Commentary

Property rights and liability for deforestation under REDD+: Implications for ‘permanence’ in policy design

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A B S T R A C T

Reducing Emissions from Deforestation and forest Degradation (REDD+) is critical in efforts to mitigate the effects of anthropogenic climate change. Despite uncertainty about the exact form of a future, international REDD+ system, REDD+ carbon property rights would need to be created and allocated with liability assigned for the potential loss of climate benefits in the event of carbon reversal from deforestation. This commentary explores the links between forest property rights and liability, to different REDD+ policy options and their implications for permanence. Should national governments retain liability for permanence then project-level activities that have individually-assigned REDD+ carbon rights may have a higher risk of carbon reversal than policies where rights are assigned to the state. Knowledge of pre-existing forest rights is necessary for some policies implemented with government-assigned REDD+ rights in order to compensate for potential income losses from policy implementation.

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1. Introduction

With deforestation and forest degradation accounting for up to a fifth of global greenhouse gas emissions, Reducing Emissions from Deforestation and Degradation—REDD+—has been positioned as an important and potentially cost-effective climate change mitigation strategy (Eliaisch, 2008; Stern, 2008; Palmer and Engel, 2009).1 Despite exclusion from the Kyoto Protocol, a global REDD+ system is emerging and may yet be included in a post-2012 climate agreement. Inclusion of REDD+ in a global compliance system will, however, necessitate clearly-defined and allocated forest carbon property rights, in the form of carbon credits or certified emissions reductions, with liability assigned for possible future carbon release into the atmosphere.2

Assigning liability is not only a precondition for credit fungibility, but is also a key issue for ‘permanence’ (Sedjo and Marland, 2003). Carbon sequestered in the terrestrial biosphere is not permanently removed from the atmosphere and is at constant risk of being returned through deforestation, whether intentional or not. Reductions in emissions thus do not represent a permanent change in the cumulative flux of carbon dioxide to the atmosphere, and this applies also to industrial emissions sources (Herzog et al., 2003; Dutschke and Angelsen, 2008). In this commentary, I adopt the viewpoint of Watson et al. (2000) that reductions in fossil fuel emissions can be regarded as leading to more permanent reductions in cumulative flows to the atmosphere in contrast to reductions in deforestation. Forests as carbon sinks face a wider range of economic, political, and natural factors, which contribute to a higher risk of carbon reversal, than other sources.

Liability can simply be defined as having a high probability of being held responsible and potentially penalised for carbon release from deforestation of a particular area. But under a national approach to reducing greenhouse gas emissions the concern is less about permanence of specific forest areas but instead whether a particular country continues to maintain changes in emissions below an established reference level, e.g. one defined as ‘business-as-usual’ (Dutschke and Angelsen, 2008). This is the definition used in this commentary with important implications for the design of incentives in more individual-specific contracts for ensuring permanent REDD+. Such contracts are more likely in a project-based REDD+ approach or one that combines projects with a national framework.

The forerunner to any future REDD+ system is Kyoto’s Clean Development Mechanism in which a limited number of afforestation/reforestation projects have been implemented. Carbon credits created in such projects, located in non-Annex I, i.e. developing, countries, can be used to offset emissions in Annex I, i.e. ‘industrialised’, countries.

1 REDD+ is defined as a set of policies and activities to prevent or slow deforestation and degradation, and increase forest carbon stocks.

2 More precisely, carbon credits describe the right to exploit an activity’s climate benefits, and can be defined through private legal contracts as in the voluntary carbon market or through national and international law as in the Clean Development Mechanism of the Kyoto Protocol (Wemaere et al., 2009). In general, a property right is a claim to a benefit stream that the state agrees to protect through the assignment of duty to others who may interfere with the benefit stream (Bromley, 1991).

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Liability for the loss of climate benefits in these projects is transferred to those purchasing carbon credits from project developers or owners once the credits have been created (UNFCCC, 2005). Since liability for maintaining emissions below the 1990 reference levels agreed in Kyoto rests with Annex I countries, they remain liable should carbon credits prove to be non-permanent as a result of deforestation by other actors. In other words, should a project developer decide to deforest after selling its credits, it can no longer be held liable for any potential losses. Instead, the credit-buying country would be held liable for losses and would need to buy replacement credits elsewhere. If it fails to do so, and is unable to meet its emissions reduction commitment in a given compliance period, it can be penalised. Sanctions include the imposition of stricter emissions targets in successive compliance periods or exclusion from Kyoto's trading mechanisms. Since non-Annex I countries did not sign up to emissions reductions targets they cannot be held liable and hence, punished in case of carbon reversal from CDM projects on their territories.

