

Nicaragua - San Pedro del Norte

A PASOLAC Initiative

SUMMARY

PASOLAC is supporting this local initiative at the micro-level in San Pedro del Potrero Grande, also known as San Pedro del Norte (Chinandega), Nicaragua. The scheme involves forest conservation and natural regeneration in 13 hectares benefiting five families (at US\$18.75 per hectare per year). It claims to have improved water flows during the dry season by 1.25 cubic metres per day two years after implementing payments. Now expanded to other areas, under the Fondo Nacional de Desarrollo Forestal (FONADEFO). For example, small Payment for Watershed Services (PWS) schemes in the Murciélago y Corcuera watersheds in Rivas, El Sauce in Leon, and Cerro San Rafael in Chinandega (see <http://www.fonadefo.org/proyectos.php> for more information).

MATURITY OF THE INITIATIVE

Ongoing. Proposal was submitted to PASOLAC in 2001 and fund was set up a year later. Contracts lasting for three years have been signed since 2003. As of 2008 the initiative was still active.

DRIVER

Local municipality's interest in developing an integrated water management scheme in response to ENACAL's inability to satisfy water needs in San Pedro del Norte. International NGO, PASOLAC, provided the required technical assistance and start up funds.

The main environmental problem in the area was unrelenting deforestation followed by slash-and-burn and compaction of soils. It has experienced sustained deforestation through logging of pine trees, followed by slash-and-burn and cattle grazing or food production. Low water flow from the main spring in the area (Los Cuevones) has decreased and the municipality had to purchase an electric powered pump to get water from a nearby creek. Precipitation is approximately 800-1,000 millimetres per year, with a marked dry season. Slopes inclination gradient is 15-35 per cent.

STAKEHOLDERS

Supply

Priority recharge areas within the micro-watershed "Paso de Los Caballos" (approximately 600 hectares), particularly around the main spring, "Los Cuevones." Since 2003, contracts have been signed with five farmers covering a total of 13 hectares (18.6 manzanas), representing 18 per cent of the area designated as critical (73 hectares in total). It was expected that sufficient funds would be raised to incorporate five more farmers by the end of 2005.

Demand

Water users in the San Pedro municipality (5,000 inhabitants, 1,200 of which live in the town).



Intermediary

Direct negotiation between the municipality and farmers.

Facilitator

International NGO PASOLAC-Programme for Sustainable Agriculture on the Hillside of Central America funded the Swiss Agency for Development and Cooperation funded by the Swiss Agency for Development and Cooperation (SDC/COSUDE), supporting the design of the initiative.

MARKET DESIGN

Service

Increase and protect water quality and quantity.

Commodity

Improved management practices through agriculture using less chemical inputs and agroforestry, incorporating stubble instead of burning it and implementing soil and water conservation measures (building rows of stone barriers in critical water infiltration points and stone ditches in creeks where there is a risk of erosion).

Rehabilitation of degraded ecosystems for protection by switch from cattle ranching to natural regeneration and conservation.

Payment mechanism

User fees and trust fund.

Water use fees were introduced and a share is earmarked for Payment for Environmental Services (PES) investment. As of 2008, funding allocated to the scheme was sourced from San Pedro water user fees (US\$ 0.33 per family per month) in addition to five percent of municipal taxes.

A trust fund has been created to administer funds. Seed capital obtained from PASOLAC (US\$12,000) and the same amount is expected from the municipality. The municipal government created, through a Municipal Ordinance, the Association of Water and Resource Management which is to take charge of PES contracts, water tariff collections and management of the fund. This association is recognised by the National Assembly.

Terms of payment

Providers receive 300 córdobas per manzana (1manzana= 0.69 hectare) or US\$18.75 per hectare per year. In the first year, 50 percent of the payment is given at the time of signing the contract and the additional 50 percent upon completion of agreed practices. The payment then continues for three years.

Users: Household consumers pay 30 córdobas per month (about US\$2) as a set fee for water use. From this amount, five córdobas (US\$0.33) are assigned to the PES fund. Water users that do not have the capacity to pay contribute with labour to the soil and water conservation measures being undertaken in the farms of the providers participating in the scheme.

Funds involved

PASOLAC contributed US\$12,000 to support design of the management plan, economic valuation, negotiations with stakeholders, creation of the water management association, and initial seed capital for the fund. The municipality is expected to contribute the same amount to the fund.

The municipality also contributes with five per cent of its own fiscal budget, yielding US\$400-500 per year.

ANALYSIS OF COSTS AND BENEFITS

Economic

Benefits: five families receive payments (25 people in total) of US\$18.75 per hectare per year for three years. Technical assistance for changing land use patterns.

Increase in water availability is expected to bring benefits on savings for not using electricity-powered water pumps, increased water availability for rural families (who are now able to irrigate small areas and provide grazing for a few cows per family) and the value of vegetation recovered (Perez, 2005).

Costs: No information currently available other than for start-up transaction costs. The PASOLAC initial funds of US\$12,000 have been used to support the negotiation and setting up of the system. PASOLAC considers this investment useful, as it has already changed the way "in which local stakeholders manage natural resources" (Perez, 2005).

Environmental

Results from PASOLAC sources indicate that after two years of PES there has been an increase in availability of water from natural springs and creeks. According to PASOLAC, permanent springs have increased from eight before 2005, to 13 in 2005 and 2006. Temporary springs have reduced from six to one in 2005 and two in 2006. Prior to 2005, the creek that flows in the area was temporary, since then it flows all year round.

