



Economic valuation of the Tilo watershed in the Güisayote Biological Reserve, Honduras: feasibility of a PES scheme

(Research Proposal)

*Olivia Rendón
Sustainability Research Institute
School of Earth and Environment
Leeds University, UK*

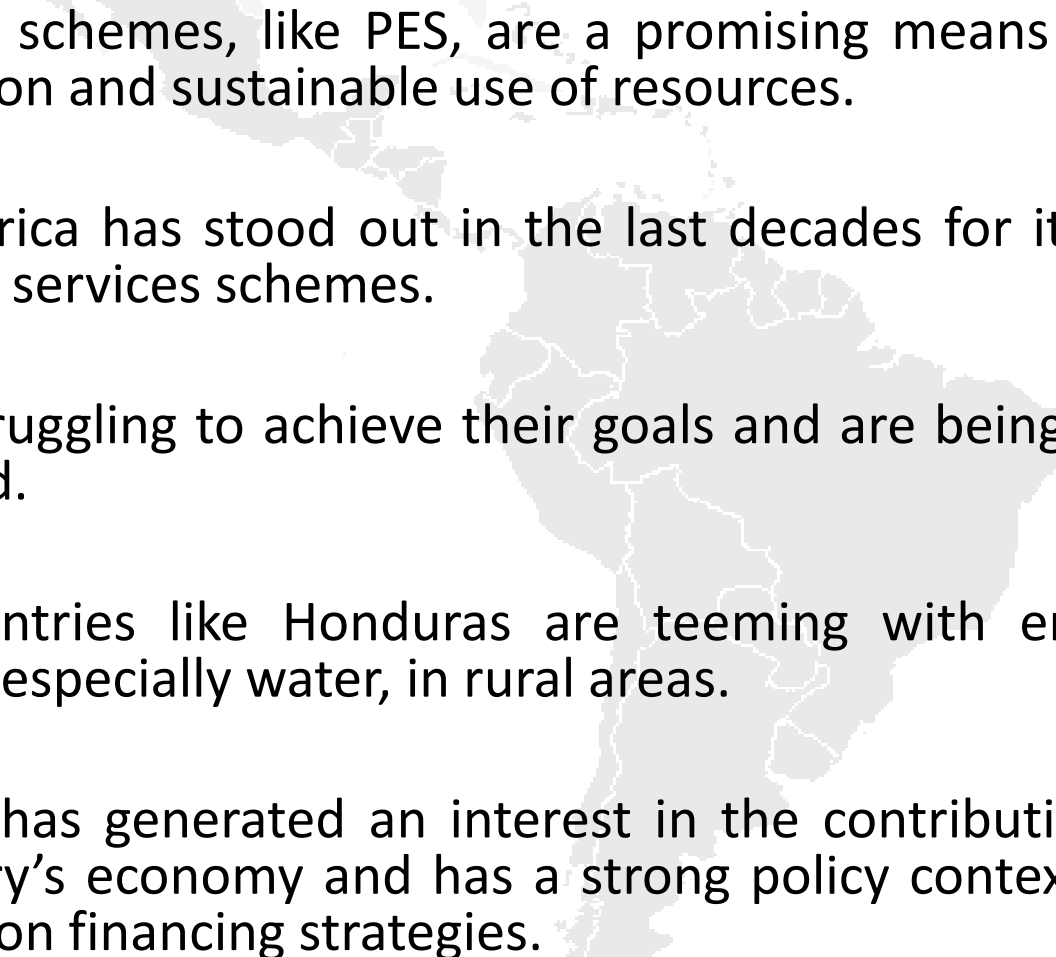
Research Problem



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- Debate about the capacity of protected areas achieving conservation and improving the livelihoods of the local communities (Adams et al. 2004).
- PAs threatened by unsustainable human activities reducing the planet's life-supporting capacity (MacKinnon et al. 1992).
- Increasing pressure in developing countries driven by economic development (Adams et al. 2004; Kramer et al. 1997).
- The provision of ecosystem services in protected areas generally results in a lack of equity and access to resources with negative effects on human welfare (Arrow et al. 2000).



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- Innovative schemes, like PES, are a promising means of achieving conservation and sustainable use of resources.
 - Latin America has stood out in the last decades for its pioneering ecosystem services schemes.
 - PAs are struggling to achieve their goals and are being consistently threatened.
 - Many countries like Honduras are teeming with environmental problems, especially water, in rural areas.
 - Honduras has generated an interest in the contribution of PAs to the country's economy and has a strong policy context to develop conservation financing strategies.

