Trees on Farms Provide Both Wood Value and Conservation Value in a Tropical Forest System: A Case Study from Western Kenya

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Many tropical forests are in regions with high populations of rural poor people who rely on subsistence harvest of forest products (e.g. fuel wood) to survive. This common dilemma to reconcile the human needs of forest adjacent communities with forest biodiversity conservation and preservation of ecosystem services is the primary challenge facing tropical forest conservation. There is growing consensus that trees on farms can play an important role in conserving biodiversity while improving the lives of people through fuel wood production and diversification of income. This is especially relevant in Africa where wood is still the primary fuel and trends are expected to increase. However, the attributes of trees on farms required for these disparate benefits may conflict: exotic species (e.g. Eucalyptus spp.) may provide the most economic value but serve the least in providing ecosystem benefits, while relic or planted indigenous tree mixtures may be more valuable for biological conservation but provide the least immediate economic value to farmers. In this study we explored whether agroforestry practices among subsistence farmers in tropical forest regions of Kenya can simultaneously provide timber and fuel wood value while extending forest tree biodiversity.

We collected tree and livelihood data from farms surrounding forest fragments and forest plots. Our data show that the economic value of fuel wood and timber are not in conflict with biodiversity conservation, and that trees on farms can be an important contribution to the extension of biodiversity in this region. Despite the potential of agroforestry, it remains seldom implemented and its contribution to livelihoods and forest biodiversity are relatively undescribed. The reasons can stem from the tendency to separate the human and natural dimensions with topics like agriculture, human development and forestry ending up in different departments and/or institutions, and ecologists ignoring or underestimating the ecological value of agricultural landscapes in conservation. We present these findings in the context of a changing economic landscape in this region fueled by a social enterprise that uses carbon financing to create hundreds of jobs and improve the lives of thousands of people while reducing deforestation from fuel wood use.