Troubled encounters : payments for ecosystem services in Chiapas, Mexico

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ABSTRACT

Payments for Ecosystem Services (PES) are a well-established conservation approach. Where forests are owned by rural and indigenous communities, PES initiatives often aim to incentivize the joint adoption of forest protection and sustainable management practices. In this article we investigate the implementation of PES in a rural community in the state of Chiapas, Mexico. We show that while a majority of the community's landowners has engaged in PES through two distinct working groups, many resist the extension of PES rules to the forests which remain outside the PES program. We argue that this incipient form of fragmented collective action for forest management results from PES accommodating a history of increasing individuation of the commons and entrenched land inequality, which in turn ignites social conflict and fails to strengthen local institutions in a way that these can legitimately deal with the contested interests that underpin the fate of community forests. Overall, in this article we demonstrate the limits of PES when parachuted into a context of uneven land tenure, weak collective action and contested leaderships.

KEYWORDS

Payments for ecosystem services, community-based conservation, forest management institutions, land tenure, collective action, leadership

INTRODUCTION

Payments for Ecosystem or Environmental Services (PES) are one among a suite of market-based, economic instruments conceived to support forest conservation and sustainable land management efforts in a cost-effective way (Ferraro and Kiss, 2002; Jack et al., 2008). PES programs are based on delivering economic or in-kind rewards to forest managers, who should voluntarily maintain or increase the provision of ecosystem services in exchange of such rewards. As of today, there are hundreds of PES programs implemented worldwide, in both developed and developing countries (Schomers and Matzdorf, 2013; Salzman et al., 2018). Pioneering countries include the United States, Australia, Costa Rica, as well as Mexico and Vietnam. The programs diverge in size, underlying regulatory frameworks, the number and type of actors involved, and the volume of financial transactions. Emerging impact assessments of PES programs suggest mixed, but overall positive, environmental outcomes while the evidence regarding social outcomes is more ambiguous (Blundo-Canto et al., 2018; Börner et al., 2017).

Many PES programs have targeted lands owned by rural communities and indigenous groups, who control approximately 11.5 per cent of the world's forests, a proportion which is higher in many tropical countries (Sunderlin et al., 2008; White and Martin, 2002). By channelling rewards to communities and indigenous peoples, government agencies, NGOs or businesses aim to encourage the adoption of more 'formal' forest management rules (Clements et al., 2010; Hayes et al., 2015). They also aim to mainstream such rules into community-based institutions and, in doing so, foster or enhance collective action around forest management (Muradian et al., 2010; Murtinho and Hayes, 2017). Often, PES initiatives have made the rewards conditional to forest use restrictions or specific management activities, and they have provided the necessary technical assistance and related trainings. In specific cases, the provision of incentives has been conditional on the design and implementation of a community forest or land-use management plan, containing scheduled activities during contract duration and ideally beyond (McElwee, 2012; Shapiro-Garza, 2013). This plan is aimed at increasing local capacities for monitoring and enforcing stricter forest management rules or stimulating participation in collective activities, such as preventing forest fires or reforestation activities (Kerr et al., 2012; Yanez-Pagans, 2013).

However, this expected synergy between PES goals, institutional change, collective action and the attainment of both ecological and social outcomes is not straightforward. This is so because the concrete ways in which PES affect local institutions and behaviour are highly contingent on community characteristics, as well as on the development pathway of communities and indigenous peoples (see Shapiro-Garza et al., this issue). First, communities' willingness to participate in PES should not be taken for granted, since the offered rewards might be insufficient to activate collective action. By collective action, we mean a voluntary process of social cooperation that leads to sustainable resource use, which is underpinned by shared principles and interests, and by decision-making processes which translate into acceptable courses of action for all group members (Barnaud et al., 2017). PES rewards and goals are sometimes not aligned with the economic and political interests of community members (Kosoy et al., 2008), and PES altogether might be perceived as a top-down policy or business activity which entails more risks than benefits.

Second, the adoption and sustainability of resource management approaches, including PES programs, will not only depend on the extent to which these are perceived beneficial by communities and indigenous peoples but also by the relative fit of community-level with supra-community institutions, and of PES with local institutions, interactions often referred as 'institutional interplay' (Young, 2002). Institutional interplay concerns how a set of institutions affect one another, which ultimately might influence the dynamics and outcomes they trigger. Whilst horizontal interplay concerns institutions operating at the same governance scale, vertical interplay refers to interactions between institutions across scales. For example, while community members will in many cases be the rightful landowners who are entitled to decide how forests can be used and the corresponding benefits shared (Poteete and Ostrom, 2004), such rights and benefit-sharing systems might contradict legal property rights arrangements and other national legislation, leading to resource management contradictions and unexpected outcomes.

Evidence in this regard suggests that community members might be more inclined to follow rules derived from socially-embedded community institutions than those emanating from external institutions, which are perceived as less legitimate and

effective when it comes to forest conservation (Chhatre and Agrawal, 2008; Rustagi et al., 2010). In the context of PES, the extent to which PES targeting, design and implementation rules align with tenure arrangements can determine program uptake, legitimacy and effectiveness (Corbera et al., 2007). For example, if PES recognize only forms of *de jure* land tenure in their targeting strategy, the landless might become excluded from PES benefits (Corbera et al., 2009). If PES are developed in contexts where other public or private incentives lead farmers and communities to engage in land-use change activities, their effectiveness can be seriously compromised, both at local and regional levels (Van Hecken et al., 2015).

