Policy for pro-poor distribution of REDD+ benefits in Mexico: How the legal and technical challenges are being addressed

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1. Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) is coordinating actions for the Reduction of Emissions from Deforestation and forest Degradation (REDD+). Following the implementation of national REDD+ activities, countries should be able to access international finance based on their carbon results. This means that payments will be in proportion to positive performance relative to an agreed baseline of emissions as defined in a national reference emissions level (REL) or a national forest reference level (RL), and expressed in tCO₂e/yr (UNFCCC, 2013). Avoided/reduced emissions are estimated against a REL, but if increases in carbon sequestration are to be claimed, the country would have to prepare instead a RL. This would include estimates of 'business as usual' rates of carbon sequestration. In both cases, only performance above these baselines would be eligible for carbon payments. In the international context, the term ‘REDD+ benefits’ was originally used to refer to the finance generated by this carbon performance, and it is in this narrow sense that we use the term in this paper. We acknowledge that as the UNFCCC policy and REDD+ discourse has developed, ‘REDD+ benefits’ are now often considered to include co-benefits of various kinds (biodiversity conservation, poverty alleviation etc.), but our study does not consider these. It focuses on the pathways of the finance involved. A recent review indicates that REDD+ benefits in the form of payments to stakeholders have been much less studied than benefits in other forms (Rakatama et al., 2016), so it is clearly an issue which needs attention.

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The system for international distribution of these financial benefits is relatively clear. However, each REDD+ country will need to have in place a second level process to distribute these benefits from the national level to local jurisdictions and from these to the stakeholders who are actually carrying out the REDD+ activities on their territories. In this paper, we consider the options for how these funds could be distributed internally within countries, since this is not determined by UNFCCC but will be decided by each country itself. Depending on the way sub-national implementation of REDD+ is organised, and how nested baselines and MRV are put in place, performance in specific sub-national regions (states, provinces) is likely to be assessed and their share of the benefits calculated on the basis of their relative performance. The channelling of money from the national government to these regions is considered the vertical component of national benefit sharing schemes (Buss et al., 2013). Within these regions, specific arrangements for benefit-sharing would be needed to distribute benefits horizontally among the stakeholders actually engaged in REDD+ activities (Buss et al., 2013), particularly to rural communities. Unless there are tangible benefits to these groups it is feared that REDD+ will not succeed (Leventon et al., 2014).

There are various options for the horizontal distribution of benefits (PricewaterhouseCoopers, 2012). In principle, this could be based either on a system of up-front input payments (designed to cover at least some of the costs of REDD+ activities to be undertaken), which we will refer to as ‘effort-based’ or on a system of ex-post output payments (payments by performance in carbon terms), which we will refer to as ‘results-based’. In this paper we analyse the technical and legal challenges that face these different systems for local benefit sharing, paying special attention to their potential to meet pro-poor objectives. We review the issue of carbon rights and general principles of environmental policy in this context. We assess the pro-poor potential of the prototype for benefit sharing in Mexico’s REDD+ strategy in the light of these challenges.

The paper is structured as follows. We describe first the calls for pro-poor REDD+ benefit sharing. After this we explore the different principles and restrictions on establishment of operative rules for benefit sharing schemes, which include the theory of carbon rights and various policy principles, and point out some technical and legal challenges to defining carbon rights in practice. Stemming from this discussion we highlight the instrumental differences between incentivising the reductions of emissions and promoting carbon enhancements. We show how all these issues have implications for pro-poor benefit distribution. Finally, we discuss solutions to the technical and legal challenges for the pro-poor distribution of benefits in the light of the prototype REDD+ benefit sharing system being implemented in Mexico.

2. The call for ‘pro-poor REDD+’

During the negotiations under the UNFCCC, REDD+ has shifted from its original carbon focus towards a comprehensive approach that now includes a strong social element. The Cancun Agreements explicitly refer to respect for the rights of indigenous and local people and for their involvement in its implementation; social safeguards were introduced in part to ensure this. Correspondingly, there has been a movement from a ‘do no harm’ position (Dani et al., 2011) towards ‘additionality’ in social terms (McDermott et al., 2012), with the idea that REDD+ should also contribute to poverty alleviation (‘pro-poor REDD+’). There has been considerable concern that REDD+ financial benefits, when distributed horizontally between stakeholders, might be concentrated in the hands of the wealthier members of rural societies (Atela et al., 2014; Pokorny et al., 2013; Peskett et al., 2011). ‘Equitable benefit sharing’ has been seen as a pre-requisite for success in REDD+ by many observers (Cadman et al., 2016; Mbatu, 2015). In addition to the moral arguments, calls for ‘pro-poor REDD+’ have been justified in terms of the need for legitimacy, the practicality of mitigation options and risk reduction (e.g. Schwarte and Mohammed, 2011; Peskett et al., 2008; Brown et al., 2008; Kaimowitz, 2002; Springate-Baginski and Wollenberg, 2010; Bond et al., 2010; Mohammed, 2011; Enright et al., 2012; IUCN, 2016; IUCN 2013). However, although this topic is widely discussed, there has been very little exploration of the legal and technical mechanics of payment systems that could achieve such aims in practice (Fischer et al., 2016; Newton et al., 2015; Rakatama et al., 2016).

