



Analysis

Designing REDD + schemes when forest users are not forest landowners: Evidence from a survey-based experiment in Kenya



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ABSTRACT

This study contributes to the debate on Reducing Emissions from Deforestation and Forest Degradation (REDD +) and the relationship between land tenure and forest conservation. We investigate policies that create alternative livelihood options for people around REDD + forests who are forest users but not forest landowners. We compare the performance of a conventional integrated conservation and development policy (ICDP) with an alternative hybrid policy that combines features of ICDP and payments for environmental services. Through a survey-based experiment in Kenya, we compare the effectiveness of different REDD + payment schemes given rising opportunity costs of forest use. This study shows that hybrid approaches that provide alternative income opportunities to local people, target the local drivers of deforestation, are conditional on environmental outcomes, and account for changing opportunity costs could work as effective policy options.

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1. Introduction

Reducing Emissions from Deforestation and Forest Degradation (REDD +) has been proposed as policy measure to address deforestation and degradation, and safeguard or increase forest carbon (Angelsen, 2008; Palmer and Engel, 2009; Pistorius, 2012). The policy sets a framework for an exchange of benefits, monetary or other, for guarantees to maintain wooded areas that otherwise would be deforested or degraded. In many cases, the forests at stake are not exploited commercially, but owners have tolerated some degree of subsistence usage through local people who are not forest landowners. Once enrolled in a REDD + program, such customary use, for example for charcoaling, could become a

risk to the newly-valuable trees. This situation calls for accompanying measures that prevent locals from using the forest in any way that is detrimental to REDD + goals. Yet there are equity concerns that crude fences-and-fines policies to protect REDD + forests jeopardize local peoples' livelihoods (Ghazoul et al., 2010; IUCN, 2010), implying a need for accompanying policies (Chhatre and Agrawal, 2009; Palmer and Silber, 2010; Groom and Palmer, 2012). In addition, as up to 800 million people worldwide are estimated to be dependent on such forests for their livelihoods (Chomitz et al., 2006; World Resources Institute, 2005), it has been argued that poverty reduction should be incorporated as a 'co-benefit' of REDD + policy (Brown et al., 2009).

This study contributes to the literature on the relationship between land tenure and forest carbon management (Duchelle et al., 2014; Holland et al., 2014; Pfaff et al., 2014; Resosudarmo et al., 2014; Sunderlin et al., 2014). In particular, we consider REDD + schemes in a context where resource user communities are not forest land owners but have joint customary rights over forests. We contribute to the debate

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on optimal REDD + policy design by comparing the performance of a conventional integrated conservation and development policy (ICDP) with a hybrid policy that combines features of ICDP and payments for environmental services (PES), and by testing the effectiveness of different payment designs.¹ The specific hybrid policy analyzed is an eco-charcoaling policy where the price paid to forest users for sustainably harvested raw material is to some degree conditional on reduced forest degradation.

We move beyond conventional ICDP approaches still predominantly applied by implementing organizations. ICDPs aim to reduce pressure on forests by providing alternative income opportunities (Hughes and Flintan, 2001). For example, agricultural policies are implemented with the idea that improved agricultural production opportunities reduce forest product extraction by local people. However, a substantial body of literature has demonstrated that the effectiveness of ICDP approaches is limited (Hughes and Flintan, 2001). Some studies argue that PES that are made conditional on an improved environmental outcome are environmentally more effective and also more cost-effective than ICDP (Ferraro, 2001; Ferraro and Kiss, 2002; Engel et al., 2008). Like ICDP, PES have the potential to address poverty and environmental concerns at the same time (Pagiola et al., 2005). The PES approach has risen tremendously in popularity over the past decades (Farley and Costanza, 2010; Kosoy and Corbera, 2010; Pascual and Corbera, 2011; Matzdorf et al., 2013; Schomers and Matzdorf, 2013). Yet a number of recent studies show that PES are not always environmentally effective or cost-efficient either (Pattanayak et al., 2010; Vatn, 2010; Muradian et al., 2013).

In addition, in the context where forests are subject to customary use rights that are not formalized legally, implementation of PES faces three major difficulties that hamper its implementation. First, paying people for non-use of a resource that is not formally theirs to start with has weak legal basis. Second, it has been shown that PES design with weak property rights is highly complex, can be counterproductive, and may involve trade-offs between environmental and poverty alleviation objectives (Corbera et al., 2007; Engel and Palmer, 2008, 2009; Engel et al., 2013). Third, customary rights are often held by groups of individuals such as local communities. This induces issues of a commons dilemma (Zabel et al., 2014).