Third, collective action and participation in PES, as well as institutional interplays, depend strongly on existing leaderships and power relations, which reflect competing interests and interpretations over the 'right way of doing things' (Cleaver, 2002). Community leaders can play a critical role in aligning community members' practice and behaviours with the provisions of both community-level and external institutions (Baland and Platteau, 1996). They can influence the processes through which cross-scale forest management institutions are socially embedded into local decision-making procedures; they can build relations of trust and reciprocity between individuals and actors; and they can also accommodate divergent interests and resolve conflicts, constructing the meaning and rationale of some adopted decisions regarding resource use (Adger et al., 2005; Ezzine-de-Blas et al., 2011). Leadership skills can be associated to a formal position but also to an individual's level of influence within a network of heterogeneous actors (e.g. governmental officials, local cooperatives, NGOs, businesses), which can also facilitate power accumulation and result in processes of elite capture (Berbés-Blázquez et al., 2016; Ishihara et al., 2017). Notwithstanding, and as argued above, not all leaders or community members might have the desire or capacity to mainstream institutional change for sustainable resource management, and the existence of past or new conflicts can hamper the capacity of socially-embedded institutions to enhance forest protection (Cleaver, 2002; Klooster, 2000).

In this article, we investigate how a context of uneven land tenure relations, weak collective action, and contested leaderships influences PES implementation in a rural community in the state of Chiapas, Mexico. We provide novel evidence on the extent to which PES incentives interact with socially-embedded institutions to create (or not)

forest governance institutions and their contribution to lasting conservation outcomes (Cardenas et al., 2000; Muradian et al., 2013). In doing so, we reveal the importance of understanding the local institutional conditions, including land tenure and collective action processes, to devise why PES is or not collectively endorsed. We illustrate how and why a community characterized by weak collective action might struggle to implement PES in a way that results legitimate, equitable and thus potentially effective in the long term. Additionally, we also shed light on the fact that, when PES triggers a process of local institutional change, attention to local leaderships is paramount in understanding how and why PES are or not adopted, by whom, and how legitimate and enforceable PES goals and rules might be.

In the next section, we provide some background on Mexico's forest management institutions, at both national and community level, and specifically on the country's PES programs. The third section describes the studied community and introduces our research methods. The fourth section presents our results. We show how PES unfolded at community level and interacted with local institutional arrangements; we explain how PES participants adopted and enforced PES rules, which fit their social-ecological context; and we reflect on the conflicts which arose as a result of trying to extend these rules beyond the PES targeted forests. The fifth section discusses these results by questioning the capacity of PES to build lasting and legitimate institutions for sustainable resource use in a context of uneven access to forest resources, weak collective action, and contested leaderships. The sixth section summarizes and concludes the article.

FOREST MANAGEMENT AND PES IN MEXICO

Property rights and collective action in Mexico's community forests

In Mexico, between 60 and 70 per cent of the country's forests are collectively owned (FAO, 2010; Madrid et al., 2009). Collective property embraces several types of arrangements, namely indigenous communities, agrarian communities and *ejidos*, each type having specific customary and organizational characteristics (Bray et al., 2003). Collective property owes its existence to the Mexican revolutionary decades of the 1910s-1930s, during which peasants and indigenous peoples fought against the unequal distribution of land property characterizing the country since the Spanish colonization.

Distinct peasant revolutionary factions supported the abolition of private property and the restitution of communal lands to create productive properties for subsistence and commercialization purposes.

Political reforms were undertaken then, including a new Agrarian Law in 1915 and a new Constitution in 1917. In its Article 27, the Constitution recognized the State's commitment to expropriate large property holdings in order to serve the public interest. The State also became responsible for granting rural communities the necessary provision of land and water. Communities holding historical land titles and able to justify past expropriations of their lands were to have those rights restored, becoming legally known as *comunidades indígenas*, or *comunidades agrarias*. Those lacking such titles could establish new population centres and were entitled to receive lands, becoming legally known as *ejidos*. Since the mid 1930s and until the early 1990s, thousands of communities and *ejidos* were created throughout Mexico. As of today, there are 32,154 communities and *ejidos* which occupy approximately 50% of the country's land (Registro Agrario Nacional, 2019).

When an *ejido* was established, a group of rightholders called *ejidatarios*, usually the founding members of the community, were entitled to a single plot or several plots of land across the community, but the formal property title encompassed all land within the community and remained collective. If an *ejidatario* died or resigned from his/her land entitlement, such entitlement was transferred to one only successor, often the eldest child or the spouse. All *ejidatarios* are members of the community assembly, which is the highest decision-making body where community rules are approved and negotiated during either monthly or bi-monthly meetings. The assembly is also in charge of electing every three years the executive body of the *ejido*, made up of three members and known as *comisariado ejidal* (hereafter referred as *comisariado*). These three members are responsible for the management of the community's monies (e.g. subsidies, payments), the enforcement of collective decisions and the administration of their lands and forests. Finally, an oversight council (known as the *consejo de vigilancia*), also composed of three members who are also elected every three years, ensures that the decisions of the *comisariado* are in conformity with the assembly decisions. Within an *ejido*, land can be divided in either individual or collective plots, with most *ejidos* reflecting a combination of both (Hausermann, 2014). Collective plots

can be accessed by non-rightsholder community members, known as *avecindados*, on the conditions decided by the assembly. These *avecindados* can also buy, borrow or rent parcelled and non-forested lands from *ejidatarios*, who are often required to consult the assembly before doing so.

Mexico's economic crisis in the late 1980s led to important political, economic and social reforms, which particularly affected collective property and land tenure within communities and *ejidos*. The government ceased its obligation to distribute more land among landless peasants and established the procedures to reconfigure rights over environmental resources and governance relations within *ejidos*. The Agrarian Law of 1992 provided the means for communities and *ejidos* to digitally certify the boundaries of their community and for *ejidatarios* to formally register their land parcels. For this purpose, the government started in 1993 a land-certification program known as PROCEDE (*Programa de Certificación de Derechos Ejidales y Titulación de Solares Urbanos*, in Spanish) aimed at resolving community boundary conflicts and, in the case of *ejidos* only, at registering *ejidatarios*' plots so that these could be exchanged in formal land markets (Varela and Cruz, 2005). When registering their land property, *ejidatarios* could choose to become full owners, opt for a 'semi-private' property certificate, only transferable to someone from outside the community provided the transfer is accepted by two thirds of the *ejido*'s assembly, or resign to the property certificate and remain as a *de facto* landowner whose lands fall under the collective title.

