

## **Payments for Environmental Services:** Introduction to feasibility, supplier characteristics and poverty issues

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### **Summary**

As Payments for Environmental Services (PES) is in its early stages of development and implementation, there are many questions to address regarding its features and functions. In this overview paper, we take a look at three themes relevant to practitioners' work - the environmental and economic feasibility of PES schemes, the characteristics of environmental service providers, and the relationship between PES and poverty. The first section on environmental and economic feasibility discusses how to develop performance-based (conditional) mechanisms built on real cause-effect relations between land use and environmental services that are economically viable for environmental service (ES) providers and beneficiaries (realistic). The second section on the ES providers discusses the characteristics of many ES providers and the issues facing them, including whether the incentives are sufficient to engage providers on a voluntary basis and whether schemes are adaptive and reflect the voices of and within communities. Finally, the third section discusses the relationship between PES and poverty, namely the opportunities and risks in reducing poverty, and the possible effects of a pro-poor focus on the viability and effectiveness of PES. This synthesis paper gives a conceptual overview of the various issues that will be further explored in the rest of the publication through case studies.



Payments for Environmental Services (PES) is an approach to resource conservation that uses incentives to influence environmental practices. More specifically, it is where beneficiaries of environmental services make payments or provide other non-financial rewards to those who secure the provision of such services. These environmental services are non-material, non-extractive benefits from natural resources, such as watershed protection and carbon sequestration. Payments, in addition to monetary exchanges, can be more broadly understood to be compensation mechanisms that reward providers of ES, and thus can include payment-in-kind and access to resources and markets.<sup>1</sup> In this publication, we take payments and rewards to consist of a range of positive incentives that may also include benefits such as decision-making power, capacity building, etc.

While PES schemes exist in some developed countries and have been piloted in various locations in developing countries, PES remains a fairly new practice with limited experience. Recently, it has been attracting increasing interest in Asia, but many questions and issues regarding its design and implementation in the region remain. This paper provides an overview of these issues and introduces the case studies that follow in this issue of *Insight*.

## **Environmental and Economic Feasibility of PES: Making Schemes Realistic and Conditional**

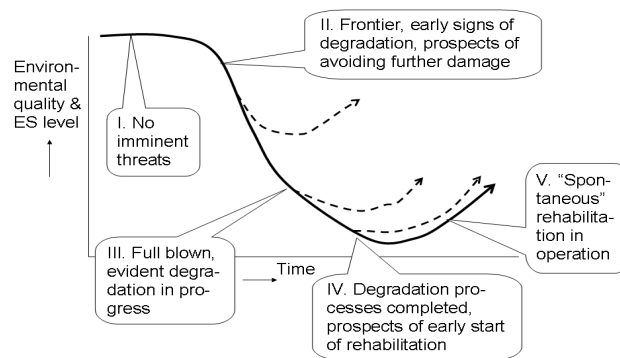
How can we ensure that PES schemes are environmentally and economically feasible? In addressing this question, the recent experience of the Rewarding Upland Poor for Environmental Services (RUPES) program highlights the importance of two criteria in the design of PES mechanisms: payments or rewards should be conditional (performance-based) and realistic.<sup>2</sup> We explore these criteria further here.

### **Realistic**

A realistic PES program considers both the environmental and economic factors that are necessary and feasible to effectively improve or maintain the provision of an ES. From an environmental perspective, a realistic PES scheme requires a clear relationship to have been established between the land use modification that forms the basis for the payment scheme and the proposed ES outcomes. This means that management practices by ES providers could actually maintain or improve the ES provisions. One major problem is that there are gaps in perception of these environmental services, and what actions can best secure them, among ES providers, beneficiaries and intermediaries. In many cases, providers of ES, even intermediaries, do not know the real effects of their land management practices on ES provisions. Buyers of ES often remain unaware of the level of ES provision they are receiving in return for their payments (or even that such values are being generated in the first place). Furthermore, the science of how to address the complexity of landscape and ES provision interactions is nascent. On top of these factors, a viable PES program should be realistic in terms of the timing, adequacy and quality of implemented practices, and allowing enough time for desired environmental outcomes to emerge.<sup>3</sup>