This commentary first explores the likely shape and form of a future REDD+ system and its implications for liability in the event of future deforestation. While it is unlikely to copy the project-based nature of the CDM and its associated liability regime, the latter has implications for some of the policy options currently being considered for implementing REDD+. These options are discussed according to whether REDD+ carbon rights are defined at the government or individual level before the final section concludes.

2. REDD+ Property Rights, Liability and Permanence

Despite current uncertainty about the precise form of the future REDD+ regime(s), some basic institutional features have emerged both in the literature and in ongoing international discussions among researchers, practitioners and other stakeholders (see Wertz-Knaupnikoff and Angelsen, 2009), revolving around the idea of a two-tier or 'nested' accounting framework (Pedroni et al., 2009).

First, industrialised countries such as, but not necessarily exclusively, those grouped under Annex I in the Kyoto Protocol, will pay countries such as Brazil, Guyana and Indonesia for REDD+. Finance continues to be a matter of discussion (political and otherwise) but it is likely to be initially based on voluntary funding mechanisms, utilising monies provided by both public and private sectors. In the long-run, there may be opportunities to tap into nascent carbon markets, which could potentially involve the creation of fully fungible REDD+ credits. Second, policy frameworks within individual REDD+ host countries can either be utilised (if existing already) or would need to be created in order to effect changes in deforestation and land-use patterns on the ground. This could involve the purchase of REDD+ credits by REDD+ host governments from landowners or farmers participating in REDD+ activities. These could then be sold by REDD+ host governments to other countries either in voluntary transactions or via regulated carbon markets.

While an international system has yet to emerge, there are a number of bilateral transactions occurring at that level, for example, between Norway and respectively, Brazil, Guyana, and Indonesia (see Sills et al., 2009). However, irrespective of the level at which transactions and policy take place, REDD+ credits require the creation of property rights that relate to the reduction of emissions and sequestration potential of a particular activity (Streek, 2009). As noted rights holders could be national governments at the first tier but could also be individual landowners, farmers, communities or concessionaires (hereafter termed 'individuals') at the second tier who can then trade these rights as carbon credits.

And what of liability for carbon reversal from deforestation? As noted in the Introduction, carbon credit buyer liability (and hence the possibility of being sanctioned) under the CDM resulted from the constraint of only buyers having national commitments in emissions reductions. In a future international REDD+ system, liability could potentially be shared between REDD+ host governments and government buyers, which is more likely if the former assume emissions targets say in a post-2012 cap-and-trade system (Elasch, 2008). While this is by no means certain to happen, liability could also be assigned to REDD+ host governments more implicitly, for example, within bilateral contracts, or with the adoption of approaches such as 'compensated reductions'. Developed by the Environmental Defense Fund and the Instituto de Pesquisa Ambiental da Amazônia (IPAM), it proposes that non-permanence in one period, i.e. the inability of a REDD+ host country to meet an agreed emissions target against a historical reference point, could be punished by being rolled into the next as an additional commitment (see Santilli et al., 2005). Thus, liability for non-permanence would rest, at least partially, with a country such as Brazil or Indonesia.

At the national level, it should therefore be possible to bring REDD+ host countries on board with regards to sharing liability for non-permanence. At this level, particularly if countries adopt a nested approach, there is a wide range of policy options which REDD+ host countries could potentially adopt in order to operationalise REDD+.

3. Policy Options Under REDD+

Policies for REDD+ could be designed on the basis of maintaining changes in emissions or carbon stocks against some agreed reference level. Broadly speaking, policies either address the drivers of deforestation, e.g. by reducing agricultural profitability, increase carbon values of standing forest and enable forest users to capture these, e.g. using payments for environmental services (PES), or regulate land use (Angelsen, 2009). Some of these policies, e.g. regulation, could, if effective, lead to the creation of REDD+ credits to be held by governments. Others such as PES, involving ground-level activities or projects could involve the creation of REDD+ credits to be held by individuals.

Cross-sectoral policies, including institutional reforms, are also necessary, first to ensure that the forest sector is not targeted in isolation and second, to complement other policies. For example, corruption and rent-seeking are widespread in the natural-resource sectors of many tropical forest countries (see Palmer, 2005). Indeed,
the recent finding that government officials in Liberia were bribed by carbon investors to secure carbon rights to a forest concession at below-market values suggests that corruption is already playing an unwelcome role in REDD+ policy (Financial Times, 2010). Initiatives to improve governance are therefore necessary to tackle possible abuses of the system.

