Are forest-dependent people necessarily poor?
Photo by World Agroforestry Centre/Meine van Noordwijk

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CHAPTER 25

Pro-poor PES designs? Balancing efficiency and equity in local context

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Highlights

- Poverty (lack of wellbeing) has at least five dimensions that relate to ecosystem services
- Qualitative poverty concepts, beyond income metrics and understood in local context, are key to pro-poor PES designs
- PES financial transfers can directly reduce poverty under specific circumstances
- Co-investment in stewardship as a PES paradigm can accommodate all dimensions of rural poverty
- A decision tree is provided to identify whether PES or PES-related approaches can reduce poverty in a local context

In exploring the relationship between social equity, ecosystem (environmental) services and the intent and practice of PES systems of various designs[1], we may need to first unpack the concept of poverty in its rural or urban context. Research on the topic has followed two traditions: bottom-up approaches, based on listening to what poor people say about their

(lack of) well-being, and top-down ones based on what is represented in spatial data and government statistics, often with a primacy of per capita income data (or percentage of population below a poverty threshold). Poverty impacts of PES depend on how many PES participants are in fact poor, on the poor's ability to participate, and on the amounts paid or invested[2]. "Although PES programs are not designed for poverty reduction, there can be important synergies when program design is well thought out and local conditions are favourable"[2]. Possible adverse effects can occur where property rights are insecure or if PES programs encourage less labour-intensive practices without increased returns to labour. Subsequent analysis has explored concepts beyond direct payment[3]. Within a broad PES concept of efforts to enhance ES through incentives[1], three major paradigms were discussed[4,5] in relation to poverty dimensions:

- commoditization (financial transfers in exchange for measurable ES performance; this requires clarity on property rights and tenure, and legality of ES claims),
- compensation (payments for foregone opportunity costs; this also requires clarity on property rights and tenure, and legality of the ES-degrading land uses abandoned), and
- co-investment (focussed on longer-term shared benefits by sharing assets, risks and responsibilities; applicable in situations where legality, tenure and property rights are not clear; this may involve a process towards preconditions for other PES paradigms).

In light of the prerequisites, the co-investment paradigm may be most applicable where poor land users are involved. However, there are many shades of nuance within the way co-investment is approached, as is evident in many of the case studies in this book.

The spatial dimension of the way poverty relates to ecosystems services—and the rules and incentives to protect them—depends strongly on the scale of consideration. In remote places, natural capital may remain high, and people scarce and poor while the benefits of exploiting nature may be low relative to the damage done. Connecting such a location with one where natural capital is scarce and financial capital available through a PES system may seem a good idea[1]. However, it can backfire, from an ES perspective, if the additional financial resources are used to increase exploitation, and slow down the move to (urban) centres of development that would otherwise have taken place. At any scale spatially segregated (function A here, function B there) multifunctionality options need to be compared with their integrated counterparts (managed trade-off between A and B in a larger area)[6,7].

As stated in chapter 3[8], the first trade-off may be between two types of ES: provisioning services versus the regulating, cultural and supporting services. The local perspective may prioritize the first; the external interest in supporting ES the latter. The preferences and priorities are likely to depend on wealth, gender, ethnic identity, migration history and age. Before we can assess the opportunities and risks of PES mechanisms in a local context through a poverty reduction lens, we need an understanding of the landscapes as whole social-ecological systems[9] with multiple feedbacks, connected across scales from plot to national and global contexts.

This chapter reviews evidence on the benefit (co-benefit), cost and risk distribution of various forms of pro-poor PES. We will review the bottom-up perspectives on poverty and the top-down spatial analysis of coincidence of poverty dimensions and ES hotspots, before exploring the empirical evidence on different PES mechanisms and a decision tree to be used in identifying key PES or PES-related entry points in specific landscapes. The discussion will refer to two of the propositions introduced in chapter 1[1]:

S1. Voluntary and mutually agreed PES criteria and indicators are essential in ensuring performance.

