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actors from native and traditional populations to recent immigrants to social movements articulated within and outside the Amazon. The magnitude of ensuing land cover and use changes (LUCC) has prompted interest in the environmental impacts of such changes, motivating the establishment of monitoring and investigative initiatives of varied nature. The purpose of this paper is to attempt to identify a few challenges for LUCC research that follow from recent changes in the region. The discussion will review changes in agriculture and cattle ranching, both from the perspectives of land use intensity and the development of market chains, territorial transformations over rural and urban spaces, topics related to the land tenure and land appropriation questions, and some institutional issues related to the Brazilian Forest Code and prescribed land use under socioeconomic-ecological zoning initiatives. Further attention will be focused on the varied settlement patterns and production systems throughout the Amazon, involving both extensive and intensive land use practices, the continual enlargement of human-transformed landscapes with dwindling forest tracts, and the development of new deforestation fronts. A few research challenges will be discussed by analyzing how those changes are related to environmental impacts and how they are reflected in the research agenda in some research programs, like the Science/Technology component of PPG7 and LBA.

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X **The Heterogeneity of Landscape Change Processes in Amazônia: A Contribution to the Human Dimensions Community**

An understanding of changes in Amazonian landscapes depends on documentation about alterations in land cover. This paper highlights some efforts and findings related to the topic within the Large Scale Biosphere-Atmosphere Experiment in Amazônia (LBA). In particular, a longitudinal study has analyzed the social and biophysical dimensions of land use/land cover changes, using a multi-scalar approach. The study areas represent a gradient of soil fertility in Amazônia and include distinct landscape mosaics, from the Amazon estuary and the Bragantina region to northeastern Rondônia. Within the project, studies in areas of rural settlements are emphasized due to their social relevance and their impacts on land cover at local and regional scales. To illustrate the potential of such studies, comparative results for adjacent sites in the State of Rondônia will be presented. The multitemporal analysis included remote sensing and fieldwork. Land owners, loggers, rubber tapers, and other local actors were interviewed about their production systems and land-use history. The calculation of spatial metrics supported our conclusions. The results indicate that settlement design and institutional aspects play a central role in the process of landscape change. The combination of private lots with extractive reserves, managed by local populations, produces positive outcomes in maintaining larger patches of forest. The methods used contribute to the analysis, integration, and monitoring of land use and land cover in Amazônia, subsidizing policies that incorporate the social and environmental dimensions in regional development.

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Populist and Capitalist Frontiers in the Amazon: Diverging Dynamics of Agrarian and Land-use Change

This paper explores the factors contributing to the emergence of differentiated dynamics of agrarian and land-use change in two Amazonian frontiers. The first labeled "populist frontier" in Uruará, Transamazon, and the second "capitalist frontier" embracing the Redenção's area of influence, southern Pará. It argues that initial public policies (i.e., land allocation policies, road construction, and agricultural support policies) have led to the emergence of differentiated Amazonian frontiers. Once released, the triggers that motivated land occupation in the frontier areas, they gave rise to place-specific dynamics of agrarian transformation (i.e., population and investment flows, markets structuring for cattle products, cattle industry growth). These dynamics, and subsequent public policy implemented in either frontier defined a dependent pathway of frontier development; thus its emergent type established their longer-term trajectory. This paper con-

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