These Constitutional, legal and land titling reforms represented a formal deregulation of collective property and paved the way to the potential privatization of the commons (Moret Sánchez, 2001; Jones and Ward, 2002). By 2017 almost all the country's communities and *ejidos* have participated in PROCEDE or in the certifications programs that followed, such as the 2006-2016 FANAR program (*Fondo de Apoyo para los Núcleos Agrarios sin Regularizar*) and the RRAJA program (*Regularización y Registro de Actos Jurídicos Agrarios*), operational since 2017. However, only 5 per cent of the *ejidos*' total land has been titled as full, and thus freely transferable, private property. This form of titling has taken place in approximately 16 per cent of all the *ejidos* across the country (Morett-Sánchez and Cosío-Ruiz, 2017) and, in the rest, the overwhelming majority of *ejidatarios* have opted for 'semi-private' land certificates.

Furthermore, over 65 per cent of the country's ejidos have titled a share of their lands as 'commons' (Registro Agrario Nacional, 2019).

The participation of communities and *ejidos*' participation in the land certification programs has been explained by several factors: some have aimed to maintain their political relations with government agencies; others have used such programs to resolve internal struggles over land resources; and some got involved because government agents forced local authorities to participate (Núñez Madrazo, 2000). Non-participation, which as noted above has been almost anecdotal, can be explained by unresolved internal and boundary-related conflicts or to a lack of trust in government agencies (Registro Agrario Nacional, 2004; Reyes Ramos, 2008).

Since the 1990s, and in parallel to this process of land reform, Mexico's federal and state governments have promoted law and policy programs aimed at halting deforestation. For example, the General Law on Sustainable Forestry Development (*Ley General de Desarrollo Forestal Sustentable*) requires that both communities and *ejidos* request a government permit to engage in commercial timber production and emphasizes that it is the responsibility of the *ejido* to protect existing forests. At the community level, however, compliance with the Law has been mixed. Some communities have been able to develop their own community forestry enterprises, often relying on a hybrid combination of community governance, entrepreneurial organisation, and governmental regulation (Merino-Perez, 2013; Wilshusen, 2009). Other communities, in contrast, have not been able to obtain or renew the government permit for timber extraction, mostly because they had exploited their forests without the permit or had exceeded their exploitation quotas. Regardless of communities' access to logging permits and their ability to self-organize, illegal wood extraction, corruption and social conflicts related to forest management are common in many communities throughout the country (Harvey, 2007).

PES programs in Mexico

Alongside Costa Rica, Mexico has been a pioneer in the implementation of national PES programs in Latin America, with more than 2.6 million hectares (ha) of the country's forests under a PES contract in 2014 (Alix-Garcia et al., 2015). In 2003, the country's National Forestry Commission (*Comisión Nacional Forestal*, CONAFOR),

with the technical and financial support of the World Bank, was commissioned to design and implement three PES programs of national reach, focused on the conservation of watersheds, of biodiversity, and on the enhancement of carbon dioxide sequestration through tree planting. While the carbon sequestration program was cancelled a few years later (see Corbera et al., 2008, pp. 1969-1973, for details on this program's performance), the first two have changed their design and targeting criteria over time, and they have inspired the development of regional PES programs (Shapiro-Garza, 2013). The legal basis for PES development is found in the country's General Law for Sustainable Forest Development, passed in February 2003, and a modification of Article 223 in Mexico's Law of Rights. The former defined the concept of ecosystem services and the latter established the necessary financial mechanisms to support the programs' funding over time (Corbera et al., 2009).

In Mexico's PES programs, voluntary applicants, which can include private landowners, agrarian or indigenous communities, *ejidos*, associations of communities or a group of *ejidatarios*, are selected by CONAFOR on the basis of pre-defined criteria that include the ecological characteristics of the community forests, the existence of state-endorsed or NGO certified forest management plans, and poverty indicators, among others (Caro-Borrero et al., 2015; Ezzine-de-Blas et al., 2016). The federal budget allocated to PES programs has always been insufficient to cover all eligible applicants, and some of these have thus been encouraged to re-apply for funding the following year (Rodríguez Robayo and Ávila Foucat, 2013). Selected applicants receive a five-year annual fixed payment per hectare, which is conditional to the design of a forest management and conservation plan during the first year of the contract. This plan aims to restrict the use of and access to the targeted forests during the contract length and it includes the implementation of locally-suited conservation activities, such as the establishment of forest guard brigades and the performance of fire and pest control activities (CONAFOR, 2013). CONAFOR pays a complementary sum to an independent certified forestry consultant who should support the development, implementation and monitoring of the forest management plan and who is chosen by PES applicants themselves (Figueroa et al., 2016).

Since 2010, CONAFOR has also sponsored 'early' regional programs of Reducing Emissions from Deforestation and forest Degradation and enhancing or sustainably

managing forest carbon stocks (REDD+), which consist of a portfolio of conservation, reforestation and sustainable forest management activities, often organized around (but not limited to) PES programs. REDD+ programs have targeted the coastal watersheds of the state of Jalisco, the tropical rainforests of the peninsula of Yucatán and biological corridors in the state of Chiapas (Bee, 2019). Where overlapping, REDD+ programs substitute PES programs by introducing a higher payment level while also compelling participant communities to design a comprehensive land-use planning document. In theory, this document should be designed with the participation of all community members, and it should include a set of actions directed to halt land-use change or expand forest cover within and beyond PES areas. When our fieldwork took place (between 2014 and 2015), CONAFOR was actively promoting the implementation of a REDD+ program in the research area.

