

# Carbon Trading Schemes Unlikely to Save Forest Biodiversity in China

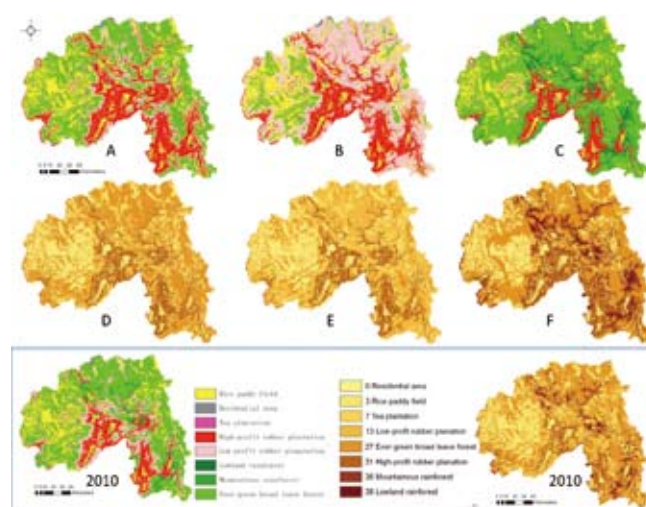
In the past 20 years, Xishuangbanna has been largely transformed from biodiverse natural forests and mixed-use farms into monoculture rubber plantations. The expansion of monoculture rubber plantation has brought about several problems, including the loss of lowland seasonal rain forest, the reduction of biodiversity, and drinking water shortage.

Recently, China has launched a domestic forest-carbon market to curb carbon emissions and mitigate climate change. Based on their previous studies on spatially explicit net present value (NPV) of rubber plantations and carbon sequestration in Xishuangbanna, Dr. YI Zhuangfang and her colleagues from the Xishuangbanna Tropical Botanical Garden (XTBG), Chinese Academy of Sciences developed land-use scenarios to evaluate the potential of carbon finance in supporting biodiversity conservation in the region.

They proposed two questions: (1) At what price and in what locations can carbon payments meet the current NPV of commercially grown rubber in Xishuangbanna? (2) At what elevations will reforestation be affordable and bring about higher biodiversity?

They then examined the two questions in three land-use scenarios: an Economic Oriented Scenario, a Conservation Oriented Scenario, and a Business As Usual Scenario. Their aim was to assess if carbon finance can be competitive with rubber profitability and to help decision-makers and policy-makers find low opportunity cost areas in Xishuangbanna that might serve as economically viable areas for natural forest protection and reforestation.

From the spatially explicit maps of rubber NPV and carbon sequestration in the three land-use scenarios, the researchers found that the Economic Oriented Scenario can achieve the greatest rubber profit but lead to substantial reductions in natural forest area, biodiversity and carbon stocks. The conservation oriented landscape design can help to balance between economic development and conservation



Land-use map of 2010 and the three land-use scenarios. Land-use scenarios are lined in the first row: the Business-as-usual scenario (BAU, A), the Economic Oriented Scenario (EOS, B), and the Conservation Oriented Scenario (COS, C) from left to right. Carbon sequestration maps in the second row follow the same order. D stands for carbon stock map for BAU, E for the carbon stock map for EOS and F for the carbon stock for COS. The bottom two maps are land-use map (left) and carbon sequestration in 2010 (right).

in the long run. The research recommended that a better landscape planning bears economic development and conservation should be put on the agenda for sustainable land-use. Otherwise, even carbon trading schemes may not be able to save the irreplaceable forest biodiversity in China.

They also suggested that rubber plantation expansion should be limited in Xishuangbanna, and they urged the protection of intact high-elevation forests and the reforestation of low-productivity plantations.

Their paper entitled “Can Carbon-trading Schemes Help to Protect China’s Most Diverse Forest Ecosystems? A Case Study from Xishuangbanna, Yunnan” has been published online by *Land Use Policy*.