

Review of: "Unlocking Natural Capital in the Megadiverse Colombian Pacific Basin: Navigating Challenges and Governance Gaps"

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Potential competing interests: No potential competing interests to declare.

Introduction:

This study is a good first attempt to evaluate the natural capital loss and the remnant natural capital of the entire Pacific Basin of Colombia. The rationale for the study was that a broader assessment and valuation of ecosystem services is necessary.

Study called for an implementation of new management strategies such as the inclusion of silvopastoral systems to manage the soil and a greater participation and engagement of the Colombian government with the local population. Authors especially highlighted the need for government to engage Afro-Colombians more, since 85% of remnant natural capital is found in their territories. Altogether this study presents a compelling reason to assemble relevant information and to develop a spatial database for monitoring biodiversity and ecosystem services as we move forward.

Main Issues:

Authors noted that the Pacific Basin of Colombia is rich in biodiversity, but there are social and governance issues that make it difficult to quantify the ecoregion's biodiversity. More than 50% of the region exhibits a low government presence.

Many species are endemic to the area.

People of the region are highly dependent on nature for sustenance - about 60% to 70% of the population. This puts much strain on the region's ecosystems.

Authors seek to provide info about current knowledge about ecosystem services and valuation of the ecosystem.

Methodology

Provide a database of current and future natural capital of the region with regards to biomes and political administrative units.

Authors evaluated threats from alternative land uses by collecting information from

1. Colombian Hydrographic Zoning map - define official limits of study area
1. Colombian Continental, coastal and marine ecosystem maps - define maps of biomes.
2. Information systems of Rural Agricultural Planning of Colombia/ GLOBIO4 model - identify future threats.

Results and Discussions

Lost value of biodiversity in the region is approximately 15% of gdp of Colombia.

Estimated value of remnant diversity is about 51%. What about the other 34%? Does that come from the other regions of Colombia?

Agricultural productive areas present imminent threats to remnants biomes in Colombian Pacific Basin.

Cattle ranches lead to loss of soil and impairment of ecosystem services. Silvopastoral systems may help mitigate some of the threats posed by cattle production.

Some concerns for this study

In the methodology authors mention that the Pacific basin experimented with rapid changes in the ecosystems. Was this really an experiment or the inevitable byproduct of development/industrial activity and the environmental changes that accompanied it?

The text in figure 2 are small and should be enlarged.

What does \$2020/year mean? If it is an index for quantifying ecosystem service loss, it is good to clearly define it.

We know of approximately 5 major biomes in ecology. How is it possible that authors can document 80 specific biomes in this region? Maybe I am misunderstanding the definition of biome as used by authors. It will however be good for authors to clarify what they mean by this.

Maps that project future scenarios of land use were used for analysis to understand potential future gains or losses of ecosystem services due to agriculture expansion from the years 2017 - 2027. Also, economic values are mapped in the MAGNA-SIGAS Colombia Bogota - Zone coordinate system. What map projections were used in the study analyses?

The explanation of LPC in page 9 and at the top of page 10 is missing information.

How did authors account for impacts of climate change impacts in the GLOBIO4 models?

It is difficult to read the maps in figures 4a - 4o. This problem also occurred in figures 6a - 6c as well as 7a - 7c and 8a - 8c are difficult to read.