S2. Vulnerability to loss or lack of ES is disproportionally found among poor segments of society: PES has to be implemented without increasing poverty of its relevant actors.

25.1 Poverty in the eyes of poor people

The bottom-up approach has documented that poverty cannot be easily captured in a single definition as it is multidimensional, context-dependent and subjectively experienced. Around the turn of the millennium, research on 'voices of the poor' was carried out in 23 countries[10]. It highlighted components that poor people commonly invoke as constituting wellbeing, under five subheadings:

- the necessary material for a good life (including secure and adequate livelihoods, income and assets, enough food at all times, shelter, furniture, clothing, and access to goods);
- health (including being strong, feeling well, and having a healthy physical environment);
- good social relations (including social cohesion, mutual respect, good gender and family relations, and the ability to help others and provide for children);
- security (including secure access to natural and other resources, safety of person and possessions, and living in a predictable and controllable environment with security from natural and human-made disasters); and
- freedom of choice and action (including having control over what happens and being able to achieve what a person values doing or being).

The weight given to these subheadings may differ between settings, differentiated by gender, age and other social characteristics. Escape from poverty may require different actions depending on which of the five issues is perceived to be dominant in a given context. The list has been used in the Millennium Ecosystem Assessment[11], the Intergovernment Panel on Biodiversity and Ecosystem Services (IPBES)[12] and in a slightly modified form of the 'human well-being pyramid' in chapter 1[1].

Asset-based perspectives on poverty-environment relations in tropical forest margins may differ substantially from those relying on income data[13]. Income provides direct options to deal with the first group of needs identified, but may be neutral or negative in interaction with the other poverty aspects. There are further aspects that cannot be adequately captured in standard surveys and require more careful listening to local perspectives.

Forests of North Kalimantan (Indonesia): source of external richness and local poverty? Photo: World Agroforestry Centre/Meine van Noordwijk

Punan hunter-gatherers in North-Kalimantan (Indonesia) acknowledge that in remote upstream villages, where natural resources are still plentiful, families barely survive throughout the year, have little monetary income, no access to education and a very high infant mortality rate, while in downstream villages, where forest resources are vanishing, families have access to more cash-earning opportunities, enjoy better education and very low infant mortality[14]. From a strict economic point of view, there is a consensus among all Punan: downstream people are generally better off; but when it comes to well-being, opinions diverge and the abundance of forest products for food, free and easy access to land to open swiddens and the availability of forest products for materials are the three most preferred aspects of living in the forest rather than close to the city where healthcare and education are much better.

While there has been due attention in many countries to the recognition of rights of indigenous people with territorial claims, the linkage of 'indigeneity' with 'territory' (rather than life styles and culture) is a problem[15]. In addition, many of the rural poor are first- or second-generation migrants and their ambitions, roles and land-use choices need to be understood in their interactions with local communities, governance and private sector[16].

A review of the conceptual foundations and frameworks for ecosystem services and poverty alleviation research[17] concluded that current understanding is best represented by the Sustainable Livelihoods framework[18], together with the Social Vulnerability framing[19] and insights on Political Ecology[20], Environmental Entitlements[21] and Resilience that include the capacity for renewal, reorganization and development[22]. Central in this synthesis[23] is access

and control over capitals, entitlements, and endowments as it interfaces with a) ecosystem structure, functions and services, b) human preferences, and c) non-ES-based ways of meeting current needs and adapting to change.

The multiple dimensions of poverty are reflected in the 17 Sustainable Development Goals that world leaders adopted for the 2015–2030 period. Comprehensive ways of addressing the whole set are now a key part of the landscape approach[24]. However, there is still a need in any specific context to identify where the more strategic starting points can be. Spatial analysis can help in such prioritization.

