



LICENTIATE THESIS IN LAND AND WATER RESOURCES
ENGINEERING
STOCKHOLM, SWEDEN 2017

Brazilian land use policies and the development of ecosystem services

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Academic Dissertation which, with due permission of the KTH Royal Institute of Technology, is submitted for public defence for the Degree of Licentiate of Philosophy on Friday the 9th June 2017, at 1:00 p.m. in V1, Teknikringen 76, KTH, Stockholm.

Abstract

Concerns related to global environmental changes due to land use changes have been driving international communities towards more sustainable land use systems. Brazil is a country of global strategic importance in this matter considering that it is the nation with the largest extension of preserved tropical native vegetation, recognised for its ecosystem services and high and unique biodiversity. Expansion of forestry and agriculture is taking place rapidly in Brazil, partly over degraded pastureland, but also over native vegetation. Regulating policies to govern and limit this expansion is crucial to ensure the preservation of the ecosystems services provided by native vegetation. This thesis aims at improving the understanding of the potential impacts of prevailing public and private policies in the conservation of nature in Brazil. For this end, the Land Use Policy Assessment (LUPA) model was employed to evaluate potential pathways of implementation of the land use policies. Paper 1 evaluated the effects of current private and public command and control regulations in the protection of above-ground carbon stocks, identifying the most relevant stakeholders holding carbon stocks. The findings suggest that about 10% of carbon stocks are unprotected, where other policy instruments based on the market will be mostly required. Paper 2 performed an assessment of the mechanism for offsetting the legal deficit of native vegetation among landholders, evaluating the different offsetting implementation practices and their impacts on nature protection and socio-economic development. The results indicate that the offsetting mechanism may have little or no additional effects on protection of native vegetation and its ecosystem services because most of the offsetting is likely to take place where native vegetation is already protected by current legislations. However, it is viable to maximise environmental and socio-economic returns from the offsetting mechanism.

Key Words

Brazil; Land use policy, Forest protection, Ecosystem services; Biodiversity, Offsetting of legal reserves