Many calls for a ‘pro-poor’ distribution system in REDD+ are couched in terms of ‘carbon rights’ (Schwarte and Mohammed 2011; Peskett et al., 2008; Kaimowitz, 2002; IUCN, 2016; IUCN 2013; Corbera et al., 2011). However carbon rights are likely to relate to land tenure, since biological carbon is inherently linked to land. Secure community land tenure systems have often been identified as a key requisite for REDD+ (Corbera et al., 2011; Deininger et al., 2010), but paradoxically, a clear definition of land rights, which typically defines specific individuals or communities as owners or holders of land rights, can be the root of other forms of inequitable distribution of benefits, as it excludes others. Much of the REDD+ literature seems to assume that as long as a reasonable share of the REDD+ funds gets paid to communities, the system would be pro-poor. This implicitly assumes that all communities – and the people within them – are more or less equally poor. In reality, land and resources are not equitably distributed either within or between rural communities (Skutsch et al., 2013; Skutsch, 2013; Karsenty et al., 2014). In designing a ‘pro-poor’ benefit distribution system, therefore, the presumption has to be that unless special provisions are included to counteract the tendency, benefits are likely to become concentrated in the hands of the wealthier members of the rural population (Atela et al., 2014; Pokorny et al., 2013; Peskett et al., 2011). A benefit distribution system based purely on carbon performance is likely to increase this effect. This is because better-off groups or individuals own larger land areas and thus may produce larger shares of total carbon emissions, implying they might have a greater opportunity to earn benefits from reversing this.

Moreover, environmental effectiveness and transaction costs need to be addressed if benefit sharing schemes are to be effectively pro-poor. It is important to recall that REDD+ strategies targeting poorer groups may not always be very effective in terms of carbon savings. There is little solid evidence that poor communities, or poorer people within communities, are more engaged in activities which result in deforestation (Funder, 2009). Indeed, it would seem more likely that richer people (who have more land and more capital) would be carrying out such activities on a much larger scale. Comprehensive reviews such as that of Geist and Lambin (2002) and Kissinger et al. (2012) indicate that commercial farming and ranching are much greater causes of tropical deforestation globally than subsistence agriculture. It would be more effective in carbon terms to address the commercial activities that result in the greatest share of carbon emissions, although these activities generally have higher opportunity costs. In this context REDD+ interventions in poorer areas – for example, targeting degradation relating to shifting cultivation - may present relatively lower economic challenges, but these low costs could be outweighed by the high transaction costs entailed in enrolling many small scale participants, in addition to the lower carbon saving potential.

Indeed there is concern that transaction costs of participating in REDD+ will be too high for poorer communities or landowners (Pokorny et al., 2013; Börner et al., 2010) and it has also been suggested that a market approach (commoditizing carbon on a per ton basis) is unlikely to benefit poorer people as the lion’s share of the benefits is likely to be captured by the elite (Paladino 2012; Maraseni et al., 2014) and also by carbon brokers. All these factors reduce the cost-efficiency of targeting REDD+ interventions to poorer groups. Fischer et al. (2016) share the view that market-based REDD+ does not look promising in the broader sense. It has also been suggested that in fact the main benefits to the communities may be not the direct financial benefits but the co-benefits that result from improved management (mainly the increased supply of provisioning ESs) (Bolin et al., 2012).
However REDD+ is a new model and there are as yet few practical examples in which outcomes in terms of distribution of benefits have been examined. The cases that are available tend to indicate that benefit distribution may not be very socially equitable. For instance in Indonesia most REDD+ projects are said to have gone to concessionaires in return for not felling in areas that had planned deforestation (Myers Madeira, 2009) and in Kenya projects have been developed in the more valuable humid forests and in middle-income counties, rather than in the poorer, dry land areas (Atela et al., 2014). However there are also cases where special pro-poor considerations have been put in place, for example in Nepal, where a pilot project has experimented with systems which weight payments such that members of disadvantaged groups get a higher price per ton of carbon sequestered (CF REDD+ Nepal, 2011).

3. Legal and technical challenges

3.1. Carbon property rights

The Convention (UNFCCC) aims to implement effective mitigation measures at the lowest possible cost (UNFCCC, 1992). Market based mechanisms, particularly carbon markets, have been envisioned as the policy vehicle to deliver least-cost mitigation actions. The theoretical basis for this is found in Coase (1960), whose classic work proposed that if complete property rights (over environmental services in this case) are defined in a context of complete information and no transaction costs, exchange between agents will produce efficient outcomes. It took more than forty years from the definition of this economic principle to the development of the first cap-and-trade prototype schemes in the U.S., and finally to the emergence of global carbon markets (Voss, 2007). It is in the context of carbon markets and compensation on the basis of performance, that property rights over carbon benefits become important, since they define the actors entitled to receive compensation for their efforts in climate change mitigation.

Economic indices of carbon-performance, that is to say, the estimated cost at which carbon savings can be achieved, are used in cost-benefit analysis (CBA). CBA as used in decision-making processes does not imply any particular definition of property rights over carbon benefits, but aims only at the selection of those activities that can deliver carbon benefits at lowest cost. For a more comprehensive evaluation of mitigation options, additional indicators can be factored into an evaluation process, for instance through multi-criteria analyses, to weight contributions in terms of social or environmental benefits. Once the “best” (most cost-efficient) activities have been identified, specific strategies and policy options can be promoted, including the definition of the mechanisms through which finance will be channelled. For the case of REDD+, the terms on which the money will be provided at international level will follow the principles of markets in that it will be performance based (payment for product, i.e. per ton carbon saved), although in the short term it appears more likely that activities will be financed by special funds rather than markets.

