



## Resource Mobilization Strategy Submission: From Resource Mobilization to Economic Transformation

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### Abstract

Below we summarize some key insights from the academic and policy literature, as well as our own research insights around the political and economic context where the Resource Mobilization Strategy is placed. We first focus our attention on assessing the evidence in relation to the Strategy for Resource Mobilization goals 1, 2, 3, 4 and 8, with an emphasis on efforts to attract private capital into conservation. The second part of our submission elaborates recommendations for the new resource mobilization strategy. In particular, and in light of the recent IPBES report, we recommend a re-framing of the resource mobilization strategy to capture the need for widespread economic transformation, of which financial resources form a part, but only a part. We suggest renaming it the “Strategy for economic transformation.”

### Part 1. Assessment of existing resource mobilization strategy

We think it is imperative to place the 2008 Resource Mobilization strategy into its political and economic context. It was a strategy forged in the afterglow of the Millennium Ecosystem Assessment, with its adoption of ecosystem services approach and the then-recent announcement of The Economics of Ecosystems and Biodiversity study (funded by the European Commission and Germany, TEEB was announced at the G7+5 Environment Ministers in Potsdam, Germany in 2007). As the Earth Negotiations Bulletin (ENB) for COP 8 in Bonn reported, “Some hoped that a study on the cost of biodiversity loss, to be conducted by Pavan Sakhdev, Head of Global Markets of the Deutsche Bank, will prove to be the turning point in biodiversity conservation efforts.”

Negotiated in the lead up to COP 8, the resource mobilization (RM) strategy reflects these hopes for economically oriented assessments. It is also infused with wider excitement of the time for innovative financial mechanisms, in particular, the possibility of bringing private, return-oriented finance into conservation efforts. Private-sector capital is often positioned as providing an answer to the so-called funding gap: the oft-cited ~ \$300 billion US dollar shortfall between what is currently flowing to biodiversity finance to fund conservation endeavors and the amounts ostensibly required to scale them up to achieve internationally agreed conservation goals and targets.



Below we address four questions: 1) To what extent has private capital moved into achieving the objectives of the CBD? 2) What kind of capital is circulating in conservation finance? The rise of “blended finance” 3) Where, geographically, is private biodiversity finance flowing? What are the impacts of innovative financial mechanisms, particularly PES?

1) *To what extent has private capital moved into achieving the objectives of the CBD?*

As is well-known for those working in this area, it is difficult to assess the amount of financial flows supporting the CBD objectives. As a recent OECD report states, “There remain considerable gaps and inconsistencies in biodiversity finance reporting and tracking. Data for several types of finance flows are not reported consistently and comparably across countries.”<sup>1</sup>

Since the 2008 RM strategy, what is known as conservation finance, or conservation impact investing, has grown in prominence. Our interest is in understanding the way that private, return-generating investment is emerging in the realm of conservation, including through mechanisms like bonds and private equity. Assessing the size of these investments poses particular challenges, as the field is highly fragmented and also often privately held. But our own and others scoping research, based on an assessment of the grey literature, often financed at least in part by the financial sector, shows that these capital flows are tiny in relation to the size of the problems, and essentially infinitesimal in the world of capital flows writ large.<sup>2</sup>

Take, for example, the private capital flowing into avoided deforestation and ecosystem restoration. In 2008 the Eliash review concluded that including REDD in a well-designed carbon trading system could provide the finance and incentives to reduce deforestation rates up to 75 percent by 2030. One scenario modelled by the review predicted that US\$ 7 billion could be generated by the carbon markets by 2020.<sup>3</sup> What happened? The most recent Ecosystem Marketplace “State of the Forest Carbon Market” report reports that the forest-based emission reduction market peaked in 2014 with US\$ 257 million in value, down to a measly US\$ 120 million in 2016.<sup>4</sup> It seems we hit peak forest carbon market before anything close to peak oil. Despite its low revenue, it is crucial to note that REDD is not benign for all communities; depending on the project it can result in land dispossession and further entrench social inequities.<sup>5</sup> One recent academic paper summarizes that REDD+ projects have faced issues of “insecure land tenure, elite capture of incentives, equity concern between recipients of payments and beneficiaries of ecosystem services, uncertainty over conditional based incentives.”<sup>6</sup>

The story with bioprospecting is similar. The famed 1987 Brundtland report, *Our Common Future*, predicted that the economic value of genetic resources alone would be “enough to justify species preservation” (World Commission on Environment and Development 1987, 155), suggesting that the

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<sup>1</sup> OECD (2019), p. 16.

<sup>2</sup> Cf. Dempsey & Suarez (2016). See also Clarke et al. (2018).

