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The hidden layer of land-use change: cognitive processes shaping agro-ecosystems in the Amazon

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Abstract

Forest loss and land-use change in the Amazon are commonly explained by structural drivers such as agricultural expansion, cattle ranching, and infrastructure projects. However, less attention has been paid to the inner, personal sphere underlying land-use decisions among rural populations. This study addresses this gap by examining how human values shape land-use attitudes in the transboundary MAP region, spanning Peru, Brazil, and Bolivia – a setting characterised by shared ecological conditions but differing livelihood strategies.

Drawing on social and environmental psychology and the cognitive hierarchy model, the study investigates how human values influence attitudes toward different land-use types. A mixed-methods approach combines baseline household data from 2022 with primary data collected during three months of fieldwork in 2024, including a value–attitude survey ($n = 171$) and key informant interviews ($n = 9$). Quantitative analyses are based on ordered logit and binomial regression models, complemented by qualitative insights.

Results show that Self-Transcendence and Conservatism are the most prominent value orientations shaping land-use attitudes across the MAP region. While Self-Transcendence is positively associated with pro-forest attitudes, Conservatism unexpectedly constrains such attitudes, despite its intuitive association with conservation and protection.

Cross-country comparisons further indicate that value orientations are more homogeneous across Peru, Brazil, and Bolivia than differences in dominant land-use practices would suggest. This suggests that while human values significantly shape attitudes, they do not directly translate into divergent land-use behaviour.

These findings have two key implications. First, they highlight that cognitions within the personal sphere do not fully determine behaviour, requiring integrated approaches that combine individual, socio-economic, and institutional perspectives. Second, broadly shared value foundations across borders offer a potential basis for transboundary cooperation. Aligning sustainable land-use strategies with Self-Transcendence while addressing the constraining role of Conservatism may support the adoption of approaches such as agroforestry and silvopastoral systems, contributing to more multi-functional and resilient agro-ecosystems.

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