

# Analyzing Effectiveness of Payment Ecosystem Services in Ecuador from an Environmental and Socio Economic Perspective

Anayancy Estacio-Manning,<sup>1</sup> Diego Riveros-Iregui<sup>1</sup>  
<sup>1</sup> University of North Carolina at Chapel Hill

## BACKGROUND

**Payment Ecosystem Services:** a transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources.<sup>1</sup>

**History in Ecuador:** While PES are called “conservation incentives” in Ecuador the function of these programs are the same

- SocioBosque was implemented in 2008 by the Ecuadorian Ministry of the Environment (MEA) in 2010
- In 2009, SocioParamo was added unto the program as well <sup>2</sup>

**SocioBosque** and SocioParamo aim to address *biophysical and conservation issues*, while also providing a means for *poverty alleviation and socioeconomic mobility*.<sup>3</sup>

## ENVIRONMENTAL COMPONENT

### Environmental Practices:<sup>5</sup>

- Burn-exclusion: Burn exclusion does not have an effect on biodiversity, but there is evidence to support that it could assist with carbon sequestration. Burn exclusion increases aboveground carbon stores, according to research.
- Afforestation: While not a part of SocioParamo, afforestation is a mitigation method some landowners perform. Pine had a mixed effect on above and belowground carbon stores, but it greatly decreased soil moisture.
- No intensive grazing or land-use change: This practice is meant to conserve carbon stores

## SOCIOECONOMIC COMPONENT

### How Participants Use Funds

- Agricultural practices: seeds, fertilizer, organic agriculture
- Latrine construction
- Another source of income

**Land ownership and Participation:** There are several factors that make SBP more appealing and accessible to wealthier landowners as opposed to the more impoverished communities that the policy intended to target

- Land tenure requirements
- Legal and/or biophysical land-use restrictions
- Financial, social, and human capital

The ability to have alternate means of income may be the largest factor behind why most participants in the program are larger landowners. Smaller landowners do not have the same flexibility of choice for what parts of their land can be enrolled or not.<sup>6</sup>

PES Practice/Requirement	Objective Fulfillment	Environment Impact	Social/Cultural Sentiments	Economic Incentive
Afforestation of nonnative pine trees -Afforestation is not incentivized by SocioParamo but another PES	<ul style="list-style-type: none"> <li>• Deforestation</li> <li>• Carbon Sequestration</li> <li>• Water Cycle Regulation</li> </ul>	<ul style="list-style-type: none"> <li>- Increases stock of aboveground carbon</li> <li>- Does not increase stock of belowground carbon stores</li> <li>- A decrease in soil moisture</li> </ul>	<ul style="list-style-type: none"> <li>- Participants were wary about adopting afforestation practices because the species were</li> <li>- Non-native</li> <li>- Threatened the water supply</li> </ul>	<ul style="list-style-type: none"> <li>- Value of pines for timber production</li> <li>- Planted pine could demonstrate community land ownership</li> <li>- Afforestation prevents the paramo from being used for intensive agricultural production (i.e. protects the land)</li> </ul>
Burn-exclusion	<ul style="list-style-type: none"> <li>- Carbon Sequestration</li> <li>- Deforestation</li> <li>- Biodiversity</li> <li>- Water Cycle Regulation</li> </ul>	<ul style="list-style-type: none"> <li>- Increases the density of shrubs</li> <li>- Moderate decrease in soil moisture</li> <li>- Moderate burning practices can increase biodiversity and growth of plants</li> </ul>	<ul style="list-style-type: none"> <li>- Is seen as a way to preserve the value of the paramo</li> <li>- Many had abandoned the practice prior to enrollment</li> </ul>	-None specific to burn exclusion
No intensive grazing or changes in land-use	<ul style="list-style-type: none"> <li>- Carbon Sequestration</li> <li>- Deforestation</li> <li>- Biodiversity</li> <li>- Water Cycle Regulation</li> </ul>	- Conserves carbon stores	<ul style="list-style-type: none"> <li>- The paramo is viewed as an important source of water</li> <li>- The paramo is viewed as having its own cultural and community significance</li> <li>- Community enrollment is viewed as a harmonious action</li> </ul>	<ul style="list-style-type: none"> <li>- Urban landowners view PES as an alternative to selling less productive and/or accessible land</li> <li>- Lowers opportunity costs for land cultivation and labor</li> </ul>

**Table 1. An assessment of some of the key requirements of SocioBosque, SocioParamo, and other conservation programs in relation to the environmental and socioeconomic components**

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## SUMMARY

While these services have proven to be effective in some ways in terms of carbon sequestration, SocioBosque and SocioParamo fall short of many of their initial aims. Some environmental practices have negative effects on soil moisture and carbon stocks and the primary participants in the program are not the most marginalized, unlike what the program initially intended. In the future, MEA would need to examine what environmental practices best protect the distinct ecosystem of the paramo. There will also need to be a reassessment on how to best target and increase participation of small landowners.