Table 1 lists potential REDD+ policies that might be deployed in order of the relative degree of separation between the carbon rights holder and where liability could lie in the event of carbon reversal. The first five rows of policies at the top of the table have the smallest degree of separation, and can only be implemented at the national or regional level with carbon rights created by and allocated to the REDD+ host government. With these policies, liability could also be assigned to the government, i.e. the same entity responsible for creating REDD+ credits. Thus, the REDD+ carbon rights holder of the first degree would hold liable for their permanence. If the REDD+ host country decides to participate in a future international carbon market or a voluntary, bilateral initiative, it could sell REDD+ credits to another country while still being held liable should carbon reversal occur.

Policies contained in the bottom row of Table 1, including PES, would have rights allocated to individuals, and can only be deployed using either a project-based or nested approach. For these policies, assigning liability in the event of carbon reversal is more problematic. If a REDD+ system is based on the idea of states and not individuals being held liable for permanence, then the former would need to devolve liability to the latter for otherwise an individual as the carbon rights holder could sell REDD+ credits without being held responsible for any losses. The REDD+ credit buyer, which in a two-tier system could be the REDD+ host government, would instead be held liable analogous to Annex I countries participating in the CDM. As discussed below, however, devolving liability might be constrained under certain conditions. That said, policies utilising government-assigned REDD+ rights are more likely to be considered and implemented in the short-run than those that involve the creation of rights for individuals. Hence, these are discussed first before moving to a consideration of the implications of liability for REDD+ permanence for policies utilising individually-assigned rights.

3.1. Policies Utilising Government-Assigned REDD+ Rights

A country could receive REDD+ incentives in the form of tradable carbon without needing to pass these rights on to individuals holding entitlement over forest resources (Streck, 2009). Governments holding rights can then implement a range of policies while potentially holding liability for carbon reversals. From Table 1, policies include raising the costs of inputs to deforestation activities and reducing the value of output from these activities, to regulate land use, and improving law enforcement. Although carbon rights do not have to be assigned at an individual level, some of these policies may require knowledge of pre-existing property rights to the benefits of forest land and use. This is to enable effective policy targeting of individuals most likely to lose their benefits as a consequence of REDD+ policy implementation. Equitable compensation mechanisms, financed with REDD+ monies received by governments, should then be designed to compensate these individuals for lost earnings and income from deforestation activities deemed legal or at least ‘legitimate’, e.g. where pre-existing rights are not formalised.

Policies requiring compensation for curtailing pre-existing rights could include some of those in which participation by individuals is involuntary. For example, regulatory approaches such the creation of new protected areas, as observed in Brazil (Nepstad et al., 2009), but also the withdrawal of permits from firms planning to develop forest areas. The challenge then is for governments to ensure that it can identify who would have the right to be compensated. Where the pre-existing rights to forest benefits are unclear, there are risks for individuals. For example, creating new protected areas may exclude farmers or communities if they prove to be effective. Processes such as community forest mapping are therefore needed to account for pre-existing rights before implementing a compensation programme. These should form part of the ‘readiness’ phase of REDD+ implementation in countries where property rights to forest resources are unclear and/or not formalised.

Important policy options not requiring compensation include the elimination of subsidies for inputs\textsuperscript{10}, measures to improve law enforcement and preventing new road-building in forest areas. Regarding the latter, roads provide easier access to forest areas while reducing costs of transporting products to market. Compensation may,
however, be justified with closing existing roads and not when trying to prevent new road-building. Improving law enforcement involves governments strengthening their de jure rights to keep forest standing, for example, by improving legal systems and the monitoring of individual compliance with the law. But in situations of weak property rights such as in Indonesia there is a need to consider de facto property rights claims (Engel et al., 2006; Engel and Palmer, 2008). Instead of strengthening their own de jure rights, governments could alternatively seek to improve individual compliance with existing land-use restrictions, i.e. limiting deforestation, via the payment of subsidies to individuals (see e.g. Wunder, 2009). Subsidies could either represent compensation to an individual who chooses to forgo his de facto property rights to forest conversion, or a payment for the individual’s forest carbon credits.11 Unlike the former, the latter would require the creation of de jure forest carbon property rights at the individual level (see below). In either case, policy participation would be voluntary in contrast to say the withdrawal of forest conversion permits by governments.