<sup>3</sup> Cf. Eliasch (2008).

<sup>4</sup> Cf. Hamrick & Grant (2017). This figure cited for 2016 excludes revenue from the Australian Emissions Reduction Fund, which transacted US\$ 509.5 million dollars. But it is not a traditional market as there is only one buyer, the Australian government who awards emission reduction contracts by reverse auction.

<sup>5</sup> For an overview of social impacts see Holmes & Cavanagh (2016).

<sup>6</sup> Clark et al. (2018), p. 341.



economic value of forests harnessed through bioprospecting would be able to secure their conservation over alternative land uses such as intensive timber extraction or conversion to agriculture. One recent estimate found bioprospecting generating only US\$ 50 million in finance for conservation.<sup>7</sup>

As CIFOR scientists conclude, “Expecting such a shortfall [in funding for SDGs, including biodiversity conservation] to be picked up by the private, or indeed any other sector, is arguably misguided and clearly represents the current disconnect between stated ambitions and reality.”<sup>8</sup> So far, the return-generating (meaning for-profit) conservation finance sector faces serious challenges scaling up, a problem readily recognized by the sector itself. The Conservation Finance Alliance concludes, “The overwhelming majority of the financial sector has yet to show interest in biodiversity conservation.”<sup>9</sup> Or as NatureVest and their co-authors plainly state, conservation investments are much “less competitive compared to competing market opportunities.”<sup>10</sup>

The state of play regarding the scale and scope of private investment - of returns-generating, profit oriented biodiversity conservation finance - depicts an emerging but halting, precarious and still largely promissory global economic sector. Such evidence is at odds with how this sector is commonly portrayed in international policy and within conservation literature, which often looks to the sector as a solution to their funding issues. The next RM strategy should be mindful of these empirically demonstrated limitations. To perhaps state the obvious, based on last thirty years of efforts - from bioprospecting to forest carbon - it is difficult to make biodiversity conservation into a profitable enterprise.

## 2) *What kind of capital is circulating in conservation finance? The rise of “blended finance”*

For the most part, the capital that is flowing is deployed by investors who are satisfied with low liquidity (assets that can be bought and sold quickly are liquid) and who are willing to take no to low return that is often highly risky.<sup>11</sup> These are investment terms unpalatable to most. In order to make such low-return, high risk investments, return-oriented conservation finance relies on the deployment of public and charitable capital that essentially “de-risk” the investments. This use of a variety of types of capital is also known as blended finance, defined generally as the use of state, development and philanthropic funds to mobilize private capital flows, in this case to mobilize them into conservation related projects.

However, the potentials claimed by the advocates of blended finance should not be mistaken for on-the-ground success. First, given that global data on biodiversity funding is inconsistent,<sup>12</sup> data on leveraging ratios - meaning the amount of public/philanthropic investment to private investment - remains on a case-by-case basis. As with blended finance in general,<sup>13</sup> this raises questions about potentially differing accounting methodologies, throwing the success of projects that appear to have leveraged significant private investment into question, as well as the effectiveness of using public money to leverage private capital as a whole. Second, the new RM strategy should take note of findings from researchers working

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<sup>7</sup> Parker, C. et al. 2012.

<sup>8</sup> Clarke et al. (2018), p. 338.

<sup>9</sup> Conservation Finance Alliance (2014), p. 4.

<sup>10</sup> NatureVest & EKO Asset Management Partners (2014), p. 12.

<sup>11</sup> Dempsey & Suarez (2016).

<sup>12</sup> OECD (2019).

<sup>13</sup> Cf. Attridge & Engen (2019).



on the rise of blended finance in infrastructure projects. These studies find that blended finance can lead to lack of transparency and public scrutiny when funding is, for example, channeled through private-public partnerships, as the private side of the equation tends to be less accountable to democratic institutions.<sup>14</sup>

Despite these concerns, some continue to argue that blended finance is not only worth pursuing, but indeed is a potential solution to the biodiversity crisis because states and multilateral institutions simply lack the money and capacity to rectify problems on their own.<sup>15</sup> Finally, because notions of blended finance are often quite broadly defined – since, for example, they include public financing for technical assistance – proposals to deploy blended finance may miss that public financing for facilitating biodiversity finance is not a novel phenomenon; development banks have long subsidized public projects that aim to create returns for investors.<sup>16</sup> On the contrary, as we highlight below by way of the example of REDD+, vast sums of public financing have been deployed in pursuit of creating privately investable biodiversity-beneficial projects. As long as we misidentify blended finance as a novel approach even in the biodiversity realm, to say nothing of its long history in conventional development *avant la lettre*, there is a risk of repeating the mistakes of the past.

