



## **Strengthening Livelihood Flows on Payment for Environmental Services through Local Lenses: Evidences from the Bolsa Floresta Programme**

**Patrícia Gallo Barbosa Lima**

Technische Universität Dresden, Faculty of Forest, Geo and Hydro Science: Institute of International Forestry and Forest Products, Dresden, Germany

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**Abstract:** Payment for Environmental Services (PES) schemes have been broadly acknowledged as a tool to promote conservation of natural resources, but a critical debate is addressed on whether PES improves the livelihood of local populations, while providers of these services — a debate which is also critical to current discussions on Reducing Emissions from Deforestation and Forest Degradation (REDD) mechanism. In this context, few studies assess the local perspective in their potential role within this process. This study evaluates the local view regarding the proposed objectives of a PES initiative in the Brazilian Amazon. The results indicate that at the Sustainable Development Reserve (SDR) *Uatumã*, the perception of the traditional communities, mostly regarding the participatory process and the non-financial benefits received by these communities, differs in some aspects from those benefits outlined within several objectives proposed by the programme. The perception of local communities about their relationship with the forest plays an essential role in successfully applying a long-term benefit-sharing intervention. Hence, in a strategy that involves long-term benefits, trust between both parties is essential from the beginning may be a pre-requisite for satisfaction. The opinions and preferences of the impacted stakeholders should be considered during the design of such schemes rather than only during project implementation.

**Key words:** Bolsa Floresta, Amazon, local view, participation, equity, Payment for Environmental Services, REDD+

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## 1. Introduction

It is clear that Environmental Services (ES) contribute to the human welfare on this planet (Constanza et al., 1997). Moreover, several livelihoods strongly depend on natural resources for their subsistence. Many ecosystems and their services are currently under increasing pressure; explicitly, more than 60% of the world's ecosystems are not being used in a sustainable way (Cenamo et al., 2009; Millennium Ecosystem Assessment, 2005). In response to this growing global awareness, mechanisms to conserve ES related to greenhouse gases (GHG), water and biodiversity are emerging in several countries worldwide as formal and voluntary markets and others mandated by law (Forest Trends et al., 2008). According to Wunder (2005), PES schemes are voluntary transactions in which environmental services are bought from a provider conditional upon the continued provision of that ES. In other words, to place a value on the benefits that these services provide, in order to promote their maintenance.

The method behind a REDD mechanism is to generate the necessary flow of resources for giving incentives to significantly reduce emissions from deforestation and forest degradation in countries with tropical forest cover (Cenamo et al., 2009). According to Bond et al. (2009), REDD can be regarded as a multi-level PES scheme, in other words, a special modality of PES as it also aims to preserve environmental services, while offering a financial compensation to those avoiding deforestation (Gil, 2010). The transaction of allowances at the international level rewards the country ensuring the provision of the environmental service (ex. carbon storage). On the other hand, at the national level, the transaction rewards may be granted, according to pre-defined rules, to actors involved in the protection and conservation of forests (Gil, 2010).

One particular concern is the lack of knowledge related to whether PES/REDD+ (that comprises also Sustainable Forest Management, enhancing the possibility for co-benefits) schemes can contribute to improve livelihoods while achieving efficient environmental conservation goals (Landell-Mills & Porras, 2002; Lee & Mahanty, 2009). Some studies have argued that PES initiatives can have

positive impacts on livelihoods of communities in forested areas (Landell-Mills & Porras, 2002; Pagiola et al., 2002; Wunder, 2005) while some authors argue about the ability of PES schemes to promote equitable outcomes (Corbera et al., 2007; Proctor et al., 2008). Nevertheless, the incentives may contribute to asset building for land user's by improving access to education and capacity building, encouraging cooperation within communities and promoting infrastructure development (Lee & Mahanty, 2009; Sunderlin et al., 2005). However, Wunder (2008) affirms that it should never become the primary goal of PES, because otherwise neither environmental conservation nor improvement of livelihood goals is likely to be achieved.

So far, research on PES schemes has been largely guided by economic, political and ecological aspects (Petheram & Campbell, 2010). Further with Petheram & Campbell (2010), emphasis on these topics is understandable, given the dependence of PES on market efforts, political support and ecological context. However, major attention is also needed on social research, particularly the local participant's perceptions, preferences and opinions. Public opinion, perception about, satisfaction and community engagement are often key motivating factors for a wide acceptance of rural development and natural resources conservation initiatives (Bureekul, 2000; Chesoh, 2010; Norsworthy, 2000). Researchers as Borgerhoff-Mulder et al. (2007) and Petheram & Campbell (2010) have evaluated how specific components of conservation interventions influence individuals' behaviours. This is particularly important in the case of PES in developing countries, where several aspects including payments, outreach and legal framework may influence the decisions to engage in these activities. Most of these studies involve the understanding of the factors that enable local communities to participate in PES (Pagiola et al., 2008) and peoples' willingness to participate in PES schemes (Kosoy et al., 2008; Zbinden & Lee, 2005).

Hayes (2012) has examined another important aspect. She has studied how the implementation of a PES scheme to promote sustainable pasture management and forest conservation in the Eastern Andes, Colombia interacts with farmers'

decision-making. Hayes concludes that by integrating the farmer into the decision-making processes, PES schemes can support a collaborative partnership that produces more than efficient conservation measures. Another example comes from Gutwein and Goldstein (2013) they say that making strategies like PES attractive to stakeholders and effective in achieving nature conservation goals requires more information on human dimensions that is lacking. In their study they seek to address the gap about perceived strategies, barriers and opportunities by interviewing a collaborative stakeholders group of ranchers in Colorado, USA.