25.2 Geographic overlap of poverty and ecosystem services

Within many countries, areas with opportunities for biodiversity conservation in remote areas as basis for ES overlap strongly with those of extreme poverty[25]. A study of the environmental consequences of current poverty-alleviation programs in Mexico[26] found that additional income from conditional cash transfer programs raised consumption of land-intensive goods and increased deforestation, especially where poor road infrastructure had been a factor in the existing correlation of poverty and forest persistence.

In a systematic mapping of the literature from 2000 to 2013, 1324 potentially relevant reports were identified[27], 92 of which were selected for a review, creating a database of 231 actual or potential recorded trade-offs and synergies. The analysis of these case studies highlighted significant gaps in the literature, including: a limited geographic distribution of case studies, a focus on provisioning as opposed to non-provisioning services and a lack of studies exploring the link between ecosystem service trade-offs or synergies and the ultimate impact on human well-being. Trade-offs were recorded almost three times as often as synergies and the analysis indicated that there are three significant indicators that a trade-off will occur: 1) at least one of the stakeholders having a private interest in the natural resources available; 2) the involvement of provisioning ecosystem services; and 3) at least one of the stakeholders acting at the local scale. The spatial scale at which conservation areas impact the surrounding landscape, at least 10 km, is wider than previously envisaged[28].

Local communities in developing countries are often forbidden to earn their livelihood from state-owned forests. Nonetheless, local people commonly manage these lands and depend on them to survive[29]. Successful conservation programs intended to rehabilitate ecological functions and produce ES for beneficiaries outside the area rely on community participation, maximizing opportunities of existing laws to move towards co-management and reducing local inequity[29].

Further steps are needed to analyse which conservation measures are appropriate and effective in enhancing ES[30], beyond current valuation studies that may show potential gains but not how to achieve them. Protected areas have been described as (potential) poverty traps with difficult access to markets, education and healthcare, rules limiting local resource use and enforcement of rules leading to criminalization of local actors. In contrast, Bolivia's protected-area system has, on average, reduced both deforestation and poverty[31]. To support this conclusion, authors used a combination of non-parametric and semi-parametric econometric estimators to analyse the heterogeneity in Bolivia's protected-area system. Similar conclusions that protected areas don't have to be poverty traps have been derived for Costa Rica and Thailand[32].

An optimistic estimate of opportunities for poverty reduction through financial transfers for global biodiversity conservation[33] stated that the top 25% of conservation priority areas could increase local income for those stewarding natural habitats by more than 50% through direct benefits plus payments for ecosystem services. The aggregate benefits are valued at three times the estimated opportunity costs of foregone ES-degrading land uses and could exceed $1 per person per day for 331 million of the world's poorest people[32].

As a step beyond spatial correlations, a review[34] of current understanding of mechanisms through which protected areas affect social and environmental outcomes concluded that "Unfortunately, empirical evidence about these mechanisms is limited, and little guidance for quantifying them exists." A range of mechanisms has been hypothesized, but there is limited empirical evidence for their relative contributions, while some advances have been made in the past decade for estimating mechanism causal effects from non-experimental data. The authors proposed three ways to close the gap:

1. Efforts to better understand mechanisms, cause-effect relation and feedbacks by scholars and practitioners;
2. Development of better theories about protected-area mechanisms, plausible mechanisms, confounders, moderators and interactions; and
3. Application by scholars and practitioners of this theory in more appropriate empirical designs for generating credible evidence in real-world contexts to facilitate continuous learning and improvement.

Protected areas for core conservation values in combination with transition zones where selected use rights plus PES incentives can help build an economy built on niche value may replace efforts to compete with mainstream agricultural bulk producers. As staple food can be better stored and transported than other components of a healthy diet, income security can help shift local agriculture to more ES-friendly land uses[35].

In conclusion of this section, there is geographic overlap of poverty and ES worthy of investment, and can be used in a balanced approach that addresses both simultaneously. The choice of PES paradigm will depend on local context.

