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Citation for published version:

Wells, G, Ryan, C, Fisher, J & Corbera, E 2020, 'In defence of simplified PES designs', *Nature Sustainability*. <https://doi.org/10.1038/s41893-020-0544-3>

Digital Object Identifier (DOI):

[10.1038/s41893-020-0544-3](https://doi.org/10.1038/s41893-020-0544-3)

Link:

[Link to publication record in Edinburgh Research Explorer](#)

Document Version:

Peer reviewed version

Published In:

Nature Sustainability

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1 **In defence of simplified PES designs**

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5 Payments for ecosystem services (PES) schemes are underperforming. Wunder et al.¹ conclude that
6 this is because many projects are allowing local politics, rather than economic theory and
7 evidence, to dictate who participates, and how they are paid and sanctioned. While we appreciate
8 Wunder et al.'s analysis, we view that their work downplays key evidence about the importance of
9 maintaining the legitimacy of PES schemes amongst local participants, and of the wider range of
10 social-ecological factors that may explain variability in PES effectiveness. We argue that
11 simplification of such schemes, by enhancing local transparency and acceptability, can in fact be
12 scientifically justified and central to project effectiveness.

13 Understanding what determines the effectiveness of a PES project is a research frontier. Wunder et
14 al. conclude that the three PES 'desirable design features' of spatial targeting, payment
15 differentiation and sanctioning are often being overly simplified in order to maintain local political
16 support. Wunder et al. then argue that this may explain why many PES schemes are not effective.
17 Our main concern is that the framing of the article appears to lead to an unwarranted (although
18 perhaps unintended) relegation of social concerns, below their three desirable design features. The
19 authors conclude that projects may be reluctant to sanction non-compliance, and to adopt more
20 complex differentiation of payments, in order to maintain local perceptions of fairness and
21 community support (henceforth, 'local legitimacy'). In contrast to this view, both theory² and
22 observations³ show that local perceptions of project legitimacy are central to PES effectiveness—
23 without it, projects can fail in their land use objectives. Further, evidence suggests that to achieve
24 local legitimacy, PES projects often need to adopt procedures that are easily understandable, and
25 seen as fair, by local participants⁴. This is the rationale for simplified approaches to the desirable
26 design features of Wunder et al.

27 Wunder et al. do implicitly address some aspects of local legitimacy through their discussion of
28 distributional equity issues and the political sensitivities of sanctioning. We argue, however, that the
29 overall effect of their framing causes local legitimacy to be treated far less prominently than the
30 empirical PES literature warrants: the conclusions mainly present such concerns as a cause of
31 'deficiencies' in design, where programmes have departed too far from their three design principles.
32 While there is ongoing debate about the extent to which local legitimacy concerns should be
33 prioritised over other issues, we propose that there is a growing consensus that accounting for local
34 legitimacy (and related equity) is at least one of the main enabling factors for PES effectiveness⁵. We
35 suggest that local legitimacy be considered an additional theoretical pre-condition for effective PES,
36 alongside Wunder et al.'s other principles.

37 The treatment of non-compliance in the article provides an example of how explicit consideration of
38 local legitimacy may allow for more nuanced and locally grounded understandings of PES design.
39 Wunder et al. categorise many of the projects in their sample as having 'never' sanctioned non-
40 compliance. However, assessments of non-compliance are rarely straightforward decisions as
41 implied by Wunder, and need to be adapted to local behaviour (see Keane et al.⁶ for examples from
42 conservation). Thus, the type and severity of sanctions need to be negotiated locally with legitimacy
43 considerations in mind. Other evidence^{7,8}, however, shows that at least some of these projects do
44 sanction non-compliance by temporarily withholding payments to underperforming farmers until

45 agreed 'corrective actions' have been completed— and that this nuanced approach was developed to
46 improve programme effectiveness by strengthening the local legitimacy of institutional processes.
47 Local legitimacy concerns thus interact with and moderate other design features such as sanctioning,
48 and are mutually supportive.

49 Our two other concerns are straightforward. First, while we recognise existing evidence that
50 effective targeting can improve PES effectiveness, other evidence shows that even the most
51 advanced methods for estimating both opportunity costs⁹ and likely ecosystem service benefits¹⁰
52 have limited certainty and precision. Additionally, more complex approaches are likely to be more
53 costly, which might prevent or impair projects with fewer resources (many of which may coincide
54 with remote 'high value' conservation areas)¹¹. Wunder et al. state that simple targeting is likely
55 affordable and use examples of national schemes. This may be true for larger schemes with
56 economies of scale, but is likely to be costly for smaller projects¹². Simpler and cheaper approaches
57 to environmental assessments can be just as effective¹³. We thus caution against encouraging PES
58 implementers to invest their limited resources in complex and costly analyses unless the relative
59 gains are clear. Finding simple and effective methods of targeting remains a key challenge for PES.

60 Second, and more broadly, the wider PES literature suggests that drivers of effectiveness are far
61 more diverse than the three design features of spatial targeting, payment differentiation and
62 sanctioning (for a recent review see Huber-Stearns et al.¹⁴). The three design features assessed in
63 Wunder et al. are an analytical framework (derived from Ezzine-de-Blas et al.¹⁵) focused on
64 economic design principles of efficiency and conditionality, rather than a more comprehensive
65 scoping of factors. The wider PES literature suggests that, while these design features are no doubt
66 important, they likely offer only partial explanations of PES effectiveness¹⁴.

67 In summary, while we appreciate Wunder et al.'s examination of their selected design principles, we
68 view that future studies on PES effectiveness should explicitly address the wider social-ecological
69 context and drivers of environmental interventions and behaviour.

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