THE EJIDO OF FLOR DE CACAO

Settlement and land tenure history

Our study was conducted in *Flor de Cacao* (FdC), an *ejido* in the municipality of Benemérito de las Américas, in the state of Chiapas, Mexico (Figure 1). We selected FdC for our study because it is situated in the recently colonized forest-agriculture frontier of the state of Chiapas, bordering Guatemala. Many *ejidos* in the study area were established in the 1980s by landless settlers. The historical lack of political representation of these remote communities, associated with internal conflicts and inequalities, have constituted barriers to the emergence of institutions enabling conservation and sustainable forest management. Furthermore, over the last 40 years, this region been characterized by rampant deforestation, caused by a combination of ineffective land-use planning, agricultural development policies, and population growth (de Vos, 2002). Despite numerous state-led conservation policies and programs during the 1990s and 2000s, including the establishment of protected areas and the conflictive enforcement of logging bans (Harvey, 2007), deforestation continues today, mostly driven by the expansion of cattle ranching, African palm and rubber tree plantations (Castellanos-Navarrete and Jansen, 2015). Therefore, FdC provided us with an ideal case to examine the ways in which a context characterized by weak collective action influenced PES implementation, and to explore how the latter influenced the introduction of more sustainable forest management institutions.

[Insert Figure 1 here]

In 1984, FdC was formally recognized by the State as an *ejido*, with 9,516 ha legally titled as commons (Table 1). By then, FdfC included 184 Tzeltal families who had settled in the area in the late 1970s, encouraged by existing governmental incentives to colonize Guatemala's border (Carabias et al., 2012). Each household head was recognized as an *ejidatario* and was entitled to approximately 20 ha of land, located around the residential area. This land has been used for slash-and-burn agriculture and cattle grazing, with most families extracting fuelwood from the plots they left forested or under fallow until recently. The remaining 5,800 ha of forests located further away from the residential area remained as forest commons, but no further rules of access or use were developed, other than prohibiting families to appropriate land in the commons for agriculture. Selective logging for timber and wildlife hunting required a permit from the community authorities, in compliance with legislation. Over the years, resource use in this area has steadily increased, with wildlife hunting, timber extraction and cattle ranching being on the rise since the early 2000s.

[Insert Table 1 here]

During the 1990s and 2000s, several waves of families arrived to FdC from elsewhere in the state or the country, settled as *avecindados*, and bought land for subsistence farming in either areas that had not been formerly distributed among *ejidatarios* or on lands previously managed by the early settling families. In 2011, the situation of these families changed when the community participated in the FANAR program, mostly to access public subsidies, including PES, and in doing so overcoming its earlier reluctance to participate in PROCEDE. The certification program stated that FdC counted with 1,655 inhabitants and 9,812.59 ha of forests and agricultural lands, and with another 200 ha occupied by the residential area, the schools, roads, rivers and one military station to control illegal trade networks operating along the Mexico-Guatemala border.

FANAR certified the land plots of 308 *ejidatarios*, of which 124 were former *avecindados* and 25 were female. None of the *ejidatarios* opted to acquire full private

property rights or 'semi-private' property certificates. FANAR certified that all forests and agricultural lands were to remain collective, i.e. with each *ejidatario* only holding *de facto* ownership over her/his lands. However, as part of the certification process, the *ejido* assembly decided to divide what had been known until then as the forest commons into 30 ha plots, which were in turn distributed across the founding *ejidatarios*. In a nutshell, FANAR was used by *avecindados* to become *ejidatarios* and to get their land and political rights recognized, and by the founding *ejidatarios* to extend their land endowments and control what was previously considered collective land. FANAR also supposed a considerable increase in the number of *ejidatarios*, which complicated the assembly's decision-making processes and in turn favoured the emergence of specific committees which today act as decentralized management structures subordinated to the community assembly (Figure 2).

[Insert Figure 2 here]

Committees are used to manage the school, the local clinic, and the water distribution and sewage system, and to collect the electricity bill fees. FdC also counts with six working groups that bring together families who participate in state programs or productive projects and enjoy a relative autonomy *vis-à-vis* the community assembly (Wilshusen, 2009). Two PES-related working groups and another group which implemented reforestation activities through another component of the 'early' REDD+ program were established with the aim of conserving and managing forests. The other three groups bring together those who participate in the state's PROAGRO program (aimed at improving rural producers' income); the PROSPERA program (aimed at increasing schooling and health check-up rates); and a palm oil plantation cooperative.

Research methods

Data collection relied on several methods, deployed over six weeks of community level research (February-March 2015). During this time, the second author conducted open-ended interviews with 20 individuals: five *ejidatarios* and their spouses involved in the first PES contract, seven *ejidatarios* involved in the second PES contracts, six *ejidatarios* not involved in PES and two *avecindados*. He approached other *ejidatarios* for interviewing, but they declined our invitation. Interviews lasted about an hour and a half and addressed the history of the community, local livelihood activities, people's

participation in the *ejido*'s collective decisions and activities, motivations to (not) join the PES program, and the actual functioning and outcomes of the latter. Some interviews were not recorded and, in these cases, notes were taken after each conversation.

Two focus groups of one hour each were also used to gather information on the historical and socio-political events that had shaped people's lives since FdC's establishment and on the evolution of forest management institutions. The first group involved six male *ejidatarios* invited by the leader of the first PES contract, and the second involved six women from households involved in both contracts (four *ejidatarias* and two spouses of *ejidatarios*). As women were underrepresented in the community assembly, involving women in a focus group became a suitable way to gather their views on collective decision-making and forest management institutions.