#### The case of REDD+ financing: what can we learn?

One way to illustrate these issues in blended finance through an assessment of REDD+ financing. Initially envisioned as a global Payments for Ecosystem Services market wherein countries with at-risk forests could be rewarded on a market-basis for protecting those forests, REDD has, at best, morphed into a “results-based aid programme,”<sup>17</sup> and at worst a tool for dispossession that creates no environmental benefit.<sup>18</sup> Between 2008 and 2015, MDBs, states and supranationals disbursed EUR17.2 billion through various channels to directly support the development of REDD+ programs across the world. This investment has netted all of EUR31 million in voluntary carbon offset trades, an ROI of 0.0017%.<sup>19</sup> Proponents of REDD+ will argue that improvements in monitoring, verification, and, above all, forest governance, produce a range of other impacts and facilitates private investments in conservation that would not have happened otherwise. This includes supply chain sustainability improvements made possible by this increased governance capacity (*ibid*). If this is indeed the case (though causation would be challenging to prove), then specifically funding capacity building for supply chain governance would seem to be a sensible approach, rather than continuing to fund REDD+ development in anticipation of a global offset market that never seems to materialize, but which has incidental supply chain impacts.

However, we have serious reservations about this approach as a whole, given the types of capacity that are being built under the rubric of REDD+. With major donors, such as the Norwegian government and the WBG contributing a majority of REDD+ ear-marked money for governance, and governance comprising 56% of total public financial flows for REDD+, we must ask, who is governing what with improved capacity?<sup>20</sup> That is, are public funds building capacity for administering contracts for private

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<sup>14</sup> See Attridge & Engen 2019; Hildyard 2016; Mawdsley 2018; Romero 2016.

<sup>15</sup> Rode et al. 2019.

<sup>16</sup> C.f. Mawdsley (2018).

<sup>17</sup> Hook (2019).

<sup>18</sup> Asiyani et al (2019).

<sup>19</sup> Olesen et. al (2018).

<sup>20</sup> Myers et al (2018).



governance or investment, or are they building institutions in line with, say the objectives of the CBD, such as Article 10(c) that focuses on encouraging customary use of biological diversity or Article 8(j)?

Overall, REDD+ readiness may have done some good, but its social and environmental outcomes are mixed at best, and it has manifestly failed in the economic register for which it was initially devised. The question for the CBD, and the future RM strategy, is whether this is a good use of public and philanthropic funds. If so much public finance is needed to achieve such paltry outcomes, is blended finance realistic as a way to finance the implementation of CBD objectives?

### 3) *Where, geographically, is private biodiversity finance flowing?*

The global geographic distribution of biodiversity finance, both public and private, is uneven. One report concludes that the United States, Canada, Europe, and China “generate and receive the majority of the world’s biodiversity finance.”<sup>21</sup> The Global South, on the other hand, receives far less biodiversity finance: Africa receives 6 percent, Latin America and the Caribbean receive 6 percent, and Asia (not including China) receives 7 percent of overall global biodiversity finance. What about private financial flows? Again, here there are data and methodological issues. One industry-sponsored survey of private investment in conservation found that 92 percent of the private investment found in their survey originated from U.S.-based investors and that across the three areas of conservation investment examined (green commodities, habitat, and water), Canada and the United States received 82 percent of this finance.<sup>22</sup> Another 2016 survey found investors are mainly based in North America and Europe (93%), with most investments staying in those same geographical regions. One exception is investments in green commodities, flowing to Latin America (29% of the total); however, only because of one major company investment.<sup>23</sup> Investments in habitat conservation are almost exclusively in the United States (79%) and mostly directed to land ownership (48%). The investment in environmental assets such as mitigation banking credits concentrates in the United States (92%), while forest carbon commitments distributed in Latin America (44%), Africa (21%), Asia (8%), and North America and Europe (27%). However, there has been a slight shift from investments in carbon offsets to investments in environmental credits with an increase of investments outside of North America.

Regarding investments in water quality and quantity, the geographical distribution of investments remains concentrated in North America (88%). It is crucial to note that private tradeable water rights can negatively impact ecosystems and people, as is the conclusion of a recent study of Chile.<sup>24</sup> Throughout all these investments - public and private - Parties to the CBD must be mindful of the broad array of CBD Articles, including 8(j), 10(c) and also the broader legal frameworks of human and Indigenous Rights.