According to Liu & Walker (1998), people are more committed to goals that they consider important than to those that they view as insignificant. In this sense, if the local communities perceive the objectives of a conservation initiative differently from what is actually proposed, they might not support the programme in a longer term if they find these perceived objectives as not so important. Some authors as Landell-Mills & Porras (2002) argue that PES initiatives can only work on a long-term basis to benefit local residents. Pereira (2010) also says that to be effective in the long run, PES schemes must consider the needs and priorities of local residents. Moreover, Petheram & Campbell (2010) state that adherence to a PES scheme is very dependent on the perception held by the participants and the likely rewards besides for example, the capacity and resources available in the community.

This paper raises the question: What role does the local view play regarding the achievement of effective and more equitable outcomes in PES mechanisms (e.g. REDD+)? This paper assesses the perception of local beneficiaries following the subsequent criteria: i) welfare and satisfaction, ii) restriction of access to natural resources, iii) increase of monthly income, iv) strengthening of cooperative work and local participation and v) improvement of knowledge (towards forest conservation). The criteria were developed following some components from the Sustainable Livelihood Approach SLA (see Conceptual Framework). Specifically, the aim is to assess if there are discrepancies between local perspective about what is proposed by the Bolsa Floresta Programme (BFP) objectives and the expectations delivered

by these objectives, it may produce different results than expected by the scheme proponents in the long term. This research seeks to bring on a deeper discussion and argues that local perspective promoting engagement should play an essential role in the design and implementation of such mechanisms to achieve better results.

## 2. Conceptual Framework

The outcomes of this research are discussed based on the following concepts to give practical meaning to the findings. The conceptual framework is built on the concept that ‘the world around us is not psychologically uniform to all individuals’ (Godwin, 2009). This is the reason that accounts for the differences in the opinions and actions of individuals and/or groups that are exposed to a similar social experience. As said by Nelson and Quick (2000), social perception is the process of interpreting information about someone or something. From this definition it should be understood that the formation of opinions about another person, situation or experience, depends on the amount of information available and the extent to which each one is able to properly interpret the information acquired. Adler (1991) says that interpretation organizes our experience to guide our behaviour. Moreover, Rao and Narayana (1998), state that there can be no behaviour without perception. From this perspective, a good understanding about the PES concepts is a fundamental aspect. Also, it is argued that local engagement will assist in the process of changing behaviour, which is one of the main objectives of PES/REDD+ initiatives (Gebara, 2013).

Moreover, Adhikari & Agrawal (2013) say that participation in PES schemes can be enhanced through effective information dissemination. Furthermore, according to Kosoy & Corbera (2010), lack of understanding of the PES proposed concept can also be an impediment to bargaining power and interest in inclusion, resulting in negative impacts on equity aspect. Presenting an example involving the BFP context, Agustsson et al. 2010 also studied the BFP in the SDR *Juma* (also impact site from the BFP). They have observed that many local participants do not

consider why they had received the monthly reward, these residents were just happy to receive it and expecting an increase in the payment level.

According to Lawlor et al. (2013), REDD+ initiatives must ensure that individuals and communities have concrete and detailed information about project risks and opportunities. Silva & Franco (2010; Box.9 cited in Harvey et al. 2010) follows the same line and say that it is extremely important to build a common understanding among the local stakeholders about benefits, risks and possible impacts in lifestyle. Kosoy et al. (2008) state that it seems often that lacking information about the PES concept are provided to participants of such schemes, resulting in them misunderstanding the concepts and proposed rules. For example, Hayes (2012) found in her research that only 13% of the respondents understood that part of their contractual commitment was to conserve forests.

The extent of the environment for many people is often viewed as confined to the biophysical dimension, wildlife and ecological issues. However, the environment is multidimensional and includes a complex of social, economic and cultural dimensions. As an answer to this, some academics have developed the Sustainable Livelihood Approach that can be used in planning, scoping and defining priorities for new developmental activities and in assessing the contribution that existing activities have made to sustaining livelihoods (Chambers & Conway, 1991; IFAD, 2011; Serrat, 2008). In this study some components of the SLA were incorporated to define the criteria to assess the data analysis. The SLA includes five assets: i) human assets (e.g. improvement of capacity, skills, also impacts on education and health system), ii) natural assets (e.g. food and water), iii) social assets (e.g. ability to participate in decision-making processes), iv) physical assets (basic infrastructure) and v) financial assets (e.g. savings, credit and debt).

Data analysis is structured around the developed criteria: i) welfare and satisfaction, ii) restriction of access to natural resources, iii) increase of monthly income, iv) strengthening of cooperative work and local participation and v) improvement of knowledge (regarding forest conservation). In addressing each of these topics, local stakeholder perceptions of the programme are compared to the

programme designed objectives and assumptions. This analysis framework permits a clearer understanding of how the BFP can affect the local communities and their livelihood and how the design could be improved to more effectively meet the targeted goals. The SLA approach was also adopted by Petheram & Campbell (2010) in a study where they explore the view of poor people living in a National Park in Vietnam, where a PES scheme was being considered to be implemented. The BFP components are not completely designed under the criteria from the SLA, however, according to the FAS Management Report (2010), the BFP also aims ‘to improve the quality of life and strengthening of relations between society and ecosystems, recognising and expanding their social ties and cultural, economic, spiritual and ecological commitments in order to seek sustainability in all its dimensions’. Therefore, some principles of the SLA are applicable in the research context.

