Integrated assessment of the effects of the Payment for Ecosystem Services (PES) Program on Conservation Land, Mexico City

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Introduction

Payment for Ecosystem Services (PES) promotes conservation by paying forest owners to maintain ecosystems that produce Ecosystem Services (ES). Since 2003, in Mexico PES has been used for conservation, water supply and poverty reduction. But despite claims, is it a successful policy.
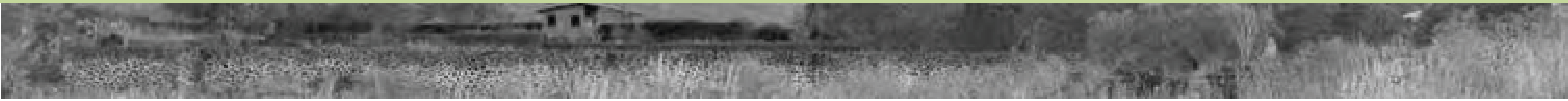
The main objective is to develop a proposal for indicators to evaluate the socio-ecological effects of this policy (PES)

Case study community, Ajusco (South-West of Mexico City)

❖ Ajusco means "where the water emerges"
❖ Natural water = $\pm$75% of the city's water
❖ 604 persons collectively own this land
❖ Strong participation in Hydrological PES
❖ High poverty, most people > 2 jobs
❖ Unequal access to housing, education, health (elderly & women) and water (all)
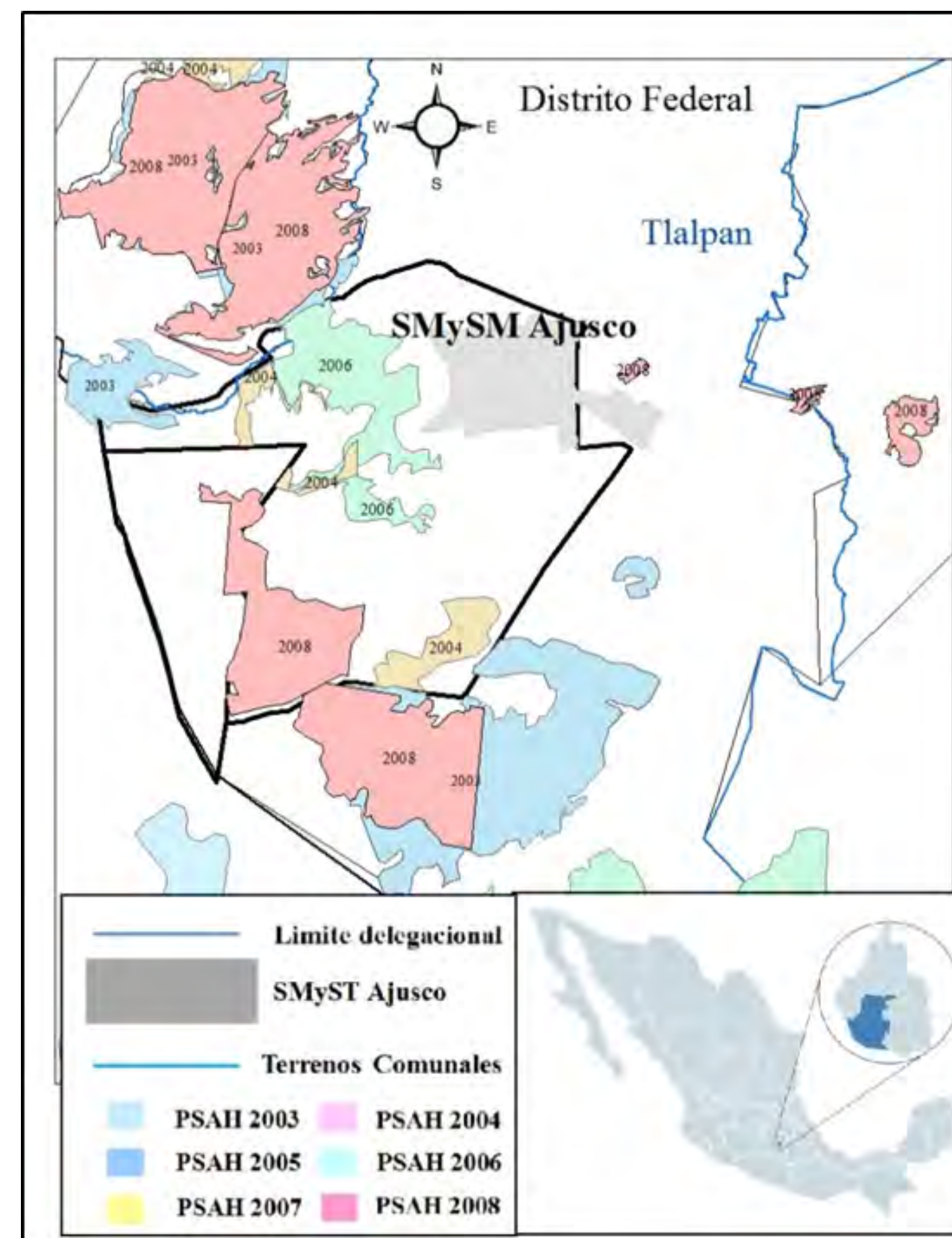
Integrated indicators of PES are needed to…