### 4) *What are the impacts of innovative financial mechanisms, particularly PES?*

Goal 4 of the RMS focuses on exploring “new and innovative financial mechanisms,” including Payments for Ecosystem Services (PES). PES programs have been increasingly promoted in the past few decades as a way of generating new sources of revenue for conservation and compensating individuals and

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<sup>21</sup> Cf. Parker et al. (2012), p. 109.

<sup>22</sup> Cf. NatureVest & EKO Asset Management Partners (2014).

<sup>23</sup> Hamrick (2016), p. 20-21.

<sup>24</sup> Hamrick (2016), p. 26.



communities for the livelihood impacts of conservation. While each of the mechanisms under Goal 4 deserves attention, we focus on PES due to our specific expertise, and also because there is a robust literature on and a significant amount of policy momentum behind these programs in locations around the world. In addition, PES are often defined capaciously so as to include other mechanisms listed under Goal 4, such as sustainable certification for green products and REDD+ projects under the Kyoto Protocol (Hein et al. 2013). Further, as an early iteration of market-based approaches to conservation, the evidence on PES can offer insights for other innovative financial mechanisms, and therefore inform the next RM strategy. Our research team provides an extensive review of the PES peer-reviewed literature in Appendix A, below we summarize the key points from the literature:

- PES for biodiversity has been hampered by the same lack of funding and difficulty of monitoring actual outcomes that limits other strategies for biodiversity conservation reliant on markets and private finance, raising questions about its viability as a strategy for channeling significant new resources into this area.
- Although theorized as being funded by markets for ecosystem services, most PES initiatives are government funded or, similar to REDD+, through “blended finance” hybrid approaches. This contradicts the narrative that PES introduce new sources of financing for biodiversity conservation.
- The few existing biodiversity-focused PES initiatives that are truly market-driven focus only on specific species of interest to users, not holistic habitat conservation, and are subject to wide fluctuations in market demand, undermining both environmental and social impacts.
- Literature assessing specific outcomes for biodiversity conservation in PES is limited and there is little consistency in methods or metrics in existing assessments. Review of these studies show that many PES initiatives use the relatively easy measure of absence of observed “land use change” in enrolled properties as a proxy for biodiversity conservation. This lack of specific monitoring for biodiversity loss means that degrading activities that preserve forest cover (e.g. intensive production forestry or agroforestry systems) may still receive payments.
- PES programs tend to focus on a single ecosystem service (such as carbon sequestration or water regulation, or in cases of biodiversity, on a single charismatic species), which can undermine the complexity necessary to support biodiversity.
- If a PES approach is utilized for biodiversity conservation, existing research suggests that the following elements will increase the chances of positive outcomes:
  - A focus on both environmental and social outcomes, with specific emphasis on equity and justice;
  - Integration with locally-specific poverty reduction and environmental policies instead of relying only on market demand and funding;
  - Design adapted to the specific environmental, political and economic context of the sites of implementation, which means this mechanism is not easily scaled up or standardized.

**Part II. Recommendations for revision of resource mobilization strategy**

**1) From assumed austerity to public finance for ecological debt**

Much of the debate about financial resources around the CBD focuses on the “resource gap,” as visualized below in a diagram created by Credit Suisse et al (2014). This type of projection - commonly circulating around the CBD and in international conservation policy - assumes that much of the finance will come from private capital, and takes as given that there will be limited public financing. While there is surely a resource financing issue, it is important to note that these sorts of projections of private capital investment put financiers as key actors for solving the problem of biodiversity loss. Assumptions of an austere state on environmental issues creates opportunities for financial institutions, who stand to benefit from plugging these gaps.

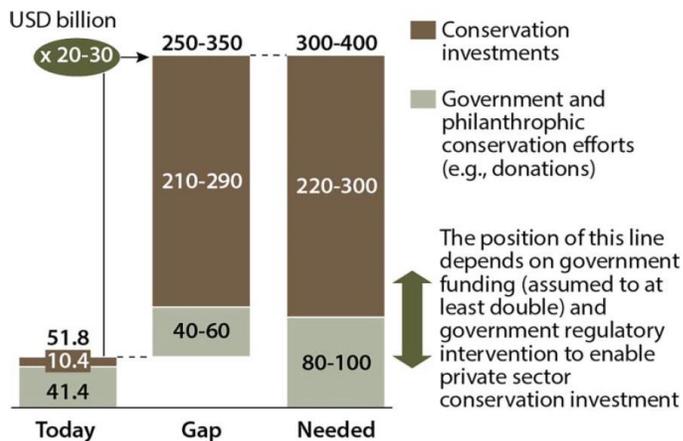
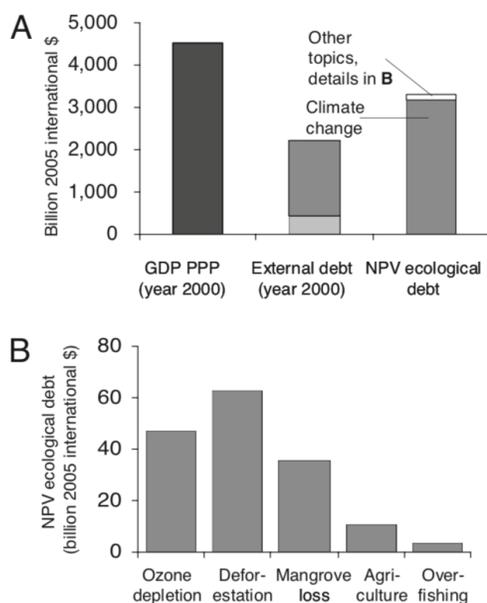