The more general notion of entitlement to carbon rights for those undertaking actions to reduce carbon emissions has however endured beyond cap-and-trade systems and carbon markets, and is present (at least implicitly) in international and subnational negotiations of climate policy. It reflects a perception of the need for fairness, since REDD+ benefits are seen as just compensation which should flow to the actors actually undertaking actions to mitigate climate change and not to other actors or intermediaries. This is in fact the fundamental objective in the design of incentive-based policy instruments. However designing fair or equitable benefit sharing schemes for REDD+ is challenging in practical terms. There are at least three different conceptions of equity that might be applicable in REDD+ (Di Gregorio et al., 2013; Luttrell et al., 2013). First it can be defined in the sense that benefits go to those who merit or earn the benefits (i.e. those who directly reduce emissions or increase sequestration/removals of CO₂ from the atmosphere). Second, it can imply that benefits go to those who have rights to them. This tends to tie benefits to those who have rights over the land resources to be used in REDD+ to reduce emissions (i.e. formal or possibly informal entitlements), but would exclude others who have fewer or no entitlements to this land; and third, equity can refer to the distribution of benefits to respond to social needs, i.e. with a ‘poor-poor’ focus. The market-based idea of carbon rights is clearly not in accord with all of these conceptions of equity. As a basis for pro-poor benefit distribution, carbon rights could have negative equity consequences that need to be carefully considered.

3.2. Differences between avoided/reduced emissions and carbon sequestration/removals

Carbon environmental services are measured as avoidance/reductions in emissions or as increases in sequestration/removals of CO₂ from the atmosphere, both in reference to a baseline. In most of the literature on REDD+, the carbon saved as a result of avoided/reduced emissions and that saved as a result of increased carbon sequestration/removals are treated as equivalent. However for a number of reasons that will be elaborated below, and in legal and property terms, emissions reductions and carbon sequestration/removals reflect two different realities (Balderas Torres and Skutsch, 2012).

Carbon removal (sequestration) refers to the uptake of carbon from the atmosphere by forests, trees and other vegetation and soils. It can be quantified through sequential forest inventories within a specific property, data from which can be used to estimate growth of biomass and thus how much carbon has been removed from the atmosphere and stored over any given time period. The carbon exists physically within the specific property and in the trees and thus the link to the legal owner is usually rather clear. A strong case can be made that the increases in carbon stock over time are the property of the owner of the land and/or trees (whether this is a community or an individual). In traditional community properties in which the tenure is informal, usufruct principles could be used to define ownership of this carbon, just as it is applied to crops grown (on the ‘fruits of the labour’ principle).

However the case of avoided/reduced emissions is very different, for a number of technical and legal reasons. Avoided/reduced emissions can only be calculated on the basis of a baseline which is intended to represent what the situation would have been in the future without REDD+ interventions (‘business as usual’). The reductions in emissions are therefore counterfactual, based on an assumption about a future state which has never in fact existed, and the claims are for CO₂ that has never been emitted. From a purely legal point of view it can be argued that it is impossible to allocate property rights over avoided/reduced emissions; they are counterfactual and do not really exist (inexistencia legal) (Carrillo Fuentes, 2015; Carrillo Fuentes and Ramírez, 2016); this is explained in detail for the case of Mexico in section 4. Unlike other non-material property such as intellectual copyrights, they are not based on something which has been produced, but on something that has not been produced. This has extremely important legal implications since it questions the possibility of defining property rights over carbon saved by reductions in deforestation or degradation.

A further issue is that the construction of a baseline at the level of each individual participant, landowner or community, which would be essential if each were to be rewarded by results, would imply very high transaction costs. Baselines are therefore usually constructed across wide areas (e.g. nationally, as in a REDD+ or at state/provincial/county level). But additionally, challenges to the attribution of avoided/reduced emissions at local level arise from the potential for leakage. This problem is resolved through use of national baselines which take into account system-wide losses and gains. This implies however that the achievement of reductions of emissions within any given parcel would not be any guarantee of financial benefits, since the total amount available for horizontal distribution depends on the sum of all losses and gains at national level. The reward for an individual will be a function not only of his own effort but of all the actors in the
country. If at national level, losses of forest had outripped gains in a given time period, there would be nothing to distribute even to those who had performed well (Balderas Torres and Skutsch, 2012). For this reason if for no other, the overall objective of reducing emissions may best be seen, and accounted for, in terms of national collective action.

Splitting the accounting for benefit sharing for carbon sequestration/removals from that for emission reductions would also allow more flexibility in how benefits are distributed (Balderas Torres and Skutsch, 2012). Sequestration/removals can be attributed directly to the owners of the trees, while reductions in emissions could create a fund which could be used to distribute the benefits of REDD+ in more equitable ways.