From an economic perspective, it is important that the scheme is based on an understanding of the economic costs and benefits accruing to various stakeholders. At least three types of costs are involved in a PES scheme: *operational* (or direct) costs to implement the conservation activities, *opportunity* costs of alternative land and resource uses forgone due to conservation activities and *transaction costs*, the financial and other costs involved in establishing a PES scheme. For a PES scheme to work, the payment or reward needs to be adequate and acceptable for: 1) the ES sellers to cover their operational and opportunity costs; 2) the intermediaries to cover their transaction costs; and 3) the ES buyers to be willing and able to pay for all of these costs and still receive a net benefit in ES value. Ideally, there are some real additional benefits to be shared beyond these costs. A realistic PES scheme recognizes the need to match the ES beneficiaries' willingness to pay (WTP) and the ES providers' willingness to accept (WTA) the offered payment or reward as the basis for negotiation of benefit sharing.

In determining whether a PES scheme is realistic in both environmental and economic terms, the conditions and trends of ES and analysis of threats to these services is important. Figure 1 shows how these conditions and trends can be analyzed to assess the potential for PES scheme implementation. The adjoining table recognizes "additionality" as a key factor in this analysis.<sup>1</sup> In general, it is easier to show additionality for "restoration" projects than for "avoided degradation" as the degradation is already clear and the ES improvement more tangible. Such demonstration of additionality can be instrumental in raising WTP, even though for environmental health, the rule that "prevention is better than cure" holds as much as it does for human health.



**Figure 1.** Diagram and table showing feasible environmental and economic factors for PES implementation

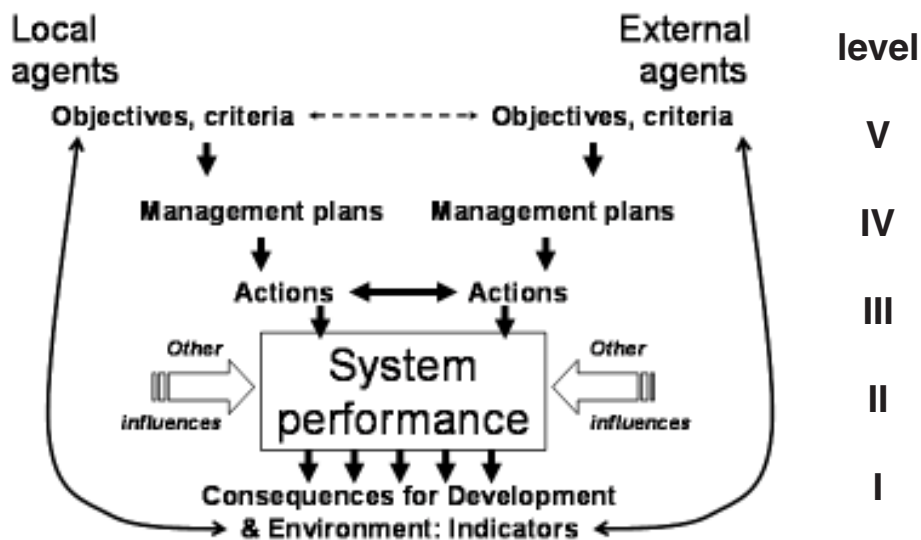
<sup>1</sup> This refers to the improvement in ES that would not have occurred without the change or project, or in a "business as usual" scenario.

	Current ES level + evidence	Threats	Prospects for ES reward mechanisms
I.	Good ES level	No imminent threats; low accessibility and/or institutional protection sufficient	No imminent need, low additionality
II.	Good ES level, but early signs of degradation	Frontier setting, interaction of multiple actors; changing institutions	Slowing down degradation, stabilizing at higher level; potentially high project additionality, but WTP and WTA may be low as yet
III.	Declining ES; evidence starts to accumulate	Full degradation in progress	Slowing down last phases of degradation, early start of rehabilitation; potentially moderate additionality, but WTP and WTA are increasing
IV.	Low ES level, historical decline evident	Degradation processes completed; prospects of early start of rehabilitation	Triggering and/or speeding up rehabilitation; moderate but “easy to show” additionality, WTP and WTA may be high
V.	Low but improving ES level; “trends” may be unclear	“Spontaneous” rehabilitation in operation	Increasing the restoration levels attainable; low-to-moderate additionality, WTP higher than WTA where real trade-offs are concerned

### Conditionality

In order for PES schemes to be socially and environmentally sustainable in the long term, the payments for ES should be conditional on the actual delivery of such ES. If providers fail to deliver (through their activities or ES results), the buyers can withhold payments or rewards. Figure 2 introduces five levels at which conditionality of PES can be envisaged, with the likely advantage of using multiple levels in any particular scheme and the opportunities for the gradual development of trust (level V) over time.