Figure 1. Need for conservation financing vs available as outlined by Credit Suisse et al (2014: p 12).

Yet, the evidence is so far clear: private finance is not flowing to plug these gaps, and where it is flowing it is backed by public and philanthropic resources, with little evidence of success in relation to the broad environmental and social objectives of the CBD and the Aichi targets. **The new RM strategy must recognize that private finance will not be the savior for achieving the CBD objectives or the post-2020 goals/targets.** Private finance is no substitute for strong political will and public resources, resources that can be understood not as charity or aid, but rather as necessary payments for ecological debt (see figure 2, an estimate of ecological debt).

Advancing payments for such debts could involve mechanisms such as higher national taxes on wealthy, the repatriation of capital held in secrecy jurisdictions, and international taxation and fees (e.g. Tobin Tax).



**Fig. 2.** Upper bound values of NPV net “ecological debt” to low-income nations from middle- and high-income nations in 2000, calculated as  $C_{ML} + C_{HL} - C_{LM} - C_{LH}$  (PPP-adjusted, discount rate 2%). In A, year-2000 PPP-adjusted levels of both GDP and external debt for the low-income group are provided for comparison, with external debt PPP-adjusted to reflect its different value to debtor low-income (dark gray) and creditor high-income (light gray) groups.

**Figure 2.** Estimates of Net Present Value ecological debt to low income nations from middle and high income nations in 2000 (from Srinivasan et al 2008)

## 2) From resource mobilization strategy to the “strategy for economic transformation”

The recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment report clearly states the necessary task: “Goals for conserving and sustainably using nature and achieving sustainability cannot be met by current trajectories, and goals for 2030 and **beyond may only be achieved through transformative changes across economic, social, political and technological factors.**”<sup>25</sup>

In light of this recommendation, we suggest a re-naming of the resource mobilization strategy with a more capacious title able to capture this wider, necessary economic transformation, of which financial resources form a part, but only a part. Our suggestion is “Strategy for economic transformation.” A wider definition of the resource mobilization strategy as a strategy for economic transformation would push Parties to the CBD and associated international organizations to focus their efforts on addressing the economic drivers of biodiversity loss. At present, the resource mobilization strategy frames the problem of biodiversity loss as one rooted in “lacked capital,” which narrows the problem into one that can be solved by the private capital, perpetuating continuous faith in market or private-sector rooted solutions (solutions for which there is limited evidence of success).

<sup>25</sup> Diaz, S. et al. (2019).



Without addressing the economic drivers of biodiversity loss, rooted as they are in unequal distributions of wealth and the externalizing machine of global capitalism, there is a risk that innovative financial mechanisms will continue to fail, remain marginal, and even distract from the most necessary and needed change. For example, in our detailed study of one value chain of innovative conservation finance, we found that generating both positive financial and conservation returns in Kenya was threatened by inequitable land distribution, a distribution rooted in the colonial period.<sup>26</sup> That is, financial and conservation innovation continues to be scuppered by political and economic structures, including wealth maldistribution sometimes rooted in colonial structures, but also because private-sector costs to nature continue to be externalized onto the public.

