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Evaluation of Different Forestry Options to Improve Carbon Content in Rural Communities in Marajo Island, Brazil

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Abstract

Brazilian Amazonia rain forest has suffered changes with high deforestation rates taking place during the past few years. Furthermore, common practices such as slash-and-burn, shifting cultivation and abandonment, can release quantities of greenhouse gases that are significant both in terms of their present impact and in terms of the implied potential for long-term contribution to global warming. Land use change and forestry activities associated to smallholders' traditional practices can affect the local uptake or emissions of carbon by increasing or decreasing the carbon stocks and associated fluxes. Therefore, emissions could be reduced if small agriculturalists adopted better practices or change their land use. In the case of Marajo Island, an area composed of a series of islands geographically constrained but still with a large forest area, environmental services through carbon sequestration appears to be a reasonable alternative for the major part of small farmers which can not integrate the traditional markets and need alternatives for income generation.

A household survey with one hundred households was conducted in Breves and Currealinho districts of Marajó Island. The interviews were oriented to capture the main aspects of the farm households, including agricultural production, forest use and extractives activities. The Cost Benefit analysis was the main tool applied to evaluate the forestry-carbon options selected for the area using as criteria, the net present value and internal rate of return. Further, a sensitivity analysis is employed to simulate different conditions, in terms of interest rates, carbon prices and payment schemes.

The paper discusses selected forestry options to be implemented in the region in order to improve the carbon content and assesses the associated carbon benefits that could emerge in the presence of a carbon trade. Consequently, policy implications for the different options are drawn, including governmental finance support to the first years of the projects and incentives as carbon payments.

Keywords: Carbon , Cost Benefit analysis, forestry activities, greenhouse gas emissions, land use change