Interviews and focus groups were performed in Spanish, which is spoken and understood by approximately 75 per cent of the village's population (2010 census data). Most villagers speak Tzeltal, but fluency in Spanish is required by any individual involved or willing to participate in collective decision making or transactions with external officials and researchers, who most often do not speak Tzeltal. The second author also spent time observing people's daily activities and participating in scheduled PES activities, and he frequently engaged in informal conversations with local household members and the PES consultant.

PES EMERGENCE AND IMPLEMENTATION

New groups, old leaderships

As noted above, FdC has never had strong institutions for the management of the (now former) forest commons. These forests have never been managed for a collective benefit and they have started to degrade recently, as a result of growing population pressure and profitable cattle grazing activities. In this context of an apparent lack of interest for forest conservation at community level, the PES program was introduced by a forest management consultant in 2011. Many *ejidatarios* mentioned during our interviews that they had problems understanding the program's rationale when it was introduced to them, including where payments came from and the purpose of PES activities. The idea

of receiving a payment in exchange for forest conservation was perceived as bizarre, because previous enforcement of forest conservation in the region had involved sanctioning or somewhat unconditional incentives for reforestation. Additionally, the uncertainty involved in writing the PES application with the consultant's support, without any guarantee of such application being accepted, was perceived as too risky. This lack of understanding about the PES program and people's mistrust on the government's intentions led the *ejido*'s assembly to vote against their participation in PES.

However, after the assembly's decision, several *ejidatarios* remained interested in learning about the potential benefits of the program, including two prominent individuals: a prominent livestock farmer (hereafter referred to as the Working Group 1 (WG1) leader) and the president of the *comisariado* at the time, who served the community as its principal authority between 2011 and 2014. Both men were recognized leaders with persuasive power, mainly due to their economic status, their charisma and the fact that both had a wide social network outside FdC; the former, as part of his business activities, and the latter through his political responsibilities in the municipality of *Benemérito de las Américas*. Both men visited other ejidos involved in PES and obtained information about the PES program. This information gave them confidence that the PES program would effectively provide benefits and it would not put at risk their land entitlements. Subsequently, these two individuals discussed the possibility of submitting a PES proposal with other *ejidatarios* belonging to their social networks, including livestock farmers and other prominent founding *ejidatarios*. Acknowledging the difficulty of obtaining a majority in the assembly that would back a community-based PES program, the WG1 promoter and the *comisariado* proposed a group-based PES application. In a WG1 member's own words:

> *'So, we did it. We set up a group. We shared the information and we presented our proposal to the assembly. Those wanting to join, those who were volunteers, those who wanted to conserve their forests, they just had to write their names on the list to join the group. At that time, most people didn't want to join the program.*' (*Ejidatario*, member of WG1)

A group-based application aligned well with the prevailing community practice which permitted using individual plots as desired and developing working groups for specific projects. Therefore, while a majority in the assembly was still opposed to PES, they could not challenge the right of some *ejidatarios* to submit a proposal as far as such proposal concerned only the applicants' forested plots. The fact that the president of the *comisariado* was interested in joining WG1 also contributed to persuade many *ejidatarios* to participate in the group-based application, who joined under the condition that PES activities would never affect standing forests outside the PES-targeted lands. The subsequent endorsement of the group-based application by the assembly, a few months after the original rejection, was critical for WG1's application to proceed, since CONAFOR has always required the community's approval before authorising any group of *ejidatarios* to participate in PES.

In preparing the PES application, the WG1 leader took most decisions collegially with the assistance of seven other *ejidatarios* who had also a prominent role in the community's economic and social life. These individuals emphasized to us that they had opened WG1 to as many community members as possible, but they were only successful in attracting *ejidatarios* who already held such condition before the community's participation in FANAR. This suggests that formal land rights were not -in theory at least- a constraint for participation in WG1 and it also indicates that confidence in the PES program was higher among some of the former *ejidatarios* than among those who had only recently been recognized as such after FANAR. This can be explained by the fact that the former owned more forested lands, while the latter had only recently got their land and political rights recognized. The former also probably perceived the PES program as less risky and less threatening to their property and social condition.

Sixty-three *ejidatarios* participated in the proposal submitted to CONAFOR for PES funding. In the PES application, WG1 members put together between 20 and 40 ha of forests each, mostly located within the forest commons, and under the condition that any PES activities in the future would not impinge negatively on the rest of the community, including the *ejidatarios* who had not joined the group (and who now had de facto ownership over a share of the forest commons). As we show later, this ended up not being the case. WG1's application was successful, and the PES contract with

CONAFOR included 1,820 forested ha, resulting in individual payments of approximately 42 US$/ha, with each group member earning according to his contribution in ha to the PES contract. During the first year of implementation (2012), however, CONAFOR realized that the applicants' forests fell inside the targeted areas of the Chiapas early REDD+ program and thus increased the monetary payment to approximately 77 US$/ha.

By the end of 2012, a growing number of *ejidatarios* who were not participating in PES realized that WG1 participants were paid with no apparent negative effects on their land tenure security. Consequently, they asked the WG1 leader to join WG1 but, in the words of the former president of the *comisariado* (2011-2014), they faced strong opposition:

> '*What did [the newly-interested ejidatarios] want? That we share our money with people who initially refused to participate in the program? This cannot happen, we have a contract [with CONAFOR] and we have complied with the rules so far*.' (President of the *comisariado* 2011-2014, and member of WG1)

A non-WG1 *ejidatario* discussed the possibility to develop a new PES contract with CONAFOR field officers and the forest consultant supervising the activities of WG1. This individual was a post-FANAR *ejidatario* who had bought considerable land in FdC during the mid-2000s. He was known for his entrepreneurial skills: he was the only one in the community who owned a tractor and he had been a pioneer in the introduction of rubber trees. As part of his business activities, he also had an important social network outside FdC, which allowed him to gather his own information about the PES program. He was able to convince a group of 90 *ejidatarios* to create a second PES group (hereafter referred to as WG2) by the end of 2012: their application was endorsed by the assembly and accepted by CONAFOR in 2013, and it encompassed a total of 629 ha.

