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Problematizing REDD+ as an experiment in payments for ecosystem services

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This paper conceptualizes the REDD+ policy framework as the world's largest experiment in Payments for Ecosystem Services (PES). REDD+ promotes the commodification of ecosystems' carbon storage and sequestration functions on a global scale and it is consistent with market-based conservation approaches and the 'neoliberalization of nature'. REDD+ is therefore problematized on the grounds that, first, eases a transition from an ethically informed conservation ethos to a utilitarian one that simplifies nature and undermines socio-ecological resilience; second, relies on a single valuation language that may crowd-out conservation motivations in the short and long term; and, last, is sustained on a 'multiple-win' discourse that in practice lacks procedural legitimacy in many developing countries and reproduces existing inequities and forms of social exclusion. The argument is developed drawing on PES literature and insights from critical theorists and practitioners of nature conservation.

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Introduction

Reducing emissions from deforestation and degradation, conserving and enhancing forest carbon stocks, and sustainably managing forests (REDD+) is an international climate policy framework aimed at generating incentives to protect and better manage forest resources, by recognizing and establishing an *economic* value for the additional carbon stored in trees or not emitted to the atmosphere [1]. REDD+'s procedural rules have evolved over time [2] and its implementation means are country-specific. To be effective, REDD+ will require several coordinated national and regional policy programs,

subnational projects, and involve multiple actors, including governments, non-governmental organizations (NGOs), multilateral agencies, private organizations, communities and individuals. REDD+ activities can thus include enforcing and expanding protected areas, combating illegal logging, changing subsidy and incentive policies, improving land-use planning, developing new forest management regulations, taxes and sanctions, and also very likely providing targeted economic incentives to land owners and rural communities through national and project-based schemes of payments for ecosystem services (PES) [3,4]. Subsequently, governments should develop legal and technical frameworks for a carbon accounting system that controls for and does not double-count emission reductions from multiple activities, whilst taking into account carbon ownership and liability issues [5,6]. The diversity of implementation means and participants makes REDD+ a relevant experiment of multi-level environmental governance [7,8].

REDD+ has so far been catapulted through a range of public funds¹ supporting the development of technical capacities and the design and early implementation of developing country policy options, counting with deposits for a total of 1.5 billion US\$. Some of this funding will probably have to be sustained over time to consolidate carbon accounting and capacity building in developing countries. Additionally, a long-standing framework to reward governments and private actors for the supply of carbon emission reductions will probably have to rely on carbon markets and/or new supporting funds generated by proceeds from permit auctions or surcharges on trading of emission credits; a levy on Clean Development Mechanism (CDM) projects; a tax on air traffic, fines imposed on countries that do not comply with the international climate regime; and debt-for-nature swaps [9].

This paper conceptualizes REDD+ as the world's largest PES experiment. PES are generally understood as a voluntary transfer of – most often monetary – incentives from beneficiaries to providers of ecosystem services, as long as incentives are made conditional to actual service provision and participation is voluntary. Some PES are

¹ These funds include the Amazon Fund, with contributions from Germany and Norway; the Congo Basin Fund, with contributions from the UK and Norway; Australia's International Forest Carbon Initiative; Norway's International Climate and Forest Initiative; and the multi-country Forest Investment Program and Forest Carbon Partnership Facility managed by the World Bank, and the UN-REDD program.

part of well-developed markets for mitigating impacts through offsetting, such as carbon markets and wetland banking [10,11]. REDD+ aims to transfer economic resources from carbon offset *buyers* to *sellers* with payments being conditional to the adoption of sustainable land-use practices and the delivery of emission reductions against national or project-based baselines, expressed in tonnes of avoided or sequestered carbon dioxide emissions. As suggested above, payments are likely to be articulated through transnational or global markets for REDD+ and other types of carbon offsets.

REDD+ thus promotes the *commodification* of ecosystems' primary production by *isolating* carbon storage and sequestration functions from other services provided by forests; *quantifying* such functions with a standard unit of measurement (tonnes of CO₂); *monitoring and reporting* carbon stocks and fluxes over time and landscapes; and *economically valuing* the cost of avoided or sequestered forest carbon emissions for the purpose of *exchange* between buyers and sellers [9]. It upscales the model of project-based forest carbon offsets promoted by voluntary carbon markets and the Kyoto Protocol's Clean Development Mechanism to encompass programmatic policy actions at country level and national-based carbon accounting methods.

