PES experiences in Latin America

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ecodecisión

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Water User Associations in the Cauca Valley Colombia
Cauca Valley

- Inter-andean valley of volcanic soils
- Considered the most fertile agricultural land in the country
- 1,000 m.a.s.l
- Over 200,000 has in sugar cane
- Heavily populated >1.3 million people
Natural Resources Management Pioneer

- 1959 created a development corporation
- Established watershed management areas throughout the Cauca upper watershed
- Began to develop management plans
- Pioneered participatory planning processes
Programación del riego

Balance hídrico:

Año Lluvioso

Año Normal

Año Seco

Rango (mm)

- 600-700 Déficit
- 400-600 Déficit
- 200-400 Déficit
- 0-200 Déficit
- 0-200 Exceso
- 200-400 Exceso
- 400-600 Exceso
- 600-800 Exceso
- 800-1000 Exceso
- 1000-1200 Exceso
- 1200-1400 Exceso
- 1400-1600 Exceso
Development of the Associations

- 1980’s: First association (Asoguabas) created
- 1980’s: Asocaña finances a watershed protection project in Desbaratado river
- 1990: Asocaña creates an Environmental Management Department
- 1992: Asodesbaratado created with support of Asocaña
- 1990’s: Asobolo and others created and “Corpocuencas” established as a regional government initiative with support from private sector
- Development of Watershed Action Plans with CVC, sugar mills, agricultural users, etc.
Institutional Structure

Farming Users (sugar cane, sorghum, etc.)

Voluntary Fee
US$ 1-2/ L/S/Trim.

WATERSHED PROJECTS

General Assembly

Board

Watershed Mangt. Plan
Environmental Authority
TYPE OF ACTIVITIES

- Land Acquisition
- Erosion Control
- Water Source Protection
- Environmental Education
- Community Development
### Funds raised

<table>
<thead>
<tr>
<th>Asociación</th>
<th>Area (Has)</th>
<th>Población beneficiada (miles)</th>
<th>Número de afiliados</th>
<th>Inversión en la cuenca en millones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asoamaime*</td>
<td>55.500</td>
<td>16.500</td>
<td>124</td>
<td>120</td>
</tr>
<tr>
<td>Asobolo*</td>
<td>19.875</td>
<td>3.250</td>
<td>144</td>
<td>90</td>
</tr>
<tr>
<td>Asodes*</td>
<td>19.920</td>
<td>1.620</td>
<td>90</td>
<td>40</td>
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<tr>
<td>Asofraile*</td>
<td>28.015</td>
<td>3.750</td>
<td>200</td>
<td>28</td>
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<tr>
<td>Asoguabas*</td>
<td>17.000</td>
<td>630</td>
<td>452</td>
<td>40</td>
</tr>
<tr>
<td>Asojamundi</td>
<td>61.000</td>
<td>12.400</td>
<td>40</td>
<td>48</td>
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<tr>
<td>Asurnima*</td>
<td>12.120</td>
<td>3.200</td>
<td>21</td>
<td>45</td>
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<tr>
<td>Corp. Río Guadalajara*</td>
<td>13.000</td>
<td>30.000</td>
<td>160</td>
<td>27</td>
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<tr>
<td>Corpopalo</td>
<td>92.000</td>
<td>12.308</td>
<td>44</td>
<td>90</td>
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<tr>
<td>F. Ríos Tulua Morales*</td>
<td>103.000</td>
<td>21.000</td>
<td>309</td>
<td>74</td>
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<tr>
<td>Fund. Río Bugalagrande*</td>
<td>80.000</td>
<td>1.765</td>
<td>306</td>
<td>40</td>
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<tr>
<td>Fund. Río Riofrio</td>
<td>28.000</td>
<td>8.000</td>
<td>22</td>
<td>32</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>529.430</strong></td>
<td><strong>114.423</strong></td>
<td><strong>1.912</strong></td>
<td><strong>674</strong></td>
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</tbody>
</table>

Source: Corpocuencias. 2001.

