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The Influence of Payments for Ecosystem Services on Land-Use Decisions in the Nicaraguan Agricultural Frontier

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Abstract

Between 1990 and 2010, Nicaragua has experienced a loss of 70,000 hectares of forest per year, which corresponds to a net decrease of 2.11 % of its forest area. The main cause is the conversion of forest areas for agricultural use.

The selected study area is situated in the new agricultural frontier in the limit of the Biosphere Reserve Indio-Maíz, municipality El Castillo, department Rio San Juan, where the Danish NGO ‘Forests of the World’ pays farmers for the preservation of a defined area of forest within their property for 5 years. This research aims to identify the influence of these payments on the land use decisions of the farmers. The methodology of the agricultural diagnosis is used to identify and understand both agricultural and historical dynamics as well as agricultural practices of farmers. This, in turn, serves to explain their motivations in relation to changing (or not) the use of their land.

Two dynamics enhancing deforestation in the area were identified. Firstly, migration from the poorest stratum to the agricultural frontier in search of land. This is due to the unequal distribution of land in Nicaragua, given that only 6.8 % of farmers occupy 56.67 % of the agricultural land. Secondly, the evolution of farms based on mixed cropping towards livestock production as the main cause of forest conversion to pasture.

Payments for ecosystem services have been unable to stop this evolution towards livestock production for three reasons. First, the amount of \$ 28.5 / hectare does not cover the opportunity costs of other land uses. Second, farmers receiving payments only commit to the conservation of forest which they are not planning to use during the five years of their contract. Thirdly, converting the remaining areas of forest to grassland provides the possibility of significantly increasing agricultural income per active worker in the family.

To reduce deforestation in the farms, the combination of two strategies is recommended. On the one hand, providing greater value to forest areas through sustainable timber harvesting. On the other hand, increasing sustainability of the production systems through the establishment of silvopastoral and agroforestry systems.

Keywords: Agricultural frontier, deforestation, extensive livestock production, payments for ecosystem services