What follows draws on critiques of and insights from incentive-based conservation, including PES and REDD+ evidence, to frame REDD+ as a paradigmatic example of market-based conservation, that is the management of nature according to monetary values, and utilitarian principles of supply and demand [12]. This conservation approach is unsurprisingly subject to the 'particularities of place' and varying degrees of public and private intervention and re-regulation that characterize the 'neoliberalization of nature' [13,14,15^{**},16,17,18^{**}]. It is argued that REDD+ transforms the conservation logic and reconfigures livelihood strategies without significantly altering procedural and distributive justice conditions of the geographies where concrete REDD+ policies and project interventions unfold. In doing so, the paper sheds light on the risks and limitations of ecosystem service-driven conservation and adds to a growing body of evidence that exposes the limitations of "selling nature to save it" [19–21]. The conclusions summarize the argument and introduce an alternative proposal for funding land-use governance in developing countries.

Itemizing nature fosters a shift in conservation logic

The concept 'ecosystem services' has been popularized by the Millennium Ecosystem Assessment as the benefits that nature provides to humans and that influence our well being [22]. The concept was already coined in the late 1970s and early 1980s but its utilitarian emphasis has been only recently discussed and criticized [23–25].

Dividing nature in a collection of ecosystem services is a scientifically-driven process that, taken out of context, may render invisible the inter-connectedness of ecosystem elements and processes and obscure the way in which such inter-connectedness affects the 'performance' of single ecosystem functions [26–28].

Despite such shortcomings, the ecosystem service idea has gained increasing traction among conservation policy and activist circles. When coupled with efforts to derive the likely monetary costs of biodiversity loss and resource degradation and to quantify the direct and indirect economic benefits that nature provides to humans, it has resulted in an appealing concept to communicate the importance of nature conservation to civil society whilst laying, in theory at least, the foundations for the design and implementation of new policy instruments such as PES [9,13]. The latter is not to say that itemizing nature always translates in the economic valuation of ecosystem services, or that economic valuation should forcefully the creation of new commodities for the purpose of exchange [29,30].

Whether or not ecosystem services become or not commodified, itemizing nature leads towards a problematic shift in the logic of conservation. The former ethical and inter-generational argument that nature must be managed and protected for the survival of (all or most) ecosystems and species is substituted by one that prioritizes those elements of nature that are useful to humans. As McCauley [31] notes:

"To make ecosystem services the foundation of our conservation strategies is to imply – intentionally or otherwise – that nature is only worth conserving when it is, or can be made, profitable. The risk in advocating this position is that we might be taken at our word. Then, if there is a 'devaluation' of nature, . . . , what are we to tell local stewards who have invested in our ideology, and how can we protect nature from liquidation?"

This shift results in counterproductivity for socio-ecological resilience because it tends to support resource management approaches – for example towards carbon content conservation or sequestration – that can result in critical trade-offs with other services and negative impacts on local well-being [32–33]. Therefore, managing for the provision of single and even 'bundled' ecosystem services requires of continuous assessment in order to identify emerging trade-offs across spatial and temporal scales, and to track changes in local well-being in the short and long term [34–35]. Paradoxically, however, very few PES schemes have to date incorporated rigorous monitoring and assessment of ecosystem services using ecological indicators and have relied instead on observations of proxy land-use data including but not always local people in the assessment process [36,37,38^{**}]. The reason is that

accurate monitoring can be technically challenging and very costly if developed by third parties to avoid accounting flaws. Few schemes have thus been able to internalize such costs as otherwise they would have been financially non-viable. The request for environmental additionality in REDD+ may lead developing countries to dedicate enough funds to guarantee faithful accounting of land-use related carbon stocks and flows but it remains to be seen if it will involve an integrated assessment of ecosystem services across REDD+ targeted landscapes.

