

Testing the effects of legislation on deforestation rates in conservation units within the Legal Amazon

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Deforestation and destruction of natural ecosystems represent a serious threat to biodiversity and environmentally provided services. The Legal Amazon territory in Brazil is such a case, containing the largest continuous tropical forest on earth, which accounts for a large fraction of the global carbon budget, water cycle and biodiversity. The Amazon deforestation is a multi layered, complex issue involving multiple actors. Establishment of conservation units, implementation of focused legislation and adoption of deforestation programmes are considered important tools in conserving forests and biodiversity. Specifically, Federal Laws 9.985/00; 11.284/06 and 12.651/12 are designed to prevent further deforestation and harmonize economic development. Here we evaluate whether Federal Law 11.284/06 and 12.651/12, and the 2008 deforestation programmes decreased deforestation rates within conservation units in the Legal Amazon. We analyzed legislation on annual basis and found no significant change; however, we did find a significant change in deforestation rates after the compilation of operations and programs of 2008. Further, when we analyzed deforestation over a reasonable period for the effect of legislation, we found significant changes for Federal Law 11.284/06 resulting in a decrease in mean deforestation rates of 0.73 and 0.02 in absolute (km²) and relative terms (%) respectively. Federal Law 12.651/12 showed no significant change, despite increase in mean absolute deforestation (+0.11 km²) and decrease in mean relative deforestation (-0.04%). These results imply that both focused legislation and deforestation programmes contribute to reduce deforestation, conserve forest and biodiversity. However, the effects of the implementation of new legislation are not immediately clear.

The complexity of managing native forests through participation by local actors / La complejidad de la gestión del bosque natural por la participial de actores locales

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La evolución y desarrollo de la humanidad históricamente ha estado signada por su relacionamiento con el bosque, inicialmente como proveedor de frutos y leña, que se convirtió en un determinante para intervenir el medio, hasta sostener relaciones complejas como soporte y regulación de la vida misma de la humanidad a través de los servicios ecosistémicos que provee. Esta investigación permite identificar la evolución conceptual que el hombre ha tenido del bosque, desde consideraciones netamente extractivistas por explotación hasta su tratamiento holístico por múltiples servicios ecosistémicos propios de su dinámica, bases para la consecución del desarrollo sostenible tanto de las comunidades que tiene un contacto directo con él, como de la sociedad que requiere de muchos de sus servicios para satisfacer necesidades básicas. La percepción conceptual ha evolucionado de objeto de explotación, considerado como recurso, a requerimientos de gestión multinivel para alcanzar un manejo hacia la provisión de medios para la consecución del bienestar, para su perpetuación como recurso natural renovable; así se hace necesario evolucionar de una consideración de simple factor de producción, cerniéndose entre el libre acceso y derechos de propiedad, hacia la definición de un conjunto de condicionantes o principios de arreglo institucional de relacionamiento, que se definen resultado de la presente investigación, en pro de prospectar la gestión del bosque como recurso de uso común en el siglo XXI, para hacer una efectiva gobernanza forestal.

A9r: FOREST OWNERSHIP AND FOREST VALUES

Estimation of the asset value of lands reserved for environmental preservation in Brazil

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The territorial and economic dimension of the areas devoted by farms to preserve native vegetation was not known in Brazil until the Forestry Code was promulgated (Law 12.651/2012). By law, rural properties should maintain areas with native vegetation cover in various categories (Legal Reserve, Permanent Preservation Areas, Surplus Vegetation, etc.). Created by the Forestry Code, the Rural Environmental Registry (CAR) is a mandatory electronic registry for all rural producers that became a relevant tool for agricultural and socio-environmental planning. The aim of this study was to quantify the property asset value of each hectare of legal reserve and permanent preservation areas in Brazil should they be sold for current market prices. Based on the price of land published by FNP Consultoria & Negócio for the year 2017, it is possible to assess by activity group (grain, rice, semi-arid shrubland, coffee, sugar cane, savannah, Amazon rainforest, transition forest, planted forests, fruit farming, Atlantic rainforest, horticulture, pasture, miscellaneous production) the average and full values of municipal land. With data from the CAR regarding the territorial area of the 218 million hectares of areas devoted to preserving native vegetation in Brazilian rural properties, produced by Embrapa Territorial, reserved areas were calculated by municipality, micro-region, and state. The results were then multiplied by the respective full land values (FNP, 2017). The national total shows that Brazilian farmers and cattle ranchers own land assets reserved for the benefit of the environment in excess of 3.1 trillion reais.

Costs of opportunity and potential for the generation of jobs, taxes, and food in mandatory environmental reserves of Brazilian rural properties

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The assessment of costs of opportunity is one way to estimate the wealth that was renounced with the legal obligation to keep areas with productive potential as environmental reserves in Brazil. Knowing the costs of opportunity is relevant in order to estimate the economic value of ecosystem services, providing environmental information to agents, aiming to underline the role of farmers in the preservation of nature and its impact in society, in socioeconomic terms as well as in terms of food production. The goal was to calculate the costs of opportunity, generation of jobs, taxes, and food in mandatory environmental reserve areas in Brazil. To calculate the cost of opportunity, we considered the main crop in the municipality under assessment, as well as corn, which has a more widespread territorial distribution. For the number of jobs to be generated, we used the average direct jobs in the corn sector. Tax generation was calculated