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Can PES and REDD+ match Willingness To Accept payments in contracts for reforestation and avoided forest degradation? The case of farmers in upland Bac Kan, Vietnam

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ABSTRACT

REDD+ (Reduced Emissions from Deforestation and forest Degradation) social safeguards promote improvement of local communities' livelihoods. However, discussion on benefit sharing in REDD+ has largely focused on coefficients for differentiated distribution of available funds. The question of economic incentives required to voluntarily establish and maintain tree cover has received limited attention. Using contingent evaluation, we elicited Willingness-To-Accept compensation for entering into contracts requiring farmers to 1) establish plantations, 2) abstain from logging mature plantations and 3) refrain from cutting indigenous hardwood trees in Ba Be and Na Ri districts in Bac Kan province, Vietnam. We found average WTA payments in the range of 231–402 USD ha^{-1}, 256–414 USD $ha^{-1}\,year^{-1}$ and 387–594 USD $ha^{-1}\,year^{-1}$ in these three scenarios, with WTA payments significantly higher in Ba Be district, characterised as poorer than Na Ri. Published estimates suggest payments of 38–43 USD $ha^{-1}\,year^{-1}$ from PFES (Paymnent for Forest Ecosystem Services), REDD+ and government support combined and a one-off payment of 300 USD ha^{-1} from government reforestation schemes. Hence, the inability to match WTA levels suggests a bleak outlook for PFES or REDD+ projects aiming to comply with social safeguard measures to protect rural household welfare. However, we note that everyone in the sample was willing to engage in these contracts given compensation.

1. Introduction

Reduced Emission from Deforestation and forest Degradation (REDD+) policies have been part of the discussion on the UN Framework Convention on Climate Change (UNFCCC) since 2005. Pilot programs and REDD+ readiness activities have been initiated, funded by bilateral and multilateral donors and involving the new institutions, United Nations UN-REDD+ program and the World Bank's Forest Carbon Facility (McElwee et al., 2016). REDD+ is essentially a carbon credit trading mechanism enabling polluters to pay developing countries for reducing emissions from deforestation and forest degradation, proposed as a means to reduce carbon emission, conserve and enhance forest carbon stock and sustainably manage forests, including to the benefit of biodiversity (COP 16). Pilot countries have been selected in which REDD+ schemes are tested, and national level REDD readiness plans developed and implemented with varying degrees of success (Angelsen and Wertz-Kanounnikoff, 2008; Cerbu et al., 2011). REDD+ initiatives draw on theory underlying Payment for Environmental Services where research among others focus on overcoming hidden information problems in relation to variations in landowners' supply prices, aiming to optimise cost-effectiveness from the perspective of the buyer (Hanley et al., 2012). However, in the context of low-income countries and poor marginalised communities in remote rural forested areas, attention to livelihoods impacts is arguably equally important and therefore the focus of the present study.

Given REDD+ schemes' inherent confidence in the market, providing the right economic incentives through benefit sharing is critical. The following features of well-designed and efficient benefit-sharing arrangements have been identified: engaging the right stakeholders; determining the appropriate forms and levels of incentives; creating legal benefit management mechanism; enforcing transparency; and

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developing effective dispute settlement mechanisms (Lindhjem et al., 2011). Importantly the REDD + Social and Environmental Standards (SES) covering all social and environmental elements of the "safeguards" agreed under the UNFCCC COP-16 in Cancun requires REDD + to improve the long-term livelihood security and well-being of local communities. However, the discussion on benefit-sharing in the operationalisation of REDD + has largely focused on what amount of surplus value can be generated through forest conservation and how the available amount of funds are to be distributed (Nguyen et al., 2013). Despite the safeguard principles, the question of what amount of financial incentives would encourage forest plot owners to plant trees voluntarily and abstain from logging, indicating that this would improve their well-being, has received only limited attention. Existing studies have mainly attempted to estimate the opportunity cost of use forgone (Whittington and Pagiola, 2011). However, this tends to underestimate the value of the land in several cases. Underestimation may occur where availability of cropland is scarce affecting household food security; when plantations of specific species are a valued investment, including to reduce the risk of shock exposure; when farmers value the land above its profit-generating capacity and; when there are other demands on household time than planting trees (Milne, 2012; Cacho et al., 2014). We found only a few studies addressing the question of household Willingness-To-Accept (WTA) payments for stopping shifting cultivation, abstaining from clearing forest to plant oil palms, or participating in PES or REDD + schemes (e.g. Cacho et al., 2014; Phua et al., 2014; Skidmore et al., 2014; Rakotonarivo et al., 2017). WTA, in this context, represents the minimum amount in payment a household requires to voluntarily enter into contractual agreements binding them to undertake or abstain from activities affecting ecosystem service provisioning.