3.3. Horizontal distribution of benefits: results-based versus effort-based payments

As already mentioned, international payments to REDD+ countries will be strictly performance based. Payments are ex-post, and proportional to carbon achievements. However the way money is distributed internally, between participants within a country, in no way has to follow the same model; as noted above, there is no specific guidance from UNFCCC in this regard. The alternative to payment on the basis of carbon results is a model in which rather than paying for the product itself (carbon), payments are seen as investments or incentives to landowners to undertake activities which are believed, a priori, to lead to reductions in carbon emissions, or more generally to low carbon development. These up-front payments are intended to cover the input costs faced by the landowners instead of rewarding the results (Skutsch et al., 2011); they thus work on an entirely different logic. The main difference is that the payments are not dependent on quantification of the carbon performance; it is just assumed that positive carbon outcomes will result. In Table 1 we compare these two policy approaches. This shows that in general, effort based mechanisms reduce transaction costs and have higher potential to include pro-poor approaches. However, they are usually less cost efficient than payment by results based mechanisms. In general, results-based distribution of benefits would tend to favour those who can directly demonstrate carbon achievements, i.e. those who own resources. Effort-based distribution allows a much wider distribution of the funds, on the assumption that all the activities financed have some positive impacts on carbon, but without relating actors and tons of CO₂ directly. In principle therefore it is more amenable to a pro-poor benefit distribution system. The difference between these two approaches to REDD+ reflects an underlying dichotomy of viewpoints about how REDD+ should work (vd Hoff et al., 2015); on the one side those supporting REDD+ from a neo-liberal standpoint who therefore champion results-based systems, and on the other, those who see in REDD+ as a new opportunity for holistic and sustainable land management and who therefore support effort-based payments.

The choice of activities which could be funded as ‘REDD+ activities’ is particularly significant if an effort-based system of up-front investment is selected, since under this system payments would be provided whether or not the activities are successful in reducing emissions or increasing sequestration in reality. This constrains the national REDD+ authority to focus on activities that are a priori most likely to be carbon effective. There are many unanswered questions related to this, such as: what would be the respective carbon impacts of introducing low impact logging compared to sedentarising shifting agriculture? Banning the practice of cattle grazing in the forest versus supporting forest fire brigades? Setting up and subsidising fodder banks versus supplying improved charcoal kilns? Impacts of these different possible REDD+ activities have not yet even been estimated using models, let alone measured in reality, and lack of information on this may be the most pressing challenge to the design of REDD+ today. It requires a great deal more research.

The choice of REDD+ activities also has implications for the distribution of benefits and the extent to which the programme can be geared to generating pro-poor outcomes. Funder (2009) for example claims that if compensation is made for avoiding deforestation, it will tend to flow to the larger and richer landowners, while restoration/forest enhancement payments have a greater chance of reaching poor communities. Although this proposition has not been tested, it makes sense if in fact most deforestation is carried out by large-scale commercial enterprises, as is suggested above. Pro-poor activities such as support for alternative income generating activities for the poorest families are certainly possible, but this may imply paying people who may not themselves have any formal rights to the forest, for activities which are outside the forest.

4. Mexico’s prototype REDD+ benefit distribution system

4.1. Outline of the national REDD+ system

The implementation of REDD+ in Mexico is being led by the National Forestry Commission, CONAFOR, which falls under the Ministry of Natural Resources (SEMARNAT). REDD+ is being implemented in phases and the definition of the benefit distribution system is described in different key documents which explain the general approach to REDD+, particularly the National REDD+ Strategy (ENAREDD+, CONAFOR, 2015a), the ER-PIN proposal to the Forest Carbon Partnership Facility (FCP) of the World Bank (CONAFOR, 2014), and the resulting Initiative for Reduction in Emissions (IRE, CONAFOR, 2016a).

In a nutshell, the ENAREDD+ proposes to compensate for avoided/reduced emissions through the government finance of investment plans (IPs) at local level, using a variety of instruments. Part of the costs will be covered by funds from the IRE and international sources. At the same time, the ENAREDD+ seeks to encourage the capture of carbon dioxide (sequestration/removals) through stimulus from voluntary carbon markets. This dual system is intended to deal with the legal challenges to carbon ownership as outlined above, but also with the technical difficulties of assessing avoided/reduced emissions at the local level.

Mexico has recently submitted to UNFCCC a revised proposal for a national REL which is based only on past rates of deforestation (CONAFOR, 2015b), as there is insufficient data available on rate of change of stocks in forests that have remained forests to construct baselines for degradation and forest enhancement. This means that for the time being the country will claim international financial benefits related only to reductions in emissions from deforestation. These benefits will then be distributed in their entirety by the national REDD+ agency to stakeholders, i.e. to communities and land owners who are engaged in REDD+ activities.

In the first instance, the state will provide finance in the form of investments for community level ‘REDD+ activities’ through extension of its existing programmes and funding lines. These activities will not be restricted to forest management or conservation since the programme takes a territorial approach aimed not only at carbon saving but at sustainable rural development in general. They could thus include investments in the agricultural sector and stimulation of non-land-based employment opportunities, provided these can be argued to support sustainable land management and low carbon development. A very important aspect of this will be inter-sectoral coordination to ensure policy coherence, a problem which has been signaled also in other countries (Atela et al., 2016).

