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Importance of local participation in achieving equity in benefit-sharing mechanisms for REDD+: a case study from the Juma Sustainable Development Reserve

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Abstract: Reducing emissions from deforestation and degradation (REDD+) in tropical countries is now a critical piece of any international agreement that aims to reduce greenhouse gas (GHG) emissions. An important issue refers to the distribution of benefits or, in other words, benefit sharing mechanisms. In this paper, I examine the degree of local participation in benefit-sharing mechanisms in the case of the Juma Sustainable Development Reserve in the State of Amazonas, Brazil, and assess how local participation – or lack of it – affects the outcomes, particularly with regard to equity. The analysis seeks to address the gap between theory and practice by considering the main concerns regarding equitable benefit sharing for REDD+, namely, the types of benefits to be distributed, eligible beneficiaries, the structure of benefits, and mechanisms for distributing them, and by identifying the possible negative and positive effects of benefit-sharing mechanisms. In doing so, my aim is to contribute to the more effective design and implementation of benefit-sharing mechanisms and to expand debate on the topic. The main research question of this paper is: how important is local participation for achieving equity in benefit-sharing mechanisms for REDD+? The results of this analysis indicate that the adaptation and mitigation goals of REDD+ are more likely to be achieved if the development and implementation of benefit-sharing mechanisms involve democratic and interactive processes for local participation, because such processes will lead to greater flexibility in the definition of benefits and distributional mechanisms. I draw the following conclusions: (1) the criteria for equity should be considered when benefits are defined, rather than when they are distributed and (2) given the complex and diverse relationships and issues involved in deforestation, it is important to adopt a multidimensional approach when identifying beneficiaries and benefits and designing benefit-sharing mechanisms.

Keywords: Benefit-sharing, Brazil, equity, Juma, local participation, REDD+

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1. Introduction

During the past five years, REDD+ (Reducing emissions from deforestation and forest degradation[1]) has emerged as a promising instrument for mitigating climate change by compensating tropical countries for preserving their standing forests.[2] REDD+ is perceived as an efficient way to mitigate climate change (Southgate 1952; Brown et al. 1996; Schneider 1998; Intergovernmental Panel on Climate Change 2007; Stern 2007; Eliasch 2008) and as a strategic option for fostering adaptation activities ('co-benefits') in developing countries (Dutschke and Wolf 2007). Indeed, the adoption of REDD+ is recognised as an important and necessary milestone in the process of implementing climate policy (Santilli et al. 2005). However, a persistent problem concerns the design of mechanisms for the distribution of benefits from REDD+, namely, how to design a mechanism that transforms funds into fairly and efficiently allocated benefits in a way that also produces additional and permanent outcomes.

The introduction of benefits from REDD+ will influence the cultural and economic values that local forest managers attach to forests, and thus will encourage them either to continue their current behaviour or to change it – for better or for worse. Given that such behaviour occurs at the local level, the equitable and efficient distribution of benefits at that level will be essential for the success of REDD+. For this reason, it is argued that local participation must play a key role in the development and design of benefit-sharing mechanisms (Griffiths 2008; Peskett et al. 2008).

[1] The Cancun Agreements (UNFCCC 2010) established that REDD+ stands for: (a) reducing emissions from deforestation; (b) reducing emissions from forest degradation; (c) conservation of forest carbon stocks; (d) sustainable management of forests; and (e) enhancement of forest carbon stocks.

[2] REDD+ was initially adopted under the Bali Action Plan (UNFCCC 2007) and ratified by the most recent decisions of the United Nations Framework Convention for Climate Change (UNFCCC 2009a,b, 2010).

In this paper, I examine the degree of local participation in benefit-sharing mechanisms in the case of the Juma Sustainable Development Reserve in the State of Amazonas, Brazil, and assess how local participation – or lack of it – affects the outcomes, particularly with regard to equity. The analysis seeks to address the gap between theory and practice by considering the main concerns regarding equitable benefit sharing for REDD+, namely, the types of benefits to be distributed, eligible beneficiaries, the structure of benefits, and mechanisms for distributing them, and by identifying the possible negative and positive effects of benefit-sharing mechanisms. In doing so, my aim is to contribute to the more effective design and implementation of benefit-sharing mechanisms and to expand debate on the topic. The main research question of this paper is: How important is local participation for achieving equity in benefit-sharing mechanisms for REDD+?

The results of this analysis indicate that the adaptation and mitigation goals of REDD+ are more likely to be achieved if the development and implementation of benefit-sharing mechanisms involve democratic and interactive processes for local participation, because such processes will lead to greater flexibility in the definition of benefits and distributional mechanisms. I draw the following conclusions: (1) the criteria for equity should be considered when benefits are defined, rather than when they are distributed and (2) given the complex and diverse relationships and issues involved in deforestation, it is important to adopt a multidimensional approach when identifying beneficiaries and benefits and designing benefit-sharing mechanisms.

I begin the paper by discussing the founding concepts of benefit-sharing mechanisms. I then explore the key challenges associated with their design and implementation, namely, local participation and equity. Then, a brief description of the research methods is followed by the case study, in which I describe the study site and present and analyse the main findings. I then discuss the implications of the findings for achieving equity in benefit-sharing mechanisms for REDD+ more broadly.

2. Conceptual Framework

It is widely recognised that the conservation of tropical forests largely depends on incentivising and supporting the countries that host these forests and the people who live and work in them (Convention on Biological Diversity 1992; UNFCCC 2007; Wollenberg and Springate-Baginski 2009). It is also recognised that incentive mechanisms such as REDD+ can quite substantially increase benefit flows to forest managers[3] (Agrawal and Angelsen 2009).