The first mode of conditionality, which is based on measurement of ES outcomes, begins with the establishment of a set of criteria and indicators between the local ES providers and the external ES beneficiaries. This may be the ultimate target of performance-based measures, but it may be difficult to implement due to time lags and strong effects of external factors, such as climate variability. Clean Development Mechanism (CDM) projects are of this type because they are ultimately based on



**Figure 2.** Schematic representation of five levels at which the interactions between local actors and external stakeholders can take place: ES outcome (I), condition of the agro-ecosystem (II), inputs/activities (III), management plans (IV) and trust in management objectives (V) (Van Noordwijk, 2005).<sup>4</sup>

measured changes in carbon stocks that reflect net carbon sequestration; a case study on CDM in A Luoi, Vietnam, gives more details about specific criteria and indicators. A further example is in the Sumberjaya case study, where the RiverCare group monitors sediment levels in the river as a basis for performance-based rewards.

A second mode of conditionality is where payments are based on the actual overall condition of the agro-ecosystem. This kind of approach, based on analysis of the “stock” of natural capital rather than the measurement of ES flows (as with the first mode), has the potential advantage that the environmental conditions are easier to observe than ES flows. However, there can be a bias in the system as certain land cover types are overrated with respect to the ES provision and others don’t get the recognition they deserve. The debate on forests or agroforests as providers of watershed functions, touched upon in the Sumberjaya case study, is a case in point.

A third mode of conditionality rewards actors on the basis of their efforts or practices that are perceived as desirable, such as planting trees, maintaining good land management that meets specified restrictions or protecting a piece of land that is ecologically sensitive. The Kuhan case in India, in which the lower village pays the upper village to protect an area from grazing, would be an example. In cases of PES based on this mode of conditionality, the payment is often based on the willingness of external beneficiaries to pay for the change in practice by local actors, rather than on the



opportunity costs to service providers. In such cases, clear guidelines of land-use practices that lead to the depletion and improvement of ES provision need to be further developed, and critically evaluated. For example, planting trees will usually reduce water availability downstream rather than increasing it.

The fourth mode of conditionality introduces the concept of local management, which can be understood as the “right to regulate internal use patterns and transform the resource by making improvement” from providing linkages to risk-sharing and conflict resolution.<sup>5</sup> Partnership is also considered the essence of co-management, which can involve lifting policies that promote environmentally harmful practices and discriminate against poorer farmers. Harmonizing perceptions on managing the environment for a win-win solution is acknowledged by the external stakeholder, who will *pay for the way they (the local actors) decide on what to do or what not to do*. It can be seen as “avoiding micro-management.” In the Kulekhani case study, for example, part of the hydropower royalty that the upland people receive as a reward for their land-use activities are used for their own conservation and development projects.

The fifth mode of conditionality is based on trust in local objectives and ability to manage for local benefits derived from environmental conservation. An example can be certain forms of the ICDP (Integrated Conservation and Development Project) where poverty alleviation and greater participation of local communities in conservation strategies and activities are based on expectations of win-win outcomes for livelihoods and the environment. People’s participation is secured at all stages of ICDPs, from design to implementation, monitoring and evaluation. Such an approach is often seen by theorists as a weak form of PES, as the conditionality of payments is low or nonexistent and the linkage between payments and ES provision is indirect.<sup>6</sup>

## Who are the Service Providers?

Engaging effectively with the providers of an environmental service is a critical foundation for PES, to ensure the sustainability of the mechanism as well as to ensure positive environmental outcomes for the service buyers and livelihood improvements for the service providers. A starting point is to understand the characteristics and contexts of the people who provide the environmental services, which can help to plan the best strategies to engage with them in a meaningful and sustainable way. The following points describe in broad terms the situation of many service providers in the Asian context, based on experiences from the RUPES program and Winrock-IIED’s work on watershed services.

