested a novel methodology to generate employment and income for the rural poor. Several positive experiences were realised, joining forces between different sectors and developing income-generating projects (e.g. shirt assembly plant, 150 hectares of black raspberry production). Also it is interesting to note that the highest elevations (3500 masl) of the Municipality are part of the La Florencia Bioreserve and the largest private hydroelectric plant in the Andes is in the adjacent municipality straddling the La Miel river (700 masl).

In this project, funds provided for CO_2 capture will be assigned to the round tables, and the participants will decide the activities and areas to be prioritized. These decisions will be informed by technical, economic and environmental information and analyses, and monitoring and evaluation supported by CONDESAN and its partners to ensure that they are profitable, meet with the objectives of the CCCDF, and generate benefits for the poorest inhabitants of the municipality.

THE JOURNEY WE ARE PROPOSING:

Using methodologies developed by CONDESAN (Consortium for the Sustainable Development of the Andean Ecoregion), CIAT (Centro Internacional de Agricultura Tropical), and other partners of IDRC´s Minga Program Initiative we will backstop municipal round tables in the design and implementation of a new landscape management vision for the municipality. Through the use of watershed models (e.g. SWAT), plant production models (e.g. DSSAT), and ex-ante economic analyses, a range of land use options will be developed. This work will be coupled with stakeholder and other participatory methodologies developed in CIAT and IDRC projects, to more clearly understand and communicate the potential benefits and costs of different types of change in the landscape. Techniques such as stakeholder analysis, participatory watershed planning, participatory monitoring and market analysis have been developed to facilitate consensual decision making and to resolve or avoid conflicts over natural resource use.

The proposed land use changes will focus on:

- **Curtailing resource degradation** (reducing soil erosion, halting encroachment into the bioreserve, and minimizing water contamination);
- **Sequestering CO2** in forest plantings and via improved tillage (leguminous cover crops and minimum till) and production systems
- **Reducing CO2 emissions** by changing practices of using wood for fuel, using burning to clear land and alternative livestock feeding practices (reducing methane emissions)
- **Introducing more profitable farming systems** (seeding legumes in pastures, renovating coffee trees in the coffee zone, shifting to other tropical fruits and berries at lower elevations, and investing in value-added agro-industries)

KEY PLAYERS:

- Key to this project will be the counterpart participation (capital, alliances, and infrastructure) that the municipality, government, entrepreneurs, research institutions and producer groups will bring to the table. These include:
- Community and municipal government of Pensilvania
- Local organizations--Coffee Federation, Fondacion Dario Maya, entrepreneurs
- Universities: University of Caldas, University of Palmira
- National Government Organizations--Corpocaldas, Min. of Agriculture, Fondo Financiero Agropecuario
- Regional Organizations-International Development Research Center, CIAT, CONDESAN, CIP

OUTCOMES AT THE END OF A THREE-YEAR PERIOD WILL INCLUDE:

- **The capture an additional 40,000 tons/yr of CO2.** This will be done through the establishment of 1,000 ha of forest, improving maintenance of 2600 ha that have already been planted, 500 ha of rejuvenated coffee plantations, 1,000 ha of improved pastures and

the preservation of 5,000 hectares of native and exotic forests that are threatened by the expansion of beef production (see Figure 1).

- **The reduction of 10,000 ton/yr of CO2-equivalent emissions** (See Figure 2).
- **Improved incomes.** 10 new micro enterprises will have been started, 1000 new jobs generated and over $3,000,000 in new investments.
- **A chronicle of this experience and field-tested methodology for linking carbon credits with income generation.** In order for a methodology developed from this experience to be useful, analysis will be conducted at three levels:
    - We will need to understand the dynamics and impacts for different members of the community, or stakeholder groups, of implementing land use changes;
    - We will need to study the impact of entering into the carbon market on municipal, regional and national institutions; and,
    - We will need to carefully measure and model the impact of changing land use patterns and agricultural practices on carbon budgets.