### **3. Methodological Approach**

#### **3.1 The Bolsa Floresta Programme (BFP)**

The BFP is the PES scheme analysed in this study. Its goal is to increase the value of forests in comparison to alternative land uses, resulting in improved quality of life of traditional communities and reducing deforestation, the targeted ES include carbon and biodiversity. In 2008, the government of Amazonas through the Decree 27.600/2008 created the Amazonas Sustainable Foundation (FAS), a non-profit public organization whose main goal is to manage the environmental products and services from the state conservation units and operate the BFP (Agustsson et al. 2010). This programme has four main components that aim: i) to reward the mothers (focus on women empowerment) of the households that are willing to make a commitment to environmental conservation through a monthly cash-fixed payment of BRL 50 (around US\$25) (*BF Family*), ii) to promote sustainable activities for increasing families income generation (*BF Income Generation*), iii) to improve infrastructure in the communities (*BF Social*) and iv) to support and strengthen social organization into the communities (*BF Association*).

In the case of BF Family, the participants have to open an account in the Bradesco Bank and the benefit is transferred at the end of every month. For the other three components, the benefits are transferred to the local association.

### 3.2 Scoping of the Study Area

Seeking for a way of strengthening the Zona Franca Verde Programme<sup>2</sup> and consolidate the State Policy on Environment and Sustainable Development of Amazonas, the state government established the State Law No. 3135 of June 5, 2007 (which establishes the BFP) and the Complementary State Law No. 53 of June 5, 2007, marking the establishment of the State Climate Change Policy and Conservation Units. In its article 21, it described the purpose of such reserves, “*the Sustainable Development Reserve (SDR) is a natural area that houses traditional communities, whose existence is based on sustainable use of natural resource*” (SDS/IDESAM, 2007).

The SDR *Uatumã* has a total area of 424,430 hectares and is located in the area of the middle Amazon River in the municipalities of *Itapiranga* and *São Sebastião do Uatumã*. Nowadays there are about 1,300 inhabitants living at the reserve distributed in 20 communities located along the riverbanks *Uatumã*, *Jatapu* and the *Caribi*. The communities are politically represented by a local association (*Associação Agroextrativista das Comunidades da Reserva de Desenvolvimento Sustentável do Uatumã*). The communities are divided into three administrative units called poles, which aims to assist the implementation of activities and planning in the reserve by the state government and other organizations. The local economy is based mainly on small-scale agriculture (mostly cassava and, in some cases banana, pineapple and watermelon), which is characterized by lack of technical assistance, poor organization and limited access to markets, which reduces the residents profitability. Also, fishing, cattle ranching and logging are the most profitable options for the residents to increase their income. The small farmers can only carry out activities as agriculture, cattle ranching and/or logging in 5.9% of the reserve. In terms of agricultural land use, each family is allowed to cultivate



crops up to 3 hectares of secondary forests (known in Portuguese as '*capoeira*') per year. Legal authorisation by the state government is required to open larger areas in secondary forests or deforesting primary forests. The residents are involved in small scale fishing, being mainly for subsistence or for sale in small quantities. In most communities timber extraction is practiced for home improvement and buildings such as schools, churches and head offices (IDESAM, 2008).

### 3.3 Research Design

The answers from the respondents represent their view and opinions. Since an investigation involving the whole reserve was not outlined due to financial and time restrictions, it is expected for the answers to have value in understanding general aspects that concern the local communities. The methods selected for data collection were the questionnaire, focus group, semi-structured interview and direct observation. During data collection (March, 2011) in 12 communities (BFP impact sites<sup>3</sup>), there was a total of 122 respondents out of 365 households. The number of answers per question differed due to the elimination of missing data. Among them 18 interviewees also responded the semi-structured interviews. In the four biggest intervention communities (> 20 households) a focus group discussion was also employed. In order to assess the perceived opinions from the beneficiaries, questions focused on respondents' view about improvement of knowledge towards forest conservation. How the communities define the BFP and what they expect from the programme was asked according to multiple-choice options. Other questions were regarding the accessibility and quality of natural resources. Respondents were asked about their opinion concerning illegal invasions. Questions about the communities' point of view on whether the BFP contributed to raising their family income and strengthen the local participation were also asked. All respondents were selected in a random approach. The household questionnaire outlined questions on basic information about the family unit (composition, occupations, etc.), perceptions and changes of welfare as well as knowledge and involvement in PES/REDD+ initiatives. Also, seven open-ended questions were developed and approached to

different stakeholders (households, key informants and group interview). The intention was to verify possible differences between answers from different actors in the process. Since all information gathered was similar, the respondents were joined in a single group.

## 4. Findings

### 4.1 Well-being

Generally, in the BFP context the residents of the SDR *Uatumã* feel better off nowadays compared to when the BFP activities started to be implemented (76% of the respondents have expressed this feeling). Among these 76% (n=106) of respondents, however, only 12% believe that the BFP implementation is the reason for being better off. In contrast, none of the residents answered that the BFP implementation resulted in them being worse off, and even the communities with more difficult access to the closest municipality and the Conservation and Sustainability Centre (CSC) have expressed the feeling of being better off. Several reasons outside the BFP context may have contributed to this improvement, but the BFP actions can be a significant one. For example, during in 2009-2010, nine ambulance-boats (*ambulanchas*) with first-aid kits were provided, which not only represented the opportunity to get faster to the closest municipality, but also to start first-aid treatment at the boat.