The main principle underlying REDD+ is the transfer of large financial incentives from developed to developing countries to reduce deforestation and forest degradation. The scale of the benefits is normally linked to the rates of

[3] 'Forest manager' is defined here as any group or individual that depends upon the forest to generate income or to subsist, including private landholders.

reduction in deforestation and forest degradation; in this regard, REDD+ can provide substantial financial benefits to developing tropical countries. The way in which these benefits are to be distributed has become a persistent problem in REDD+ (Vatn and Vedeld 2011). Particular concerns are that the benefits may not be equitably shared between stakeholders and that people with less power in the benefit-sharing decision-making processes could lose out (Griffiths 2008; Costenbader 2009).

Peskett et al. (2008) and Griffiths (2008) argue that equity in benefit-sharing mechanisms is a fundamental condition if REDD+ is to be effective and that this, in turn, depends on the degree of local participation in the process of developing and implementing benefits. However, despite concerns raised in the literature about the impact of benefit-sharing mechanisms on the effectiveness of REDD+, as reflected in overall reductions in deforestation (Luttrell et al. 2007; Agrawal and Angelsen 2009; Johns and Schlamadinger 2009), scholars have been unable to agree on how to make benefit-sharing mechanisms more equitable. Indeed, still lacking is a clear understanding of what benefit-sharing mechanisms entail, the types of benefits they will deliver and the processes by which they will deliver them (see Figure 1).

The term 'benefit sharing' currently has many different meanings (e.g. governance structures and institutions set up to collect compensation and rents from the provision of the ecosystem services of carbon sequestration and storage; distribution of the direct and indirect benefits among affected stakeholders, etc.), which hampers efforts to identify the main issues and the optimum approach (cf. Costenbader 2009, 2010; Vatn and Angelsen 2009; Lindhjem et al. 2010; Vatn and Vedeld 2011). In particular, it is not always clear what types of benefits need to be shared; how 'legitimate' beneficiaries should be identified, particularly in cases where deforestation is the result of illegal activities; or how benefit-sharing

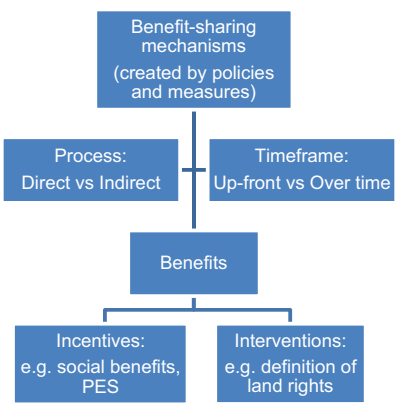

Figure 1: Characteristics of benefit-sharing mechanisms.

systems can be managed at the various levels of government (i.e. national, subnational, local).

2.1. Defining benefit-sharing mechanisms

According to the Bali Action Plan, benefit-sharing mechanisms and the related benefits will be created as part of the policy approaches and measures for REDD+ (UNFCCC 2007; Brown 2008; Eliasch 2008; Peskett et al. 2008). Two types of policies and measures related to benefit-sharing mechanisms have been identified: those that aim to generate compensations (benefits designed to cover the foregone opportunity costs of deforestation) and those that generate incentives (benefits designed to encourage positive behaviours) (Brown 2008; Peskett et al. 2008). Both incentives and compensations can be delivered up-front, to enable REDD+ to commence, or dispensed over time, to ensure that REDD+ actions continues according to performance.

In this paper, I consider compensations as a type of incentive, because they serve to encourage conservation behaviours. Another category of policies and measures related to benefit-sharing mechanisms consists of those that aim to generate interventions. Interventions in this context are actions designed to create legal, administrative and technical benefits and include the regularisation of land tenure, institutional arrangements, monitoring systems and other actions that are necessary to facilitate and guarantee positive outcomes from REDD+.[4]

Another important consideration is the process by which the mechanisms distribute the benefits: directly or indirectly (Peskett et al. 2008; Luttrell et al. 2012). Direct benefit sharing involves giving benefits directly to forest managers [e.g. Payment for Environmental Services (PES), technical materials], whereas indirect benefit sharing encompasses benefits that aim to foster broader development and adaptation actions that enhance co-benefits (e.g. access to education and health services).

Mechanisms would involve the delivery of benefits at both national and local levels. The choice of policies and measures to establish benefit-sharing mechanisms will affect the whole structure of a REDD+ scheme by determining who is to be given incentives to do what and the kinds of interventions that are needed to facilitate the successful implementation of the process.

2.2. Defining beneficiaries

Following Cortez et al. (2010), I consider three categories of beneficiaries: national, subnational and local. National and subnational beneficiaries, such as federal and state government agencies, receive resources to implement interventions through policies and measures. Incentives for local beneficiaries, such as forest managers,

[4] Given the complexity of the research involved in analysing interventions, I limit the scope of this paper to an analysis of incentives.

include direct payments and subsidies. All these actors benefit from REDD+ investments and should therefore be considered as beneficiaries. They include governments, agencies, private entities, municipalities, traditional communities, indigenous communities, settlers, private landholders, associations, institutes and non-governmental organisations (NGOs).