A ‘strategy for economic transformation’ could further foreground and advance work on eliminating economic incentives (subsidies) harmful to biodiversity, a major structural barrier to achieving the objectives of the CBD. A recent report from OECD notes the disjuncture between the financial flows moving to achieve the objectives of the CBD and subsidies harmful to biodiversity, conservatively estimating subsidies at USD 500 billion per year (based on fossil-fuel subsidies and government support to agriculture that is potentially environmentally harmful), an amount that is approximately 10 times higher than global financial flows for biodiversity.<sup>27</sup> In Brazil and Indonesia, one study found that for every dollar spent trying to stop deforestation through climate finance, \$70 and \$164 (respectively) are spent on domestic agricultural subsidies linked to deforestation. These positive incentives are teeny tiny minnows swimming up Niagara Falls: in Brazil, \$158 million is spent trying to stop deforestation while almost \$14 billion subsidizes activities linked to deforestation – like agriculture and biofuels. In Indonesia, it is \$165 million vs \$27 billion.<sup>28</sup> Yet research on the nature of these subsidies is limited and in need of extensive social scientific investment and political will.<sup>29</sup>

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<sup>26</sup> Dempsey, J. and P. Bigger. (2019).

<sup>27</sup> OECD (2019), Biodiversity: Finance and the Economic and Business Case for Action, p. 20.

<sup>28</sup> McFarland W. et al (2015).

<sup>29</sup> Dempsey, J., T. Martins, R. Sumaila. 2019. Subsidizing Extinction. Under review at *Conservation Letters*.



## Appendix A. PES literature review

### PES for biodiversity conservation:

Biodiversity has not been an explicit focus of most PES to date, and evidence on outcomes for biodiversity is limited. According to the original, theoretical definition, PES focus on a specific ecosystem service or set of services that can be purchased or subsidized by downstream users who compensate service ‘providers’ for conservation actions upstream. While such programs have become ubiquitous for ecosystem services such as water quantity and quality, carbon, erosion control, and even ‘scenic beauty,’ PES for biodiversity “has been slowest to take off, due largely to the typically low availability of financial support for biodiversity conservation.”<sup>30</sup> In other words, PES for biodiversity has been hampered by the same lack of funding that limits other strategies for biodiversity conservation, raising questions about its viability as a strategy for channeling significant new resources into this area.<sup>31</sup> Unlike some other ecosystem services, biodiversity directly depends on complex ecological relations that are not easily aligned with the PES model. In a review of the viability of PES as a strategy for global biodiversity finance that responds to the 2008 CBD Resource Mobilization Strategy, Hein et al. note that “the complexity of ecosystem functioning is not easily transferred to market prices. Ecosystem changes are subject to complex dynamics including thresholds and irreversible changes... Consequently, there may be major variations in the societal costs and benefits of preserving one additional unit of an ecosystem, depending on the changes in ecological processes as a function of that change.”<sup>32</sup>

Biodiversity outcomes are more difficult to ‘sell’ and to measure in PES than ecosystem services such as water or carbon. While Calvet-Mir et al.’s<sup>33</sup> review uses “biodiversity” as a general term to refer to all conservation outcomes, only 17 of the 30 programs reviewed had biodiversity as an explicit focus, with ‘biodiversity’ in many of these cases referring to habitat conservation for a single species. Most of these programs do not directly monitor biodiversity outcomes, but use proxies that land cover or agroforestry practices to demonstrate biodiversity outcomes. This is an important gap in research because such proxies do not provide direct evidence as to biodiversity outcomes: for instance, while Costa Rica’s PES includes biodiversity conservation as a goal, it relies solely on forest cover as a proxy measure for ecosystem services,<sup>34</sup> a metric which indicates little about biodiversity outcomes in a context where PES also includes payments for plantation forestry. David Lansing has shown how Costa Rica’s PES has served to subsidize the forestry sector, resulting in more homogenous “plantation forests” planted with a majority of a single non-native tree species valued for the production of wooden shipping pallets used in export agriculture<sup>35</sup>. Lansing thus argues that “PES payments for reforestation have become an indirect subsidy for plantation agriculture.”<sup>36</sup> As Hein et al. point out, “safeguarding the supply of a specific ecosystem service does not necessarily involve protecting the species or genetic diversity in the

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<sup>30</sup> Ingram et al. (2014), p. 10; Wunder and Kanounnikoff (2009).

<sup>31</sup> Hein et al. (2013).

<sup>32</sup> Hein et al. (2013), p. 90.

<sup>33</sup> Calvet-Mir et al (2015).

<sup>34</sup> Daniels et al. (2010).

<sup>35</sup> Lansing (2013).

<sup>36</sup> Lansing (2013), p. 107.



ecosystem,” and where biodiversity is not the explicit goal of PES these programs may negatively impact biodiversity.<sup>37</sup>

Literature assessing outcomes specifically for biodiversity in PES is limited, and there is little consistency in methods for assessing outcomes. Calvet-Mir et al. reviewed 30 articles assessing environmental effectiveness and/or equity outcomes in PES programs, and found widely-varying judgements of outcomes by authors of the reviewed articles, especially with regard to ecological effectiveness (assessed either by direct measurement of changes in ecosystem service provision or through changes in land-use or habitat as proxy indicators of ecosystem services).<sup>38</sup> For instance, Costa Rica’s PES program was judged ineffective by two articles and effective by three articles, depending on the scale and methods of analysis. Of the articles they reviewed, only half had assessed additionality, meaning that outcomes assessed could not be definitively linked to program interventions.