### 4.2 Improvement of knowledge concerning forest conservation

One of the BFP goals is to increase awareness regarding environmental issues as described in the conceptual framework. According to Corbera (2010), the human asset can be also impacted by the improvement of skills and knowledge with regard to sustainable use of natural resources. Petheram & Campbell (2010) in their research adopted a sixth asset, 'the cultural assets', defined as values, social preferences, ethics and perceptions. Therefore, this paper adopts the same view to assess this perspective. In this context, Cochrane (2006) says that the cultural,

human and social assets are linked. The responses from group discussion and semi-structured interviews were almost equally divided, showing how difficult it was to access this perspective. Further in this sense, it is still difficult to identify if education efforts play a role in the context of SDR *Uatumã*. Some respondents believe and others not that the BFP has contributed towards an improvement of understanding regarding forest conservation.

Aside from the fact that the weak background of environmental education actions does not directly involve the BFP context since the municipal government is the responsible for the educational system, this paper argues that the level of engagement concerning environmental education within the communities is still low, although the participants have gained a new understanding through the provided information trainings by FAS. On the other hand, it should be acceptable to argue that more effort and time (more than a 2 or 3 days training) should be invested to achieve a fully conceived understanding by the participants. Recognizing the need for improving this aspect, the strategy adopted by FAS was to implement the CSC (Conservation and Sustainability Centre) as a side-BFP project, located at the community *São Francisco do Caribi*. This structure will house the first high school in the reserve. The proposal is to receive the students there for three weeks and in the fourth week the students will go back to their community subsequently continuously during the regular scholar year. In this centre the students will attend regular classes under the legal education system and in addition, they will attend extra classes in a professional setting. In the first year they will attend classes regarding agro-ecology and communication technology. According to Barroso<sup>4</sup> (personal communication, 2011) around 10 of the 20 communities are already benefiting from the centre. However, a higher level of engagement from the communities seems desirable since only two visited communities (*Maracaranã and Santa Luzia do Caranatumã*) teach about nature conservation in their schools.

At the community *Maracaranã*, according to the teacher, the school tries to teach the importance of future use of natural resources to the students. However, in a general way, it was observed that the local residents value the forest beyond the

market purpose, to support, as said by one of the respondents: *“We need the forest to survive. The forest is our friend and our home” (Community Ebenezer)*. Moreover, from another perspective, since two schools are already ‘voluntarily’ teaching about environmental concepts, the BFP activities could stimulate more engagement within the schools in the communities with regard to this aspect, especially concerning external threats and use of natural resources. Saylan & Blumstein (2011) state that environmental education must go well beyond the classroom. In opposition, the first step must be taken and this paper is in line with Gebara (2009, 36) that says ‘if we consider that one of the main causes of deforestation is the lack of knowledge about sustainable forest management, education could be able to foster the process of reducing deforestation’. Lastly, as said by one of the respondents *“knowledge is also a benefit (Community Flechal)*.

#### 4.3 Understanding the BFP concept

Most of the interviewees defined the BFP as a ‘forest degradation/destruction reduction policy’ representing 60% (n=118) of the total answers. However, although the majority defines the BFP as a conservation policy, 51% of the respondents (among the 60%) focus their attention on the financial perspective and expect as a benefit that, the cash-payment will be increased to complement their family monthly income. Viana (2008) says, ‘BF Family is not intended to be the main source of family income, but an income supplement paid as a reward for forest conservation’. However, 65% (n=118) of the total respondents expect that the BFP will raise their family income, and thus they may not assimilate or make use of all BFP benefits. Only 4% from the total interviewees hope that the BFP can effectively protect forest areas.

Regardless the fact for the BFP activities considered to be successful must not necessarily change the cultural value of the communities since the participants follow the BFP ‘rules’, the understanding about the PES concept that includes conservation scope is extremely important. According to Ottaviani & Scialabba (2011), cultural context can encourage the development of social equity and respect

for natural resources. The PES component from the BFP activities contributes together with the reserve status to reach the main goal that is forest conservation. Kosoy et al. (2008) states that attitudes towards forest conservation from stakeholders should be considered, which take into account wider motivations for participation in PES schemes. Attitudes and consequent behaviour are considered outcomes of an individual's core values (such as environmentalism) and their beliefs (Lawrence et al., 2010). Moreover, according to Sommerville et al. (2010), outreach and education play a role in motivating behavioural change. As stated by Gebara (2013) and Sommerville et al. (2009), PES/REDD+ activities are based on the assumption that payments to ES providers will change their behaviour (one of the main goals of such schemes) in a manner that will improve service provision compared to what would have occurred in the absence of an intervention.

#### 4.4 Accessibility and quality of natural resources

The residents rely on forest resources for their subsistence, on the other hand, they do not represent a strong threat for large-scale deforestation. For example, Börner et al. (2013) found that the average size of cropland among BFP participants is around 1.8 ha per household, a number below the allowed. The opportunity to open and clear primary forest land has been decreasing since the BFP implementation according to 63% (n=120) of the respondents. However, most of them (71%) credit this to the creation of Conservation Units (CU) by the government, but they also say that BFP is helping them to adapt to this new scenario. Therefore, this restriction may decrease the access to the natural resources, consequently also decreasing the internal pressure on forest resources and as said by one of the respondents: *"Before, people opened bigger areas than the necessary. Today is more restricted but is better, we have to follow rules to explore"* (Community Santa Luzia do Caranatuba). On the other hand, the BFP activities in combination with the reserve status may improve the quality of these resources. Moreover, going beyond the case of *Uatumã*, Börner et al. (2013) in their regional

scale analysis suggest that deforestation in BFP implementing-reserves has been reduced by 12% more than in non-BFP reserves.