3. Challenges of benefit-sharing mechanisms: local participation and equity

3.1. Local participation

Some academics have argued that active and ongoing local participation is necessary to identify beneficiaries, appropriate benefits, the timeframe for implementation and the ways in which benefits will be received as part of the design and implementation of benefit-sharing mechanisms for REDD+ schemes (Santilli et al. 2005; Nepstad et al. 2007; Griffiths 2008; Peskett et al. 2008). However, the evidence is that local participation processes are being implemented poorly – or not at all – in REDD+ pilot schemes [see, for example, Dooley et al.'s (2008) review of nine Readiness Plan Idea Notes (R-PINs) submitted to the World Bank's Forest Carbon Partnership Facility (FCPF)[5]]. Where local participation has been effectively implemented, it has proven to be a key element for the success of REDD+ in terms of both empowering local stakeholders and addressing some of the underlying social drivers of deforestation (Hajek et al. 2011). It is recognised, however, that achieving effective participation is not easy. It requires long implementation periods, flexibility in the design of benefits, close monitoring and evaluation, and an effective system for communication among stakeholders (United Nations 2005).

For the purposes of this paper, it is important to define 'local participation'. The Food and Agriculture Organization of the United Nations describes participatory forestry as those processes and mechanisms that enable people with a direct stake in forest resources (i.e. local people) to take part in decision-making in all aspects of forest management, from managing resources to formulating and implementing institutional frameworks.[6] More specifically, community forestry refers to a component of participatory forestry that focuses on local communities as key stakeholders for sustainability.

However, the meaning of 'local' itself is controversial (Raffles 1999). Definitions of local people and forest-dependent communities, for example, are normally specific to their geographical area, and various terms are used for people who live in or near forest areas or who are from such areas. In this paper, I define

[5] The FCPF is one of the World Bank's four funds related to forests and REDD+.

[6] See http://www.fao.org/forestry/participatory/en/.

'local' as any group that depends upon the forest to generate income or to subsist, including private landholders. These people, referred to in this paper as 'forest managers', derive substantial benefits from the forest and therefore are more inclined to manage and take care of it. They will be the first to feel the impact of any changes in the forest cover or quality of the forest and its services.

'Participation' too can have different meanings depending on the context. Whatever the definition, participation is 'highly context-specific and its effects range from coercion to full local control' (Hobley 1996, 8). There are two distinct perspectives for participatory approaches: participation as a means, i.e. to improve the effectiveness of certain interventions, and participation as an end, i.e. as a necessary tool for equity and the empowerment of marginalised groups (Cleaver 1999; Diamond 2002). Furthermore, according to Pimbert and Pretty (1994 in IIED 1994), there are different levels of participation, from simple sharing of information to transfer of power (Table 1).

This sounds fine in theory. In practice, however, some recent applications of participatory typologies in the development mainstream have fallen short of their original intentions. Critics note that participation is sometimes used merely as a tool for achieving preset objectives and not as a process to empower groups

Table 1: Typologies of participation.

Typology of participation	Characteristics
Manipulative	People's representative is unelected and has no power.
Passive	People are simply being told what has been decided; unilateral announcement by administrators.
Participation by consultation	People are consulted but analysis and decisions are made by external agents.
Participation for material incentives	People contribute resources (e.g. land and labour), and receive cash, food and other material incentives. People have no stake in prolonging participation when the incentives end.
Functional participation	People's participation is in response to predetermined objectives formulated by external agents. They may be involved in decision-making, but tend to appear only after major decisions have been made. They may simply be co-opted.
Interactive participation	People participate in joint analysis, development of action plans, and formation or strengthening of local institutions. Participation is a right, not an obligation to achieve a goal. A group has control over local decisions and resources. They have a stake in maintaining structures or practices.
Self-mobilisation	Independent initiative by the people. Contact with external institution is based on their needs. They retain control over decisions and resources used. Participation is facilitated by outside technical assistance. Structure and distribution of wealth and power may or may not be challenged from within.

Source: Pimbert and Pretty (1994) in International Institute for Environment and Development (1994).

and individuals to take leadership, envisage their futures and improve their lives (Cornwall 2000; Cleaver 2001).

The crucial role of local participation in the design of benefit-sharing mechanisms is to develop approaches that are flexible, suitable and able to ensure the effectiveness of forest managers' efforts to reduce deforestation and forest degradation. Such approaches are most likely to result from interactive and self-mobilisation participation (Pimbert and Pretty 1994 in IIED 2004), because these types of participation involve forest managers taking control of local decisions and resources. There is a risk, however, that benefit-sharing mechanisms will end up reinforcing the status quo and that the control of the benefits will remain in the hands of project developers or central governments, to be distributed according to their own criteria (Griffiths 2008), producing unfair outcomes.

Another relevant issue in local participation is free, prior and informed consent (FPIC). This involves ensuring the presence of: (1) information about and consultation on any proposed initiative and its likely impacts; (2) meaningful participation of forest managers; and (3) representative institutions (United Nations 2005). It is argued that only through participation based on the FPIC principle is it possible to design interventions and incentives that reflect the priorities of forest managers and are relevant and feasible from their points of view (United Nations 2005). Coupling FPIC with local participation helps forest managers to maintain control and affects sustainability by building on their knowledge, initiatives and motivation. In addition, participation enables forest managers to identify and adjust to emerging problems, and to engage in advocacy and policy dialogue with local and national policy-makers.

Local participation has also been found to have important implications for related aspects of REDD+, such as monitoring activities, as reviewed in Corbera and Schroeder (2011). Fry (2011, in Corbera and Schroeder 2011), for example, argues that national systems should be built, at least partly, on community-based monitoring, reporting and verification (MRV) protocols that maximise local people's involvement in forest monitoring and the assessment of social impacts. Hajek et al. (2011, in Corbera and Schroeder 2011) demonstrate the potential for technological and organisational innovation when a diverse group of local and international for-profit and not-for-profit actors come together to design and implement a project.