25.3 PES paradigms and poverty reduction

This section is meant as a step in the analysis of which PES designs can be pro-poor in what contexts. In contrast with the optimistic estimates above[30] that are based on beneficiaries of biodiversity-providing ES of global value, watershed functions are per definition more local. Only in specific combinations of demography (many beneficiaries, few providers) and specific ES-relationships (upstream–downstream) will financial transfers from downstream ES beneficiaries to upstream poor have a direct effect on reducing poverty. Such cases exist in Southeast Asia, but they are rare[36]. Opportunities exist where a relatively small number of people live in the landscapes that provide ES that support urban concentrations of people, as found in forests that provide drinking water to cities or upper catchments that provide hydropower to a national grid. It may be for good reason that the early applications of PES concepts in Asia have been in such situations. Elsewhere, urban poverty may preclude substantial transfers to rural areas upstream, where land users are better off than those living in urban slums.

Distributive, procedural and contextual equity are three aspects relevant in discussions on PES[37]. First, distributive equity addresses the distribution of benefits and costs. Second, procedural equity refers to decision-making. The third dimension, contextual equity, links the two and incorporates the pre-existing conditions that limit or facilitate people's access to decision-making procedures, resources and, thereby, benefits. A combined equity framework then considers how these dimensions are shaped by the scale and target group of concern (who), the framing of goals with respect to equity (why), and, crucially, how the decisions about the content, target and aims of equity are taken. The authors expect that debate around the fundamental ethical values at stake can guide analysts, policymakers and planners towards more open and inclusive processes for defining equity, along with affirmative efforts to engage marginalised people.

The Integrated Conservation and Development Projects (ICDPs) that were meant to address poverty reduction and biodiversity conservation issues simultaneously have, in general, not met their stated goals and have been declared a failure, be it with notable exceptions[38]. Lessons learnt from the ICDP evaluations have informed the next generation of efforts to reduce emissions from deforestation and forest degradation under the REDD+ umbrella[39]. Opportunities exist for more explicitly taking such lessons on board in a process that reconciles three scales: the global interest in emission reduction, the local interest in enhanced livelihoods, and the national-scale efforts to do so in a way consistent with the common but differentiated responsibility. The PES-paradigms mentioned before (commoditization, compensation and co-investment) can be used across these scales, reconciling the co-investment properties of ICDPs with the opportunities of international carbon markets[40]. Integration of payment for ecosystem services programs with biodiversity conservation and sustainable development is now promoted as the way to manage forests for the full suite of ecosystem services[41]; it is understood that 'forest carbon projects' may fall short on biodiversity conservation and sustainable development.

Non-market valuation of ecosystem services has implications for justice dimensions of emerging new policy instruments, such as PES and REDD+, paying for or trading ecosystem services and biodiversity[42]. Current discussions can inform a new agenda for critical scholarship of market-based conservation, with more precision in claims about impacts, distinguishing across market-based instruments and across types of outcomes. This will also require a more nuanced account of the ethical connotations of such instruments, which should involve analyzing both unequal socio-economic relations and culturally bounded conceptions of justice.

A case study for the Western Ghats and Eastern Himalaya in India[43] showed that interventions strengthened a range of village level and regional institutions that play a critical role in the rural economy and in conservation of biodiversity. Local resource exploitation was a driver of continued ecosystem degradation and chronic poverty in all six villages studied in the Eastern Himalayas[44]. Proposed ways to support the recovery of ecosystem services and key aspects of human well-being have a 'coinvestment' character.

25.4 Identifying starting points for any given context

Box 25.1 summarizes a set of questions that may lead to an initial choice of PES paradigm for a given context. With a broader view on PES that includes non-financial transfers[1], we may find that root causes of poverty are, in some situations, linked to negative effects on ES and there can thus be opportunities to simultaneously reduce poverty and enhance ES. However, there has to our knowledge not been a systematic and comprehensive assessment where

these situations occur. A stepwise approach through a list of guiding questions can help in diagnosis of the main cause of rural poverty in any given location:

A. Lack of access to and use rights of land?
B. Lack of access to clean water and local agrobiodiversity?
C. Lack of investment funds for clean development?
D. Lack of income opportunities?
E. Lack of (political) voice, being scapegoats?