There are no evidences that imply a recent reduction of forest loss in the SDR *Uatumã* (Börner et al., 2013). The authors state that threat on natural resources is unlikely to originate from inside of the reserve due to low historical deforestation levels of this area and, therefore, protection from illegal external invasions and other external pressures will be the key challenge for the reserve management and BFP activities. Regarding invasions, about 78% (n=106) of the respondents believe that the BFP is improving protection against external invasions and 22% believe that the number is the same as before the implementation. Some of them expressed that nowadays with more information provided by the BFP, they know how to notify FAS and the other responsible governmental organization IPAAM (Environmental Institute of Protection of Amazonas State) about illegal invasions. However, they said that IPAAM takes too long to follow up on the complaints most of the time. As a result it opens the opportunity for invaders to leave, return and commit more environmental damage. This indicates that higher conservation levels could be achieved by strengthening the capacity of collaborative enforcement involving residents as active local agents of reserve protection complying with the reserve management. Börner et al. (2013) also confirm that focus on fostering the role of residents as in the protection aspect of such reserves against external threats would be probably beneficial.

#### 4.5 Enhancement of Income Generation

The BF Income Generation supports the sustainable production and activities concerning fish, oils, fruits, honey, nuts, tourism and others. The goal is to promote the enhancement of and to increase added value of products by the small producers (FAS, 2010). Projects regarding fisheries, swine and poultry as well as the management plan for timber extraction are being implemented at the SDR *Uatumã*. As BF Income Generation is not yet providing extra income to most of the families, for instance, when asked about the total amount that they receive from the

programme per month, 51% (n=122) of the respondents have referred exclusively to the cash-fixed payment (the other component, BF Family) and 31% don't know. It could be speculated that one of the reasons for this would be the recent implementation of this component at the time of data collection.

Many of the interviewees perceive and express a lack of technical assistance to improve the development of the proposed activities, even though, for instance, during 2010 more than 70 training workshops were done within the reserve (FAS, 2010). As an example, the fish production from one of the communities was not sold according to them because FAS did not provide the legal licensing with the government to commercialise those fishes. Nevertheless, according to Lima<sup>5</sup> (personal communication, 2011) the investment chosen by the beneficiaries was the tank-fish, which means the residents should provide the license if they consider necessary, since a license is not required to sell the fish in local market, but for instance in Manaus, it would be needed. Following this example, it is argued that a clear communication must exist between the beneficiaries and the proponents of a PES scheme in order to clarify the rights and duties from each side of this 'contractual process'.

Other respondents expressed that they lack the proper knowledge to develop the projects by themselves. For instance during the group interview: *"We did not have the correct technical assistance to improve. The creation of these birds is different from those we create in the backyard. We do not have much experience, the explanation was little"* (Community São Francisco do Caribi). On the other hand, it is intriguing to notice that, for example (from the remaining 18% of respondents), in the community *Livramento* this project is already particularly prosperous (respondents expressed that they receive an amount of US\$ 170/month in average from BFP). According to the president of this community: *"Here the small chicken production works"*. Understanding the reasons for success in this community may represent the key to improving performance of BF Income Generation in others. One of the reasons for that might be the previous knowledge the community had, as also according to the president they already knew how to deal with this kind of hen

production. This fact is particularly interesting because since in some communities the income generation projects still did not show positive results as in others, the participants from these communities simply do not acknowledge the other benefits received by BFP activities, strengthening their perspective about the financial aspect.

#### 4.6 Strengthening of social capital

Social control and empowerment of the traditional communities are emphasized in BFP design. When asked if they have voted if the BFP should or should not be implemented into their communities 64% (n=106) answered 'yes'. Silva & Franco (2010; Box.9 cited in Harvey et al. 2010) say that it is necessary to dedicate substantial time to dialogues, workshops and other engagement process in such schemes. In this sense, FAS promotes a 2 days workshop to explain about the BFP and all contexts involved before the activities implementation. However, according to Pereira (2010), also using the BFP activities as example, even though FAS holds these training meetings, some of the participants were unaware of the existence of the programme when BFP was launched. She also argues that the local communities did not take part in the design process. This paper likewise argues that the communities must participate into the process instead of purely being consulted and receiving project benefits.

According to Lee & Mahanty (2009), a critical point is to create the opportunity for the poor stakeholder to access PES schemes. From this perspective, the BFP design should be considered as advantageous to other PES schemes. The participants just need to prove they live within the reserve (more than 2 years) and identification documents. Thus, the transactions costs to be eligible to participate in the BFP are not high, although some participants could be left out because of bureaucratic inefficiency from the state department in providing the documents. Further with Sato (2010, 43) 'the costs are also relatively low to sustain their participation on the programme because most of the rules are not additional to their current obligations'. On the other hand, when asked if they have participated in the



design and/or implementation of the activities in the communities 75% of the respondents answered 'no'. According to Griffiths (2008) some studies of PES schemes in Brazil and Bolivia have found that these programmes have tended to be a top - down decision. Therefore, due to the fact that the residents do not participate in the design or implementation process of the programme, some of them expressed that they do not feel as a part of the programme, even though it is recognized that to feel part of the programme is not an immediate process. For instance as said by one of the respondents: *“Even FAS coming here and asking to us what we need, what we want, afterwards the project comes ready and we are not sure if it is going to work” (Community Jacarequara).*