The literature contains a range of findings indicating the necessity of local knowledge and engagement when designing and enforcing rules for forest management (Gibson et al. 2005; Chhatre and Agrawal 2008). Overall, the findings indicate that the design of national policies and measures should include flexible approaches for benefit-sharing mechanisms, which can be adapted to the needs of forest managers and to the area in which the REDD+ scheme is to be developed. Moreover, if changes in forest management and forest conditions are to be achieved, social change at all levels will first be necessary (McDermott 2009); policies and measures should therefore include tools and subsidies to achieve such social change.

3.2. Equity

Equity is a key element in the design and implementation of benefit-sharing mechanisms for schemes such as REDD+ (Pagiola and Platais 2007; Grieg-Gran 2008; Peskett et al. 2008; Pascual et al. 2010; McDermott et al. 2011). The literature contains a range of equity discourses on REDD+ benefit sharing (see, for example, Luttrell et al. 2012), and these discourses, along with ideologies and definitions associated with benefit sharing, concern a variety of objectives, ranging from the need to provide compensation for costs incurred, the need to ensure co-benefits (e.g. biodiversity) and the need to recognise legal rights and ensure fair outcomes.

A major concern when incorporating equity into REDD+ schemes is that, in order to meet the additionality criteria (as defined in the Clean Development Mechanism), REDD+ must provide benefits to the large landowners that are likely to be responsible for the bulk of emissions from deforestation and forest degradation – and this would be unfair to those who have been conserving the forest for a long time, such as indigenous communities (Sunderlin et al. 2008 in Griffiths 2008; Bond et al. 2009).

Most of the various definitions of equity are based on ideas of distributive and procedural justice (Rawls 1971; Dobson 1998; Okereke 2008; McDermott et al. 2011), which are as varied as the cultures from which they emanate (Sachs and Santarius 2007). Therefore, the definition of equity will always vary from one REDD+ country to another and may change with time. Another important consideration is the way in which equity is analysed, both in the outcomes of a distributional scheme and in the process of coming to an agreement on such a scheme (Lind and Taylor 1988). This distinction is described by Brown and Corbera (2003) as, respectively, 'equity in outcomes' and 'equity in decision-making', where the first refers to the distribution of project outcomes among project participants (Corbera et al. 2007) and the latter concerns procedural fairness within the project framework and considers the issues of recognition and inclusion in strategic management decisions (Fraser 1997; Paavola 2003 in Corbera et al. 2007).

Another form of representing these concepts is found in McDermott et al.'s (2011) definition of local equity as a global value of ecosystem services. They identify three interrelated dimensions of equity, distributive equity, procedural equity and contextual equity, as follows.

(a) Distributive equity is concerned with outcomes in the allocation among stakeholders of the costs, risks and benefits resulting from environmental policy or resource management decisions and hence represents primarily (but not exclusively) the economic dimension of equity (Mahanty et al. 2006). In this context, the equitable distribution of benefits can be justified on the basis of one of various principles: equality, social welfare, merit and need.

(b) Procedural equity refers to fairness in the political processes that allocate resources and resolve disputes. It involves representation, recognition/inclusion, voice and participation in decision-making.
(c) Contextual equity links the other two dimensions by taking into account the pre-existing conditions under which people engage in procedures and benefit distributions – and which limit or enable their capacity to do both. This concept builds on Brown and Corbera's (2003) idea of 'equity in access' by incorporating context, capabilities and power.

In terms of distributive equity, Pascual et al. (2010) summarise different economic fairness criteria that could be applied in PES schemes, including: (a) 'compensation', where payments compensate landholders for the foregone benefits related to the provision of environmental services; (b) 'common goods', where payments are invested in common goods, so all providers benefit indirectly; (c) 'egalitarian', where funds are distributed equally among all providers; (d) 'maxi-min', where the aim of payments is to maximise the net benefit to the poorest landholders; (e) 'actual provision', where payments to landowners correspond to the actual outcome level of provision of environmental services; (f) 'expected provision', where payments to landholders depend on the expected level of provision of services for a given land use; and (g) status quo, where payments maintain previous levels of relative distribution of income among providers.

This paper adopts the view that equity in decision-making (procedural equity) will directly influence equity in outcomes (distributive equity), as argued by Corbera et al. (2007), and employs this distinction to analyse the way in which benefit-sharing mechanisms were designed and implemented in the Juma project. To analyse equity in the decision-making process, I use Pimbert and Pretty's (1994) typologies of participation to examine how local forest managers were engaged in the design and implementation of benefit-sharing mechanisms. To analyse equity in the outcomes, I look at the fairness of the benefits distributed following Aristotle's dictum that what is just is what is proportional (Muller 2001). This permits the inclusion of a range of economic fairness criteria (see, for example, Pascual et al. 2010), without the need to choose just one specific criterion.

Therefore, for the purposes of this analysis, 'fair' benefits are those benefits that can meet different needs proportionally, looking not only at incomes and costs (as the literature on PES has been doing, e.g. Grieg-Gran 2008), but also at the main needs of those in charge of keeping the forests standing. My decision to include 'meeting needs' in the definition of fair benefits is justified by the fact that it figures prominently in the sustainable development discourse (World Commission on Environment and Development 1987; Dooley and Okereke 2009).

Furthermore, I explore the dimensions of equity in an interrelated way, as defined by McDermott et al. (2011). As they argue, the initial conditions (distribution of resources, capabilities and power) tend to predict subsequent outcomes. In the case of an intervention positively evaluated under the equity

framework, if: (a) all affected parties participate in a fair process of decision-making and (b) all have access to adequate resources to participate in the process, then (c) the equitable distribution of benefits is expected to result.