### Rural, often poor

A key characteristic of service providers is that they are usually rural or peri-urban. In most of the cases presented from Asia, they are small-scale farmers practicing subsistence and market farming, or horticulture in a mixed landscape that includes farms and forests. The providers may also be users of natural resources, such as forests, based on formal or informal rights to the resource.

### **Diverse livelihoods**

A related feature of these rural poor is that they typically draw on a diverse range of livelihood activities undertaken for their subsistence and survival. For those that own land, for instance, a household may farm their own small patch of land, keep a few animals that graze in a nearby forest, and collect a variety of NTFPs for subsistence and sale. The implication of this is that any change in land-use practices is likely to have a range of impacts on a variety of stakeholders, some that are direct and immediate, and some that may not be immediately obvious.

### **Small landholdings**

Across Asia, many of the landholdings are small; for example, in countries like India, Indonesia, Nepal, and Vietnam, average landholding size is under a couple of hectares.<sup>7</sup> In mountain regions, the size of fields and holdings may be even smaller (this is illustrated in the Kuhan case, from Himachal Pradesh, India, where landholdings are in fractions of hectares, and also the Kulekhani case, Nepal appearing later in this volume). Higher populations and small landholdings mean that functional environmental service payment schemes may have to deal with a large number of people to achieve a sufficient scale of impact on the ES.

### **Limited awareness and information**

Many poor communities have limited information, and may be unaware of the effects of their activities. In the Kulekhani case, for example, the people of the watershed did not know that their activities were benefiting others besides themselves. Service providers and beneficiaries may also have very limited information on the process of setting up functional PES mechanisms or of the skills and training that the schemes may require. Facilitators may play an important role in raising awareness of the concept of PES, as they have done in the Kulekhani case, or in capacity building and training, which was required for the service providers in Bakun watershed, Philippines.

### **Low voice and negotiation power**

Along with limited information, poor service providers usually have little political voice and even lesser power to negotiate agreements. More often, they are at the receiving end of government regulations and investments. However, where payment mechanisms are able to engage meaningfully with such stakeholders, it can provide a vehicle to both undertake land use practices that provide environmental service benefits as well as improve the circumstances and welfare of the service providers.

### **Local institutions need strengthening to play a coordinating role in PES**

Institutions that coordinate and represent the service providers can play a critical role in reducing transaction costs and helping a variety of stakeholders with differential power and voice engage in the negotiation of a PES instrument. Where such institutions are lacking or non-functional, a key interim goal for facilitators or interme-



diaries has often been to develop and nurture such representative bodies. This can be seen as a foundation activity for PES, which actually brings multiple benefits. Conversely, where such institutions do not exist and facilitators are unable to engage in such supportive work due to short time horizons or other constraints, mechanisms are less likely to succeed.

### **Lack of clear land tenure**

Another feature that is prevalent across Asia is the variation in security of land tenure for farmers, whether on private lands that are farmed individually, or common lands that are accessed and/or managed by communities. The lack of clear title and secure tenure affects the ability and incentive of individuals and communities to make longer term decisions about their land use and land management decisions. For communities, the risk is that where land use rights are unclear, actual landowners – often the government or large private landholders – can accept environmental service payments, with little trickling down to other land users who are also affected. This is particularly relevant as the timeframe involved in undertaking land use practices and seeing their full environmental impact may be measured in years and decades rather than months, while most farming and forest communities live from one harvest to the other, and have high discount rates (placing higher value on immediate rather than long term returns). The lack of clear tenure can then become a significant barrier to developing payment mechanisms and achieving sustainable resource use. Conversely, innovative payments mechanisms can help such communities to strengthen their tenure, perhaps as a reward based on environmental performance, as in the Sumberjaya case study.

### **Influence of the size of resource flows**

A key question for ES providers is whether the incentives offered for them to change their resource use and management practice is sufficient to engage them on a voluntary basis. A second question is whether the payments can vary to reflect the variations in the opportunity costs amongst the service providers, especially on common lands, e.g. graziers may bear higher costs than non-graziers, if grazing is closed. Where the size of incentives are small in proportion to the number of stakeholders, and the activities are also often on common lands, an effective practice can be to provide and use the payments at a collective level, rather than distribute small sums of money to individuals, as in Kulekhani.