Pricing ecosystem services risks crowding-out conservation behavior

The underlying attribution of a monetary value to an ecosystem service that characterizes REDD+ and other PES schemes risks undermining or at best underplaying other languages of valuation [12]. Examples of rural communities resisting the pricing and exchange of ecosystem services are rare, potentially due to the fact that only those PES schemes that are somehow supported and become implemented are thoroughly researched. In south-east Mexico, for example, there are documented cases of communities and farmers who have stood against PES and other forms of conservation support since the rise of the revolutionary Zapatista army [39]. Another reason that may also explain the lack of such kind of studies is what Milne and Adams [40] have termed the ‘PES community-model’ that reconfigures discursively and practically local authorities and governing institutions as service providers. The latter “depoliticizes and sanitizes community-based conservation, by removing the need to consider explicitly local voices and resource rights”, thereby silencing internal resistance to PES.

The economic valuation of the ecosystem service(s) in PES has been commonly informed by expert-driven calculations of opportunity costs for alternative land-use management options, by providers’ willingness to accept compensation and, when relevant, by the broader market set-up in which payments are inserted [41]. In fact, only a few ecosystem services can count to date with underlying regulatory frameworks that enable providers to realize an economic value, which in turn is subject to changes in the framework and price volatility [42*]. The case of forestry carbon offsets is in this regard explanatory because it has been influenced by carbon prices in larger emission trading markets, such as the European Emissions Trading Scheme, whilst institutions like the World Bank have also played a key role in setting up benchmark prices through its carbon investment funds [43]. REDD+ offsets may thus be no exception and their price may be influenced, on the one hand, by the existence of a global climate policy framework which could raise prices if mitigation targets were ambitious enough and, on the other, by the price of carbon emission reductions in emission markets or the costs of mitigation in buyer countries.

Therefore, the average price per unit of emission reductions in REDD+ will vary depending on who pays for such reduction in the first place, and which institutional framework is used as a pricing reference. The issue is then how many emission reductions a country would prefer to provide at any given price per tCO₂ reduced or, in other words, how countries may choose between implementation means to minimize the costs of REDD+² and to maximize the return for a given carbon value [44]. In this regard, studies estimating the likely mitigation effectiveness of different carbon prices have proliferated [45,46]. Country-based analyses indicate that if levels of REDD+ financing are based on opportunity-cost calculations, payments may be insufficient for effective carbon conservation and REDD+ activities may only become viable if governments are serious in establishing the right policies for addressing deforestation drivers without undermining livelihoods [47,48]. This shows that most developing countries must deal with multiple governance challenges before having any real chances of success in REDD+ based mitigation, such as dealing with contradictory policy incentives, changing tenure regimes and markets conducive to deforestation, and tackling corruption practices, among others [49–51]. REDD+ cash will not bring the necessary change in the institutions and actors that mostly contribute to land-use change, insofar as governments, through policies and investment patterns, are often “behind the majority of deforestation” [52].

Furthermore, there is a need to consider the long-term implications of providing landowners and communities with monetary or non-monetary incentives to comply with REDD+ regulations. Psychology and behavioral economics studies have shown that incentives can foster but also undermine intrinsic motivations for particular types of behavior, depending on the type of incentive, the characteristics of the social actors involved – including the social and cultural meanings they attribute to the concerned behavior – and the procedures for allocating incentives, among others [53–55]. Experiments in rural Mexico and Tanzania [56] to test the effects of payments on collective attitudes towards litter collection suggest that participation can be high irrespective of the incentive if social norms favoring participation are present but payments help raise participation where people are otherwise uninterested. In Mexico, group payments made through village authorities yield lower participation where people distrust leaders whilst, in Tanzania, high individual payments do not undermine participation although they appear to reduce people’s satisfaction from the task relative to when there is no payment. Narloch

² The costs of REDD+ include *implementation costs* associated with the action required to reduce deforestation, degradation, and increasing biomass stocks; *opportunity costs*, that is the economic rents foregone in enforcing/changing land-use; and *transaction costs* involved with the monitoring, verification of carbon and the transaction in international markets.

et al. [57] demonstrate that individual rewards increase the adoption of *Quinoa* landrace varieties (as an agrobiodiversity proxy) in two communities from Peru and Bolivia, whilst collective rewards undermine existing pro-social conservation behavior. The authors suggest, however, that collective rewards may in some circumstances strengthen conservation by aiding group organization and reducing transaction costs.