On top of that, different types of forest managers arguably have different ways of managing and obtaining benefits from the forest, and so they will have different demands for adopting (in the case of large landholders, for example) or maintaining (in the case of indigenous communities, for example) conservation behaviour. Therefore, a contextualised assessment of forest managers' needs and of the interventions that are necessary in each case appears to be a crucial step in determining equity parameters when identifying the benefits and optimum benefit-sharing mechanisms for REDD+ schemes at the local level. Furthermore, as shown by Corbera et al. (2007), a more contextually informed definition of the benefits is critical for achieving equity in benefit sharing.

4. Research methods

The central data in this paper were collected during field research in the Juma Sustainable Development Reserve, conducted in July 2009, in which I interviewed community household members. The field research allowed an in-depth investigation and examination of how benefit-sharing mechanisms were designed and implemented in the Juma project and the role that local participation played in this process.

To develop the interview questions, I began by carrying out an exploratory study to clarify the subject, given the absence of a clear definition of benefit-sharing mechanisms and how they should be implemented. To complement the secondary data available, I then emailed a questionnaire to a group of academics identified as experts in 'REDD+-like' schemes, including PES, whom I selected based on their representation and relevance to the study's conceptual framework. Eight respondents participated in this part of the research. The questionnaire covered the experts' views on REDD+ equity, criteria for the distribution of REDD+ benefits, priority of REDD+ investments, methods for local participation, and awareness of the Juma project. The results of this part of the research served to guide the field research in terms of important aspects related to sharing benefits from REDD+, including the actions that are necessary to ensure that REDD+ resources are distributed effectively and the preconditions to secure fairness in the distribution of REDD+ benefits.

For the field research, I interviewed 50 people (mainly household members, community[7] representatives and students) using open (Grummitt 1980) and probing

[7] This paper adopts the definition of a community as a culturally differentiated rural group that recognises itself as such, with its own forms of social organisation, and that uses natural resources for subsistence and for cultural, social, religious and economic activities. This is the legally recognised definition of a traditional community in the law of the State of Amazonas (LC 53/2007). Under that law, these communities maybe indigenous; however, in the case of the Juma project analysed in this paper, there are no indigenous communities.

(Torrington 1991) questions in a combination of semi-structured and unstructured interviews. I selected the interviewees based on the following criteria:

1. Access to benefits: people who received benefits and those who did not.
2. Market access: people who live near roads and those who live far from roads.
3. Deforestation rates: people living in areas with high deforestation rates and those in areas with low deforestation rates.
4. Participation in the design and implementation of benefit-sharing mechanisms: people who actively participated and those who did not.

Questions focused on interviewees' views of how local participation was approached in the project in terms of the design and implementation of benefit-sharing mechanisms and the fairness of the distribution of benefits. Respondents were asked to assess the benefits of the project as fair, significant, sufficient or insufficient, based on the equity concept described in the previous section. Other questions included how the introduction of benefits affected forest cover change (which benefits were producing positive outcomes), household incomes (how households were adapting to the new rules in terms of income generation) and how the project developers' approach to benefit sharing could be improved to achieve more effective results. By interpreting the respondents' perspectives, I was able to construct a sense of the fairness and local participation in the case of the Juma project.

5. Case study

5.1. The Juma Sustainable Development Reserve project

The Juma Sustainable Development Reserve project for reducing greenhouse gas emissions aims to address deforestation in an area of the State of Amazonas (Brazil), which is under pressure from land-grabbers and illegal loggers, mainly because of two main highways that run alongside the area (BR-319 and AM-174). The main activity of the area is small-scale agriculture, for the production of tuber crops, grains and fruit. The area is a conservation unit (sustainable development reserve) created in 2006, which belongs to the state and is protected by law. The overall project, however, is coordinated by a private entity called Amazonas Sustainable Foundation (Fundação Amazonas Sustentável, or FAS, in Portuguese).

All the carbon credits generated by the Juma project belong to FAS (under Law No. 3135 and Decree No. 27.600; Amazonas 2008) and will later be sold to Marriott International, the main private funder of the project. The fact that FAS owns the carbon rights may raise questions about the fairness of these policies and measures in taking these rights away from the local forest managers that

are responsible for reducing emissions. In reality, however, REDD+-like schemes tend to represent a virtual transfer of property rights from service providers to resource users (Corbera et al. 2007), who then often control the nature of this transaction. This provides an example of why, if forest managers are to receive fair compensation and incentives, benefit-sharing mechanisms must be transparent and accountable.

5.2. Benefit-sharing mechanisms in the Juma project

The Juma project employs financial resources in both incentives and interventions. As noted above, I limit the scope of this paper to an analysis of incentives because of the complexity of the research involved in analysing interventions.

The benefit-sharing mechanism used in the Juma project to implement incentives was originally a state programme to pay for environmental services, known as the Bolsa Floresta Program (BFP). The BFP was established by law in 2007 and is implemented in all the conservation units in Amazonas. However, more types of benefits are being distributed as part of the BFP in Juma than in other conservation units because of extra financial resources provided by the REDD+ project there (R. Luna, 2009, personal communication); this aspect guarantees the financial additionality of the Juma project.