### **Adaptive mechanisms**

Mechanisms that are adaptive, effectively reflect the voice of communities and balance negotiation power between stakeholders, are more likely to succeed. They will also have to be based on an assessment of the level of uncertainty and risk – whether a proposed land use change will have the anticipated benefits, whether communities have the staying power to undertake the changes and wait for the payments later, whether payments are for input activities (tree planting, terracing) or for outputs (reduced erosion), and so on. Potential buyers may also be hesitant and skeptical of the ability of the service providers to deliver here, there may be a role for



experimental “stand-in” payments that demonstrate the viability of a payment mechanism, as in the Sumberjaya case study with the RiverCare group.

Meaningful engagement with communities that have both environmental and local economic benefits will require understanding service providers’ specific characteristics and addressing them at the site level. It is clear is that, for service providers who include a significant proportion of poor people, any land-use practice change that is proposed should either have significant local benefits (a win-win solution), or provide adequate, and sometimes innovative, forms of compensation.

## **PES and Poverty: Opportunities and Risks for Poverty Reduction**

When considering the feasibility of PES programs and the service providers involved, a central issue that arises is the effect of such programs on the poor. *Can and should* PES aim to reduce poverty, and *how*? To answer this question, we must consider both the impacts of PES on the poor, and the impact of a pro-poor focus on the effectiveness of PES. More specifically, can PES programs help to reduce poverty? Are there ways in which these schemes may even worsen the situation of the poor, and how can such risks be minimized? What implications will a focus on poverty reduction have for the viability of PES schemes? Answers to these questions are rarely clear cut, especially given the limited experience and research so far on these issues. However, some general points can be made.

Firstly, experience has shown that resource management interventions of this kind, particularly where common property resources are involved, have the potential to affect livelihoods in significant ways. Furthermore, studies so far indicate that the impact of PES on the poor may be substantial.<sup>8</sup> With a better understanding of the various dimensions of the relationship between PES and poverty, more can be done to maximize PES’ poverty reduction potential and reduce risks to the poor.

### **Impacts of PES on poverty**

The opportunities and risks for the poor that emerge from PES programs seem to largely depend on specific characteristics of the programs and the context in which they take place, such as the types and locations of services being marketed, the transaction costs involved, the forms of payments or rewards, and the level of priority to target the poor.

Before we discuss the specific impacts of programs, we consider what determines the participants of PES in the first place and how the poor might be excluded. First, there must be a market for the ES being provided by poor suppliers. Though many land users are poor and so may be in a good position to be willing ES sellers, there is no guarantee that there are many users of such services or that existing users are willing to pay. Also, even when there is a potential market for the services the poor provide, a number of barriers exist for the poor to participate in PES. Certain charac-



teristics of the poor, such as uncertain property rights, small landholdings, and weak political voice, noted above, can diminish access by the poor to PES schemes. For example, if a PES program is open only to landholders, this immediately restricts the potential for PES to benefit many of the rural poor, who do not have secure title to land. Furthermore, PES programs can involve high costs, such as transaction costs and investment costs, which may hinder participation by the poor.

In this analysis, we take a multidimensional approach to the concept of poverty. Rather than understanding it to be only the lack of material income or financial assets, we understand poverty to be the lack of capabilities that enable a person to live a life that he or she values,<sup>9</sup> involving deprivation in four other areas in addition to financial assets - human, natural, social and political, and physical. The impacts of PES on poverty therefore also need to be explored in terms of the impacts on these five asset bases.<sup>10</sup>

**Financial assets:** PES may contribute positively by increasing the overall income in participating households through payments or expanded employment opportunities. On the other hand, if access to PES schemes by the poor is restricted, income may become more concentrated among the wealthy, and restrictions on land use associated with PES may reduce income from other sources for both poor participants and non-participants.

**Human assets:** Access to basic services like education and health and emergency assistance enable people to adapt to change and decrease their vulnerability to financial or environmental shocks. Public health could be improved by PES if air and water quality are improved. For participants, PES initiatives may bring an increase in human assets by bringing training associated with the projects. However, the poor may have difficulty in capturing these, and may also be further excluded due to lack of initial skill and training.

**Natural assets:** Here, a key concern is the poor's security of access to natural resources and change in the value of these resources. In some cases, PES may strengthen tenure security; land under PES agreement is not considered "idle", which can reduce the threat of encroachment. Tenure security itself has also been used as the form of payment or reward in some schemes, as seen in the Sumberjaya case study. Conversely, PES may limit access to common lands for marginal groups who use them for livelihood activities such as grazing, resource collection, and swidden agriculture. There is also a concern that land might be taken away from the poor as the land becomes more valuable under a PES scheme, as indicated in the Indian case study by Rohit and Kerr.