In Vietnam, a UN-REDD + pilot country, the Government aims to convert certified net emission reduction into REDD + revenue distributed to local partners, including individual households, in a transparent, equitable and cost-effective manner (Hoang et al., 2013), the last two of which may be mutually exclusive objectives. Due to the similarities between the envisioned REDD + scheme and existing Payment for Forest Ecosystem Services (PFES) schemes in Vietnam, efforts to operationalise REDD + benefit-sharing mechanisms have looked towards this concept and to ongoing government reforestation programs (Hoang et al., 2013). PFES involves users paying or rewarding local service providers for the conditional provision of well-defined environmental services through a voluntary transactions (Wunder, 2008). In Vietnam, this has been based on carefully constructed coefficients to differentiate the distribution of available funds (Hoang et al., 2013). In relation to PFES this is called the K-factor, which differentiates the amount of payment to forest owners according to forest status, type of forest, the origin of the forest and level of difficulty in forest management (Hoang et al., 2013; To et al., 2012). A similar factor, called the R-coefficient, has been developed to calculate the distribution of household level REDD + payments (Hoang et al., 2013). However, the economic incentives required by farmers to voluntarily (i.e. in agreement with the safeguards cf. above) establish plantations and maintain tree cover has not been rigorously addressed.

Hence the objectives of this study are to evaluate household reliance on forest goods and to assess household WTA payment for entering into contractual agreements (from here on just WTA) requiring them to establish a plot of trees, abstain from logging mature trees and refrain from logging indigenous hardwood tree species. To elicit these WTA measures we use contingent valuation methods centred on the constructions of hypothetical scenarios. We then compare requested compensation to expected funds likely available for disbursement from PFES, REDD + and government reforestation programs. Based on this we discuss the feasibility of these schemes in generating economic incentives for voluntary reforestation and avoided forest degradation.

2. Methods

2.1. Study Area

Vietnam has experienced a transition from net deforestation to expanding forest cover the past decades (Meyfroidt and Lambin, 2008), but the agricultural and forestry sectors remain responsible for a substantial contribution to national greenhouse gas emission (29% combined) (MONRE - Ministry of Natural Resources and Environment, 2010). Forest conversion remains high in the northern mountainous province of Bac Kan, which is, therefore, a prime target for development and implementation of UN-REDD Phase 2 in Vietnam (MARD, 2013). Particularly Ba Be and Na Ri Districts are considered hotspots for forest protection and rural development (Hoang et al., 2008).

The Vietnamese government has the past three decades pursued policy reforms including Forest Land Allocation (FLA) transferring forest management from State-owned Forest Enterprises to households, communities and private enterprises. Land zoning in 1991, defined three types of forest land: 1) special-use forests of high biological or cultural value; 2) protection forests for the protection of watersheds and from land degradation, and; 3) production forest (Meyfroidt, 2013). Land use rights over production forest were allocated to households and communities along with duties constraining their rights of withdrawal, whereas only Forest Management Boards can have land rights to special-use and protection forest (Sikor and Nguyen, 2007; Dang et al., 2018). Few households have obtained so-called 'red book' certificates for their forest plots constituting a legal 50-year lease on land enabling inheritance, exchange and use as collateral. Moreover, FLA programs have been resisted at the local level by farmers perceiving it as a restriction on land access, and outcomes differ widely depending on local context (Knudsen and Mertz, 2016; Ginzburg et al., 2018). Perceptions of land rights have furthermore been found to be inconsistent with legislative rights (Knudsen and Mertz, 2016). Local ownership of forest plots is often perceived by households based on rights established through occupancy, use and management over generations, although the government in these arrangements in principle owns the land and leases it out (Knudsen and Mertz, 2016). In practice, district authorities are not able to enforce forest protection, and the duties bestowed on households or communities in these arrangements (Sikor, 2001). As a result, about 60% of our sample perceived that most of the forest in their area (whether production, protection or special-use forest) was privately or communally owned as opposed to state-owned, and 91% stated that it was community or privately managed. REDD + implementation which involves the government strengthening or imposing national level property rights over forested land is likely to collide with these perceptions.

Na Ri District has the largest area of production and special-use forests while Ba Be has the largest area of protection forests (Hoang et al., 2013). Ba Be District encompasses Ba Be National Park, and is among the poorest districts in Vietnam. Approximately 56% of households are classified as poor compared to 37% in Na Ri District (Hoang et al., 2008). The majority of the population belongs to ethnic minorities including Tay, Nung, Dao, Kinh, Khmer and H'mong. The principal livelihood activity in both districts is subsistence agriculture combining rice or maize farming with forestry and shifting cultivation at higher elevations.

PFES projects have been tested in Bac Kan Province since 2008 in the form of the RUPES2 program and the 3PAD project (Simelton et al., 2013). Approximately 13–15 PFES projects have been implemented in the province, but it is unclear whether these met established PES criteria (Wunder, 2008) or if payments were merely disbursement of