If any combination of the above applies, can forms of payments for ecosystem services help in reducing poverty? How do we know which interventions are effective in reducing poverty, as the effectiveness of any intervention depends strongly on context? How can any external observer get to grips with that context and the way it is understood locally?

Box 25.1 Decision key to select an appropriate PES paradigm

1. Is there a clear link between land use practices and the provision of environmental services (= ecosystem services beyond the private benefits from extraction of goods)?
   Yes.....2
   No.....7a
2. Is local appreciation of ES sufficient to guarantee their provision at externally optimum level?
   Yes.....7b
   No.....3
3. Are property rights clear and non-contested at community or individual level?
   Yes.....4
   No.....7c
4. Are all 'illegal' threats to environmental services handled by appropriate law enforcement?
   Yes.....5
   No.....7c
5. Can environmental services be measured and partitioned/attributed to actions in an additive manner?
   Yes.....6
   No.....7c
6. Are 'ES providers' able to absorb or insure against risk of non-delivery of ES by *force majeur* or temporal inability to secure ES?
   Yes.....7e
   No.....7d

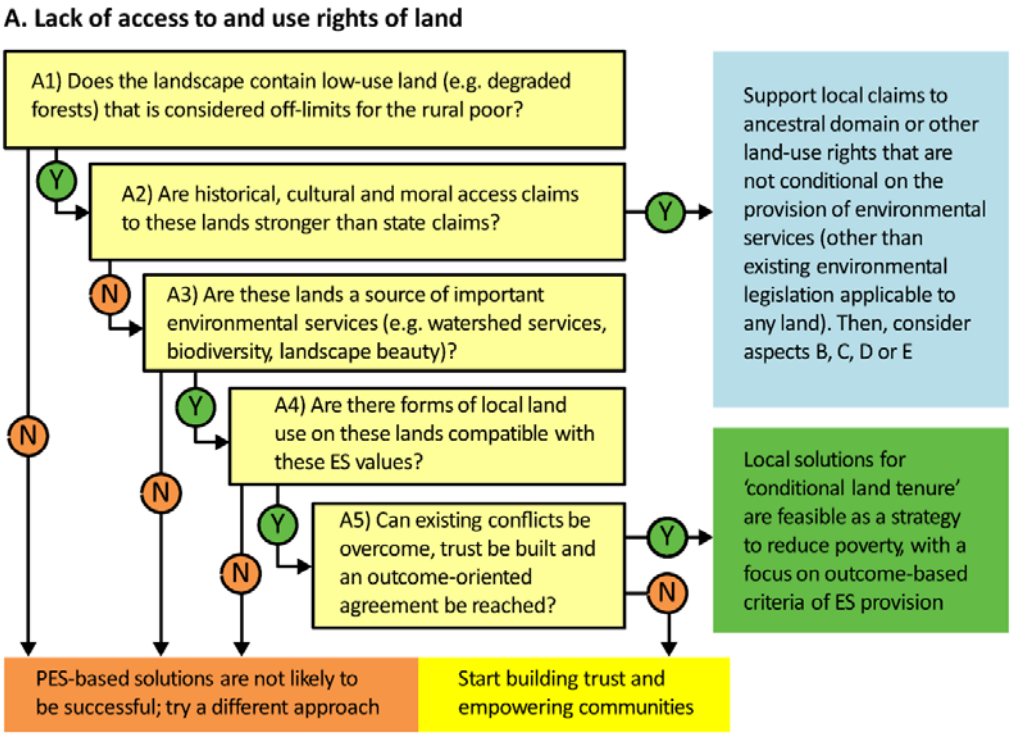
7a. Accept that environmental services will further degrade or first clarify ES production

