

Conserving nature on a budget

– context matters

Payments for ecosystem services (PES) programs are an increasingly popular policy tool to conserve nature. A recent study shows that considering context - be it political, economic or geographical - is key in designing PES programs for maximum conservation impact.

SEVERAL OF THE GREAT environmental challenges today, such as climate change and loss of biodiversity, are linked to land-use practices. When addressing these issues, conflicts may arise between the economic interests of individual land owners and the goals of conservation agencies. Payments for Ecosystem Services (PES) is a policy that bridges this gap by providing compensation to land owners. Today there are PES programs all around the world, implemented in vastly different contexts. This brief offers guidance to policy makers on how to tailor program design to maximize impact in a given setting.



Unamat forest in Madre de Dios, Peru. Photo: Marco Simola/CIFOR

PES programs in a context

In the recent article by Lundberg et al (2018) the amount of ecosystem services that can be protected with a limited budget is compared between different PES programs designs under different circumstances.

One of the circumstances that is explored is the characteristics of the landscape where the PES program is implemented. An important factor here is the relationship between the ecological value of the land protected and the cost of protecting it. For example, is land that maintains high ecosystem service values expensive to protect, due to factors such as good agricultural quality or proximity to a city, or is it cheap to protect, for example due to a remote location?

Another factor is whether there is a chance that the land-owner might have provided the ecosystem service even without

payments. If the goal is to protect existing forest, there might be other reasons for the land owner to do so besides the payment. If the goal, on the other hand, is to plant new forest solely for conservation, it is unlikely to happen without economic compensation.

When running a PES program there is also a political context to consider. Is the program's focus only to provide an ecosystem service, or is it also aimed at providing social benefits? And is it acceptable to pay some participants more than others, or should everybody get the same payments per hectare?

Pros and cons of PES designs

The vast majority of existing PES programs have a fixed payment level for land-owners who want to take part. An alternative way to

allocate conservation contracts is through auctions.

In a program that uses an auction, land-owners that want to take part in the program can submit an application with a bid. In the application, the land-owner specifies the amount of money per hectare that they would require to take part in the program.

There are different types of auctions that can be used for PES programs. The two main categories are auctions that give all of the accepted participants the same payment, regardless of the bid that they submitted (called uniform auctions), and auctions where the accepted participants are paid the amount that they bid (called discriminatory auctions). Both of these auction types can be combined with ranking of the ecosystem service value of the applicant's land.

Fixed payments is the most well-known program design. It can be considered fair, as all participants are paid the same amount and in general it requires less administration than auctions. However, if PES program officials don't have a good estimate of the alternative values of land in the area it can be hard to set an appropriate payment level. If the payment level is too low, nobody will want to join the program; if it is too high, a lot of land-owners will want to join, but few can be paid.

Key points

- Accounting for context is key when designing Payment for Ecosystem Services (PES) programs for maximum impact.
- Prioritizing land owners that provide high ecosystem services generally increases PES effectiveness, but is particularly important when land providing most ecosystem services also is the most expensive to protect.
- PES programs have larger impacts when targeting services that land owner are unlikely to provide without getting paid, such as reforestation.
- When paying for ecosystem services that are likely to be provided in absence of payments, PES programs should use fixed payments and prioritize landowners that provide high ecosystem values.

A way to avoid “the wrong” payment level, is to use a uniform auction. The uniform auction maximizes the number of participants for a set budget, by enrolling applicants with the lowest bids first, thus helping to set an “optimal” price level. With this design, however, some participants will be paid significantly more than their actual costs.

In discriminatory auctions, the program does not over-compensate any land-owner. Hence, with a limited budget, more land-owners can be signed up for the program. The land-owners that are paid less may however increase their bids in later auction rounds, in order to increase their payments. Over time, this behavior can erode effectiveness.

Context matters

By enrolling land-owners with the lowest costs first, auctions can increase the amount of land enrolled into the program. But if land

with the most valuable ecosystem services is the most expensive to protect, and many land-owners would provide the ecosystem service even without getting paid, auctions can enroll the “wrong” applicants. The findings in Lundberg et al (2018) suggests that in this setting, common e.g. in forest conservation PES programs, fixed payments that focus on participants with high ecosystem service provision scores may be a more cost-effective option.

Programs using ranking of land generally provide a higher total ecosystem service. They can be particularly effective if land with high ecosystem service values is the most expensive to protect. However, if applicants with high ecosystem service value are prioritized, this may decrease the total number of applicants that can be enrolled in the program. So, if there is a dual goal of nature conservation and poverty alleviation, this design may not be desirable.

Summary

When it comes to deciding on a PES program design, context matters. A payment for ecosystem service model that is highly successful for a forest plantation project in Africa might not be appropriate for a forest conservation program in South America. Considering context—be it political, economic or geographical—is thus key in choosing a payment for ecosystem service program design that maximizes conservation impact.

References

This brief is based on the following publication: Lundberg, L., Persson, U. M., Alpizar, F., & Lindgren, K. (2018). Context Matters: Exploring the Cost-effectiveness of Fixed Payments and Procurement Auctions for PES. *Ecological Economics*, 146, 347-358

Payment for ecosystem services - design options:	+ Advantages	- Disadvantages
Discriminatory auction <i>- an auction where enrolled participants are paid their submitted bid</i>	<ul style="list-style-type: none"> + Economically, the most efficient design. + Easily understood by the participants. 	<ul style="list-style-type: none"> - Risk that applicants exaggerate the cost of providing the ecosystem service in order to get paid more. - Concerns for fairness. - Risk of enrolling land-owners who provide low quality ecosystem service and who would most likely have provided the service anyway.
Uniform Auction <i>- applicants submit a bid. The bid determines which applicants are accepted into the program, but all enrolled participants are paid the same amount</i>	<ul style="list-style-type: none"> + Low risk that applicants exaggerates their costs. + “Politically fair”. + Can help set the “optimal” price, since the bids inform program officials how much money the land-owners require to provide the ecosystem service. 	<ul style="list-style-type: none"> - When everybody is paid the same price, it is harder to combine the auction with a scoring of the participant’s ecosystem service value. - Risk of enrolling land owners that provide low quality ecosystem service and that would most likely have provided the service anyway (same as for the discriminatory auction).
Fixed payments <i>- all enrolled participants are paid a fixed price per hectare, that is announced in advance</i>	<ul style="list-style-type: none"> + Well-known program design. + “Politically fair”. + Likely to have lower transaction costs for applicants and lower administrative costs. 	<ul style="list-style-type: none"> - It can be hard to set the right payment level. If the payment is too low, nobody will want to join the program; if it is too high, a lot of land-owners will want to join, but there will only be enough money to pay a few of them.
Ranking participants after an ecosystem service provision score	<ul style="list-style-type: none"> + Land-owners that protect land with high ecosystem service value are prioritized into the program. This is especially important if land with high ecosystem service values is also the most expensive to protect. 	<ul style="list-style-type: none"> - It may decrease the total number of applicants that can be enrolled in the program. If the program is supposed to both protect the environment and support poor people, this might not be desirable. - It could mean more administration and higher costs, both for program authorities and for land-owners

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