Deficiency in communication is another complaint pointed out by the residents. The respondents said that since only 2 persons per community are invited to the meetings with FAS, sometimes they are not able to receive a comprehensible feedback. Focusing on this aspect, some conflicts might be generated internally in the community. For example at the community *Manaain*, one of the respondents said that conflicts between the president and some residents may be the reason for the president to not give them feedback about the local association activities and also regarding the other activities from BFP. As a consequence of these conflicts, some of the residents may lose the interest about the BFP activities. Also, most of the residents within the visited communities expressed a feeling of lack of trust towards the main local association. They believe that the administrative process is not clear, for instance, *“We don't know from where the money comes and neither to where it goes” (Community Manaain).* In order to strengthen this relationship, a new statute with the BFP support was voted. It is expected that this administrative process will be clearer to the local residents. A consolidated feeling of trust could mean the opportunity for a better communal organization, since the communities have to adapt to a collective scenario.

## **5. Implications for livelihood flows and forthcoming PES (REDD+) schemes**

The findings of this research are discussed on this section. Also, several elements identified in the analysis can also be applied for forthcoming examples of PES/REDD+ schemes.

For instance, the level of social cohesion among local participants groups is often a critical point of the success of engagement process in such schemes (Silva & Franco, 2010; Box.9 cited in Harvey et al., 2010). Hence, the approach used by BFP to require that each community which participates in the BFP must have an association linked to the main local association can be appropriate to promote cooperative actions and empowerment among the residents of a same community, influencing thus, equity. Harvey et al. (2010) also found in their survey that the existence of formal or informal social structures could be used as a mean of reaching support of local stakeholders. However, the individualism still is a strong characteristic within the communities and a preference of community organization. This characteristic may be very difficult to change due to its cultural condition. For example, as said during the group interview at the community *São Francisco do Caribi*: *“I gave an idea to produce all together, but the other residents wanted to do individually, then it did not work. If we had done all together maybe we would have had more technical support”*. This scenario is a consequence of a low level of participatory organization within the communities. Even though the residents live in a community each household has its own private interest. As an example, in every community there are no communal lands to grow crops (the communal areas are for communal facilities, for example, the community centre), instead each household has its own personal plot. A PES scheme should be able to enhance social organisation and deal with situations aforementioned, only this way the beneficiaries would be able to maximize better results of the local participation process.

In the design and implementation of mechanisms like REDD+, equity is a fundamental condition (Grieg-Gran, 2008; Pagiola & Platais, 2007; Pascual et al., 2010; Peskett et al., 2008). Hence, conservation actions in developing countries should experience a changing in perspective, from legitimating cost-efficient and effective natural resource management to concerns about the equity of the scheme. According to Costenbader (2009), Gebara (2013) and Griffiths (2008) a singular concern is that those with less power and influence in the benefit-sharing decision-making processes could lose out. Moreover, Griffiths (2008) and Peskett et al. (2008) state that for benefits to be equitably shared between stakeholders it will depend on the degree of local participation and engagement in the process of developing and implementing these benefits. In particular, equitable distribution of benefits has been identified as a key challenge in the design process, since such mechanisms should distribute benefits into fairly and efficiently way that also produces additional and permanent outcomes (Di Gregorio et al., 2013; Gebara, 2013; Ghazoul et al., 2010). Therefore, the benefits to be distributed and the beneficiaries should be defined before implementation.

The traditional communities in the SDR *Uatumã* consistently perceive that they are providing a service and should be well compensated for doing so. For example during the group interview: *“The government says we must preserve and we all agree on what we see on television. We will preserve but then it comes the question what about our life condition? The government is not here to preserve, who preserves the forest are us” (Community Flechal)*. Conservation practices must be more profitable as other land-use alternatives (e.g. agriculture), in other words, the offered benefits should meet the opportunity costs. According to Agustsson et al. (2010) and Börner & Wunder (2008), an equal uniform payment (as the case of BFP) is usually calculated based on the ES provider with the highest opportunity cost. Therefore, should the payment be lower than the opportunity cost, the better-off participants could not see any financial motivation in joining the programme. Although Börner et al. (2013) state that in the case of BFP the opportunity costs for the participants to comply with the land use related rules tend to be null – the

communities carry out rustic activities, they do not use fertilizers (or other chemicals) and to plant they use part of the cassava plant ('*maniva*'), therefore this cost tends to zero – some participants expressed that the direct payment alone is not sufficient to compensate the opportunity costs of participation and adaptation to new rules. However, it is interesting to notice that most of the participants that expressed this feeling are the ones with lower monthly income. Moreover, when a monetary incentive is given to the beneficiaries, they assume the payment as their motivation (Agustsson et al., 2010).