**Social and political assets:** Critical social resources enable people to function equitably as members of society. These assets include both social structures and processes (the internal and external relationships in communities), and institutional arrangements (the decision making structures and processes). Where PES programs

promote the strengthening or creation of institutions to negotiate agreements, they may unite communities and increase their social and political power. On the other hand, there is also risk of conflict, especially associated with problems in the equitable distribution of costs and benefits within communities.

**Physical assets:** These include access to basic infrastructure, such as sufficient housing, energy, transport systems, and communications facilities, which can create opportunities to expand livelihoods and decrease dependence on local resources. Local infrastructure may be improved due to market infrastructure provided through PES programs, such as roads, while some may have to be dismantled in order to properly deliver environmental services.

These are just some of the risks and opportunities that may face the poor through PES programs. How these weigh up against each other will vary according to each specific case. Either way, it remains important to consider the effects of PES on the poor; ignoring this can be, at best, a lost opportunity to reduce poverty, or at worst, a significant liability to the poor and a setback in the pursuit of poverty alleviation.

### Effects of a pro-poor focus on PES viability

Some say that poverty reduction should be a central objective of PES, perhaps even inextricably linked to its environmental conservation objective. Aside from ethical reasons, the inclusion of the poor can be seen as important for the long-term viability of these initiatives, and could also contribute to wider poverty reduction goals.

Others argue that conservation should be the primary objective of PES and that focusing too much on poverty reduction may cause PES to become unviable, or diminish the delivery of environmental services. The concern is that, considering the market-based nature of PES, diverting the focus too much from environmental conservation could end up preventing the delivery of environmental services, and causing buyers to pull out. In this event, there is no opportunity for the PES mechanism to help the poor.<sup>11</sup>

There is also concern that efforts to involve the poor can compromise the efficiency of PES;<sup>12</sup> for example, with the higher transaction costs for a group of smallholders. Some have also expressed concern that improvements in the five asset bases might ultimately have a negative impact on the delivery of the ES. For example, an improvement in the local economy could attract migrants and threaten the very resource that people are trying to conserve.<sup>13</sup>

It seems that there are situations where conditions for environmental conservation and poverty reduction may converge and a win-win situation is possible. However, this will not happen automatically, and the level of priority placed on poverty outcomes needs to be explicitly determined at the outset.



### **Future action**

This brief overview of the relationship between PES and poverty highlights its complexities and the need for more research to clarify the issues. What we can see so far is that PES brings a number of opportunities and risks for the poor, much of which depends on the conditions and design of PES in each case. While there is debate on the level of priority that should be given to poverty reduction within PES programs, it is imperative that proponents of PES share a commitment to “do no harm” to the poor through PES initiatives by worsening their situation. Further, PES schemes could usefully take up the identified opportunities to improve the accessibility of PES initiatives and to build the assets available to the poor.

Intermediary organizations have a critical role to play in the above tasks. They can help to improve the accessibility of PES schemes to the poor by: sharing information on ES market opportunities, facilitating innovative ways to strengthen resource rights for the poor to enable their participation, and reducing the transaction costs of their participation. They can also strengthen the assets of the poor in various areas, particularly through training and knowledge management and strengthening and developing local institutions.

We need to also recognize that poverty reduction and sustainable natural resource management will ultimately need a range of complementary strategies, not just PES. At a particular site, PES might form one of a range of strategies including regulation, enterprise development, and community-based resource management. The poverty reduction potential of PES is perhaps best considered on a site-specific basis in the context of the other options available, to enable the most effective options for sustainable livelihoods and resource management to be supported in an integrated way.

### **Conclusion**

We have reviewed a number of important factors to consider when designing and implementing PES mechanisms – factors in ensuring mechanisms are realistic and conditional, implications of characteristics of service providers, and various aspects of the relationship between PES and poverty. Many uncertainties and challenges remain, but pilot projects and research are clearing up some questions and informing our decision-making. The sharing of information and experience is essential to taking PES mechanisms forward, and we hope the case studies that follow contribute to this process.

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