- **General objective:**

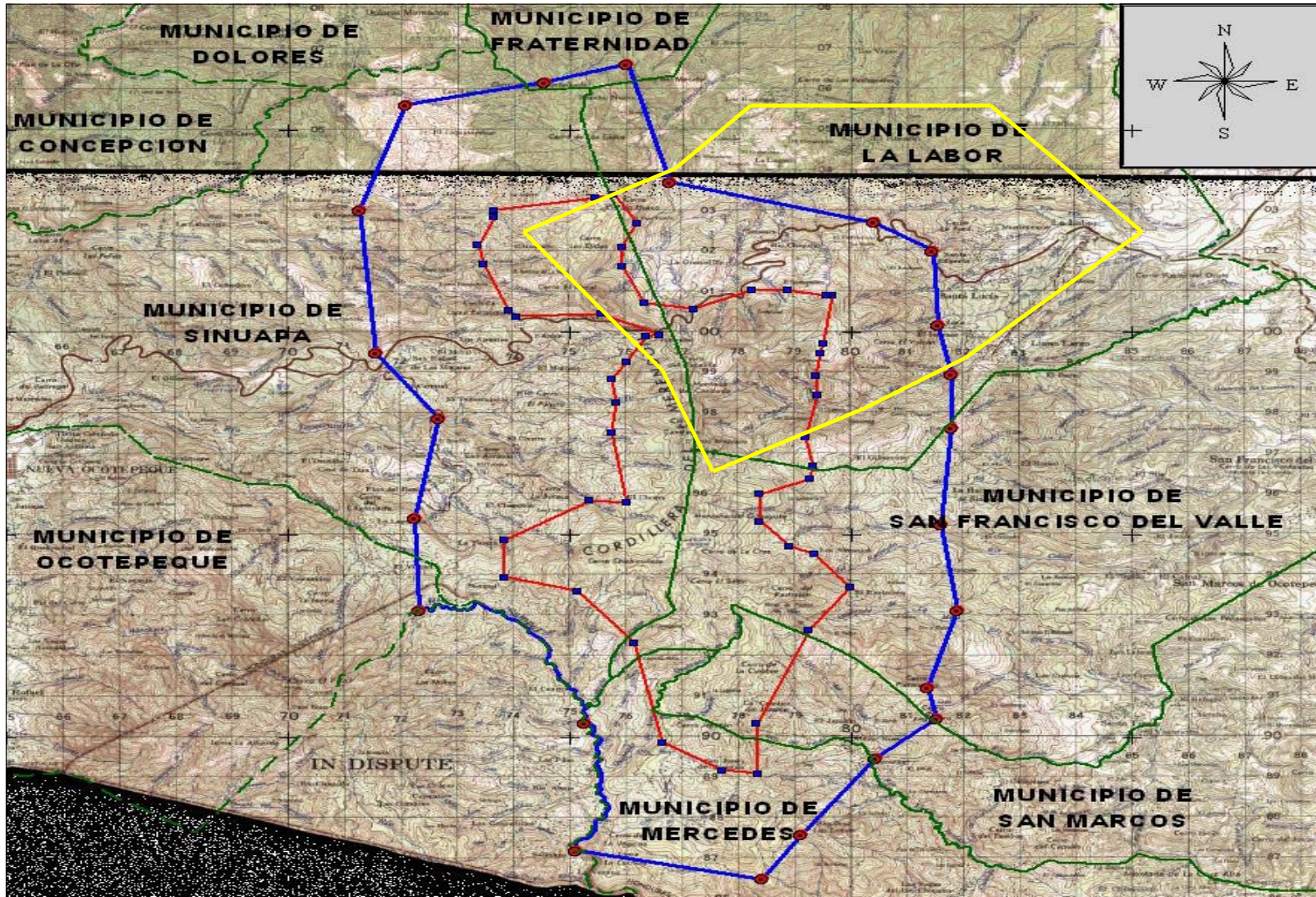
Analyse the likelihood of conserving the Tilo watershed through a PES scheme in order to improve water provision.



- **Specific objectives:**

1. Determine the WTP of the users of the watershed in order to improve water provision.
2. Calculate the cost of taking land out of production to improve water quality and quantity of the watershed.
3. Contribute to the development of procurement auctions for PES contracts in developing countries.
4. Evaluate the feasibility of a hydrological PES scheme for the Tilo watershed.