In the Early Action Areas (in the states of Yucatan, Campeche, Quintana Roo, Chiapas and Jalisco), five year Investment Plans (IPs) are being prepared on a participatory basis by groups of communities coordinated by Public Agents for Territorial Development (APDTs to use the Spanish acronym), which are governed by rules established in the federal law for parastatals (CONAFOR, 2016a).2 The investments

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2 Although this process is participatory, and CONAFOR has stated e.g. in the IRE that poor and vulnerable groups should be involved in the discussions, it is not clear to what extent the discourse will in reality engage non-rights holders. Most such decision making is carried out in the ejido Asambleas, where only ejidatarios have a vote.
will be upfront (i.e., on an effort-based system), and the money will be used to cover the expenses related to a set of planned activities, for example, the labour costs. This differs from practice under Mexico’s Payment for Environmental Services programme, where a fixed payment per hectare was provided, to be used at the discretion of the community authorities, and which in some cases was in part distributed in cash to members of the community. It is clear that the APDTs will play a pivotal role in helping to identify and define the REDD+ activities to be carried out. How much power they will have over the choices of each community is not yet clear, and there is some ambiguity as regards to whom they are responsible.3 Their stance with respect to inclusion of pro-poor groups may be compromised by other interests (for example, for nature conservation, for fast results) and they may not be experienced in dealing with the poorer social groups, who are less visible and do not attend regular village meetings (Asambleas) because they do not have decision-making rights. The fact that they will be (semi-) public sector organizations does not of course guarantee that they will represent the interests of all, although it is difficult to imagine what kinds of organizations would be better suited. Local private sector groups such as the membership associations that support ejidos in Yucatan in their timber development do not qualify as APDTs.

After two years, the net carbon impacts of these IPs across the whole state will be assessed against state level baselines (no carbon baselines will be prepared at the level of the community properties). Performance-based benefits can then be claimed by the country under the Initiative for Reduction of Emissions (IRE), which has been submitted to the FCPF, as laid out in the Emissions Reduction Project Information Note (ER-PIN) (CONAFOR, 2014) and the IRE document (CONAFOR, 2016a). This money will subsequently be used to finance ‘additional activities’, that is to say, activities for which no funding streams are available currently in Mexico, which may be suggested by communities, supported by the APDTs and approved by a supervisory council at state level. The government has also stated its intention to add more funds from internal sources over time.

There has been a strong lobby in Mexico for the benefits of REDD+ to go mainly to communities with forests, that is to say the ejidos, comunidades and pueblos indígenas (indigenous groups). The lands owned by these groups contain 45–62% of the total national forest area (estimates vary: CONAFOR, 2015b; Madrid et al., 2009; Skutsch et al., 2015; CONAFOR, 2016). The public perception is that all rural communities, ejidos and the people living in them are poor. It is not often made clear however that some communities are much richer than others, e.g. because they have higher natural resource endowments per capita.

Moreover, within communities there are various groups of local stakeholders with different rights and access to land, according to Mexican law. There are the individuals and groups with formal ownership of land (these are the ejidatarios, comuneros, and private property owners). There are also posesionarios, who are granted the use of small plots of land during their lifetimes but who are not ejidatarios or comuneros.

