

Mexico- National PSAH Programme

National Programme for Hydrological Environmental Services (PSAH)

SUMMARY

Mexican countrywide Payment for Environmental Services (PES) scheme investing earmarked water use fees into conservation of forest cover in priority areas for enhancement of hydrological resources. The PSAH programme is meant to catalyse the introduction of local schemes based on contributions from local water users that can be financially sustainable in the long term.

Acronyms: PSAH- National Programme for Hydrological Environmental Services; PSA-CABSA- Program to Develop Environmental Services Markets for Carbon Capture and Biodiversity and to Establish and Improve Agroforestry Systems; CONAFOR - Mexican Forestry Commission; CNA- National Water Commission; INE- National Institute of Ecology.

MATURITY OF THE INITIATIVE

Ongoing since 2003 and active as of 2011. In 2004, the Mexican government created a second national PES programme to support biodiversity conservation and carbon sequestration projects, particularly through agroforestry (PSA-CABSA).

DRIVER

Interest in curbing deforestation and, at the same time, protecting the aquifer recharge function of natural forestlands. Water scarcity is a serious problem in Mexico, as two-thirds of its aquifers are being exploited beyond their capacity. The PSAH scheme provides incentives for forest conservation with a share of revenues from existing water fees.

STAKEHOLDERS

Supply

Private or communal landowners: well-preserved forest (with at least 80 per cent forest cover) *Priority areas* (maximum area per participant is 4,000 hectares);

- Critical recharge areas for the over-exploited aquifers of the country (according to National Water Commission/Comision Nacional del Agua (CNA) classification);
- OR near streams, in regions with problems of water scarcity, poor water quality and high sediment loads and where hydrological natural disasters are more frequent;
- OR in areas that supply urban centres of more than 5,000 inhabitants;
- OR in priority mountain areas (designated by the Mexican Forestry Commission/ Comisión Nacional Forestal (CONAFOR), IF they are also facing water problems).

The minimum size to be eligible in 2004 was 50 hectares of forest (the smallest area that can be observed with satellite images) (Alix-Garcia et al., 2005).

Participation: The PSAH programme began with 6 million hectares of eligible land. In the first year (2003) from the 900 applications (600,000 hectares), 271 were selected (127,000 hectares). In the following year, 352 new participants (and 180,000 hectares) were added to the programme. By 2005, the programme already included 477,756 hectares, covering most states) but mainly concentrated in two northern states (Chihuahua and Durango) and two southern states (Oaxaca and Chiapas). This trend of expansion continued throughout 2006 to 2008, at which time nearly 1.5 million hectares were enrolled in the PES programme.

Including CABSA, the total land area under the Mexican National PES schemes, by 2005, was already 535,206 hectares surpassing the 10-year old Costa Rican National Programme, in two years alone (2003-2005) and becoming the largest programme in Latin America.

For the first year of operation, *ejidos* and indigenous communities holding forestland as common property accounted for 47 per cent of the contracts and for 93 per cent of the area contracted. The remaining seven per cent of the area under PES belonged to private landowners (public land is not eligible for the programmes).

Demand

National government, on behalf of water users, channels a share of the water use fees to the PES programmes.

All drinking water users (domestic, commercial, industrial, urban public) and most bulk water users (irrigation, industry) pay for water consumption. Amounts vary according to the state. Actual collection of fees is very low (Alix-Garcia et al., 2005) and the largest water users (responsible for 80 per cent of consumption), arable and livestock farmers, do not pay for water (Muñoz-Piña et al., 2005).

Intermediary

CONAFOR: National Forestry Commission, which also manages other commercial forestry programmes.

Facilitators

The PSAH programme took three years to set up and had the advantage of expert advice from Costa Rican National Forestry Fund (FONAFIFO), the Mexican National Institute of Ecology (INE), the Economic Research and Higher Education Centre (CIDE) and the University of California at Berkeley. Financial and technical support was also provided by the World Bank.

MARKET DESIGN

Service

Water quantity: interest in supporting watershed management to increase ground water recharge. Water quality and reduction of landslide risk are also mentioned.

Commodity

Conservation and protection of existing ecosystems through forest protection contracts, valid for five years.

Contracts require participants to preserve the original forest cover by ensuring its protection (against forest fires). Targets areas of well-preserved natural forest for protection of their hydrological function in critical watersheds and over-exploited aquifers and proximity to water sources that supply settlements of more than 5000 inhabitants, which might, in the future, take over the payment through their own local government and/or water utilities.

(In the case of CABSA, reforestation for commercial plantations and agroforestry are also possible options.)