Study Area



Study Site



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El Potrero/ Tilo River

Area 61.22 km²

Population 800

Villages 1

Caserios 5

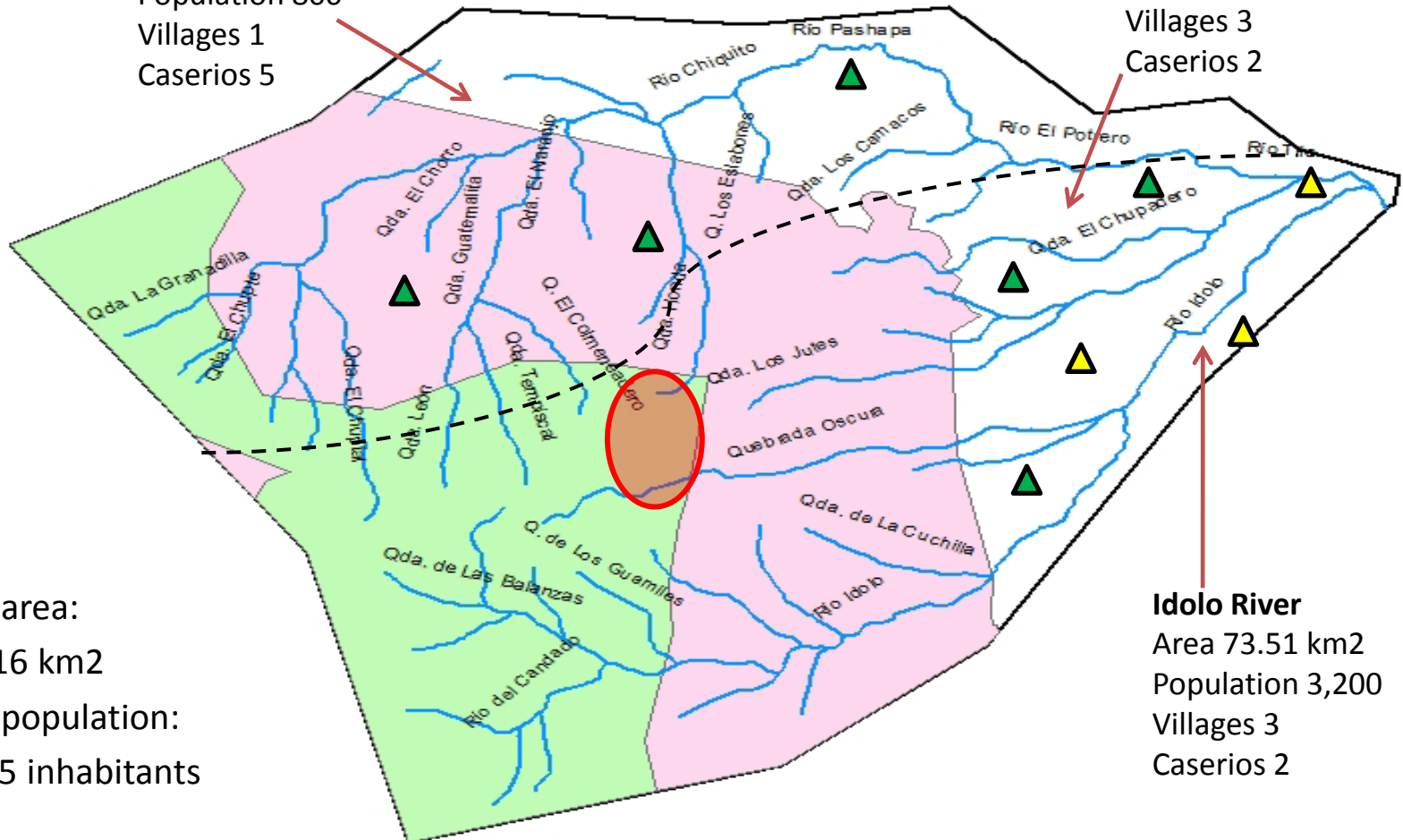
El Chupadero Stream

Area 21.43 km²

Population 2,595

Villages 3

Caserios 2



- Total area:
156.16 km²
- Total population:
6,595 inhabitants

Idolo River
Area 73.51 km²
Population 3,200
Villages 3
Caserios 2

WTP:

Contingent valuation survey
(Focus groups and pre-testing)
Averting behaviour



WTA:

Opportunity costs
PES auctions

Contingent Valuation



- A questionnaire that elicits the willingness to pay for a (hypothetical, but realistic) improvement in the water quality and quantity of Tilo watershed.