The links between PES and export agriculture in Costa Rica reflects broader concerns about “leakage” in PES and related programs, i.e. that conservation interventions in one area may simply displace destructive activities to other areas. Leakage and other offsite outcomes of PES programs have not been sufficiently addressed in the literature, and constitute an important research gap: for instance, given that the large majority of PES programs focus on changing or curtailing farming by small-scale landholders, how might PES contribute to agricultural consolidation and intensification, and with what social and environmental effects?

PES programs can also expose both biodiversity outcomes and participants’ livelihoods to new market risks. Ingram et al.’s review of four PES programs for biodiversity notes that “because the PES initiatives are highly demand-driven, the financial sustainability and long-term revenues for these projects are dependent on the markets that exist for sport hunting, ecotourism, and certified rice.”<sup>39</sup> Because most PES require significant and often irreversible changes in participants’ livelihood strategies (such as abandoning farming activities), this means that both biodiversity outcomes and participants’ livelihoods are subject to risks of program failure due to market changes or other variables. Although PES are often heralded as a more sustainable financing mechanism, this is only the case so long as biodiversity outcomes remain economically valuable for downstream users, and only insofar as program costs can remain competitive with regard to other sources of substitutable ecosystem services.

Even in those programs that are explicitly focused on biodiversity -- such as the four programs reviewed by Ingram et al.<sup>40</sup>-- these are often not oriented toward biodiversity as such but toward specific charismatic species of interest to downstream users, such as sport hunters of wild turkeys in Guatemala or ecotourism for birdwatching in Cambodia. In such instances “[l]and owners may not be interested in maintaining the overall ecosystem, but may instead intervene to shape the ecosystem to heighten specific attributes or the presence and visibility of species attractive to tourists.”<sup>41</sup> The lack of funding for biodiversity-focused PES and the focus on charismatic species highlight a key limitation of PES, insofar as

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<sup>37</sup> Hein et al., (2013), p. 91.

<sup>38</sup> Calvet-Mir et al. (2015).

<sup>39</sup> Ingram et al. (2014), p. 19.

<sup>40</sup> Ingram et al., (2014).

<sup>41</sup> Hein et al. (2013), p. 91.



these programs are only viable for ecosystem services that have economic value for downstream users. This means that ecologically significant but non-charismatic or geographically-remote species are unlikely to benefit from PES finance or ecotourism revenues.<sup>42</sup> Green certification has similar limits, insofar as “the impact of such management in plantations is limited to species whose presence can be reconciled with agricultural production, which excludes a range of threatened species, such as large mammals.”<sup>43</sup>

This raises a broader issue for PES in general: assessments of PES effectiveness (the degree to which programs achieve environmental goals) are narrowly defined according to the goals of the program. This has led some scholars to conclude that user-financed PES programs are more efficient than government-financed programs because they enforced conditionality based on local user needs.<sup>44</sup> This indicates the limited ability of PES to address broader social and ecological issues, especially if these programs are made to conform to models of market exchange between ES ‘buyers’ and ‘sellers’: while they may succeed in enhancing ecosystem service flows to specific users -- for instance powerful agro-industrial interests<sup>45</sup> -- this says little about their implications for environmental health or sustainability in general. In these instances such initiatives may primarily serve to ‘sustain’ or partially mitigate the impacts of environmentally-harmful industries while doing little to address fundamental drivers of biodiversity loss.

#### Designing PES mechanisms for biodiversity conservation

It is vital that conservation practitioners should consider all of the limitations of using PES for biodiversity conservation reviewed above. However, if attempting to use these mechanisms for biodiversity conservation, key lessons from the literature should be taken into account:

*PES design should focus on both environmental and social outcomes.*

Ensuring sustainable outcomes in PES that are “consistent and in harmony with the Convention and other relevant international obligations” requires that these programs address both social and environmental outcomes. Evidence of PES outcomes suggests that, despite debate in the literature as to trade-offs among environmental and social goals, such programs can deliver both positive environmental and social outcomes.<sup>46</sup> A recent systematic review by Ola et al. of 69 studies of 56 programs in Asia, Africa, and Latin America addresses the question: “what key factors inform the environmental, poverty alleviation and ‘win-win’ outcomes of PES programs and how do these factors influence outcomes?”<sup>47</sup> That review found that 54% of these programs “attained ‘win-win’ outcomes.”<sup>48</sup> The review found three decisive factors for

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<sup>42</sup> Hein et al. (2013).