During the dry season (December-May) creeks and springs dry up if sustainable water techniques are not used in the catchment area. In the particular case of Los Caballos there is an estimated additional 1.23 cubic metres per day of water available during the dry season, giving a total of 162.5 cubic metres of water over the 135 critical dry season days. However, it is difficult to completely attribute these effects to land use changes in only 13 hectares, over two years.

Water shortages will remain regardless of land uses in the area. The current estimate of water flow into during the dry season is 6.03 cubic metres per day (in 2006 was 12.96 cubic metres per day), but local requirements are approximately 42 cubic metres per day (assuming that a family of six needs 300 litres per day, and there are 140 families in the town). During the rainy season the problem is less serious due to greater inflows into the reservoir and the option to use rainwater collected from rooftops. Between 2002-2004, the forest area increased from 31 per cent to 49 per cent and shade density in the critical recharge zone increased from 73 per cent to 80 per cent.

PASOLAC believes that they have demonstrated that PES can increase water supply and improve its quality (PASOLAC, 2006). Some of this extra water is used in the farms, but the extra water available downstream has helped to increase supply of water from 14 per cent to 32 per cent of total demand. The impact of the scheme may increase if funds are sufficient to include more farmers, as at the moment it only pays five farmers out of 43 in the catchment area.

Social

The negotiations carried out to implement this project have increased stakeholder participation and that has led to conflict resolution.

LEGISLATION ISSUES

The municipality has proclaimed a Municipal Ordinance declaring the foundations of the Fund for Environmental Services.

MONITORING

A series of basic feasibility studies were conducted for the site, highlighting the main hydrological variables (precipitation, soils, etc.). Some records of water exist in the local municipality before the initiative took place, but no in-depth hydrological study for the area was conducted. Monitoring is made by visits to the field, by a representative of the water association.

MAIN CONSTRAINTS

No information available.

MAIN POLICY LESSONS

Policy momentum due to decentralisation of water by the water supply service company; in the early 2000s, the PES was created together the municipal water management service. Payments are seen as being low and do not cover opportunity cost in some cases. Willingness to pay revealed interest in paying for a better water supply system as well as for water environmental protection measures.

The small initiative in San Pedro del Norte has expanded to other areas under the Fondo Nacional de Desarrollo Forestal ([FONADEFO](#)), covering small numbers but generating important ground lessons (see for example Gil Gerardo, [Murciélago y Corcuera](#) watersheds in Rivas, [Almendro y Sálales](#) in Leon, and [Cerro San Rafael in Chinandega](#)).

OTHER INFORMATION

Two other PASOLAC sites in Nicaragua.

In San José de Achuapa (also in Chinandega), 16 upstream farmers are already receiving payments for 170 hectares of forest conservation and management.

Payments are made in cash, once a year, for conservation and management of forest. Mature forest (over 25 years old) is paid 260 córdobas per hectare per year (about US\$15), developing forest (10-25 years) receives 130 córdobas per hectare per year (US\$7) and young forest 65 córdobas per hectare per year (or US\$4). Contracts were made for five years and minimum area was 10 hectares.

A further incentive received by the participants is a total or partial exemption on municipal estate tax. According to the level of conservation adopted in their properties under PES, landowners may be fully (in the case of adopting sustainable forest management) or partially released from payment (land under agroforestry is eligible to pay only 50 per cent of the tax and adoption of soil and water conservation measures may reduce it by 10-25 per cent).

Funds are still from seed capital and not yet from water fees. The municipality is expected to be able to provide funds from water fees once the seed capital runs out.



In the Community of Espinal (Esteli), members of the downstream community provide their labour for management activities upstream. This involves crop waste management (no burning of stubble) and fencing of the aquifer recharge area. A valuation of the payments to labourers that was saved through the use of volunteer work is about US\$200.

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REFERENCES

- Aburto, E.; and Ogier, M. 2005. *La gestión local a través de acciones de pagos por servicios ambientales hídricos*. PASOLAC report prepared for the Mink'a de Chorlavi Fund.
- Alcaldía Municipal San Pedro del Norte (no date). *Pago por Servicios Ambientales*. Chinandega. Powerpoint presentation. Obando, M. 2007. Evolución de la experiencia de los PSA hídricos en Nicaragua: El caso de los Caballos, Municipio de San Pedro del Norte, Chinandega. PASOLAC, SDC, COSUDE, Tegucigalpa.
- Ardón-Mejía, M. and Barrantes G. 2003. *Experiencia de Pago por Servicios Ambientales de la Junta Municipal de Agua del Municipio de Campamento, Olancho, Honduras. Tegucigalpa, Honduras, PASOLAC Honduras. Sistematización de la Experiencia Piloto de PSA*. http://mario-ardon.rds.hn/documentos/Sistematizacion_digramada.pdf.
- Barzev, R (no date). *Pago por Servicios Ambientales: Experiencia Nicaragüense. El pago por los servicios ambientales en el contexto del Corredor Biológico Centroamericano. SIEM: Servicios Internacionales en Economía y Medio Ambiente*.
- PASOLAC (2006) Pago por Servicios Ambientales al Nivel Municipal y Micro cuencas en Honduras, El Salvador y Nicaragua. PASOLAC El Salvador at the SDC/COSUDE workshop.
- Pérez, C. 2005. Recovering Positive Mountain Externalities: reversing land degradation through payments for environmental services at local level. <http://www.pasolac.org.ni/paginas/documentos/PASOLAC-Payment%20for%20Environmental%20Services%20-%202005.pdf>.
- Stanton, T., Echavarría, M., Hamilton, K., Ott, C., 2010. State of watershed payments: an emerging marketplace. Ecosystem Marketplace.

LINKS

www.fonadefo.org/proyectos.php