Under Decree No. 27.600 (Amazonas 2008), FAS is responsible for coordinating the programme, which consists of four voluntary components: (1) Bolsa Floresta Family (BFFamily); (2) Bolsa Floresta Social (BFSocial); (3) Bolsa Floresta Association (BFAssociation); and (4) Bolsa Floresta Income (BFIncome). In 2007, Decree No. 26.581 created the State Fund for Climate Change, in which the resources for activities related to climate change, including REDD+, are deposited. The amount of money earmarked for the benefits distributed by the BFP is equivalent to the interest obtained from REDD+ investments in this fund (M. Cenamo, 2009, personal communication). The components of the programme and other relevant information are summarised in Table 2.

6. Findings

6.1. Local participation in the Bolsa Floresta Program

The BFP is a voluntary programme whose beneficiaries include the association in the reserve, traditional communities, households, women and children. The association itself benefits from BFAssociation, and the traditional communities, households, women and children benefit from the other components: BFIncome, BFFamily and BFSocial.

According to the Project Design Document (Viana et al. 2008, 7), ‘the project was designed through a transparent process involving participatory workshops and political consultations in order to guarantee the involvement and commitment of all the local stakeholders’. Furthermore, ‘the use of participatory

Table 2: Overview of the Bolsa Floresta Program (BFP).

BFP	Characteristics
Beneficiaries	Traditional communities, local associations, women, households and children
Coordination	FAS
Relevant policies and measures	• State Climate Change Law (Law 3135/2007): Established the programme • Complementary Law 53/2007: Regulations for the State Climate Change Law • Decree 26.581/2007: Created the State Fund for Climate Change • Decree 27.600/2008: Defines the coordination of the programme
Source of funds	Interest accrued on the State Climate Change Fund, administered by FAS, consisting of funds donated by the state and private investors
Components of the BFP	• BFFamily: Direct payment of a monthly grant of BRL 50 (~USD 25) per family, to the households of these families. • BFSocial: An average value of BRL 4000 (~USD 2000) per community per year, for social improvements. • BFAssociation: Payment to the Association of people living in the reserve. The amount corresponds to 10% of all the BFFamily funds granted. Its purpose is to strengthen the organisation and social control of the programme. • BFIncome: An average value of BRL 4000 (~USD 2000) per community per year. This portion is intended to be used to support sustainable production.
Eligibility criteria	1. Be a resident of the reserve for at least two years. 2. Ensure any children in the household attend school. 3. Actively participate in the Association and in the development of management plans and comply with their rules. 4. Sign a commitment agreement to keep crop and pasture areas no larger than they were in the year the programme was instituted.
Rules and penalties	Families that deforest an area a little larger than their crops (up to 50%) are given a 'yellow card' and, after justifying their actions to the Association, are allowed to continue in the programme for another year. Families that then continue deforesting are given a 'red card', and their benefits are suspended for an undetermined period. Whoever deforests an area much larger than their crop area (in excess of 50%) is given a 'red card' in the first year. Families given either two consecutive yellow cards or three in alternative years are excluded from the programme.

Source: Adapted from the Amazonas State Secretariat for Sustainable Development website (www.sds.am.gov.br).

methods in all of these meetings, workshops and public hearings throughout the reserve creation process was very important for increasing understanding at the community organization level and for communicating the *modus operandi* to the local communities' (p. 54). In these workshops, climate change, the programme and REDD+ were explained to local communities.

When asked to describe their participation in these meetings, as part of the field research for the present study, the majority of households interviewed

classified them as informative/passive and consultative rather than as interactive/empowering. In fact, the whole programme had already been developed (with the participation of key stakeholders only[8]) when these workshops were held. As one interviewee stated: 'they served more to inform than to help in constructing the project and its benefit-sharing mechanism'. One of the interviewees noted that during these meetings, participants were also invited to sign a non-deforestation commitment.

With the exception of BFSocial, traditional communities and households in the reserve were not included in the early stages of the development of the BFP components, nor were they given the opportunity to choose how the different components would work, types of benefits or how they would receive these benefits.

Almost all the households interviewed felt that direct payments under BFFamily, for example, made no difference to their well-being; indeed, such payments meant 'nothing' to them. This might be attributable to the passive/informative nature of the local participation process. Some of the households (15%) felt that the payments were 'better than nothing', but were not sufficient to encourage better behaviour given that they could obtain greater benefits from exploiting forest resources.[9] Another problem was that to receive the money the household members had to travel to the nearest town, which required them to spend almost an equivalent amount on fuel; this decreased the efficiency of the payments.

Despite having the last word on how funding resources should be used in any one year, some communities were not able to participate in the BFIncome decision-making process simply because they did not know on which days the BFIncome decisions would be made. Consequently, in the year of the field research, the BFIncome choices benefited only the communities in one part of the reserve.

To monitor the impacts of the project in the communities, the project organisers carried out a socio-economic assessment of these communities during the initial stages of implementation. Each household head completed a questionnaire, and the results were used to evaluate the communities' social conditions and identify their social needs (Viana et al. 2008). According to project coordinators, this assessment was also used to determine social benefits and the best way to distribute them in BFSocial.

Responses to the questionnaire revealed that, as families in the reserve do not have easy access to services such as education, health, water and energy, the social benefits in BFSocial are very important because they provide permanent, self-sustainable benefits without creating dependence. Furthermore, according to the majority of interviewees, such benefits were more effective in modifying behaviour

[8] These included NGOs, state representatives and forest management representatives in Manaus, the capital of Amazonas.

[9] Answers to the question on the value of forestry income in cash per month ranged from BRL 500 (around USD 250) to BRL 8000 (around USD 4000).

than direct payments. For example, as one of the local project coordinators noted, having their children go to school provided much more incentive for families to meet their commitments with regard to conservation.