FINANCIAL COMMITMENT REQUESTED:

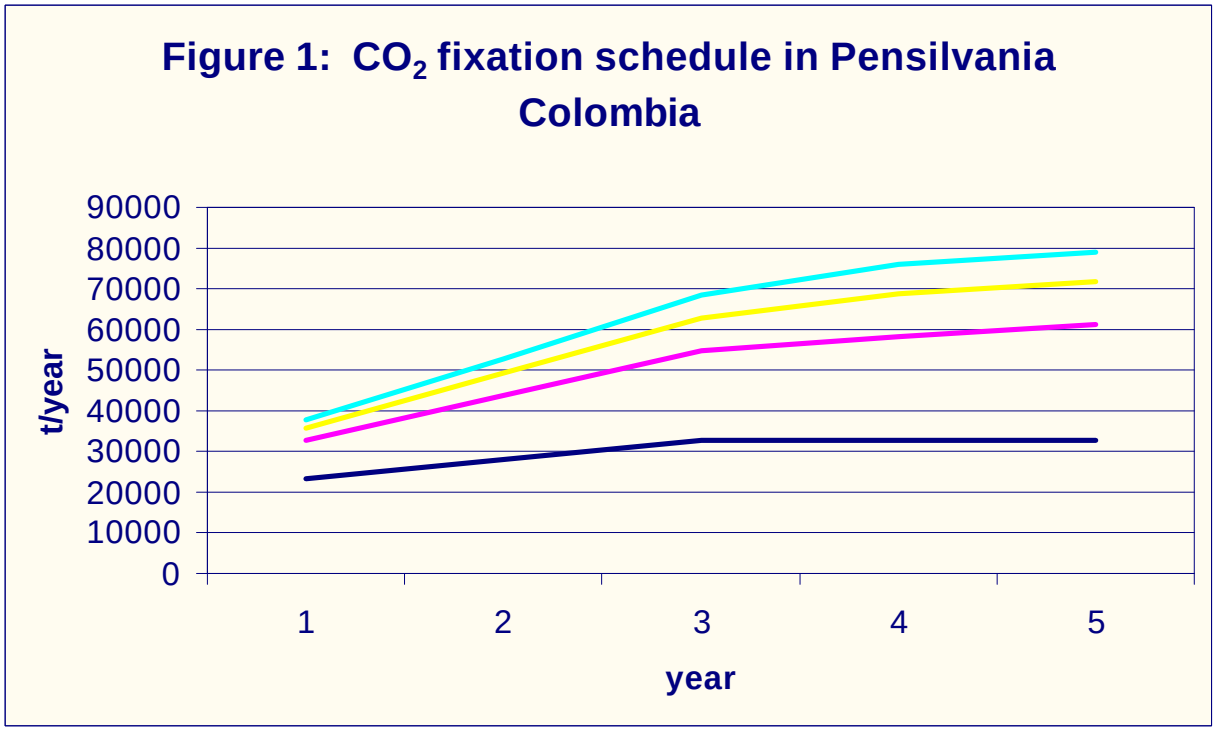
In order to develop this project we will need roughly CAD $2,700,000 over a three year period from the Canadian Climate Change Development Fund.
Indicative budget:

Investment Fund	1,650,000
Monitoring & Evaluation	600,000
Liason and Administration (20%)	450,000
TOTAL	2,700,000