In the context of PES and REDD+, systematic analyses of PES and REDD+ incentives' effects on conservation behavior are lacking. In a large number of cases, PES have contributed to *reinforcing* collective and individual conservation behavior as schemes have been characterized by low levels of environmental additionality and financial compensation [36,37,58**]. However, when such conditions apply, it cannot be guaranteed that stopping payments would not have implications on behavior. A recent study suggests that PES incentives can translate into "no pay, no care" attitudes in some circumstances and for certain people. Fisher [59] shows that household poverty and institutional contexts are key factors influencing the extent to which incentives explain participation in a Ugandan carbon sequestration project, with poor households showing highest preference for incentives due to higher discount rates, and with villages and households involved in collective forest management and benefiting from the proximity of a national park being more inclined to highlight and prioritize forests non-use values as key drivers of conservation. According to the author, these results suggest that, for social contexts and poorest households where payments feature among the most important reasons for forest management and conservation, guaranteeing payments in perpetuity may be the only yet improbable way to maintain conservation behavior in the long term. In the REDD+ context, the latter would mean to create a market in perpetuity for carbon offsets that would constrain our chances to achieve the radical cut in global emissions that we need to stabilize climate change during this decade [60].

Uneven procedural and distributive outcomes

PES schemes are informed by a neoliberal environmentalist rhetoric that makes it possible for ecosystem service buyers to "eat one's conservation cake and have development desert too" [61]. Governments and NGOs often understand PES as instruments that can reconcile conservation and development goals and acknowledge the role of landowners and communities in securing the provision of ecosystem services. When introduced to prospective providers, both national and localized PES schemes have been presented through a stylized yet locally-contextualized 'win-win' discourse, which considers such schemes *an opportunity* for local people to get their role as resource managers and/or nature stewards recognized. Participating in PES can foster local well being and align local development priorities with global

conservation goals, including those of climate mitigation and adaptation [16,62,63]. The validity of such assumptions, however, is increasingly challenged as evidence on their procedural and distributive implications has begun to emerge.

Insights on the *procedural legitimacy* of PES, that is who is recognized, represented in and entitled to *decision-making*, suggest that government-driven programs have diverged in the extent to which NGOs and other social actors, including those who "speak on behalf of local people", have been invited to negotiate and influence "the rules of the game". In Mexico, the design of the PES national program involved civil society actors who were able to gear the program's rules towards equity and distributional concerns, whilst a constant dialogue between the government and scientists has enabled a continuous improvement of targeting, mostly towards areas of higher deforestation risk and poverty levels [64,65]. China's sloping land conversion program, by contrast, did not involve rural organization in its inception and it forced participants to undertake additional reforestation activities in degraded and mountainous areas in order to access payments. Farmers challenged such request on the grounds of the additional labor required and the government subsequently downgraded it to become an optional requirement [66]. For local schemes, evidence suggests that projects that have been able to involve local people in their design ensure higher participation levels and show more chances to be sustained [67].

REDD+ procedures at international level have been opened to the participation of many actors through a variety of means (e.g. side-events, communications, proposals for lobbying) and continuous changes in the rules reflect the integration of multiple interests [2,68]. Notwithstanding, most governments, with the exception of a few countries, tend to follow a different approach in the design of their REDD+ strategies. Many countries lack clear procedures for the participation of non-state actors, including indigenous peoples' organizations and rural communities, and in some cases ignore the agency of those who do not hold formal title to land and forests [69,70].

This evidence indicates that the idea that of PES representing an opportunity to be taken is inaccurate. Participation in PES is constrained by procedural rules, including geographical and spatial targeting issues, and by the political, social, economic and cultural realities where projects unfold. The size of land endowments, the nature of tenure rights, the diversity and availability of livelihood options, access to financial and political capital (e.g. access to organizations and networks), levels of trust, and existing values attached to forests are critical factors influencing local farmers and communities' ability and willingness to participate in PES design and implementation [39,71]. In fact, in many instances, PES developers

have faced political choices regarding the functioning of inequitable institutions at local level – which may be biased against the interest of particular groups and actors – and have had to trade-off ecosystem service provision against more procedurally just development, and they have found it difficult to secure long-term support for bottom-up design of resource management practices [72].