> US$250,000 in 15 yrs.
Case of Quito Watershed Fund
Ecuador
Quito’s population exceeds 1.5 million people
Current water consumption around 150 million m³ per year
Recent construction of two major projects to insure supply beyond 2020
Water is being diverted from other watersheds and in particular from National Protected Areas
QUITO´s WATER SOURCES

- RESERVA ECOLOGICA ANTISANA
- RESERVA ECOLOGICA CAYAMBE COCA
- PARQUE NACIONAL COTOPAXI - PITA RIVER
- RESERVA ECOLOGICA ILINIZAS - SAN PEDRO RIVER
- BOSQUE PROTECTOR MINDO-NAMBILLO-CINTO, MINDO & PICHAN RIVERS
Ecological Reserves Cayambe-Coca and Antisana: Genuine Water Factories

- Storage and regulation of glacial water
- Extraordinary hydrological capacity of Andean grasslands (*páramo*)
- Forests/vegetation also play a key role
- All of these ecosystems help maintain the purity and quantity of water
THREATS

- Population Growth
- Overgrazing/burning of grasslands
- Deforestation
- Migration Pressures
- Hydroelectric Projects
- Unregulated Tourism
- Development Projects
- Lack of Protection
SOLUTION: Invest in conservation

- Calculate value of environmental services provided by resource
- Link water users (drinking water, irrigation, energy generation, recreation) to the conservation of water sources
- Include the cost of protection in the price of water
FONAG Watershed Conservation and Protection Projects

WATER USERS $/m^3

FUND

Other Nat & Int'l resources

Watershed Conservation and Protection Projects

Management Plans for Protected Areas
FONAG’S CONTRACT

- DEFINES FUND OBJECTS
- ROLE OF BOARD OF DIRECTORS
- ROLE OF THE TECHNICAL SECRETARIAT
- ROLE OF THE FINANCIAL MANAGER
TYPES OF PROJECTS

- Land tenure
- Ranger and control programs
- Hydrological protection measures
- Valuation of envtual services
- Sustainable production systems
- Evaluation and Monitoring programs
Projects

Users
-1% sales drinking H2O
-$45,000 energy
-$6,000 beer producer
-$10,000 swiss coop

FONAG

Financial Manager

Technical Secretariat
Project Management

Board

FONAG
FONAG’S INCOME TO DATE

- **INITIAL SEED CAPITAL**: 21,000
- **DRINKING WATER SALES**: 1% of 60,000 = 1,000,300
- **ELECTRICAL GENERATION**: 135,000
- **PRIVATE BEER PRODUCER**: 6,000

**TOTAL**: 1,162,300
## ESTIMATED RESOURCES

<table>
<thead>
<tr>
<th>(Thousands US$)</th>
<th>Dic/03</th>
<th>Q4</th>
<th>05</th>
<th>Q6</th>
<th>07</th>
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</thead>
<tbody>
<tr>
<td><strong>INITIAL EQUITY</strong></td>
<td>1.162*</td>
<td>1.425</td>
<td>2.125</td>
<td>2.925</td>
<td>3.865</td>
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<tr>
<td><strong>MEMBER PAYMENTS</strong></td>
<td>300</td>
<td>700</td>
<td>800</td>
<td>940</td>
<td>1.100</td>
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<tr>
<td><strong>INTERESTS GENERATED</strong></td>
<td>75</td>
<td>144</td>
<td>154</td>
<td>170</td>
<td>180</td>
</tr>
<tr>
<td><strong>(-) EXPENSES</strong></td>
<td>12</td>
<td>24</td>
<td>24</td>
<td>30</td>
<td>30</td>
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<tr>
<td><strong>FUND RESOURCES</strong></td>
<td>1.525</td>
<td>2.245</td>
<td>3.055</td>
<td>4.005</td>
<td>5.115</td>
</tr>
<tr>
<td><strong>PROJECTS TO FUND</strong></td>
<td>100**</td>
<td>120</td>
<td>130</td>
<td>140</td>
<td>150</td>
</tr>
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<td>3.865</td>
<td>4.965</td>
</tr>
</tbody>
</table>