7b. No external incentives are needed, ES-maximization will be the local land use of choice

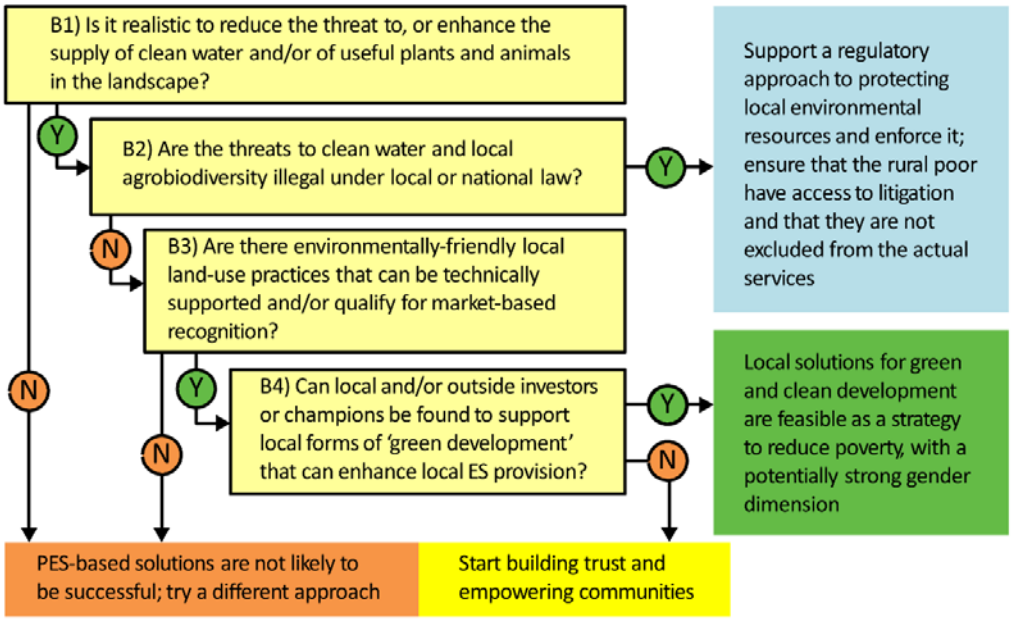
7c. Try 'Co-investment in environmental Stewardship, CIS' as approach

The decision support tool calls for an initial understanding of the main or multiple causes of poverty in local context. It refers to a number of 'rapid appraisal' tools[45,46] that explore gaps between local, pubic/policy and science-based understanding of issues such as tenure claims (RATA = Rapid appraisal of tenure), hydrology (RHA = rapid hydrological analysis), agrobiodiversity (RABA = Rapid Agro Biodiversity Assessment), carbon stocks (RACSA = Rapid Carbon Stock Appraisal), local institutions (RISNA = Rapid Institutional), agroforestry technology and practices (RAFT = agroforestry technologies) and the REDD/REALU site level feasibility appraisal (RESFA).