Given the weaknesses of both PES and ICDP approaches for the case of REDD + design for customary forest users, in this paper we implement a survey-based experiment in Kenya to answer the following research questions: (i) how does a hybrid policy that combines ICDP and PES features compare to a conventional ICDP policy? (ii) How do different payment designs compare to each other? and (iii) what is the most effective policy under volatile opportunity costs? Is a policy that indexes payments to opportunity costs more effective than a standard policy with fixed payments? To the best of our knowledge, this is the first study that compares the effectiveness of different REDD + payment schemes in the field, and provides some insights on the effectiveness of different policies when forest users are different from forest landowners. It is also to our knowledge the first study that assesses the environmental effectiveness of a hybrid approach. We show that the hybrid approach is environmentally effective, and worthwhile exploring in actual REDD + policy.

The paper is organized as follows. Sections 2, 3, and 4 describe the case study, the experimental design, and the data, respectively; Section 5 presents the empirical model, and Section 6 the results. Section 7 concludes, highlighting policy implications, and directions for future research.

2. Case Study Description

This study focuses on the Kasigau Corridor REDD + Project in Kenya, which is the first REDD + project ever to issue carbon credits under an

internationally accepted carbon standard (Peters-Stanley et al., 2011). In the Kasigau Corridor, the forest users are not the forest landowners. The forest land is split into several community ranches, which are owned by shareholder companies. The shares have historically been distributed among the population living on the more fertile hills that surround the forest, but since then the population increased heavily and many shareholders also migrated to Nairobi or Mombasa. In general, the shareholders do not live close to the forest. They receive a share of the revenue from the sale of carbon credits, which is high above their opportunity cost, as the area is rather infertile and the forest is of low commercial value for the owners. The amount of land per shareholder varies greatly. The ranch with most shareholders has 2500 shareholders, while the one with least (which is about one tenth the size) has only one.

Under the REDD + agreement, the land was leased to a conservation company, which is responsible for the entire carbon accreditation and commercialization, as well as protection of the forest. Apart from various indirect measures, the company also introduced rangers who directly control the forest for illegal charcoaling and tree cutting. The focus of this study was laid on the forest users rather than the forest landowners, because the former face substantial opportunity costs of forest conservation.

Despite being illegal in Kenya, charcoaling is a widespread practice and the base of many livelihoods, as well as a major cooking fuel in the entire country.² Although domestic demand in Kenya has been reduced through the introduction of efficient charcoal stoves, we still consider demand as inelastic, as charcoal is exported through Mombasa harbor and therefore linked to international demand for energy carriers. Therefore policies with the aim to reduce unsustainable charcoaling primarily need to address the supply side. The investigated hybrid policy is an indirect payment through the financial support of eco-charcoal factories, which pay local land users for the supply of sustainably harvested raw material, i.e., scrap wood from fast growing shrubs, while at the same time supplying a sustainable substitute for the non-renewable charcoal for the end users. In the Kasigau Corridor, charcoal production is the key driver for forest degradation. It also paves the way for deforestation, as the land becomes easier to clear for agriculture once a charcoaler removed all hardwood trees. A pilot eco-charcoal factory has already been set up and is currently producing small amounts of eco-charcoal.³ In the pilot project, hired workers cut shrubs for daily wage. The project owner made deliberate efforts to hire ex-charcoalers. This setup has several disadvantages when aiming to scale up: (i) the access to shrubs is limited to land owned or leased by the factory operators and public lands; and (ii) it could be perceived as unfair since only charcoalers are employed, and even lead to perverse incentives such as starting charcoaling to get a job. For scaling up to a level of production that can substitute a significant amount of charcoal, we assume that access to shrubs on private land is required, and therefore, we analyze a scheme where anybody can sell shrubs at the factory gate.

3. Experimental Design

A complexity that has been discussed in PES design is that prices in developing countries are often volatile and households myopic. Also, in the light of growing world food demand, promotion of biofuels, and resulting increases in agricultural commodity prices, the opportunity costs of forest conservation may well increase over time and induce landowners to breach REDD + contracts (Butler et al., 2009). Designing REDD + schemes under these conditions can be challenging. Very few studies exist on how REDD + scheme design may help to address this issue, and they mostly focus on the allocation of liability between buyers and sellers of REDD credits (Dutschke and Wong, 2003; Dutschke and

¹ In related ongoing work by some of the authors of this paper, we compare different REDD + policy designs in Brazil, but in a setting with secure individual property rights (Reutemann et al., 2014).

² Hosonuma et al. (2012) emphasize that the most important driver of forest degradation in Africa is charcoaling and fuel wood collection, accounting for 48% of forest degradation.

³ The production of eco-charcoal requires equipment costing several thousands USD and is therefore only feasible when done at least at the small factory scale.

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