

Focali Brief: 2012:02

Realizing REDD+: what role for Payments for Environmental Services?

This brief presents a framework that can be used to assess the potential impact of Payments for Environmental Services (PES) schemes. Insights from this framework challenge claims to general cost-efficiency of PES, suggesting that impacts will depend greatly on the context in which PES is implemented. In light of this, the role that PES policies can play in realizing REDD+ is discussed.

WITH CLAIMS to be both institutionally simpler and more cost-effective than previous conservation efforts implemented in developing countries, Payments for Environmental Services (PES) programs have gained in popularity over the last decade. The advent of REDD+ (Reduced emissions from deforestation and forest degradation) within international climate deliberations has further strengthened the call for PES. Just as PES compensates land owners for the opportunity costs (extra or alternative costs) of ecosystem conservation, the basic premise of REDD+ is to compensate developing countries for reduced greenhouse gas emissions from deforestation and forest degradation, or for the conservation or enhancement of forest carbon stocks. As such, REDD+ is being seen as a multi-level PES scheme where national

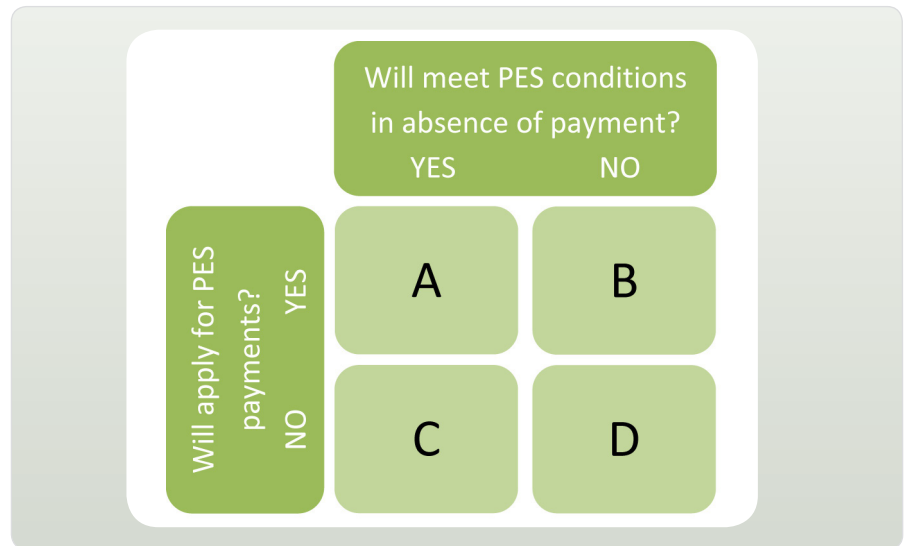


Figure 1. Conceptual framework that elucidates the main determinants of PES additionality (Persson & Alpizar 2012).

About this brief

Focali provides knowledge to Swedish ministries, government agencies and other relevant actors for effective forest management to achieve climate-poverty targets. This brief is based on the following three publications:

Persson, U.M., and Alpizar, F. (2012). Conditional Cash Transfers and Payments for Environmental Services: A Conceptual Framework for Explaining and Judging Differences in Outcomes. Submitted to World Development.

Nordén, A., Persson, U.M., and Alpizar, F. (2012). Incentives, Impacts, and Behavioral issues in the context of Payment for Ecosystem Services programs: lessons for REDD+. Forthcoming in Globalization and Development: Rethinking Interventions and Governance, A. Bigsten (Ed.), Routledge Press.

Alpizar, F., Nordén, A., Pfaff, A., and Robalino, J. (2012). Unintended Consequences of Payment for Environmental Services: Spillovers from Targeting of Deforestation Threat. Working paper.

and sub-national PES programs will be a key tool for REDD+ implementation.

However, impact evaluations of existing PES schemes aiming to protect tropical forests in Costa Rica and Mexico indicate that these schemes have not been very effective in generating *additional* forest conservation; i.e., the vast majority of land owners who have been paid for not clearing their forests would most likely not have done so anyway. Understanding the reasons for this inefficiency and the potential to increase additionality through better policy design is crucial for a more informed discussion about which role PES can play in implementing REDD+.

What determines the impact of PES?

The basic determinants of PES impact can be better understood by introducing a simple conceptual framework (Fig. 1) that categorizes potential PES participants based on whether

they will meet the program conditions in the absence of payments and whether they are willing to enroll in the program or not. The only way in which a PES program has an impact is by contracting land owners who would not have met program conditions in absence of payments, and consequently the additionality of a PES program will be determined by the share of payments going to what we here call type B applicants. This, in turn, will be determined by two factors: (1) the share of type B applicants among all applicants, and (2) the degree to which the regulator is able to identify and target payments to type B applicants.

