

## Mexico - Fidecoagua

### *Fidecoagua Trust Fund, Coatepec Veracruz*

#### **SUMMARY**

The trust fund, Fidecoagua, was set up to conserve the cloud forests of the Coatepec Municipality, Veracruz. The head of the municipal government initiated the scheme due to concerns about declining water availability and apparent links with increasing deforestation. Farmers in the area are poor with an average of 3.5 hectares and very low levels of education. Payments are made to farmers who have signed contracts to conserve forest and reforest. The total area covered is 600 hectares. Satellite imaging is used to detect infractions. The scheme is funded by a fee added to water charges, collected by the municipal utility company. As a warning to the reader, most of the information collected in this case profile is based on e-mail communication and project leaflets, and not in independent studies.

#### **MATURITY OF THE INITIATIVE**

Negotiations began in 2001 and the trust fund was created at the end of 2002. Calls for applications were made and first payments made in December 2003. The Fidecoagua initiative was considered active as of 2011.

#### **DRIVER**

Following a serious period of draught in 1998, the mayor of the city issued a petition for a voluntary contribution, from water users towards forest conservation. The local municipality was worried about deforestation in the cloud forests, soil erosion (loss of 200 tonnes of fertile soil per hectare per year) and reduction of river flows, which began to seriously affect water availability and quality downstream.

The request was for a contribution of MEX\$1 (about US\$0.09) per month, to be added to the water bill. Due to the recent problems with water scarcity, people's awareness of the problem translated into willingness to pay and the scheme went ahead with the creation of a trust fund.

#### **STAKEHOLDERS**

##### **Supply**

*Private and communal land* in strategic recharge and riparian areas of the Huehueyapan river, in the headwaters of Coatepec city, selected through satellite-reference photography and identified using georeferenced GIS mapping of the property.

In the first year, 67 farmers in 500 hectares with highest forest cover were receiving payments. In 2004, 84 landowners were added (of 165 applications submitted), representing an additional 600 hectares. The same area was planned for 2005. As of 2008, 89 landowners were participating in the programme.

##### **Demand**

*Local domestic and commercial water users (about 11,000).*

##### **Intermediary**

*Trust Fund* - Fund for the Promotion, Preservation and Payment for Forest Environmental Services in the Mountain areas of Coatepec, Veracruz (Fidecoagua). Fidecoagua is the organisation responsible for engaging with the participants and managing the funds collected, through its technical committee.



## Facilitator

CONAFOR provided funding and technical support with the preparation of baseline analysis for the assessment of forest cover on each property. It also assists with monitoring.

## MARKET DESIGN

### Service

*Water quality and quantity.*

### Commodity

*Conservation and Protection of Existing Ecosystems.*

*Reforestation for commercial plantations:* farmers are encouraged to reforest their lands- reforestation contracts should include at least 50 saplings per year.

### Payment mechanism

*User-fees and trust fund FIDECOAGUA.*

The municipal water utility collects the monthly water bills and channels the funds to FIDECOAGUA, who then invests in target strategic areas in the catchment.

Participants sign a contract and are constantly monitored. Contracts are renewed every year, depending on the availability of funds. This length of contract is preferred because of uncertainty about future availability of funds. According to the availability of funds, a new call for applications is released every year (FIDECOAGUA has a target area of 4,500 hectares).

### Terms of payment

*Ongoing cash payments.* Payment in 2003 was MEX\$1,000 (about US\$90) per hectare. Unclear if this amount has changed over time. In some areas, participant landowners are also receiving payments from the national PSAH, whose payments are about three times lower. In these cases, FIDECOAGUA contributes with the remaining amount up to its standard payment.

### Funds involved

Seed Fund of about US\$90,000 (Federal funds: MEX\$400,000; Coatepec Municipal Water Utility: MEX\$100,000; CONAFOR (through its PRODEFOR programme) MEX\$500,000)

Contributions from users (MEX\$1 per month) yield about MEX\$120,000 a year (about US\$11,000 per year).

In the first year (2003), the budget allocated to for payments was MEX\$500,000. In the following year it was reduced to MEX\$300,000.

## ANALYSIS OF COSTS AND BENEFITS

### Economic

*Transaction costs are very high.* Significant level of initial investment was required, including equipment for office, transport, photography, computers, etc., for a total of MEX\$405,629 (about US\$37,000). Annual expenses include wages, insurance, and vehicle expenses, to a total of MEX\$303,000 (or approximately US\$28,000). Ongoing expenses such as rent, electricity, telephone and water are paid by the municipality, as the FIDECOAGUA's office is located in the



municipality building (Contreras, personal communication, 2005). Other costs such as opportunity costs have not been quantified, nor have the benefits for participants. However, it has been observed that many small, poor farmers have begun to invest in reforestation and soil management, as well as investing in unused land.

PSAH provides additional funds to complement the income of small farmers and allow them to capture value for standing forests. With the funds from CONAFOR many small, poor farmers have begun to invest in reforestation and soil management, as well as investing in unused land.

## Environmental

Expected impacts include improved/maintenance of water quantity through protection and reforestation in cloud forests. Pine and cypress species referred to as "water factories" through increase fog capture (Blanco y Rojo, 2005). Mr Contreras, the director of FIDECOAGUA, (personal communication, 2005) considers that there has been an improvement in water quality, due to a reduction in sedimentation, and an increase in water quantity, saving Coatepec from the severe water scarcity problems that have affected neighbouring municipalities, with considerable productive losses in agriculture and ranching. They expect to be able to prove the positive results through studies about to be conducted by hydrologists from the Free University of Amsterdam and the Mexican Institute of Ecology. No studies supporting this are available. Experiments show that fog interception is not as high as originally thought. An analysis of two adjacent micro-catchments containing mature and 20-year-old secondary cloud forest in Veracruz, Mexico, show that fog interception occurred exclusively during the dry season (November-April), and was  $\leq 2\%$  of annual precipitation for both forests (Muñoz-Villers et al., 2010).