In the case of BFAssociation, household interviewees reported that they had no decision-making power regarding how funding resources were used. Rather, participation was considered consultative only. In the first year, for example, although households participated by giving feedback on the use of resources in some workshops run by FAS, the foundation made all final decisions concerning BFAssociation. Furthermore, as one interviewee pointed out, the equipment that FAS bought for the association belongs to the foundation. This could reduce the autonomy of the association and restrict its potential to achieve its goals.

6.2. Equity in the Bolsa Floresta Program

In this section, I look at how the decision-making process affected the outcomes of the benefit-sharing mechanisms in the Juma project by analysing equity in decision-making and in outcomes.

Interviewees reported that, with regard to direct payments under BFFamily, no attempt was made to determine households' needs, how they would access the money or how to manage transaction costs incurred by participants. For example, as one respondent noted, the value of payments was decided based on how much would be available from interest accrued on financial resources, without taking needs or opportunity costs into account. Furthermore, households reported that they are not able to renegotiate the deal and that they have a passive position, which can generate negative implications for equity. Pagiola and Platais (2007) note, for example, that one of the attractions of PES schemes is precisely that they should be able to adapt to changing conditions. It is important for all parties to have the ability to require that contracts be renegotiated to respond to new conditions (Engel et al. 2008).

In the case of BFSocial, however, the fact that the communities' social needs were considered before the social benefits were established and distributed confirms that 'equity in decision-making' can increase 'equity in outcomes'. The analysis of households' perceptions of participation and equity under BFSocial shows that, when beneficiaries have the chance to define priorities in investments, it is more likely that a range of needs will be met. As the families in the reserve did not have easy access to services such as education, health, water and energy, these became additional benefits, which are permanent in nature.

Strategies that decrease dependence on forests, such as enhanced educational and social services, can be effective in reducing emissions and generating co-benefits (Byron and Arnold 1999) under REDD+ schemes. The majority of the experts interviewed for this research followed this argument and ranked local adaptation and capacity building as top priorities when sharing benefits.[10] The most

[10] Information obtained by analysing experts' responses to the questionnaire.

concrete benefit of the Juma project at the time of the research was, undoubtedly, the provision of education through the establishment of the main school of the project.

The aim of the association is to strengthen the participation and organisational character of the local communities, which should be seen as a very important step in enhancing equity and attempting to apply FPIC principles. However, as not all people can actively participate in the decision-making process and receive benefits from the association, these goals are not being achieved. Rather, conflicts have arisen among communities and the association representatives, which has further complicated the process of meeting all needs. In this sense, there is a need to improve equity both in decision-making and in outcomes in BFAssociation.

In the case of BFIncome, the resources in the first year of the project were all invested in the production of Brazilian nuts – an activity that did not serve the interests of all communities. That household members felt this way about how the funding resources for BFIncome were used indicates that there is a need to diversify activities so that more people in the reserve can derive benefits. Some households also felt that the investment was inefficient, because they receive income from Brazilian nuts only once a year, rather than year-round.

7. Discussion

The aim of this paper was to explore ways to distribute REDD+ benefits fairly based on a framework of local participation and equity. This section examines the prevalent issues in the analysis and suggests approaches for the future. It also identifies elements that emerged from the case study that can be applied to other REDD+ schemes. Two specific issues arise within this framework: (1) how to define benefits and (2) how to develop and implement a benefit-sharing mechanism.

7.1. How to define benefits

The Juma project experience demonstrates that benefits may be fairer and more efficient if they are clearly defined before any decisions are made on how to share them. Defining the benefits before defining their distributional mechanism will make it possible to identify what will work most effectively for forest managers and which benefits will be most efficient in changing behaviour; to meet a range of needs; and to deal with multiple stakeholders' needs more effectively. It will also increase the likelihood of additionality and the permanence of the scheme. Moreover, the fact that deforestation has multidimensional causes suggests that approaches for identifying beneficiaries and benefits and creating benefit-sharing mechanisms should also be multidimensional. As suggested by Bengston (1994) a multidimensional approach would allow an examination of the value people attach to forests based on multiple valuation frameworks and would provide a richer and more comprehensive understanding of benefit-sharing mechanisms

compared with one-dimensional analysis. Furthermore, 'multiple indicators of value are needed for each valuation framework in a multidimensional approach' (Bengston 1994, 525).

It is also clear that defining fair benefits ('equity in outcomes') is more likely to occur when there is a transparent, interactive, inclusive and well-implemented process of local participation ('equity in decision-making'). However, as noted previously, local participation processes are difficult to implement because they require communication among forest managers, information, logistics systems and close monitoring and evaluation (United Nations 2005). Moreover, local power relationships are very often underestimated or even ignored, leading to a distorted version of the local reality (Cleaver 1999; Kanji and Greenwood 2001 in Mannigel 2005). As Agarwal (2001, p. 1625) states: 'There are limits to what participation alone (even if interactive) can achieve in terms of equity and efficiency, given pre-existing socio-economic inequalities and relations of power.'

Therefore, a contextualised evaluation of forest managers' needs and what may be considered fair and effective benefits could lead to a more equitable benefit-sharing process. As noted by Mahanty et al. (2006, in Schreckenberg and Luttrell 2009), 'the "benchmark" for measuring equity needs to be situationally determined to account for social contexts, norms and values'. There are some core needs for financial investments in REDD+ schemes, but it is crucial to analyse the particular needs of the area where the scheme will be implemented if fairness, additionality and permanence are to result.