Our interviews revealed that the WG2 leader personally helped many *ejidatarios* to comply with the administrative requisites needed to join the group, but he took most decisions regarding the forest management plan and benefit-sharing unilaterally, acting as the unique intermediary between the forest consultant and WG2 members. His involvement in the application process increased his prestige at community level, and

this was a key factor in his election as the president of the *ejido* in 2014. Soon after his election, the WG2 leader submitted another proposal for the enlargement of WG2, which was approved by CONAFOR that same year. Ninety additional *ejidatarios* joined the PES program and added about 822.57 ha to the previous 629 ha.

WG2 finally encompassed 1,451 ha and 180 *ejidatarios*- both former and post-FANAR ones- who brought between 5 and 25 ha of forests into the PES scheme. Some of these areas were located in the forest commons and others were near the residential area. Payments to individual members were not proportional to the number of ha brought into the contract, since a few (including the group's leader) did not own land with standing forests. A share of the total annual payment was allocated to those members of the group who did not have standing forests, while a larger share was allocated to those who had contributed with land, in order to compensate them more for their effort. We estimate that WG2 members who did not include any land in the PES contract received a payment of approximately 53 US$/ha in 2013, while the larger contributors received about 61 US$/ha (Table 2).

[Insert Table 2 here]

As shown in Table, 2, WG1 and WG2 members' socio-economic profiles somewhat diverge, with WG1 including *ejidatarios* with larger land entitlements -of both agricultural and forest lands- as well as more material assets than WG2 members on average. Additionally, WG1 members are more likely to have occupied executive and managerial positions at community level than WG2 members. The latter, however, represent now the majority of the community's *ejidatarios* (180 over 308) and their leader has over time increased his political relevance and his decision-making power at community level. Several *ejidatarios* noted to us that such increasing power had a lot to do with his ability to enlarge the PES program and benefit a greater number of families, but also said they were afraid of losing their payments if they would speak up against him in the future.

As regards payment levels, both WG1 and WG2 members told us that they aimed for higher payments but also recognized that they were quite satisfied with the program benefits (Costedoat et al., 2016). Several beneficiaries mentioned that they used

payments to borrow arable lands located near the residential area of FdC, and particularly in the alluvial plain at the east of the residential area that is considered to be more productive for the cultivation of maize and beans. The WG1 leader noted to us that he aimed to invest PES revenues in intensive cattle raising activities and use his land under the PES contract as a collateral to borrow additional money for such purpose.

By early 2015, WG1 members had started to discuss (internally and with the forest consultant) the possibility to renew their contract. A third group of approximately 25 pre- and post-FANAR *ejidatarios* wished to establish a third working group, but faced the opposition of the WG2 leader, who as noted earlier was the *ejido*'s president at that time. When prompted about this issue in an interview, the WG2 leader noted that he could not formally refuse the establishment of a third group, but that he was suggesting them to join WG1 or WG2 when these renewed their contracts. At the time of writing, we found out that WG1 had indeed renewed the PES contract for another five years, now encompassing 1,900 ha, and we were told that WG2 had not yet done so. The latter was probably a delay in the renewal process, as the Mexican government changed in July 2018 and government programs were then put at a standstill. We do not know if the third group of interested people had joined WG1's renewal or if they were planning to join WG2.

Short-term collective action and conflict

Although the PES program suggests that the design of the applicants' forest conservation plans should be participatory and involve all participants, both plans in FdC were designed by the WG leaders and the forest consultant, with little participation from their respective group members. The plans of both groups include the prohibition of logging, grazing and hunting within the contract's area and the obligation to participate in collective activities, such as creating and cleaning firebreaks, removing trash near forested areas and putting up signposts to inform about PES participants' obligations.

At the start of each contract, signposts indicating the existence of the PES program were placed near the forests that were included in the PES contracts. Twice a year, both groups collected waste along the road in order to minimize fire risk; established and

maintained firebreak fences along the borders with the neighbouring *ejido*; and patrolled the PES parcels periodically through a forest monitoring brigade whose members rotated every year. Both WGs often scheduled such activities during the same week, usually after being reminded by the forest consultant. Participants also contributed in-kind to the daily expenses of these activities, for example by providing food or gasoline. Labour days were unpaid but mandatory to receive the PES annual payments, and a presence list was used to control for any missing participant. Female members from both WGs did not participate in such activities, as a social norm prevents women from participating in collective outdoor activities. Nevertheless, participating women sent a male relative in order to remain eligible for PES payments. According to our interviewees from both WGs, these PES activities proofed that forest conservation in the PES areas was taken seriously by community members.

When forest plots were found degraded during random visits of CONAFOR field officers, those responsible of contract violations were warned that payments would be cancelled if PES parcels continued degrading. According to our interviewees, fuel wood extraction and wildlife hunting had diminished, particularly in the forests subject to payments, but continued apace in non-PES forests, with cattle ranching activities expanding throughout the community. Therefore, it is not surprising that, when our interviewees were prompted about the possibility of extending conservation goals beyond PES areas, they challenged such idea on either practical or ideological grounds. It was argued that many in the community aimed to change land-use in their forested plots in the future while a few others would oppose so because they stand the idea of conserving for the benefit of distant 'others'. Our interviewees emphasized that, until the arrival of PES, permits for hunting and logging in standing forests were easily obtained. But this situation changed in December 2014, when the *comisariado* refused to grant a logging permit requested for some non-PES forested plots. As noted by an affected individual:

> '*Before, nobody could tell me what to do with my trees, because each of us is the owner of his parcel. But now, with the PES program, it is forbidden to cut trees. [The consultant] said it only concerns members of PES working groups, but the comisariado says everyone is affected*.' (Ejidatario, not involved in PES).