*Estimated interest rate (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>10</th>
<th>8</th>
<th>6</th>
<th>5</th>
<th>4</th>
</tr>
</thead>
</table>

*Jun./03     **accumulated interests
PROJECT SELECTION CRITERA

- CONTRIBUTE IN THE WATER QUALITY AND FLOW PROTECTION
- BE COMPATIBLE WITH THE PROTECTED AREAS´ MANAGEMENT PLANS
- PROMOTE COMMUNITY PARTICIPATION
- ACTION ORIENTED
- FOLLOW THE BYLAWS DETERMINED BY THE FUND
- SELECTION BY COMPETITIVE AND TRANSPARENT PROCESSES
- IMPLEMENTED BY A SPECIALIZED INSTITUTION (NGO´S IN PARTICULAR)
INSTITUTIONAL DEVELOPMENT

FIRST PHASE 1997-2000
- Design of the proposal
- Political lobbying and approval

SECOND PHASE 2000-2001
- Signing of contract and seed capital provided
- Capitalization - not enough interests generated for project implementation
- Institutional organization - new member, Technical Secretariat, Bylaws, EP

THIRD PHASE 2002-2004
- Establish priorities - watersheds, areas and plans
- Start financing small scale projects
- Develop institutional alliances

FOUR PHASE 2005-
- Cofinancing from international donors for larger scale projects
- Water resources planning for Quito Watershed
WHY ESTABLISH A FUND?

- Coordinate and enhance individual efforts
- Take advantage of the skills and capabilities of all players
- Assure continuity and transparency in conservation activities
- Provide long-term conservation financing
- Expand public/private participation in conservation
Case of Pimampiro
Ecuador
Pimampiro

- Municipality has a population of 17,000 - 6,000 live in town
- Estimated that 13,000 has of forests were deforested since 1985
- Of 7,000 has of forest left in the municipality, 638 has are in the hands of the Nueva America Association (27 families)
- This forest is in the headwaters of the municipality´s water system
Pimampiro’s Drinking Water System

Needs: 20 l/s

Supply:
before 2001 = 4 l/s untreated
2001 = +8 l/s allowing for 12 l/s treated (installed capacity for 50 l/s)
+ 2003 = +20 l/s by adding 80 l/s to the irrigation canal
Pimampiro

- Payment mechanism
  - Was part of natural resource management and agricultural assistance project
  - Institutional arrangement
  - Price definition based on willingness to pay
Institutional Arrangement

20%+ price increase

Seed Capital (IAF) US$15,000

Fund (BEDE)

UMAT CEDERENA

Payments Nueva America
## Payment structure

<table>
<thead>
<tr>
<th>Primary paramo and forest</th>
<th>US$ 1/ha/month</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old secundary forest</td>
<td>US$ 0.75/ha/month</td>
</tr>
<tr>
<td>New secundary forest</td>
<td>US$ 0.50/ha/month</td>
</tr>
</tbody>
</table>
Profafor - FACE

- Ecuadorian organization working since 1993
- Financed by a group of Dutch energy companies interested in Activity Implemented Jointly (precursor to CDM)
- Profafor finances 75% reforestation costs and gives technical assistance
- Landowner commits to keep forest for 99 (now 25) years
- PROFAFOR Owner of the carbon credits
Profafor - FACE

☑ 200 reforestation contracts
  ▪ 8000 ha in Indian communities
  ▪ 18000 ha with private landowners

☑ Environmental effect
  ▪ 26.000 ha reforested
  ▪ Working with exotic species
LESSONS LEARNED

- Imperfect information – need to clarify the service being rendered
  - Not paying for the resource (water, oxygen, trees)
- Socio economic context has to define the application of the mechanism
  - Different cultural dimensions - $, water, etc.
  - Opportunity costs of land and labor differ
  - Situations where PES are NOT applicable
LESSONS LEARNED

- High willingness-to-pay for water protection
- Hydrological function has a sensitive political dimension that should not be ignored
- Payments do affect behavior and environmental awareness
- Payments are a source of income for rural areas with little investment options
- Community organization and participation is fundamental