<sup>43</sup> Ibid.

<sup>44</sup> Wunder et al. (2008).

<sup>45</sup> Nelson et al. (2019).

<sup>46</sup> Ingram et al. (2014) have argued that PES programs can be effective for biodiversity only where this is the priority over and above social goals; however, their review importantly did not address any cases in which social goals were on par with biodiversity goals, rendering these conclusions largely speculative. Further, that study found that all four programs reviewed had both positive livelihood and biodiversity outcomes, demonstrating that such goals are compatible.

<sup>47</sup> Ola et al. (2019), p. 62.

<sup>48</sup> Ola et al. (2019), p. 58.



influencing such ‘win-wins’: 1) high levels of payments that cover transaction and opportunity cost of participants (found in only 41% of programs); 2) monitoring of ecosystem services; and 3) equity.

Each of these factors present a challenge to existing PES, as monitoring increases transaction costs in PES and payments in most programs are currently determined through negotiation between program managers and providers or by fiat (for instance in government programs).<sup>49</sup> Establishing effective monitoring and sufficient payments requires significant contextual knowledge and interaction with prospective participants as a necessary part of program design.<sup>50</sup> Ola et al find that “establishing participatory, distributive and contextual equity is essential” in the initial assessment and design stage, and that “[t]he presence (absence) of equity enhances (diminish) the impact of PES programs.”<sup>51</sup> Equity enhances trust among buyers and sellers of ES, decreases transaction costs, and enhances safeguards for vulnerable populations.<sup>52</sup>

*PES should be integrated with locally-specific poverty reduction and environmental policies instead of relying on market demand and funding.*

Many studies have described the gap between the theoretical model of PES, with its focus on creation of markets for ecosystem services premised on widespread user demand, willingness to pay, and the ability to measure production and create direct economic linkages between providers and users, and PES in practice.<sup>53</sup> Whereas market theories of PES stress strict conditionality and additional in the targeting and distribution of payments, few programs meet these criteria. Further, where payments are conditional they are generally linked to particular land use activities (or cessation of activities, e.g. farming) rather than ecosystem services delivered, which would be required in strict definitions of conditionality.<sup>54</sup> Additionality - the degree to which conservation outcomes are dependent on payments -- is also notoriously difficult to assess in complex social-ecological contexts.<sup>55</sup> This highlights the important role that governments play in PES, which is much broader than often described in PES theory.<sup>56</sup> Several PES programs have been shown to be more effective when integrated with other poverty-reduction or environmental policies, and governments can provide important safeguards against market risks to biodiversity outcomes and participant livelihoods.<sup>57</sup>

*PES should be designed according to the specific environmental, political and economic context of the sites of implementation, which means this mechanism is not easily scaled up or standardized.*

In general, the literature suggests that outcomes of PES are highly context-specific, depending on the level and nature of government involvement; institutional, political, and economic context; the degree of

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<sup>49</sup> Ola et al. (2019).

<sup>50</sup> Ola et al. (2019); Leimona et al. (2015).

<sup>51</sup> Ola et al. (2019), p. 62.

<sup>52</sup> Ibid.

<sup>53</sup> Muradian et al. (2010); Shapiro-Garza et al. (2020).

<sup>54</sup> Wunder, S. (2007).

<sup>55</sup> Wunder, S. et al. (2018).

<sup>56</sup> Ola et al. (2019).

<sup>57</sup> Ibid.



equity in program design and implementation; and effective monitoring of ecosystem services.<sup>58</sup> Study after study of the dynamics and outcomes of specific PES initiatives, as well as reviews of this literature, suggest that “context matters” as the theoretical model of PES is adapted to fit local conditions.<sup>59</sup> This means that, similar to other biodiversity conservation strategies, it is vitally important to consider these elements of the context in the sites of implementation when designing PES initiatives and be able and willing to adapt the approach as they evolve.<sup>60</sup>

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<sup>58</sup> Ola et al. (2019); Nelson et al. (2019); Shapiro-Garza et al. (2020).

<sup>59</sup> Reed, Mark S., Katherine Allen, Anais Attlee, Andrew J. Dougill, Karl L. Evans, Jasper O. Kenter, Jillian Hoy et al. (2017).

<sup>60</sup> Barton, D. N., Benavides, K., Chacon-Cascante, A., Le Coq, J. F., Quiros, M. M., Porras, I., ... & Ring, I. (2017).



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