Payment mechanism

User fees and trust fund

PSAH funds originate from an earmarked share of the water use fees charged by the municipalities and then channelled to the CNA. While initially this share was to be a percentage of the total revenues (2.5 per cent), it was later changed to a fixed amount. It started at 200 million Mexican pesos (approximately US\$20 million) in 2003 and was increased to 300 million Mexican pesos (approximately US\$30 million) in 2005. This allocation of funds covers both PSAH and CABSA (Ley Federal de Derechos, 2005).

From the total budget allocated to each PES programme, 96 per cent is allocated to direct payments to participants in the case of PSAH, and to support project elaboration and execution in the case of CABSA. The remaining four per cent should cover costs of

operation, evaluation and monitoring. Funds are channelled through the Mexican Forest Fund, an instrument created to finance forest conservation and restoration projects, by pooling funds from different sources. As such, the fund also supports other programmes managed by CONAFOR.

Applications are submitted in July/August every year and results are released in November/December. Successful candidates receive an official letter and results are also posted on CONAFOR website.

Terms of payment

Direct cash payments to landowners.

Primary forest owners receive 300 pesos per hectare per year (approximately US\$27) and cloud forest owners receive 400 pesos per hectare per year (US\$36) due to the perceived higher delivery of hydrological services associated with this type of forest (mainly due to their role in capturing water from horizontal rain in the dry season).

Payments are made on an annual basis, at the end of the year, once the absence of land use change has been confirmed (see **MONITORING**).

Funds involved

According to CONAFOR (2006a), US\$88 million had been invested up to 2005 (including funds assigned to PSA-CABSA: about US\$10 million, 2004 and 2005). This amount originates from the share of the water fees, which amounted to approximately US\$20 million in 2003 and in 2004, and US\$30 million in 2005, (coming to a total of approximately US\$70 million).

A new input was added early this year, through a World Bank/Global Environment Facility (GEF) project for Forest Environmental Services. The project's aim is to consolidate the PSA-CABSA and strengthen the PSAH, particularly by creating local sustainable financing mechanisms. Overall project costs are US\$173 million, including a GEF grant of US\$15 million and a World Bank loan of US\$80 million. The largest share of the project's budget (82 per cent), and 91 per cent of the loan (90 per cent) is to be invested in the fulfilment of payment commitments to participant landowners (GEF, 2006).

Project components and budget (% of a total of US\$180 million)

I. Developing Sustainable Financing Mechanisms for water, carbon and biodiversity	12% (9% of which is assigned to the development and capitalisation of a Biodiversity Fund)
II Developing and strengthening PES Delivery Mechanisms (capacity building, monitoring)	2%
III Supporting Environmental Services Providers (access to the programmes and compliance)	1%
IV Payments to Service Providers	82%
V Project and Programme Management	1%

Source: GEF (2006)

ANALYSIS OF COSTS AND BENEFITS

Economic

Transaction costs are likely to amount to about US\$1 million per year, or US\$5.6 per hectare (for a total of 535,206 hectares), considering the accumulated budget allocated to the PES programmes (PSAH and CABSAs) since 2003 (about US\$88 million) and the set allowance of four per cent for administration expenses.

For PSAH participants, in 2003, transaction costs amounted to 237 pesos (approximately US\$20) for ejidos and communities and 304 pesos for private owners (COLPOS, 2004, cited in Alix-Garcia et al., 2005).

Opportunity costs: given appropriate soil and water conditions, alternative land uses could generate higher average returns per hectare than the payments received: corn - US\$37 per hectare per year and livestock production - US\$66 (Jaramillo, 2002 cited in Muñoz-Piña et al., 2005). However, in many places, conditions for farming or ranching are not promising and so the compensation offered might have been higher than the opportunity cost. This might explain the high number of applications.

"The land in many parts of the reserve [Sierra Gorda Biosphere Reserve] is not suitable for most forms of agriculture or ranching. It just isn't productive enough." So when Pedraza and his colleagues told some of the local farmers that the Mexican government might be willing to pay them as much as 400 pesos (US\$40) per hectare per year to leave their forests alone, most jumped at the opportunity. "It took some education," explains Pedraza, "but not much convincing." ...farming and ranching in these parts is difficult business. They'd be lucky to maintain one head of cattle on 10 hectares, so the 300 or 400 pesos per hectare per year more than makes up for the loss of their grazing opportunities" (Roberto Pedraza, Director of the Sierra Gorda Ecological Group, cited in Bayon, 2004).