## Social

*Poverty impacts.* Potential impacts on poor are large. Ninety per cent of landowners in the area are illiterate and because of their limited options they had been cutting down forest to use land for agriculture and ranching with traditional methods and very low productivity. Payments from the scheme may considerably increase family income and reduce pressure on forest.

## LEGISLATION ISSUES

FIDECOAGUA was created in 2002 before the General Law of Forest Development was passed, or the national PSAH programme was introduced. Today there are new processes where the law is changing and including forest development. The laws for supporting the expansion of the agricultural frontier (*desmonte*) have been eliminated. Expectations from carbon markets and international laws and agreements for carbon reduction also encourage reforestation projects.

## MONITORING

Monitoring is done annually with satellite images provided by CONAFOR, which also set procedures to use during the field visits for monitoring and provides the field supervision. Initial baseline study for forest cover in properties. Info about expected impacts (Improved/maintenance of water quantity through protection and reforestation in cloud forests) was from literature and not from actual studies. Payment for Environmental Services (PES) and direct purchase of plots for conservation. Independent studies have also been measuring impact of cloud forests on water flows.

## MAIN CONSTRAINTS

Although there are studies that recognise the economic importance of forest, intensive agriculture and ranching are still advancing rapidly in Mexico. Forest incentive programmes involve long and bureaucratic procedures and have a poor track record.

The programme began with little information and faced problems using the appropriate technology (learning GIS-based programmes, etc.) without appropriate results until CONAFOR provided them with training. Today the Instituto Nacional de Ecología (INE) has programmes and toolkits setting down procedures to follow in establishing PES, and there is a good degree of cumulative experience to support other nascent projects elsewhere. One such tool is a manual developed by INE, with step-by-step advice on how to set up a local PES scheme.

## MAIN POLICY LESSONS

*HOW TO GET FARMERS ON BOARD*, Mr Contreras tells about the experience with FIDECOAGUA

"In the beginning of the project, when we identified the most problematic and critical areas, the poorest farmers feared that the programme would involve expropriation of their lands and demonstrated against it.

We then went to their communities. We explained with detail the objectives of the project we showed them the satellite pictures. They recognised the advanced deterioration of their lands and we all considered alternatives for real improvements in their communities, to stop cutting down the forest until they ended up 'without trees and just as poor as before.'

After the meeting they began receiving the PSAH, and currently they receive saplings for reforestation, and we make constant visits to the area and they to the offices of FIDECOAGUA. We have excellent relations with most of them. Some farmers are not taking part in the project, and keep on cutting down trees, but the example from participants is strong and creates social pressure for a cultural change." (Ignacio Contreras, FIDECOAGUA, personal communication, 2005)

Ignacio Contreras, the programme director has highlighted the following lessons:

- To be effective in the long-term, Payments for Environmental Services (PES, or PSA in Spanish) schemes must be accompanied by training, capacity building, technology and resources for viable projects that the communities accept and engage with.
- Allocating funds to small projects can be effective in catalysing regional development. There is a long-way to go towards engaging the private sector and reducing dependence on scarce municipal resources. Industries with high water consumption have been approached, but without positive results.
- Even the poorest of the poor are willing to make sacrifices for the future, especially of their children. But it is necessary to provide long-term alternatives.
- Women are the key element in family livelihoods and are more willing to enter in projects that improve the chances of their children. It is necessary to create ways to reach them directly. However, cultural limitations in some areas do not allow women to own land, or take part in capacity building.
- The PES is an excellent tool for working with communities in sustainable forest projects and can help communities out of extreme poverty.

"Nobody is too tight to understand. Even people of the lowest cultural groups can understand and look for better alternatives when they get the opportunities to improve their livelihoods. Especially when the most sensitive areas are concerned, such as the future of their children. However, from this emerges the commitment to bring to them alternatives for improvement. We consider that PES is a good start, but it is not enough to create the change to a sustainable culture. Women are the foundation of the family livelihoods. They hold the responsibility for family life. But unfortunately, in some places, women are not allowed to take part in capacity building. It is necessary to have female trainers that can access other women in their own homes. Social management is not easy, but neither is it impossible. The tool of paying for conservation is an important incentive, but it is important to match it with other social tools."



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(Ignacio Contreras, FIDECOAGUA, personal communication, 2005)

## **OTHER INFORMATION**

No information available.

## **CONTACT**

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## **REFERENCES**

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FIDECOAGUA (Leaflet), *"Por qué pagar servicios ambientales forestales a los propietarios de predios en la montaña que han conservado sus bosques?"*.

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Holwerda, F., L. A. Bruijnzeel, L. E. Muñoz-Villers, M. Equihua, and H. Asbjornsen. 2010. Rainfall and cloud water interception in mature and secondary lower montane cloud forests of central Veracruz, Mexico. *Journal of Hydrology* 384:84-96.

Muñoz-Villers, L. E., F. Holwerda, M. Gomez-Cardenas, M. Equihua, H. Asbjornsen, L. A. Bruijnzeel, L. Marin-Castro, and C. Tobon. 2010. Water balances of old-growth and regenerating montane cloud forests in central Veracruz, Mexico. *Journal of Hydrology* Draft.

## **LINKS**

<http://www.ine.gob.mx/ueajei/publicaciones/libros/395/rickards.html>

<http://www.mexicoforestal.gob.mx/nota.php?id=247>

<http://www.semarnat.gob.mx/veracruz/exitos.shtml#fidecoagua>

<http://www.semarnat.gob.mx/veracruz/fidecoagua>