### Table 1

Comparison between results-based and effort-based mechanisms for the horizontal distribution of benefits.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Results-based payment systems (ex-post payment by result or performance in carbon terms)</th>
<th>Effort-based payment systems (ex-ante payment to cover costs of implementing REDD+ activities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baselines and monitoring</td>
<td>Carbon baselines are essential to estimate additional carbon savings, and payments which are conditional and proportional to these (for both avoided/reduced emissions and carbon sequestration/removals) (e.g. Cattaneo et al., 2010; Luttrell et al., 2013; TFCG, 2010). Monitoring is required at local level to demonstrate results and channel resources locally and horizontally.</td>
<td>Baselines are not required for defining payment levels; it is simply assumed that REDD+ activities will produce carbon benefits. Monitoring takes place at national or sub-national level to demonstrate results and to access international finance.</td>
</tr>
<tr>
<td>Payment levels</td>
<td>In market mechanisms payments are determined by demand and supply; however flat rate payments are commonly offered. In theory payment offered would have to cover implementation, transaction and opportunity costs in order to be an effective incentive (Balderas Torres et al., 2010) but it could be based on opportunity costs only (Cattaneo et al., 2010; TFCG, 2010). Total payments are uncertain since they depend not only on the payment/price level but also on the actual carbon achievements, which are known only ex-post.</td>
<td>Usually it includes only implementation costs; however if benefits from implementation do not cover opportunity costs, participation could be low. Lower monitoring requirements reduce the transaction costs. Payment levels are known ex-ante.</td>
</tr>
<tr>
<td>Eligible activities</td>
<td>There is flexibility, but participants (the local actors) will clearly want to select activities that have maximum carbon impacts. Specific safeguard standards can be established.</td>
<td>Specific activities need to be proposed by the government (funding agency) and thoroughly evaluated to ensure they will produce carbon impacts, and to define the required levels of finance. Usually the selection of activities is not made by local actors, although they may be consulted.</td>
</tr>
<tr>
<td>Timing of payments</td>
<td>Payments on delivery are ex-post; this reduces the present value of payments. Higher risks and uncertainty on initial investment.</td>
<td>Ex-ante payments, increasing present value of the money. The only risk appears if local actors fail to implement the activities. Typically provided by, or channelled through, the government; the scheme is in some ways similar to programmes of Payments for Environmental Services (PES), although payments may in some cases be made in kind rather than in cash and may be conditional on indicators of proper implementation (but not on results/performance). Payments may (e.g. in the case of Mexico as described below) be for specific activities; the extent of local stakeholder discretion in use of these funds will vary from country to country.</td>
</tr>
<tr>
<td>Source of finance</td>
<td>Private or intergovernmental resources via a full or quasi carbon markets. In practice, resources may also be channelled through the government.</td>
<td>Selection of and finance for activities that are assumed to reduce emissions from deforestation and degradation. Typically provided by, or channelled through, the government; the scheme is in some ways similar to programmes of Payments for Environmental Services (PES), although payments may in some cases be made in kind rather than in cash and may be conditional on indicators of proper implementation (but not on results/performance). Payments may (e.g. in the case of Mexico as described below) be for specific activities; the extent of local stakeholder discretion in use of these funds will vary from country to country.</td>
</tr>
<tr>
<td>Incentives to reduce emissions</td>
<td>Very difficult to link incentives to performance at local level due to technical and legal barriers and lack of baselines (see main text).</td>
<td>Selection of and finance for activities that are assumed to increase carbon stocks. Higher potential to be pro-poor. Activities can be identified to target specific vulnerable groups and pay them for activities implemented. In this case systematic exclusion of landless and poorer people would not be so marked.</td>
</tr>
<tr>
<td>Incentives to promote carbon enhancements</td>
<td>Resources channelled to local level via national or international carbon markets.</td>
<td></td>
</tr>
<tr>
<td>Pro-poor potential</td>
<td>Lower potential to engage vulnerable groups (landless) since performance is linked to carbon-achievements which are associated with land tenure (i.e. market mechanisms for carbon sequestration/removals), independently of land tenure.</td>
<td></td>
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</tbody>
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3 The APDTs … will be responsible for the strategic planning processes that will identify the actions and deadlines for the various stakeholders in the territorial unit that can and must intervene to improve territorial management. … APDTs are public interest agencies that work at the regional or landscape level; … have their own technical staff and should have financial management capacities. There are restrictions on the provision of technical services by these implementing agents. (from footnote 17 of the ER-PIN (CONAFOR, 2014).
and therefore do not have a vote in the decision making body, the Asamblea; they cannot pass the land to their offspring, nor do they have an automatic right to profits from communal resources such as forests. In addition there are avceindados, who have no land, voting rights or rights to common property. Many of these will be renters or sharecroppers or will borrow land, and are thus obligated to comply with any given contractual conditions as specified in the Mexican Civil Code. However there are also many who use land and forests resources based on informal and customary rights, these include widows and younger sons without land inheritance. Like posesionarios and avceindados, these people may be allowed to use the communal forests for their subsistence needs (e.g. firewood) but in general they would have no rights to profit-making activities from communally owned forest, for example from timber sales, or from Payment for Environmental Services schemes. It is also noted that ejidatarios commonly rent out their forest parcels to people inside or outside the ejido who need grazing areas for their cattle. If REDD+ benefits were to be based on cash transfers to those with rights to the forest, renters might lose their use of this facility, without compensation.

The number of non-rights holders in any one community varies, but Robles Berlanga (1996) estimated that at least 30% of the families living in ejidos and comunidades do not have ejidatariar or communal rights, and the proportion has almost certainly risen since then, as sales of lands and of rights between families have become common place. It is undoubted too that people without land and rights are on average poorer than rights holders.

### 4.2. The pro-poor stance of Mexican REDD+

The ENAREDD+, on which the IRE is based, mentions poverty only six times in its 107 pages, mainly in the generalized context of poverty alleviation as a desirable co-benefit of REDD+. Poverty is mentioned in several places in the IRE, for instance as a contributory driver of deforestation but without evidence (CONAFOR, 2016a, page 83). The IRE notes that poorer communities often do not have the social and organizational capacities to take advantage of forest subsidy programmes or to manage forest sustainably, but also states without any further discussion on this point, that ‘most forest communities are poor’ (CONAFOR, 2016a; pages 82, 84, 86). Annex 3 to the IRE strongly stresses the need to include marginalized and vulnerable social groups in the consultation process associated with the preparation of the IPs (CONAFOR, 2016b), but it does not clearly enunciate whether non-rights holders will have a ‘right’ to a share of the REDD+ benefits; this is left very vague and appears to be a hope rather than an obligation. Once funds have reached the community, it is not clear how they will be used internally and to what extent non-rights holders would be eligible to receive them, for example in the form of wages for activities to be undertaken, if they are applied in forest which legally belongs to rights-holders.

It is notable that in these key documents no methodology for explicitly differentiating between richer and poorer rural groups (either within or between communities) is even hinted at, and no hard evidence is provided of a direct link between poverty or lack of land rights and deforestation (Balderas Torres and Skutsch, 2014). Moreover, it not clear what will happen if the activities selected in the participatory planning process do not hold much promise for reduction of carbon emissions. This lack of clarity relates in part to the fact that the range of activities that could be funded by such investments has not been fully defined, but is left largely to the participatory process to determine. Thus although the IRE is using an effort-based approach which has good potential to be pro-poor, it has not defined specific interventions to target vulnerable groups or guidelines to promote an inclusive distribution of benefits. If the money is used to support broad community programmes, and if for example no distinction is made between rights holders and non-rights holders in the selection of labour for paid community work (e.g. cutting fire lines, reforestation activities, nursery work), then there may be some possibilities for distribution of benefits to poorer residents (Skutsch and Balderas Torres, 2015). However, at this point, one can say that there has been insufficient consideration of how the groups with no rights might participate, which makes the pro-poor outcomes of the policy difficult to predict. In particular, if the term ‘owners and legal possessors’ of the forest resources is interpreted in a narrow legal sense (see below), the use of REDD+ funds for investments that benefit non-owners could be brought into question.