Further with Agustsson et al. (2010) and Kosoy et al. (2007), to be efficient the payment must meet two conditions: the amount paid should not be less than the opportunity cost, and at the same time the amount should not be greater than the value of the provided service. In the present case, the participants are being rewarded for their service in maintaining the forest stand (a good act), but the payment is not tied to the amount of the provided service (e.g. size of the protected land). Also, the main reason for the low value is basically because the direct payment was not designed and calculated to cover opportunity costs of participation. FAS declares as strategy to use this payment as a form to attract local residents to join the programme and to build a trust-relationship with them (Agustsson et al., 2010). On the other hand, it seems that those participants with lower income family level feel less satisfied than others with higher income level, even though for better-off participants the aid is little additional to their income, these participants with low income consider the value paid too low and do not recognise that the payment could represent perhaps a substantial increase in their monthly income. For example, Sato (2010) conducted also a study at SDR *Uatumã*, she found that the averaged net income per household per month by activities such as agriculture, cattle ranching, logging, per diem jobs and fishing could range from US\$ 71 to US\$ 2,100 within some communities.

Still with regard to opportunity costs, another study (Gebara, 2013), conducted at the SDR *Juma* says that some interviewees reported that concerning this fixed-cash payment the needs and preferences of the households were not

considered. They argue that the amount paid was decided without taking into account how the participants would access the aid and how to manage the transaction costs acquired by local participants. This complaint was also heard during the data gathering in the SDR *Uatumã*. Also, some respondents expressed that they have to pay the fuel for the boat to go every month to the bank or that some communities are too far from the bank, they also argue that the number of individual within a family was not considered when defining the value to be paid. Oppositely, regarding transaction costs, FAS express that the BFP was designed in a manner that FAS and other organizations (e.g. IDESAM) will absorb most of the costs. For example, for the meetings, FAS provide the fuel for the boats, but the participants said that sometimes they have to provide themselves. This example brings to discussion another aspect, some of the participants do not see this condition as an advantage, on the contrary, they defined this situation as lack of trust from FAS to them, since they do not hold full autonomy to manage financial resources that come to the main association. Thus, in this sense, trust needs to be developed between all actors, stakeholders and institutions in order to promote discussion and good interaction to achieve equitable outcomes in PES schemes (Gregory, 2011)

Community-based benefits do not necessarily address individual opportunity costs (Gregory, 2011). Therefore, enhancing income generation through (reliable and profitable) projects should be one of the most important actions of such schemes and a good opportunity to reach this goal. These projects could guarantee the benefits permanence in the long run (also after the lifetime of the project), replacing in this sense deforestation interventions, which according to Gebara (2009) should be a condition to measure the effectiveness of a REDD+ scheme. Three out four BF components (Income Generation, Social and Association) involves lifelong benefits; therefore, a solid strategy of permanence of benefits should be an indispensable aspect in such schemes. This kind of projects within the communities seems to be a valuable alternative to promote cooperative work besides economic returns. FAS declares to expect that the collective aspect under the component BF Income

Generation can improve infrastructure and communication among the residents (Agustsson et al., 2010), supporting thus the presented aforementioned argument. Consequently, it seems essential to achieve good results in all components for a successful implementation of the programme. To support this idea, according to Cochrane (2006), the different types of capital are used in combination to give rise to flows of goods and services and wealth creation.

On the other hand, the opportunity costs are often higher than PES payments (Bekessy & Cooke, 2011), thus something else must be driving interest and participation. In other words, usually participation in such schemes is barely cost-effective compared with alternative land uses, therefore, it seems improbable that the participants get voluntarily involved exclusively for economic reasons. From this perspective offering indirect benefits (as adopted by BFP) might be a great opportunity to drive engagement of local participants, not only for the BFP but also as a framework for other PES/REDD+ projects to reach more equitable outcomes and permanent benefits. Some of the residents reported that they would prefer technical assistance, better education for their children or better health system as benefits. Conflictingly, regarding this aspect most of the respondents expressed that they are not satisfied with the collective benefits, although they acknowledge its importance, as they believe these will not be available to their communities in short term, as expressed at the group discussion: *“We believe that the best way to get this supply is in the form of collective benefits, if they arrive. The problem is that it is not coming. For example, 3 times already we have cleaned the area where it was promised to put the flour mill and so far nothing, this means extra expense (Community Maracaranã)”*. Other community also cited another example, as receiving the ‘ambulancha’ but the first-aid box arriving only 3 months later. These examples do not reflect the whole situation, they are individual cases. Nevertheless, it should contribute for the BFP proponents and other PES proponents to be aware about it. Also, since the aid is a direct benefit, it may be potentially less sustainable than indirect benefits. Furthermore, Agustsson et al. (2010) recognise that the direct payment in the case of BFP could be unsustainable in the future also on

account of dependence of external financing sources. At the time of this research, however, these same respondents have expressed that in the moment they would prefer to receive a higher amount of money as a benefit instead the improvements.

Most land-management decisions are made at the community or individual land owners levels and therefore, supportive participation and acceptance are critical aspects to any PES intervention. Harvey et al. (2010, 68) states that 'local stakeholders engagement has been one of the most difficult aspects of developing forest carbon initiatives'. This happens on account of the necessity to get support from local residents and other landowners over the long lifetime (minimum 20 to 30 years) of these initiatives and the complexity of ensuring that these local participants will receive concrete benefits in short term (Harvey et al. 2010). Therefore, following the 'Expectancy Theory' of Vroom (1964), this paper argues that the local communities will support PES/REDD+ schemes in the long term if they believe its implementation will bring to them genuine benefits. The theory says that 'people will be motivated to behave in certain ways if they believe that doing so will bring them rewards they value' (Vroom, 1964). Thus, according to Vroom's concept, the project success is dependent on accomplishing the project goals (first level outcome) and reaching the participant's satisfaction as a reward brought by the projects goals achievement (second level outcome). Moreover, according to Chesoh (2010) and Schübeler (1996) participatory relationships are mostly voluntary (also the BFP condition) and the effectiveness of such relations depends on local stakeholders to be convinced that the implementation process will meet their interests.