After this incident, and during a community assembly held at the end of 2014, the *ejido*'s president and WG2 leader argued that such ruling responded to CONAFOR's REDD+ program provisions, which encouraged communities to protect all their forests -with or without PES-. To our knowledge, however, this is not mandated by the REDD+ program and was probably a strategy of the WG2 leader to increase the areas eligible for PES in a future (enlarged) contract. This would allow him to gain further political control over a larger share of the *ejido*'s forests, and to halt land-use change in areas that current participants did not enrol in the PES program. Concurrently, some *ejidatarios* openly accused the WG2 leader of making a unilateral decision and of misusing community funds and WG2 payments for his own benefit (this last accusation being recurrently held against many *comisariados* but rarely proven with evidence).

In April 2015, a majority of *ejidatarios* forced the president of the *ejido* and WG2 leader to resign as a community authority. Some WG2 members also supported this impeachment process, since they were unhappy with the money that they had received in comparison to WG1 members and they complained that the president had benefited from PES without owning forests himself. However, after his resignation, the former president continued as WG2 leader, partly because nobody else was willing to replace him and he still had the respect and gratitude of many WG2 members. We do not know if the benefit-sharing rules of WG2 or the PES contract have changed as a result of this conflict, or if logging permits outside PES parcels are now granted again, because we have not returned to the village since fieldwork concluded.

In summary, the described dynamics demonstrate how the lack of a shared collective purpose for the forest commons in the past did not preclude many community members to engage in PES and enforce forest management rules that had not previously existed. The rules prescribed by the PES forest conservation plans should thus be considered additional from both a conservation and institutional perspective and, potentially, a first step towards enhanced collective action over forest resources. However, the results also show that such rules were adopted without consulting most PES participants, as well as non-applicants, and leading to misunderstandings and a conflict over why forest protection should be extended beyond PES parcels. In other words, the WGs leaders have persuaded many to jump on the PES train without much discussion and debate,

using their political authority to circumvent scrutiny and criticism from both their WG members and non-participants.

BENEATH INSTITUTIONAL INSTERPLAY: SOCIAL EXCLUSION AND COMPETING VIEWS OVER LONG-TERM FOREST CONSERVATION

The story of PES in FdC demonstrates that PES adoption and implementation, at least in the short term, depend strongly on the ability of PES objectives to align with local land tenure institutions and livelihood trajectories (Corbera et al., 2007; Osborne, 2011). PES never operates in a vacuum, but rather in an evolving social-ecological context, where tenure institutions are fluid and livelihood trajectories far from pre-defined (Shapiro-Garza et al., this issue). FdC is a clear, yet a common example of a rural community of the Mexican forest-agriculture frontier, where the *de jure* land commons determined by national legislation underlie an evolving and quasi-private land tenure regime, in which rightholders exercise control over weak forest management institutions. Our research has demonstrated that, in such a context, some relatively powerful individuals can easily take advantage of PES to maximise economic and political returns, and that PES can in turn alter local institutions and personal relations in ways that may lead to social conflict or distrust (Milne and Adams, 2012; Rodriguez-de-Francisco et al., 2013). These findings resonate with other empirical research of PES and REDD+, in Mexico and elsewhere, which has shown that these incentive-based conservation mechanisms can contribute to recentralize political and/or state power, thus reversing decentralization trends in natural resource governance (Bee, 2019; Milne et al., 2019; Hoang et al., 2019).

The conflicts ignited by PES in FdC have been multi-faceted and have evolved over time. PES first induced a conflict between the leaders of WG1 and the prospective leader of WG2, who was unable to join and involve others in the WG1's PES contract. Subsequently, PES has resulted into a conflict between some PES participants and other community members affected by the WG2 leader and other authorities' decision to prohibit logging in forests outside PES areas. The reason why these evolving conflicts have not yet precluded the implementation of PES can be explained by the fact that participants are in general satisfied with the payments received, to the extent that WG1 has already renewed the PES contract. This suggests that some of the practices

introduced by PES are likely to continue as long as payments are guaranteed. This renewal of the PES contract is by no means exceptional among the thousands of communities involved in Mexico's PES national programs, which have steadily increased their geographical reach over the past 15 years (Ezzine-de-Blas et al., 2017).

However, PES relative success can also be explained by its institutional malleability. Mexican rural communities have easily adapted PES rules to their local institutions and development pathways: PES programs allow communities to apply in groups, not necessarily involving the whole community, because the central government is aware of existing social and political divisions, the uneven distribution of forests across landscapes and properties, and of the fact that not all rightholders might be willing or able to participate in PES. In other words, PES rules match well with a local reality that is often characterized by an increasing individuation of the commons and rather loose community rules when it comes to forest management and conservation. This positive vertical interplay also concerns the types of activities to be developed, which are by no means difficult or costly to implement and require a few days of collective work per year. Seemingly, these activities do not contravene the rules imposed by state institutions, such as requiring permits for wildlife hunting and commercial logging, which also facilitates the landing of PES in Mexican *ejidos* and communities.