Environmental

ADDITIONALITY: In the first two years of the PSAH programme there seems to have been little effect on reducing the risk of deforestation since 64 per cent of enrolled land is under low or very low deforestation risk. Much of PSAH's 2005 budget was invested in natural protected areas or priority mountains, which were not necessarily areas that had water-related crises- 90 per cent of the land under PSAH in 2004 corresponded to not-yet-overexploited aquifers (Muñoz-Piña et al., 2005, Alix-Garcia et al., 2005).

Programme has had a small impact in reducing deforestation (reduced rate 2000-2007, using control groups to measure, from 1.6 per cent to 0.6 per cent). Hydrologic importance and risk of deforestation represents only 20 per cent of total priority criteria (out of 26 criteria). Secondary criteria (administrative, social, etc.) diverts funds from where they can be more effective, but slippage effects can only be accounted for at the national level so it is difficult to establish net effect.

Social

POVERTY IMPACTS: The largest share of the PSAH payments has been assigned to areas of high or very high marginality (72 per cent of enrolled hectares in 2003 and 83 per cent in 2004). However, Alix-Garcia et al. (2005) highlights that this has not been an intentional poverty alleviation strategy, but a consequence of the fact that 80 per cent of the forest in Mexico is held by ejidos and indigenous communities, and that 86 per cent of the forest is located in communities with high or very high marginality. According to CONAFOR (2006a) the national PSAH scheme is reaching rural areas that other government programmes have not been able to.

LEGISLATION ISSUES

According to CONAFOR (2006a) a very important step to implement the PSAH was to create clear enabling legislation for investment in environmental services. This was one of the recommendations from the Costa Rican advisors right in the beginning of the process. CONAFOR began by incorporating provisions for the PSAH in the federal forestry law, and then proceeded to do the same at the state level.

MONITORING

Higher payments for cloud forests and forest with high deforestation risk. CONAFOR has established an excellent monitoring system based on changes in forest cover, controlled by GIS and satellite images, although issues like seasonality and topography can affect results.

PSAH monitoring is done once a year, through the comparison of satellite images of the original forest cover and of the present condition; this can also be complemented by random visits to the plots. Compliance levels are very high and loss in forest cover is often unintentional and due to forest fires or timber theft (Muñoz-Piña et al., 2005).

However, the fact that the programme monitors only the maintenance of forest cover, allows other threats to prevail. This is the case of livestock being allowed to remain in the forest damaging the undergrowth and creating other negative impacts for water resources related to soil compaction and organic matter deposition (Bayon, 2004).

MAIN CONSTRAINTS

BARRIERS TO PARTICIPATION remain, especially for the most marginal groups who have less access to information and capacity to formalize applications (often related to lack of complete documentation in relation to land register) and less lobbying power with the local CONAFOR office (Muñoz-Piña et al, 2005).

ABSENCE OF LOCAL INTERMEDIARIES AND FACILITATORS: The PSAH operates without local intermediaries and it is only where NGOs are already active that the local farmers have real support in learning about the programme and applying for it. The case of Sierra Gorda Biosphere Reserve, mentioned by Bayon (2004) illustrates this situation.

MAIN POLICY LESSONS

POLITICAL INFLUENCES: Due to a combination of political negotiations, legal impediments and lack of technical information and capacity, the final version adopted of the PSAH was considerably less targeted with respect to environmental and social goals than in the initial design of the programme which had contemplated starting with a pilot phase (Alix-Garcia et al., 2005).

CHOICE OF INTERMEDIARY: Since the real mandate of CONAFOR is commercial forestry projects some authors (Alix-Garcia et al., 2005) have argued that this influenced the way the PSAH programme was implemented, particularly in terms of the distribution of contracts to forest-holders with commercially viable forest operations and to those with land in target areas of other CONAFOR programmes. This might help explain the lack of environmental additionality of the programme (see **Environmental** impacts above). However, the same authors consider that CONAFOR's experience and lobbying power was key in securing funding for the programme. Muñoz-Piña et al. (2005) highlights the importance of the political support provided by CONAFOR's General Director "first giving his agency's full support to the development of the idea, and later providing the political backing it needed to pass through the Congress and the agricultural lobbying groups."

ACCOUNTABILITY OF THE NATIONAL SCHEME AND POTENTIAL FOR LOCAL TAKE-OVER: Since users are not paying an extra fee to cover the PSAH investment, pressure for the programme to comply with its goals and be accountable for the investment might be too weak to justify the current budget allocation.

OTHER INFORMATION

No information available.

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LINKS

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