PES/REDD+ schemes must be flexible to define financial compensations that should be able to address environmental goals and social fairness as well as guarantee better outcomes. This is mainly because in contrast to those who act as the main driver for deforestation with economic purposes, traditional communities and indigenous tribes rely on natural resources only for their subsistence. For instance, indigenous people have expressed concern about possible negative impacts. If forests are given monetary value under REDD+ schemes, many fear that (where

land tenure rights are unclear and decision-making remains top-down) new conflicts could arise among indigenous and local communities and between them and the State. Therefore, it is vital that PES schemes proponents or any other development and natural resources conservation initiatives are aware that participation and local preference need to be considered in decision-making process, design, implementation, maintenance and evaluation of the programmes outcomes (Lane, 1995). This aspect may indicate an essential fundament for a mechanism such as REDD+ to achieve more equitable outcomes. A previous assessment before the implementation should be done to consider the influenced communities' opinions and also to help to foresee probable problems regarding the implementation. The local residents must be allowed to address to the PES proponents predominant problems and specific conditions in their community.

This paper brings to discussion the role of local opinions enhancing engagement providing in this sense some of the essential conditions for a PES/REDD+ schemes to reach different needs from the stakeholders and also existing equitable outcomes. Therefore, the proponents of such schemes must be aware to the points: i) local participation (not only consultation) must be assured in all stages of decision-making; ii) clear information about concepts, rules, benefits and beneficiaries before implementation; iii) transparency and trust-building; iv) permanence of benefits (the benefits must be additional to all participants); v) fairly distribution of benefits; vi) flexibility and vii) the opportunity and transaction costs must be considered in the design.

## **6. Conclusions**

This paper contributes to the current scientific debate on the ability of PES (e.g. REDD+) to provide livelihood improvement for local users of natural resources. According to the findings, indeed the perspective and expectation of most of the influenced communities in the SDR *Uatumã* differ in some aspects from some elements of the Bolsa Floresta Programme proposed objectives. But when working with opinions, a key challenge is the correct identification of potential distortions



that may arise from unfulfilled over-expectations and strategic responses to questions on programme impact. Misperception can transmit a sense of dissatisfaction that may not necessarily correspond with people's behaviour – i.e. people may voluntarily participate and comply with programme rules and criticise the programme at the same time. On the other hand, as mentioned in the text the process of changing behaviour is one of the aims of a PES/REDD+ initiative and, also this process is straightforwardly linked to perception. Thus, it is considered that local perspective and engagement influence the direction and execution of such benefit-sharing activities.

Regarding livelihood flows, it implies that the programme activities are providing improvements on this aspect, especially concerning health and education systems besides the monthly aid, even though the income generation projects are still not providing positive results in all visited communities. However, the analysis point out some possible weaknesses specially concerning social empowerment, cooperative work, local participation and a truly conceived understanding about the PES concept. These topics are discussed within the text and the arguments are based on the real importance of these aspects (straight related to the local view) for the development of such initiatives to achieve genuinely equitable outcomes. In this specific case of SDR *Uatumã*, it seems that some of the participants are not making use of all benefits provided by the BFP activities, because these same participants do not perceive the indirect benefits as concrete benefits. They focus their expectative on the financial asset and hope to receive a higher amount in cash as a reward for their environmental service. Although there are no evidences of concrete reduction of forest loss within the reserve, the PES component seems to reach the goal of forest conservation at least from the interviewee's point of view.

Understanding how PES/REDD+ schemes achieve more equitable outcomes and induce behavioural change at household and community level needs to be further researched, since the designed framework from such schemes varies from case to case, nevertheless some elements can be replicable. Additionally, the BFP due to its large scope needs more studies regarding the relationship between key

actors of BFP and the traditional communities. The proponents of BFP should seek other perspectives about why some of the participants are satisfied with the program and use this information to strengthen their trust-relationship with those who are unsatisfied with the BFP activities. According to Corbera (2010) PES activities draw important lessons for the establishment of REDD+ schemes, particularly related to livelihood impacts of land change-use interventions. In this sense, due to its multidimensional concept, the BFP could be an example to incite the development of more equitable strategies under the same conditions in the future. Moreover, the PES system is changing perspective to reach an international level searching for agreements within the UNFCCC and trying to establish a legal framework for the development of more holistic REDD+ strategies.

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### **Notes**

[1] Currently PhD Researcher at Brandenburgische Technische Universität Cottbus-Senftenberg, Department Civil Law and Public Law with References to the Law of Europe and the Environment, CAPES/CSF scholarship holder, Cottbus, Germany.

[2] Zona Franca Verde it is the Sustainable Development Plan for the South of Amazonas State, developed during the Eduardo Braga mandate (2003-2010).

- [3] Communities: São Benedito, Maracaranã, Maanaim, Flechal, Santa Luzia do Caranatuba, Ebenezer, São Francisco do Caribi, Nossa Senhora do Livramento, Santa Luzia do Jacarequara, Bom Jesus, Monte Sião do Leandro Grande and Deus Ajude o Boto.
- [4] Aniceto Barroso – personal communication – FAS. Date: 15.03.2011
- [5] Luiza Lima, Project Analyst – FAS – personal communication. Date: 15.08.2011

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