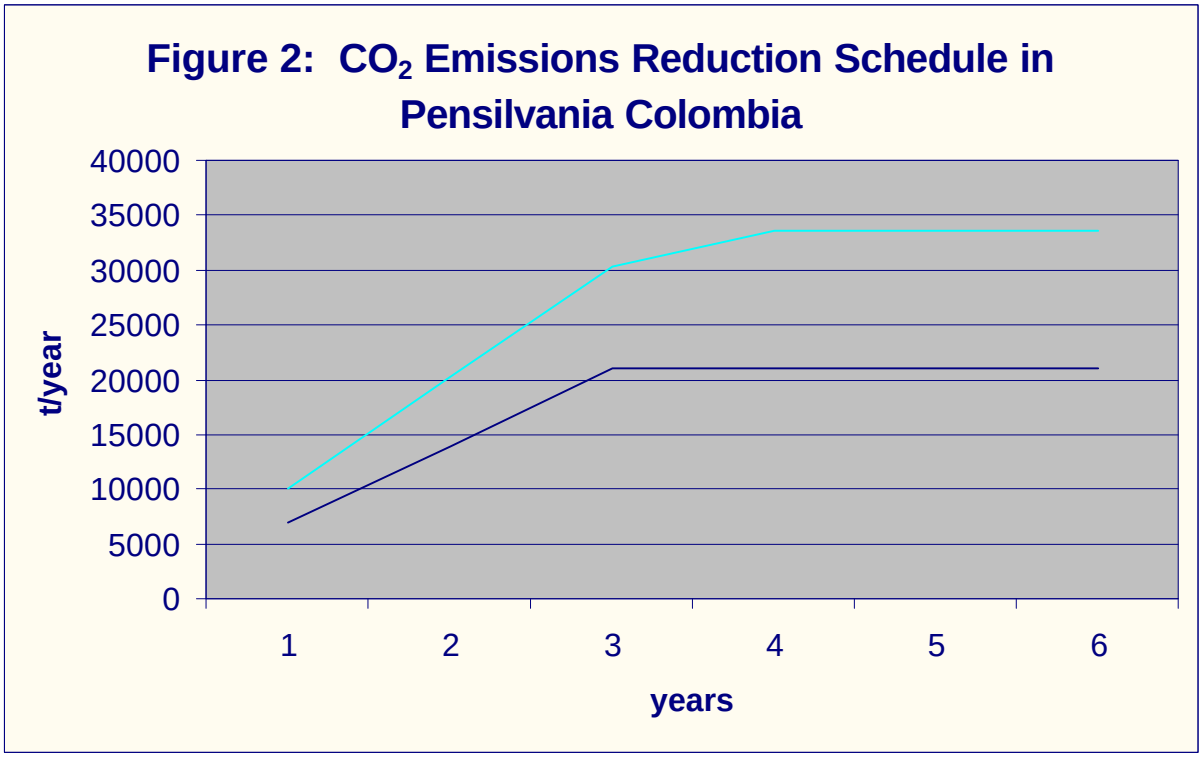
- The Investment Fund will be used to initiate the process of changing land use systems and developing productive enterprises. Counterpart funds from Colombian sources (Municipal, Regional, National, and Entrepreneurs) will match these resources. We estimate that the changes that will be made will be equivalent to $CAD 456,000 per year in an improved carbon budget (assuming $CAD 7.60/ton for captured CO2 and $CAD15/ton of CO2-equivalent in reduced emissions).
- The monitoring and evaluation program will involve Colombian faculty and students, in collaboration with IDRC, CIAT, and CONDESAN.
- Management of the project: At this stage, colleagues in IDRC, CIAT, and CONDESAN have simply formed an ad hoc committee to develop this concept note. In mid-November, leaders of the three teams will be meeting at the CONDESAN Annual Board meeting and a management system will be proposed that reflects the comparative advantage and location of each partner.

SCALING-UP:

A major product of this project will be a methodology that will permit replication of this work in other sites. CONDESAN consists of a network of 7 watersheds, representative of different ecologies and production systems in the Andes. Similar projects could be initiated at these sites, building upon the experiences of the CONDESAN Fund.



1. Improve the maintenance of 2500 ha of recently initiated plantations (assume increasing the base production rate of 4t biomass/ha/yr to 5 t/ha/yr (biomass includes above and below ground growth).
2. Establish new plantations on 300 ha/yr for 4 years (assume 5t biomass/ha/yr).
3. Protection of endangered native forests. Average 500 ha/yr for 4 years. (assume 3.5t/ha of new growth per year)
4. Interventions on agricultural land. Renovation of coffee plantations results in a one-year increase of 1 t biomass/ha. Renovations will take place at the rate of 300 ha/year. Using green manures and establishing forage legumes in pastures will result in more above ground and below ground biomass. We anticipate working with 500 hectares of crop land and 2000 hectares of pastures by the end of 4 years.



1. CO_2 equivalents due to reduced wood use by 500 families.

2. CO_2 equivalents due to improved diet and weight gain of 500 additional animals / year up to 2000 head.