### 4.3. Carbon rights and implications for benefit sharing

In Mexico, ownership rights to forest carbon are intimately bound up with questions of property and tenure over land and over forest resources. The legal framework (article 27 of the Constitution, and particularly 5., 7. and 134 Bis of the General Law on Sustainable Forest Management) state that the owners of the land (private individuals, ejidos and comunidades) are the owners of any forest resources on that land. It also concludes that the carbon, which is a chemical component of the trees, belongs to the owner of the land and the trees, a point which is echoed also in the ENAREDD+ (CONAFOR, 2015a), and the IRE (CONAFOR, 2016a). This right of property involves also a number of subsidiary rights such as use and the right to receive benefits from this property.

This means that in principle, communities would be considered the owners of the carbon stocks and enhancements in their forests. If they are able to monitor and measure any growth then they would be entitled to trade credits for this in national or international voluntary carbon markets as long as they comply with the requirements of an approved methodology (CONAFOR 2015a, 2016). The ENAREDD+ embraces this principle. It is therefore envisaged that in principle communities who wish to do so may measure and register their own carbon sequestration/removals (forest enhancement) and participate in national or international markets (CONAFOR, 2015a), that is, outside of the national REDD+ financing scheme.

As regards access to the benefits from avoided/reduced emissions, the General Law on Sustainable Management of Forests indicates that the ‘owners and legal possessors’ of forest have the right to benefits arising from the environmental services generated, but the law does not go so far as to say that they are the owners of these services (avoided/reduced emissions in this case); in fact avoided/reduced emissions are not identified as a specific environmental service in the legislation. A legal analysis (Carrillo Fuentes and Ramirez, 2016) indicates that landowners cannot be considered owners of the avoided/reduced emissions since these are not a real or legal entity (inexistencia legal). Although not stated in black and white, the position of the government seems to be that international payments for avoided/reduced emissions should be seen as public property to be administered by government through the public programmes which become part of REDD+. However, the General Law on Climate Change implies that all the financial benefits of this will be invested to support further activities to be carried out by the legal owners of the forest (ejidos, comunidades and individual private owners), although who within these communities has rights to these benefits could be disputed.

Hence benefits from avoided/reduced emissions will be distributed under REDD+ in the form of investments via IPs, which reflects two important government standpoints. First, as already explained, that avoided/reduced emissions cannot be owned by communities given that they are not in a form which could be considered as property, and second, that deforestation without a permit is illegal in Mexico according to the General Law on the Sustainable Management of Forests and the criminal law. Thus from a legal point of view it would not be possible

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4. **Duelos y poseedores legales.**

5. “El derecho real (posesión) no puede existir sino con motivo de una cosa determinada; no se concebiría ni derecho de propiedad, ni usufructo, ni derecho real de ninguna especie sobre una cosa que no estuviera individualmente designada.” Jorge Mario Magallón Ibarra, *Instituciones de Derecho Civil, Ed. Porrúa, México 1990*, Pág. 72
for the Mexican government to pay people for not deforesting, since this would amount to paying them for not committing a crime. Conceptualising the benefit stream as investments designed to support sustainable territorial management at the local level thus neatly deals with these two legal difficulties (Balderas Torres and Skutsch, 2014; Skutsch and Balderas Torres, 2015). This decision also reflects the fact that if reductions in emissions were seen as property of the local owners and had to be rewarded on an output basis, this would, as noted above, involve very high costs in terms of the need for baselines, monitoring, etc. and could lead to considerable social conflict (Skutsch, 2014).

5. Discussion

The prototype benefit distribution system proposed by CONAFOR allows for a combination of effort-based and results-based approaches. Avoided/reduced emissions from deforestation will be measured at state and national level and the resulting benefits will be distributed as investments on an input basis. This means that there could in principle be opportunities for directing REDD+ benefits to poor communities and/or to poorer people within communities, for example by emphasizing norms such as: most of the funds should go to pay for labour, with non-rights holders getting some of these labour opportunities, or for community infrastructure that would benefit all residents. However, non-rights holders do not have voting rights at the community assembly and although they are supposed to be consulted in the REDD+ participatory planning process, it is unclear whether they will be able to demand a share of the benefits. The decisions concerning what activities are going to be carried out, and by whom, will always rest with the community leaders and the will of the ejidatarios/comuneros.

Communities that wish to market carbon credits resulting from increases in forest stock (forest enhancement) would be able to do so and benefits would accrue on an output basis (proportional to the amount of carbon that has been sequestered). In this case, it seems clear that these credits will be the property of the legal owners of the forest (ejidatarios and comuneros) and not of the non-rights holders in the community (unless they receive the benefits indirectly, e.g. if they are hired to perform certain tasks as part of a carbon project). Hence this strategy is unlikely to be socially progressive. Moreover, since engaging in carbon markets of this kind is complicated, it is probable that better-off communities will be able to take part to a greater extent than poorer communities.