Therefore, one should expect PES to translate in uneven *distributional outcomes*, that is who bears the costs and benefits of the scheme and why this is the case. Several studies reveal that PES – including emerging carbon and REDD+ pilot projects – enhance inequalities in income and access to resources, particularly when pro-poor management measures are not adopted [58^{**},72,73], as well as create economic enclosures through territorialization for biodiversity and carbon conservation [74–75]. There is also evidence of communities retreating from PES after realizing that the resource management strategies promoted by the scheme contravene local hunting practices and compromise dietary requirements, thereby increasing food insecurity [76]. And CDM afforestation and reforestation projects have had limited levels of local consultation in their design and lack of transparent information regarding carbon and timber benefit sharing [77]. When PES involve the adoption of ecosystem service provision contracts, providers assume the risk to get a poor economic deal, to unwillingly sign up for restrictions on access and use of natural resources, and to limit their space for negotiation in case of dispute, which in some contexts may undermine advances aimed at giving greater recognition to the rights of indigenous and other forest-dwelling peoples [78]. However, I acknowledge that some PES can contribute to local development in some cases, even when simultaneously translate in negative outcomes for some people. PES have assisted livelihoods diversification by providing labor opportunities and new income sources to participants, supporting local demands (e.g. promoting tenure security), funding infrastructure and facilitating the establishment of farmer groups and of cross-scale social networks to better manage forest resources whilst promoting best practice sharing [43,79–81].

Finally, let me emphasize that REDD+'s geographic scope, and its multi-faceted and multi-actor approach, requires that future scholars concentrate on both procedural and distributive dynamics of inclusion and exclusion at larger scales. The quest for forest carbon can increase the current rush for land in developing countries, as conservation competes with other land-uses, and can legitimize the creation of 'environmental enclosures', that is territories managed temporarily or in perpetuity for the sake of carbon and biodiversity conservation and with the direct or indirect support of the state [82]. For example, Beymer-Farris and Bassett have recently shown how an alliance between the Tanzanian government, international donors and an NGO misread the contribution

of local people to preserving the landscape of the country's Rufiji delta to re-organize resource use in the area and make the latter more amenable to future carbon payments [83^{*}]. REDD+ may even produce a myriad of indirect economic and socio-political processes with uneven costs across populations, including the recentralization of forests and ecosystem services' use and property in the hands of the government, changes in settlement policies or the demonization of certain shifting cultivation practices [84,85].

Conclusion

This paper has argued that REDD+ can be conceptualized as the largest PES experiment in the world. As such, the framework is congruent with an existing trend towards 'neoliberalizing nature' that is characterized by the re-regulation of state and non-state driven forms of conservation through the commodification of new ecosystem goods and services; an increasing number and complexity of actors pursuing conservation; a process of territorialization that demarcates new spaces for controlling people and natural resources; and the subsequent uneven realization and distribution of accompanying benefits and costs [16].

REDD+ and other PES schemes are a manifestation of such trends and they are contributing to the framing of conservation in utilitarian rather than ethical terms. They underplay ecological management risks and trade-offs in the provision of subsistence goods and services, and promote a single valuation language that enhances existing procedural and distributive injustices and that may result in the undermining of intrinsic conservation motivations. This argument, however, requires further empirical engagement to avoid resulting in a void prophecy. Critical scholars should concentrate on analyzing actors' agency in the design of REDD+ policies and projects, with a particular emphasis on formal and informal means of recognition and participation by constituencies with vested interests; examining carbon commodity chains under REDD+, looking at who captures the benefits, who bears the costs and why; and illustrating the role of REDD+ incentives in affecting conservation behavior.

But what if the prophecy is realized, and REDD+ policy and technical challenges prove insurmountable and negative impacts are rapidly felt across developing countries in forthcoming years? Policy makers may then like to turn away from market-based conservation approaches and consider instead the development of a global ecological debt fund. The latter could serve as the main financial instrument to pay back the debt of poorer countries after years of sustained ecologically unequal exchange (i.e. poor countries bearing the burden of environmental degradation associated with mineral extraction and agricultural exports) and to address the historically uneven contribution to global greenhouse gas emissions

[86]. The fund could be generated from the increasing taxation on the consumption of fossil fuels and of imported minerals and goods contributing to land-use change in tropical and subtropical countries or from the taxation of international financial operations. Recipient countries could, in turn, be requested to use all or part of these additional resources to responsibly foster their own environment and development agendas, without carbon accounting and trading conditionalities. Such a deal would be politically difficult to negotiate but would help dealing with land-use and forest governance in developing countries under a more ecologically and socially just framework than the REDD+ framework as it currently stands.

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