i. Evaluate success of PES
ii. Evaluate feasibility
iii. Inform the public, since –
   a. Positive government evaluations not available to the public
   b. Academic assessments disciplinary
iv. Justify the permanence or enhancement of PES

» PES = US$24.26 ha/ year for 5 management activities :
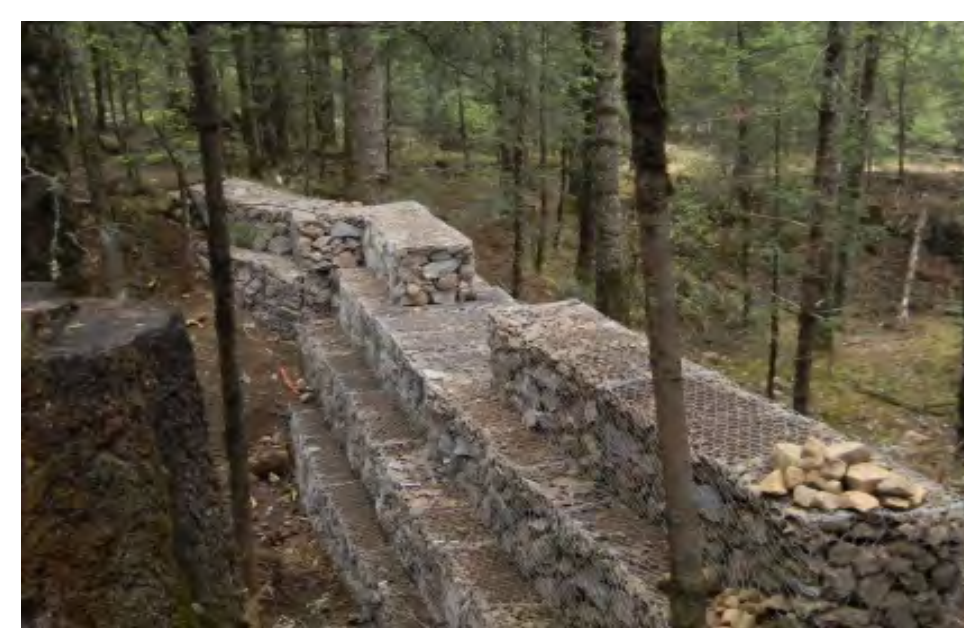
1. Dams (with natural materials) 2. Improved Reforestation   3. Cut fire barriers   4. Prune low branches   5. Soil conservation

Indicators proposal

SOCIAL
- *Access to water* (% households with clean water)
- *Environmental education and forest perception* (time invested, # participants in activities, workshops, forest values, etc.)
- *Governance* (inclusion, participation & capacity)
- *Community benefits* (involvement in forest management, multiple resource use)
- *Equity* (gender & youth)

WATER
- *Water quality (*pH, temperature, DOC, conductivity, DBO & DBQ)
- *Water quantity* (annual % water production m3/year)
- *Water buffer capacity (*functionality of the soil & vegetation)

ECONOMIC
- *Marginality* (education, payment, etc.)
- *ES' real monetary value* ($ price of the service produced)
- *Value for users* ($ to replace ES)
- *Value for providers* ($ and job quality)
- *Welfare* (housing, education, etc.)

SOIL
- *Soil productivity* (biomass production and/or net N immobilization net kg/ ha)
- *Compaction & soil characteristics* (bulk density, physical & chemical proprieties)
- *Erosion* (USLE factors)
- *Nutrient decomposition rate* (kg/m2)

ECOSYSTEM Integrity & Functionality
- *Biodiversity* (functional groups & floristic richness)
- *Forest health* (damage- physical & pathological, retention of dead trees)
- *Structure and forest dynamics* (demographic and spatial)
- *Quality of species habitat* (bird inventory)