In principle there would be four options for including people with no rights more securely in the benefit distribution mechanism: (1) to introduce reforms into relevant legislation, particularly with respect to agricultural and forestry law, to give more rights to people designated as ‘posesionarios’, (2) to establish a fund specifically to finance activities to be carried out by those people who are not owners and do not have recognized rights over property, (3) to establish public programmes specifically to finance activities to be carried out by those people who are not owners and do not have recognized rights over property and (4) to create or reform ejidal regulations and community statutes so that with agreement of the Assembly, the rights of such people are recognized as regards to REDD+ benefits. Any such changes in the regulations and statutes would have to be approved by the Agrarian Authority. Each of these options would need to be investigated in depth to determine who could be a beneficiary of REDD+ and how, what rights it would imply, and how this could be instituted. The mechanism to be implemented would have to have a clear legal basis, and provide clarity on who would have rights to receive benefits, and how these people would be identified.

The legal question of whether reductions in emissions can be considered property (since these emissions have never occurred and therefore do not exist in legal terms) is a new one in the REDD+ literature. In the case of Mexico, the position taken by the government is strengthened by the law which states that all unplanned deforestation is illegal. The attribution of the avoided/reduced emissions to the state is also a pragmatic solution to the technical difficulties that would be involved in constructing baselines at the level of each and every property. Thus the state is using these arguments to retain for itself the control over benefits stemming from the international valuation of avoided/reduced emissions, even though it has committed to distributing all the resulting funds to communities in the form of investments.

But if avoided/reduced emissions cannot be considered ‘property’ at the level of the community, this might bring into question whether the state itself can ‘own’ them and exchange them for international funds. To deal with this, we may turn to another principle of environmental policy; ‘the polluter pays’. Mexico’s position on REDD+ has up to now envisaged a strategy of carrots not sticks, but de jure, unauthorised deforestation is a crime (although the principle is rarely enforced); and for the case of legally authorised/planned deforestation, by Mexican law a compensation fee is levied for restoration of the environmental service (i.e. to pay for afforestation in another location). In parallel, the Environmental Law establishes the Prevention Principle, under which it can be argued that providing incentives in the form of investments to communities to encourage them to avoid or reduce deforestation and degradation is more appropriate in environmental policy terms than paying them for the reductions themselves (which could be seen as the opposite of the ‘polluter pays’ principle).

6. Conclusions

Many observers have assumed that because REDD+ involves performance payments at the international level, this will also be applied in the horizontal distribution of benefits within each country. Those who support this model cite efficiency (only those who actually achieve carbon savings would be paid) and clarity of incentives (communities will try harder if they are paid by results) as the main advantages. Many also support this model because they fear that if government is free to distribute the funds in other ways, the money will be dissipated and disappear into other activities and may not be environmentally effective.

However as we have shown in this paper there are several major technical problems with results-based payments specifically for avoided/reduced emissions at the level of the individual owner or individual community, not least that they would in most cases be tied to existing property rights and would therefore not be available for the non-rights holders within communities. An effort-based system such as envisaged in Mexico, using up-front investments, could be one means to avoid at least some of these difficulties. It is necessary however to define specific interventions which could target vulnerable groups and to establish guidelines to promote an inclusive distribution of benefits (Balderas Torres, Skutsch and de los Ríos, 2015). We note too that effort-based schemes are not exempt from risks of elite capture and lack of flexibility.

There is also a fundamental problem relating to the selection of activities which could receive investments under REDD+ in Mexico. All the policy documents state that these will be selected in a participatory process at local level, but there is no guarantee that activities selected will be successful in terms of improving carbon stocks. There has been

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6 The existing Payment for Environmental Services programme is however not considered to constitute paying people not to deforest. This is because it involves flat rate payments per hectare, considered ‘fair compensation’ for the continuation of good management practices (in essence, conservation) which generate (unmeasured) positive externalities in the form of hydrological or biodiversity services. This has a very different political resonance from a policy which would measure avoided deforestation and pay proportionally.

7 Ley General de Desarrollo Forestal Sustentable, Art. 117.

8 LGEEPA, Arts. 15, fr. IV; y 21, fr. III.

9 The law is based on the idea that the first step in good environmental management is the application of the principle of prevention; that is, to avoid damage or risks to the environment in places where these would be expected to occur.
almost no research done on the impact of different activities on carbon stocks at the community level and this remains a pressing point for further investigation.

Finally, it is common to talk in terms of ‘win-win’, as if a benefit distribution system that privileges poorer people will automatically also be successful in carbon savings. Strategies such as ‘agroforestry’ are commonly quoted in this regard. However, there is no evidence to show that poorer people are more engaged in activities that cause deforestation than richer people, indeed logic would suggest the opposite. The reality is that hard choices and trade-offs may be necessary between poverty alleviation and climate change mitigation under REDD+.

The impossibility of defining property rights over avoided/reduced emissions means that other principles of environmental policy are needed to justify and operationalize benefit distribution. We suggest that the right of those who produce environmental services to receive compensation can be seen as a counterpart of the polluter pays principle. Using this principle, the government may identify beneficiaries entitled to receive a share of benefits stemming from international performance based finance.

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