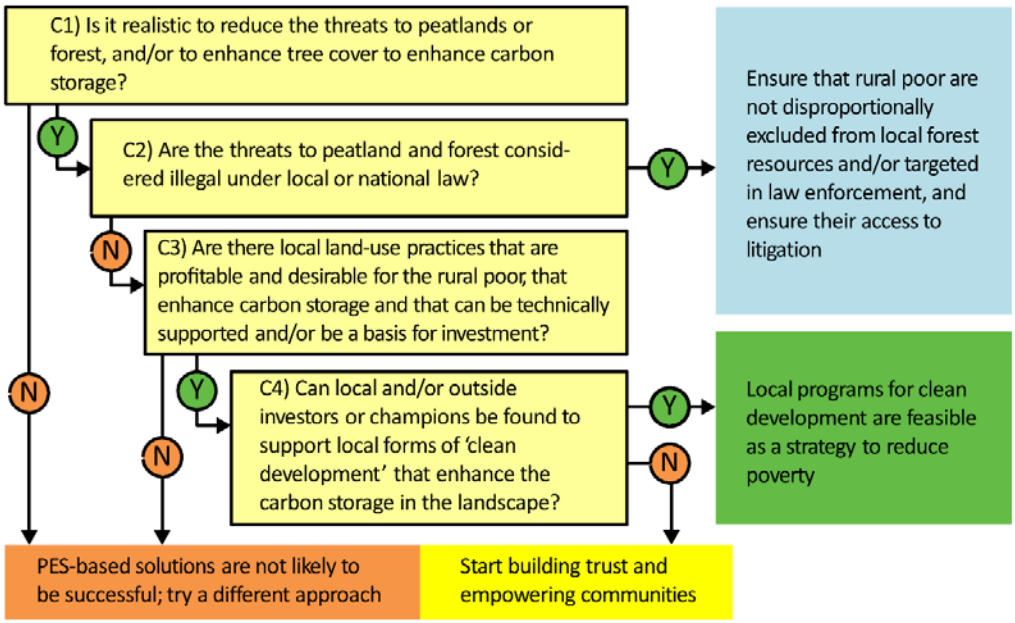
When the focus is on ES rather than poverty, one might think that step A3 in Fig. 25.1 should come before A2. If step A2 is answered with 'yes' and ancestral claims are respected, this may[47] or may not result in degradation. In such a case where issues of category A have been resolved, constraints in categories B...D may become the next priority, and an equivalent of A3 comes back in that modified context.