Other policies in which governments hold carbon credits can be characterised as being voluntary. Increasing agricultural productivity, for example, could involve the targeting of REDD+ monies towards marketing and agricultural extension programmes (Rudel, 2009). Similarly, REDD+ could subsidise alternative energy sources for individuals who harvest forests for biomass energy or could be utilised to increase the scope and value of their off-farm labour opportunities. But identifying appropriate and sustainable alternatives has to contend with missing and constrained markets including those for forest products and land, potentially raising the transactions costs of policy implementation (Groom and Palmer, 2010). Nevertheless, the voluntary nature of these policies, also a characteristic of PES and joint-production activities, implies that resources do not have to be directed towards implementing and managing compensation schemes.

3.2. Policies Utilising Individually-Assigned REDD+ Rights

Should a country authorise individuals to participate in carbon trading then title over the carbon rights needs to be established, which requires a clear legislative framework defining principles of ownership for emission reductions. The creation of new carbon rights will also affect the rights of those already using forest resources even where these are ill-defined or informal. One widely-discussed policy instrument that utilises individually-created property rights is PES. This can be conceptualised as a voluntary direct incentive to individuals to reduce deforestation, and increase carbon stocks (Wunder, 2009).

Increasing forest carbon values and enabling their capture can also be undertaken via the joint production of private and public goods, e.g. reduced-impact logging and eco-tourism (Ferraro and Kiss, 2002). Unlike PES for REDD+ these activities benefit from relatively mature markets where property rights for ‘sustainable forest use’ are already being traded. Forest carbon rights would still need to be established, although these could be potentially bundled with existing rights. Joint products could be marketed as ‘REDD+ friendly’ and priced at a higher premium than usual. One limitation is that the market demand for such products may only account for a small proportion of the potential demand for REDD+ carbon. Markets also need to be identified in which consumers are willing to pay price premiums for sustainable production, which might be problematic. For example, while markets for certified timber have grown rapidly in recent years there is, in fact, relatively little evidence that buyers are willing to pay higher prices for certified wood products over extended periods of time (UNECE, 2006). Alternatively, additional REDD+ payments could be made to participants.

Clearly-defined and enforced property rights to forest land and resources are a precondition both for effective implementation of PES and joint-production activities, which will not hold in many REDD+ host countries (Streck, 2009; Sunderlin et al., 2009). For example, clearer and better-enforced community forest rights in Papua New Guinea might have made it more difficult for this country’s government to weaken them further with recent legislation to protect resource-extraction firms from litigation in the event of environmental damages on community-owned land (Mongabay, 2010). Essentially a state capture of property rights from local people, this type of legislation weakens the ability of non-government actors to hold such firms liable should they deforest any land included in a REDD+ programme. In doing so, REDD+ permanence may be more difficult to ensure.

Unclear or contested tenure implies that these policies will not only struggle to be effective but may also struggle to be efficient or equitable. While rights do not need to be either individual12 or fully formalised to secure participation in trading systems, the project-based approach will favour those with formalised rights (Vann and Angelsen, 2009). Attempts to clarify tenure and enforce property rights via institutional reform will inevitably increase policy (transactions) costs.13 Formalising and enforcing rights, if effective, may also exclude the poor, i.e. those least likely to hold de facto rights to land and forest resources, from access to both REDD+ and forest-use benefits.

The poor, particularly those with relatively few assets, are also less likely to participate in project-level activities if liability for carbon reversal is devolved from the government to the individual. Yet incentives at the individual-seller level, whether a local community or concessionaire, are needed to ensure permanence. Contracts between governments, e.g. as a REDD+ credit buyer, and individuals would first need to incentivise due care, e.g. to minimise the risk of natural hazards such as fires, and second, prevent opportunistic forest conversion by individuals. But enrolling poorer individuals in a REDD+ scheme implies limited liability in contracts. In practice, this could mean the exclusion of disincentives to deforest, such as sanctions, from contracts in order to ensure incentive compatibility, i.e. to ensure that poorer individuals actually participate. Liability could well be further reduced where there are problems of incomplete contract enforcement, a not uncommon situation in some REDD+ host countries (see MacKenzie et al., 2010).

While conditional benefits should be offered to individuals, conditionality simply means that they only lose the right to future payments with buyers bearing the cost of possible carbon losses to the atmosphere.14 Credit buffers, risk pools and insurance allow for some mitigation of risk. Yet property rights still need to be clearly defined and allocated for these strategies to be effective. For example, since one of the principles of insurance is that one can only insure what one owns, it will only be effective if buyers have purchased clearly-defined

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11 The type and size of such a subsidy depends on whether it represents a compensation to the landowner for foregone the profits from deforestation or an incentive payment for enabling the capture of the forest carbon externality. These will not necessarily be equivalent, although both would to some extent represent a recognition of an individual’s de facto claims to the standing forest. Subsidies might, however, be more effective if accompanied by steps to formalise individuals’ pre-existing de facto rights to forest conversion.