7.2. Implications for other REDD+ schemes

According to the interviewees from the Juma project, investments in common goods, such as education and social benefits, were fairer and had more additional and permanent benefits than direct payments. The common goods criterion, as defined by Pascual et al. (2010), emerged clearly in the case of the Juma project, and this type of benefit was successful in improving the welfare of forest managers and in generating co-benefits while at the same time reducing emissions.

7.3. Developing and implementing a benefit-sharing mechanism

The case study shows that failure to fully engage local forest managers in participation processes, as in the cases of BFFamily, BFIncome and BFAssociation, may undermine the equity of the benefit-sharing mechanism. By contrast, social benefits under BFSocial were decided after an analysis of households' socio-economic conditions, the aim of which was to identify their main needs in order to decide how resources would be used. This is an example of how local access to resources and roles in decision-making can bring about social transformation (McDermott 2009).

Because benefits must be distributed among multiple stakeholders and at different levels, it is necessary to have a range of options for sharing them. Such

options must be developed according to local capabilities and be reviewed and monitored from time to time to guarantee equity, permanence and additionality. In the absence of reviewing processes, as in the case of BFP, there is the risk that forest managers can be locked into inappropriate long-term commitments, meaning that the benefits they receive are insufficient to cover the costs of reducing deforestation.

A final but no less important consideration is that strong local organisation and negotiation skills appear to be vital for guaranteeing that benefits are distributed according to a bottom-up approach, rather than a top-down approach based on discretionary criteria. Most of the households interviewed suggested that introducing mechanisms for resolving social conflicts was crucial, indicating a need for accessible and transparent grievance mechanisms in the Juma project. As Ostrom (1990) claims "all efforts to organize collective action, whether by an external ruler, an entrepreneur, or a set of principals who wish to gain collective benefits, must address a common set of problems". Furthermore, the current lack of monitoring of social impacts could make the difference between a household being in favour of or against the programme.

7.4. Implications for other REDD+ schemes

The BFP experience indicates that benefit-sharing mechanisms are most likely to produce equitable outcomes when there is interactive local participation at all stages of benefit sharing, from the definition of benefits to the implementation and monitoring of the mechanisms for distributing them. The main approaches adopted in the Juma project for the inclusion of forest managers in the benefit-sharing process tended to be consultative and informative; this led to conflicts between forest managers' needs, the benefits that were being offered and the ways in which they were received. The Juma project also shows the importance of monitoring and accountable systems for administering benefit-sharing mechanisms if outcomes are to be equitable, especially in cases where forest managers do not retain carbon rights.

The present analysis of benefit sharing under the four components of the BFP can contribute to the development of benefit-sharing mechanisms in other REDD+ projects because it demonstrates the importance of offering benefits that meet the social, organisational and financial (mainly income generation) requirements of forest managers.

8. Conclusions

In studying the Juma project, this paper aimed to assess the extent of local participation in the sharing of REDD+ benefits in the project and the implications for equity parameters. The analysis of the Juma project indicates that households' various needs should be considered at the phase when benefits are identified, rather than at later stages. In addition, when identifying benefits, it is important to

have local participation in determining how resources are used, as this will assist in the process of changing behaviour, which is the main objective of REDD+ incentives and interventions.

On top of that it is crucial to recognise that FPIC is a process wherein forest managers can undertake their own independent and/or collective decision on matters that affect them as an exercise of their rights to land, services and resources, such as benefit-sharing mechanisms for REDD+. Recognised as a REDD+ safeguard (UNFCCC 2010), project implementers should ensure that when FPIC is sought from forest managers, the customary rights, procedures and community protocols of these actors are respected and complied with at all levels. The BFSocial experience showed that a preliminary assessment of the local context could serve as important information provided to forest managers in order to better choose benefits.

Moreover, because deforestation involves complex and diverse relationships and issues, the adoption of a multidimensional approach in identifying beneficiaries and benefits and in creating benefit-sharing mechanisms can increase fairness and efficiency. That is, deforestation has multidimensional causes and so a multidimensional approach would reflect the relative costs and needs of different stakeholders. Furthermore, the generation of co-benefits such as poverty reduction, for example, is more likely to occur with a multidimensional strategy.

As schemes such as REDD+ must target those areas that offer the greatest potential for effectively reducing emissions from deforestation and forest degradation (Wunder 2007; Hall 2008), benefits for these areas will need to consider the local forest managers' conservation efforts and costs. A multidimensional approach should also include benefits for those who already exhibit conservation behaviour (such as indigenous communities) because such benefits are essential for dealing with equity dilemmas and avoiding 'perverse incentives' that could ultimately have the effect of increasing deforestation (Richards and Jenkins 2007).

In considering these factors and multitask processes, project developers must keep in mind that there is no 'one size fits all' solution for REDD+ projects and that the benefit-sharing mechanisms will need to vary from one project to another. Further research is needed to develop guidelines for implementing inclusionary, interactive and democratic processes of local participation. Finally, when we think about how to equitably share REDD+ benefits among forest managers and whether it is really possible to share benefits that are simultaneously fair, additional and permanent, we need to consider the degree to which REDD+ benefits are consistent with the needs and conservation efforts of forest managers.

That yet another question is being raised here is perhaps not surprising given that this area is relatively new. Even at this relatively early stage, however, it is clear that, for REDD+ to generate fair, additional and permanent benefits, benefit-sharing mechanisms will need to be developed and implemented with inclusive approaches and flexible dynamics to ensure that all types of forest managers receive appropriate benefits. If not, the risk is that REDD+ will serve only to disturb social relations in the forest and obstruct the process of reducing emissions.

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