

Economics of Forest Land Use in Developing Countries



A Brief Literature Survey

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Forest Valuation and Accounting

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Abstract: Mangrove ecosystems are rapidly declining in many parts of the world. This has resulted in the loss of important environmental and economic products and services including forest products, food mitigation and nursery grounds for fish. The aquaculture industry was the single biggest threat to mangroves in the Philippines until 1981 when conversion of the remaining mangrove stands was prohibited by law. However, the decreasing yield from capture fisheries is putting pressure for the re-examination of this policy. To understand the importance of mangroves, insight is needed into the value of products and services provided. This article compares the costs and benefits of mangrove preservation with those generated by alternative uses such as aquaculture and forestry. Equity and sustainability objectives are taken into account, in addition to economic efficiency and analyzed according to the perspectives of the different types of decision makers involved.

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Abstract: This research examines the deforestation behavior of smallholder agriculturalists as off-farm labor market conditions change. A model of a representative village is proposed, which incorporates dependence on open access forests for fuel wood and animal raising. Dynamic simulations are then presented, which compare time paths of forest stocks, deforestation levels, and household labor supply under a variety of conditions. Despite the open access regime assumed in the model, with a perfect, albeit low-wage, off-farm labor market, the agro-forestry system in Nepal is basically stable. An alternative model where there is no off-farm labor market eliminates the important features of adjustment to deforestation which generate forest stability, suggesting that the availability of off-farm opportunities is an important determinant of deforesting behavior and equilibrium forest stock levels.

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Abstract: Studies about the impact of the timber trade on tropical forests have often oversimplified process complexity and underestimated regional variability. This study shows that forest degradation and clearing in Northwest Ecuador between 1983 and 1992 was closely linked to commercial logging. A key finding is that domestic demand is critical for shaping timber extraction and, hence, forest degradation and deforestation in this region. Low timber prices for roundwood and sawnwood at the origin, which are bolstering unsustainable forest extraction, have not been affected by market liberalization. This suggests that conservation initiatives that target international trade linkages may only be partially successful, even when they do what they are intended to do. Results suggest that market-based incentives are more likely to produce the desired results if they target and support timber producers directly. These findings are also relevant for other regions where domestic markets are a significant drive for deforestation and where local markets are supplied through the activities of small-scale, labor-intensive primary producers. Also, by emphasizing areas where logging is a dominant force, meso-level studies, like this one, not only help to more accurately estimate the impact on local forests, but also identify major resource flows and the factors promoting or hindering sustainable use, and those affecting the effectiveness of policy options.

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Abstract: Northern Vietnam has experienced significant deforestation due to the expansion of shifting cultivation fields. Since the late 1980s, with the introduction of individualized land rights, such agricultural "extensification" was followed by the agricultural intensification and regeneration of forests. We present a dynamic model of agricultural intensification versus extensification and test its implications using commune-level data in 1978, 1987, and 1994. The results suggest that the choice between intensification and extensification is relevant in hilly areas with limited flat land and sloped upland, and that strengthened land rights, particularly which on upland, tend to deter deforestation.

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Abstract: A survey of 209 Chimate Amerindian households in 18 villages in the Bolivian rain forest was done to examine the role of tenure security and private time preference on the clearance of old-growth forest. Results of Tobin regressions suggest that conflict with abutters was associated with more deforestation, but the average impatience of the households heads was associated with less deforestation. Results suggest that governments should protect the land rights of indigenous people if they wish to enhance conservation. Results cast doubts on the idea that high private time preference increases the depletion of natural resources.
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Abstract: A major strategy to combat deforestation caused by household fuel collection has been the establishment of plantations, especially in India. A household model is specified with a number of collection possibilities and analyzed empirically using household, vegetation, and GIS data, and the potential decrease in collection from the natural forest is estimated. The results show reduced pressure on the natural forest due to establishment of plantations. It also questions buffer zone plantations very close to natural forests.

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Abstract: When monitoring or enforcement is difficult, governments may find it impossible to manage village forest commons directly. Village-level institutions might be better able to manage these commons, yet villagers' management objectives may not coincide with those of the state. This article considers the effects of two different government policies on the local management of village commons. One policy tool attempts to induce villagers to conserve forest commons by giving them a share of the timber harvest. We investigate the question of whether or not this scheme Joint Forest Management (JFM) is preferred either by the villagers or the government to a simple benchmark policy, under which the government harvests at random. We show that, when villagers are sufficiently patient, for any equilibrium JFM policy there exists a benchmark policy which gives villagers the same level of utility. However, whether the government is similarly indifferent between these two arrangements depends on the villagers' ability to enforce collective agreements, and on the curvature of villagers' utility functions.

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Abstract: Assessments of changes in land use and tree cover density were made for 64 parishes of East-central Uganda between 1960 and 1995. Additional data were collected on population, tenure, access to markets, and other factors, and were used in models to explain changes in the land use and tree cover variables. Conversion of land into agriculture was heavily influenced by population pressure and was greater under the customary tenure system. The change in tree cover density was not linked to population pressure, and for agricultural land, was higher under the more privatized tenure system.

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Abstract: Forests continue to fall for agricultural purposes throughout the humid tropics, with immediate and potentially large consequences for climate change and biodiversity loss – issues of key interest to the international community. Some of the actors directly responsible for forest conversion fell trees to meet food security needs and alleviate poverty issues of urgent interest to them and also to national policymakers. This multiplicity of groups with differing (often conflicting) interests in the multifarious goods and services produced by tropical forests complicates the search for alternative agricultural activities for forest margins since these alternatives must satisfy such divergent objectives. This paper sets out a conceptual framework for comparing the impacts of different land use systems and agricultural practices at the margins of tropical rainforests in terms of the concerns and objectives of two key interest groups: small-scale farmers seeking livelihoods at the forest margins and the 'international' interests in the global public goods and services supplied by tropical rainforests. This framework should be useful to a third key group, the national and regional policymakers who must consider these and other policy objectives and then decide on courses of action. The paper identifies data needs and analytical methods capable of supplying an empirical base for this conceptual framework, based on quantifiable indicators. It then presents preliminary results of the application of this conceptual framework in Indonesia and Brazil in association with a global, collaborative, multidisciplinary research program. Even using preliminary order-of-magnitude estimates (to be replaced by more precise measurements as they become available), this conceptual framework presents results in ways that allow researchers and policymakers to select clear 'best bets' for development, when they exist, and to assess tradeoffs and options for complementary policy action and research efforts, when they do not.

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Forest Land Use

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