However, we argue that such local appeal from a pecuniary perspective and such institutional fit also contribute to mask entrenched social inequalities in access to power and land (Cleaver, 2012). In FdC, WG1 members were able to participate in PES even if the majority of the community assembly was unwilling to do so. They persuaded the assembly about the righteousness of PES because the group involved a charismatic leader, who was also the president of the community at the time and thus possessed moral and legal powers. He mostly invited original *ejidatarios* in WG1 and left behind the more recent ones. In the case of WG2 members, their ability to get their application endorsed was explained by their leader's social and political influence, as he had become the principal authority of the community in 2014. WG2 was much more diverse, but its members more economically and politically marginalized than WG1 members. PES inadvertently contributed to strengthen the privileged position of some individuals over others, and in doing so might potentially increase the political and economic gap between participants and non-participants over time (Hendrickson and

Corbera, 2015; Rodriguez-de-Francisco et al., 2013). As for most PES participant communities in Mexico, the few *avecindados* in FdC were not able to participate or benefit from PES because, as our interviews revealed, they lacked the necessary social connections and only rarely became involved in community activities which were concomitant on land ownership.

These uneven power relations derived from institutional hierarchies or social hierarchies and the uneven access to land rights can by themselves jeopardize the implementation of PES or any other policy program in the future, particularly if they lead to acute social grievances and revolt by those willing to claim land or power (Milne and Adams, 2012; Osborne, 2011; Van Hecken and Bastiaensen, 2010). If such conflicts do not escalate, they often remain hidden behind stories of successful PES adoption or purposively ignored by PES promoters, to the extent that tackling the root causes of social discrimination might challenge existing tenure and power relations and put local participation in PES at risk (Büscher, 2012; 2014). Therefore, despite the apparent success of PES in fitting the local institutional context and aligning with the economic interests of most community members, we cast doubt on the long-term sustainability of PES in FdC based on two evident factors. First, PES activities rest on a poorly designed land-use plan and, second, they are confronted with increasingly polarized views and unresolved conflicts over the desirable fate of the forest commons and over the PES program itself.

Earlier we indicated that the land-use planning process which led to the definition of PES goals and activities in both WGs did not involve the majority of PES applicants. Both WG leaders were unable or unwilling to share the necessary information about PES across all community members and to dedicate sufficient time and community resources to develop the forest management plans. This behaviour did not contribute to create a culture of inclusive and participatory decision-making, which is necessary to ensure that new forest management institutions become better understood and legitimate at the local level (Lund, 2015). In Chiapas, or other areas of the country where conservation efforts have historically resulted in social conflicts, PES promoters should dedicate more time and resources to explain initiatives like PES and make sure their benefits, costs and potential dangers are well understood. This is particularly important in terms of guaranteeing the long-term sustainability of the program. External actors,

including external consultants, NGOs and CONAFOR officers can play an important role in catalyzing the collective adoption and legitimate enforcement of new forest management rules, if they take into account the diversity of values and interests of community members involved in or affected by changes in forest management (Muradian et al., 2013; Oldekop et al., 2013).

The future of PES activities may be further compounded by the fact that PES rules in FdC contravene the interests of the non-participant *ejidatarios* and that such rules have not been legitimately accepted and sanctioned by the whole community. We are inclined to believe that, since the forest commons do not exist as a collective good since FANAR was implemented, conflicts over resource use are likely to rise. A clash between those who would like to restrict forest use and maximize collective action for conservation and those who would prefer the further fragmentation and transformation of the remaining forests may be inevitable. These competing views on the role and fate of forests in FdC also exist in relation to PES: whilst the WG1 leader understood PES as a mechanism to channel investment or use as collateral for other productive individual activities – which could result in the conversion of other non-PES standing forests -, the WG2 leader tried to use PES as a means to enforce new rules over all standing forests and to capture more political power and future pecuniary benefit. These insights combined represent rather antithetical perspectives on the future of the community's forests and PES program, and they suggest that there is not a shared collective vision of the community's land-use and development future.

CONCLUSION

We set out this manuscript to analyze how a context of uneven access to land, weak collective action and contested leaderships influenced PES implementation in a rural community in the state of Chiapas, Mexico. We aimed to shed light on how PES might be able to build long-lasting conservation institutions at local level. We have demonstrated that a challenging context does not preclude the adoption and implementation of PES and a relative success in meeting conservation goals in the short-term. However, we have also demonstrated that using PES as a means of establishing legitimate and more long-lasting institutional arrangements is a more difficult endeavour.

If collective action and institutional building efforts are not perceived as legitimate and equitable by the whole community, they are unlikely to deliver satisfactory social and ecological outcomes in the long term (Chervier et al., 2017; Murtinho and Hayes, 2017). WG leaders in FdC mobilized their social and political power to encourage the adoption and increasing uptake of PES at community level, which was in turn grounded on a rather centralized decision-making style. Additionally, one of them used his political power to extend conservation efforts beyond PES areas, causing a social conflict and unearthing the community's divergent views on the desirable future of local forests. The case of FdC neatly shows that changing or creating new resource management institutions at community level (or beyond) requires negotiating power and responsibility between actors at different scales (Adger et al., 2005; Olsson et al., 2004), as well as establishing procedures to resolve, rather than to ignore conflicts over resource management, in order to improve trust in institutions and between stakeholders (Andersson et al., 2018).

To conclude, the example of FdC also makes evident that PES are not a one one-size-fits-all policy which can straightforwardly build new community capacities for forest management and conservation (Chhatre and Agrawal, 2008; Muradian et al., 2013). Instead, it shows that PES design and outcomes are critically mediated by the local context, and specifically by the evolution of community-based institutions, including social, tenure and power relations, and by the always changing configuration of local livelihoods which can either support or limit the consecution of PES objectives. When PES programs meet a community where uneven land tenure, weak collective action and competing leaderships and interests predominate, one should expect troubled encounters with unexpected outcomes.

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