The share of applicants who will not comply with PES conditions in the absence of payments will reflect the ratio between compliers and non-compliers among all land owners. The first insight that emerges from this conceptual framework is thus that a PES program is likely to be more efficient if it provides incentives for behavior that is not already common. Put differently, unless effort is put into identifying non-compliers, a naïve



A landowner in Costa Rica being interviewed regarding socio-economic and land issues. Photo: Anna Nordén

guess is that the additionality of a PES program should equal the non-compliance with programs conditions in absence of payments (Fig. 2). This insight goes far in explaining the meager results of the national PES programs aimed at reducing deforestation in Costa Rica and Mexico (Fig. 2); with annual deforestation rates around or under half a percent, it should come as no surprise that the additionality of these programs is of the same order of magnitude and consequently that most program beneficiaries would have conserved their forests regardless of PES.

However, the little robust empirical evidence there is on the additionality of ex-

isting PES programs suggest that not even measured against the reference of overall compliance do the programs perform well. The reason for this is something that can be called negative selection bias (Fig. 2), meaning that those that would anyway meet program conditions apply for participation at a larger extent than those that will not meet conditions. Both in Costa Rica and Mexico evaluations have shown that land owners with plots at a low risk of deforestation make up a disproportionately large share of program applicants (though selection bias seems to have lessened in later years). A simple reason for selection bias is that land-owners for whom

clearing is not a profitable option are happy to accept payments for doing what they would have done anyway, whereas for many of those who were already clearing, deforestation is profitable and payments are not high enough to cover the opportunity cost of conservation.

The problem of hidden information

The reason for the poor performance of PES in forest conservation to date can be framed as the result of hidden information: program officials do not know which applicants would comply with conditions in absence of payments. The smaller the share of potential payees that will not comply in absence of payments, the larger the problem of hidden information is.

One possibility to overcome this problem is by targeting payments based on imperfect information about risks for non-compliance (e.g., deforestation risk). The better non-compliance can be predicted, the larger the efficiency gains from targeting. However, the administrative costs of targeting can be quite large and while the relative gains from targeting can be substantial, absolute additionality may still be low (e.g., if deforestation rates are low; see Fig. 2). An alternative, institutionally simpler, approach to targeting is to direct payments to geographical areas where, for example deforestation rates are higher.

Fairness and the limits to efficiency

However, the gains from targeting may be offset by so called spillover effects. In addition to so called leakage (where PES simply results in deforestation shifting in space) there is a risk that increased targeting of payments will engender feelings of injustice among those who does not receive payments; especially as a likely result of increased targeting is that forest stewards will lose out as payments are directed to land owners who are, in the words of Wunder (2007: 53), “if not outright environmentally nasty, then at least at the edge of becoming so”. As a consequence land owners not receiving payments may retaliate by deforesting their land, justified either by feelings of not being rewarded, but punished, for their previous environmental stewardship, or in the hope that this will increase the probability of receiving PES in the future.

Economic experiments carried out in Costa Rica suggest that this is indeed a plausible response. In a so called dictator game where respondents have to decide how much of an allocated sum of money to donate to an environmental cause, people gave less if others who had contributed little before were targeted by a policy creating an incentive to