12 The widespread existence of common property regimes in tropical forest areas (see Agrawal et al., 2008) implies that serious consideration be given to the creation of common property carbon rights.

13 Missing or constrained markets for land and other inputs, such as for credit and capital are widespread in developing countries (Groom and Palmer, 2010). Identifying and overcoming these, along with the need to monitor, verify and reward emissions reductions at the individual level, will further increase costs as will the implementation of a national framework to minimise the risk of carbon leakage from project-level activities.

14 If payments are only made at the end of a monitoring period, for instance, the buyer could withhold the following payment but would not be in a legal position to claim back any payments made in previous monitoring periods unless some liability has been assigned to the seller.
REDD+ rights. However, in the absence of assigning liability for carbon reversal such strategies do not give direct incentives to individuals to protect forest carbon rights.\textsuperscript{15}

4. Conclusion

A range of policies could be implemented for REDD+, with a two-tiered (or nested) accounting approach providing greatest flexibility for policy makers. While none of the policies detailed in this commentary are particularly new or innovative, REDD+ could potentially provide more financial investment for forest conservation and rehabilitation than has ever been seen in the past. For REDD+, to provide more permanent climate benefits, however, policy design first requires the creation and allocation of new forest carbon property rights. In doing so, there is a need to assign liability in the event of carbon reversal from deforestation. Since international climate policy, potentially including REDD+, tends to be agreed and implemented by national governments, states will ultimately be held liable for maintaining emissions reductions below pre-agreed reference levels. If found liable, credible sanctioning mechanisms are required. A failure to implement such a system in an effective and equitable manner may contribute to a lack of permanence while giving disincentives to further financial investment in REDD+. Note that assigning liability is only an issue for carbon credit fungibility where credits are traded in carbon markets. Nevertheless, even voluntary arrangements need liability assigned in such a way as to reduce incentives to deforest.

The liability problem is most acute for project-level activities. If individuals, particularly the poor, cannot be directly sanctioned for deforestation instead only having their future benefit streams removed, e.g. those supplied from PES, then there may be higher risks of non-permanence. Policy innovation, perhaps in the form of a policy mix, is necessary to somehow implicitly share liability between the state and individuals. For example, a co-management framework, in which state authorities and individuals share both the management of and the benefits from forest resources (Carlsson and Berkes, 2005), could be combined with REDD+ payments. This would first require the incorporation of individually-assigned REDD+ rights into pre-existing property rights frameworks. REDD+ payments could then be paid to local actors as an incentive to protect more forest than would otherwise be protected in a co-management scheme alone.\textsuperscript{16} In retaining liability for permanent REDD+, the state would have an incentive to carefully monitor and enforce contracts. Violations by individuals could be penalised through the withdrawal of some of their forest-use rights institutionalised under co-management in addition to the curtailment of REDD+ payments. Thus, in the event of non-permanence, an enforced reduction in local forest uses might ensure that the government maintains emissions reductions below the national reference level.

Individually-assigned carbon rights in projects will play a relatively minor role in REDD+ policy in the short-run. Instead, national-level initiatives are likely to dominate with liability potentially being taken on by REDD+ host governments. While these preclude the need to establish carbon rights for individuals, pre-existing property rights to forest land and resources may need to be considered for some regulatory instruments such as protected areas. Knowledge of these are required for possible compensation to affected individuals in the event of negative impacts from policy implementation. Again, policy innovation is necessary. For example, protected areas can go hand-in-hand with integrated conservation and development projects (ICDPs) with the latter providing alternative income streams for those excluded from forest areas (Brandon and Wells, 2009). In establishing such schemes, property rights could be mapped with compensation paid out from government REDD+ funds \textit{ex post}.

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References

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\textsuperscript{15} These strategies are often embedded in carbon standards used to verify offset quality, which tend to be reflected in the credit price. Risk pooling may, however, be subject to intentional carbon reversals, i.e. due to strategic behaviour by sellers. One solution is the system established by the Voluntary Carbon Standard (VCS) in which credits stored in a project risk buffer can be sold \textit{ex post} (VCS, 2008). Analogous to performance bonds, this approach provides incentives to project owners to implement permanence measures, e.g. to prevent forest fires. However, note that the ‘project owners’ may not be the same people who actually participate in the project.

\textsuperscript{16} This naturally requires knowledge of local reference levels for deforestation and forest degradation (see Engel et al., 2010).