B. Lack of access to clean water and local agrobiodiversity



C. Lack of investment funds for clean development



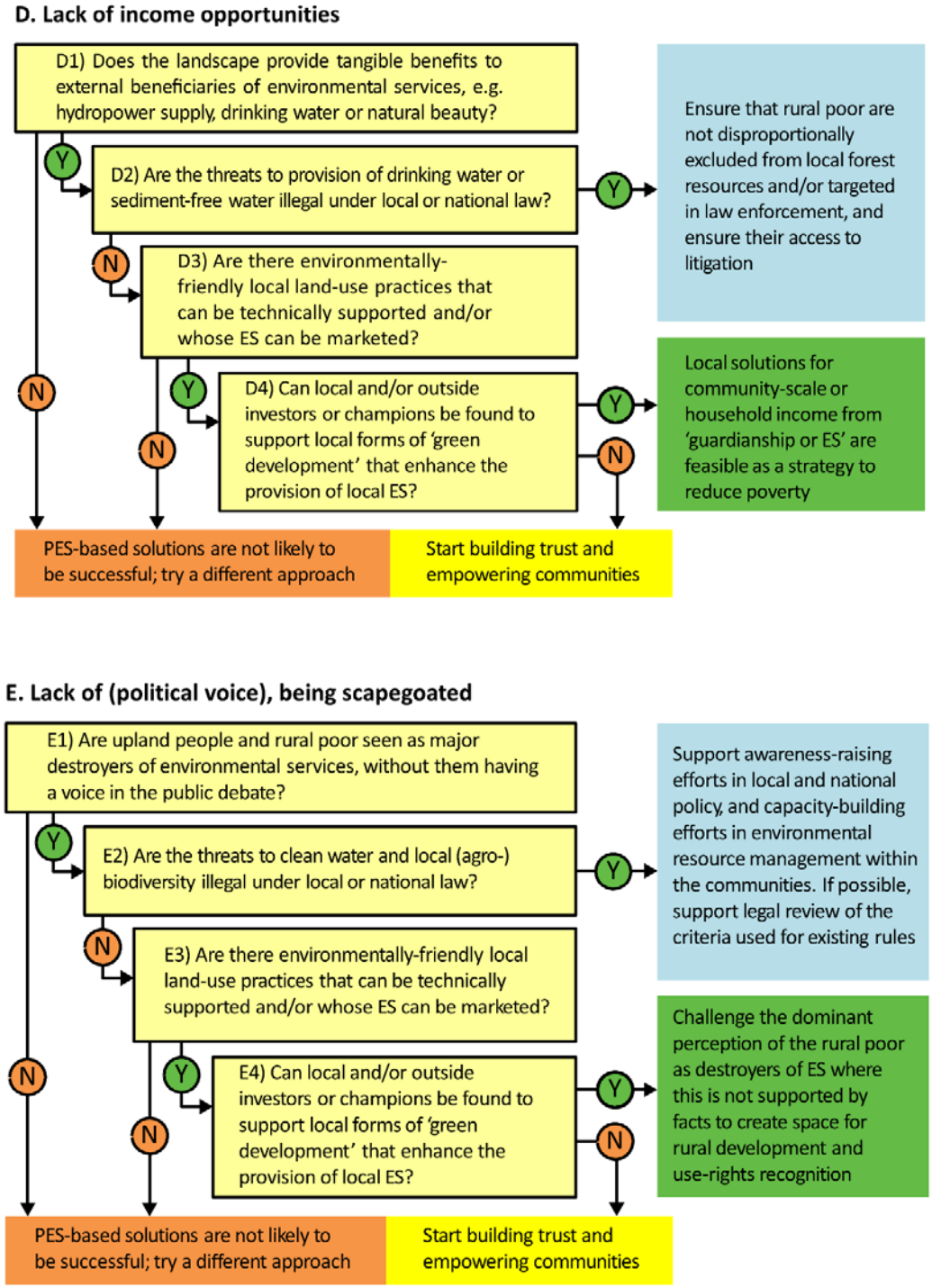


Figure 25.1 Decision trees for identifying starting points for poverty-reducing interventions for five primary dimensions of rural poverty

25.5 Discussion

Progress in this field requires a combination of 'hands-on' action research to develop practice and praxis, and an emerging interdisciplinary understanding of the linked socio-ecological systems across scale that we deal with. Traditional academic disciplines such as economics, ecology, social and political and environmental sciences can contribute, but concepts will have to transcend what each of them brings by itself. A review[48] of empirical evidence on mechanisms linking ecosystem services and poverty alleviation found results to be dominated by provisioning services and just two poverty dimensions, concerning income and assets, and food security and nutrition, respectively. Overall, evidence is accumulating that ecosystem services support well-being, and perhaps prevent people becoming poorer. Few studies, however, provided sufficient context to understand poverty alleviation impacts (positive or negative), if any. In the authors' view, a considerable gap remains in understanding the links between ecosystem services and poverty, how change occurs, and how pathways out of poverty may be achieved based on the sustainable utilisation of ecosystem services.

Returning to the example of the Punan hunter-gatherers and others in the forests of North Kalimantan[14], one might ask whether the (financially) poorer upland Punan who enjoy better access to land and forest products might benefit from PES, if that actually emerges[49]. Presumably they would, if their income increased without affecting their forest access. Conversely, they could be made worse off if (a) the rules of the PES program reduced forest access, and (b) the payments received were not sufficient to offset the resulting loss. The 'procedural equity' question than shifts to 'Free and Prior Informed Consent' [50].

Returning to the two propositions[1], we have found some further evidence supporting proposition S1 ("Voluntary and mutually agreed PES criteria and indicators are essential in ensuring performance"). This is especially so where gaps between poor ES providers and better-off ES beneficiaries include gaps in culture, knowledge, rights and perspectives. We also found additional evidence for S2 ("Vulnerability to loss or lack of ES is disproportionally found among poor segments of society: PES has to be implemented without increasing poverty of its relevant actors."), although situations where urban poor ES beneficiaries don't have the means to support financial transfers to upland ES providers require attention as well.

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