- Structure:

Introduction (voluntary and confidential)

Environmental awareness and perceptions

Description of problem

Scenario & cheap talk

Willingness to pay

Understanding and motivations

Socio-economic characteristics

Interview assessment

- **We are proposing** to solve the problem through a Payment for Ecosystem Services (PES) scheme. In this scheme you have users of a service (water) downstream and providers of a service upstream. There is an activity (or activities) affecting the service quality and/or quantity. The payment is possible when both parts agree to participate in the program voluntarily, the users offer a compensation that covers the costs of the providers for changing their activities and the providers agree to this amount, and there is a contract.
- **Here is how the scheme would work:** The Municipality would increase La Labor residents' current water bill and use the money to compensate all upstream landowners to take land out of production, i.e. stop cattle ranching, agriculture and logging. Furthermore, the fee will be used by AESMO to reforest the area taken out of production. This will be agreed after careful negotiations and a contract signed. The Municipality will ensure that the landowners comply with this agreement by patrolling the watershed periodically and imposing a fine on contract non-compliance.

Averting behaviour (Damage cost)



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- Comparison of stated and revealed preference data has been used to better understand preferences, more efficient and robust estimation of value, and to evaluate the CV results.
- These methods involve collecting data on the negative economic effects of low quality water and reduced quantity.



- Averting behaviour: lost earnings and lost leisure time.
- Damage cost: medical costs and lost production.

Opportunity cost



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- Estimated to determine the expected value of taking land out of production.
- the calculation per individual per year is based on total income/ area used minus the total costs/ area used.
- Data will be collected through interviews of upstream landowners carrying out activities that involve forest clearing, i.e. logging, cattle ranching and agriculture.



- An innovative approach used to verify the estimated opportunity costs of the landowners and their expectation about the max. acceptable price.
- Landowners can claim higher costs; auctions are designed to induce landowners to reveal their “hidden information”
- Provides indication of possible PES contracts
- Much less complex than bargaining with each landowner and is a “voluntary” scheme
- Use bidding rules and market competition to reduce the incentive for sellers to inflate their prices.
- Overall results will not be disclosed to “opposite parties” or in any way that harms landowners.



Auction outline



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- A hypothetical contract, as would be elaborated by the buyers of the ecosystem service, and inviting bids from suppliers of the service.
- Single bids that are simultaneous, indivisible, and homogenous.
- Number of bids (revisions), sealed bid, payment (uniform-price auction).
- The buyer's (i.e. the researcher) will have a fixed budget based on the results of the WTP results.
- Buyer attributes will only be known by the buyer.

- ✓ Non-parametric analysis (e.g. Kristom), mean and median, and a model
- ✓ Content validity check through the focus groups and the pre-test
- ✓ Convergent validity assessed by comparing to the revealed preference method
- ✓ Procurement PES auction analysis
- ✓ WTP evaluated in the light of the WTA to ascertain the feasibility of a payment for ecosystem services scheme.

- Better understanding of how to bring into play residents' preferences and motivations in the management of ecosystem services in protected areas.
- Determine contracting opportunities between providers and beneficiaries of hydrological ecosystem services.
- Application of novel approaches: the combination of stated and revealed preference methods and PES auctions.
- Generation of new empirical results for Honduras almost absent in the scientific arena.
- Contribute to discussions on protected areas management and watershed conservation in rural areas.

- Inform feasibility of PES schemes in Tilo Watershed and adjacent areas to AESMO.
- Presentation of results and the possibility of a payment scheme to local stakeholders.
- Academic seminars at two universities: National Autonomous University of Honduras (UNAH) and Leeds University (UK)
- International conference paper



- Scoping trip (e.g. discuss CV scenario, define sample, determine land uses)
- Design auction format
- Develop opportunity cost and averting behaviour surveys
- Define data analyses to be used

A photograph of a lush green forested hillside under a blue sky with white clouds. The foreground is filled with dense green vegetation, including bushes and trees. The middle ground shows a dense forest covering the slope of the hill. The background is a clear blue sky with scattered white clouds.

Thank you!

Contact: eeorrt@leeds.ac.uk