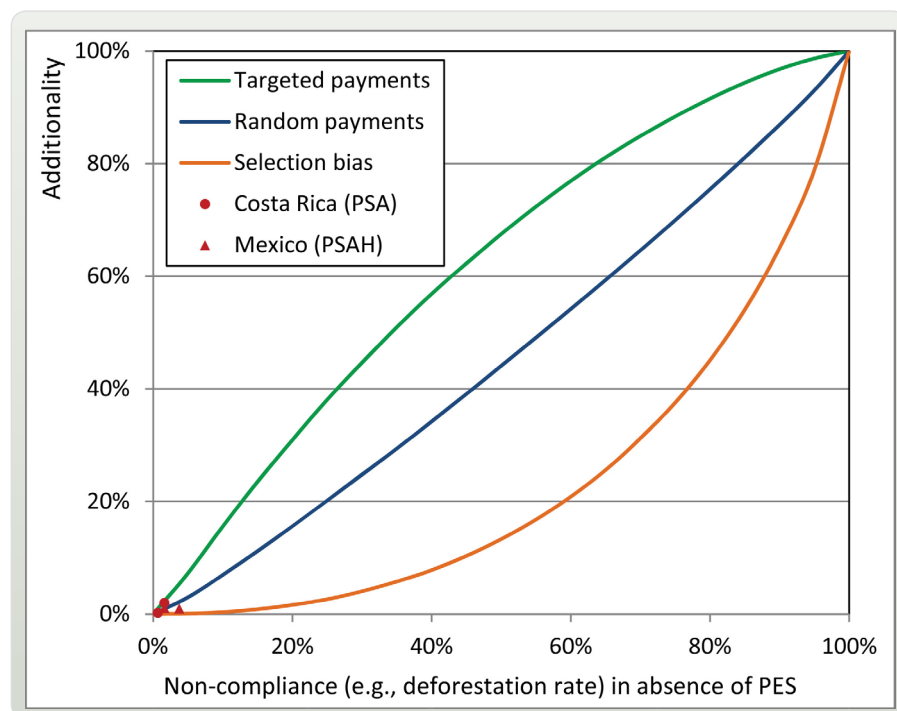


Figure 2. Results from a multi-agent model (Persson & Alpizar 2012) showing how the additionality of a PES scheme depends on the level of non-compliance with program conditions in absence of payments, the degree of selection bias (agents already complying self-selecting into the program at a higher rate than non-compliers), and targeting. Data on additionality of existing PES programs in Costa Rica from (Pfaff et al., 2008; Robalino et al., 2008) and Mexico from (Alix-Garcia et al., 2012; Muñoz-Piña, 2010). (PSA - Pago por Servicios Ambientales, PSAH - Pago por Servicios Ambientales-Hidrológico.)

contribute more. This implies that behavioral responses are likely to put bounds on the additionality that can be achieved in a PES program, as targeting for efficiency may be perceived as unfair or create perverse incentives for non-compliance.

PES – not for REDD but the plus?

The results presented here indicate that the cost efficiency of PES to a large extent will be determined by the level of compliance with program conditions in absence of payments. In the context of REDD+ this implies that PES in most instances is likely to be inefficient in reducing deforestation (since annual clearing rates are in the order of or below one percent in most countries) but much more efficient in inducing additional reforestation (since baseline reforestation rates are in most cases low), which is the exact experience coming out of Costa Rica's nationwide PES program. This conclusion is further strengthened by evidence that efforts to increase additionality through targeting risk are being hampered by spillover effects.

One can of course argue—as officials in Costa Rica have—that additionality is not the sole purpose of PES, but that all providers of ecosystem services should be compensated. However, in the case of REDD+, additionality is at the core of the system if market based, as countries will only receive compensation for

emission reductions below a given baseline. This implies that if one seeks to implement REDD+ through a PES program that achieves one percent additional forest conservation, either the carbon payment has to be set at a level one hundredth of the international carbon price (which will most likely have little effect on clearing rates) or one has to provide co-funding for payments to the 99 percent of land owners that will not yield international carbon funding (which is most likely not realistic for most potential REDD+ countries).

What role for PES in national REDD+ policy?

Even though a national PES program alone will probably not be effective in addressing deforestation, PES may still have a role in REDD+ implementation as one tool in a broader policy mix. In the case of Costa Rica it has been argued that the PES program was instrumental in creating acceptance for concurrent changes to the country's Forest Code that strengthened forest protection. Similarly, PES can be used as a way to share REDD+ benefits among stakeholders in order to increase policy legitimacy and support.

However, policy makers also need to be aware that the introduction of monetary incentives for forest conservation may have other unintended consequences. For instance, there is some evidence that the introduction of payments may undermine land owners intrinsic



Interviews and economic experiments with landowners were conducted to examine behavioral responses to PES in Costa Rica. Photo: Anna Nordén

motivation for forest protection. Evidence from Mexico suggests that PES does not create lasting effects on forests and there is anecdotal evidence of land owners threatening to clear their forests if they do not continue to receive payments. If the main argument for PES is no longer its cost-effectiveness, the question is whether there are other policy options that are superior in creating legitimacy for REDD+ and more long lasting support for tropical forest conservation.



Corcovado National Park in Costa Rica. Photo: Anna Nordén

Key policy messages

- Payments for Environmental Services (PES) policies are more likely to be efficient in incentivizing behavior that is not already prevalent (e.g., reforestation) than for conditions that are already frequently met (e.g., avoided deforestation).
- While targeting payments based on risk for non-compliance has a potential to increase PES impacts, gains risk being offset by unintended market and behavioral spillover effects.
- While national PES programs alone may not be an effective tool for REDD+ implementation, there might still be a role for PES in a broader policy package.

This brief

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Valle Turrialba in Costa Rica. Photo: Anna Nordén

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