EF-to-EF Mentorship program between Fondo Acción and Mulanje Mountain Conservation Trust Fund (MMCT)

Project K: RedLAC-CAFÉ Knowledge for Action Project

Mentor Fund:

Fondo Acción

Mentee Fund:

Mulanje Mountain Conservation Trust (MMCT)

Theme:

Payment of Ecosystem Services (PES)

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Case Study

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1. Executive summary

This case study shares the experience of **Fondo Accion** (FA) in the implementation of two Payment of Environmental Services (PES) schemes in Colombia. The document is intended to share the lessons learned on these two PES experiences with **Mulanje Mountain Conservation Trust** (MMCT) and other RedLAC and CAFÉ affiliate funds. Furthermore, it provides clear and relevant information about the favorable conditions for an efficient performance of this financial mechanism in the preservation of biodiversity and other environmental services, as well as about issues that may hinder its performance.

This case study analyses the interaction between MMCT and Fondo Accion while sharing the experience of two PES schemes in Colombia. One of them addresses hydric ecosystem services in one municipality in the Andean Region, San Vicente de Chucurí, where users of the ecosystem service (ES) make in-kind payments to the service providers. The other scheme is implemente d in several municipalities in seven different regions of the country, where the international community makes payments in cash to cattle farmers for two different ecosystem services: biodiversity conservation and carbon emission reduction.

Both Environmental Funds (EF) visited their counterpart home country, exchanged experiences in management and project development, and had a field trip to see the projects first hand, interact with operators and beneficiaries, and identify relevant lessons learned.

The main results from the PES analysis in Colombia show that the initiatives were promoted by a third party interested in the conservation of at least one ecosystem service and relied on international funds for their design and initial implementation. One important finding is that the sustainability of PES schemes is challenging. They require constant funding for a long period, and it is crucial to find different funding sources, identify the main demand for the environmental service and implement strategies to keep all the parties committed and motivated. They also rely on the constant presence of professionals at the local level, interacting periodically with the main stakeholders (users and providers of the ES), and –in the case of Fondo Accion initiatives– delivering technical assistance to guide the transformation of agro-ecosystems to increase their productivity and compensate for the land devoted to conservation and provision of relevant ES, according to a farm plan.

Another significant lesson is that the success of the PES depends heavily on building and maintaining trust between all stakeholders involved: donors, public officials, users, providers, implementing agencies, operators, etc. This process needs time and deep commitment to timely fulfill all the commitments agreed in the design and outreach of the project.

2. Background (context)

The activities took place as part of the *Knowledge for Action Project* (Project K), between Fondo Accion, from Colombia, and Mulanje Mountain Conservation Trust (MMCT), from Malawi.

MMCT is an environmental endowment trust funded by the World Bank and the Global Environment Facility. Its objective is to promote the conservation of the Mulanje Mountain Forest Reserve biodiversity, and the empowerment of local communities who depend on the sustainable use of its natural resources.

Fondo Accion is a non-profit Colombian organization that believes in the power of local communities to change the world, provided they have the right support and proper technical assistance. It was created in 2000, by the government of the United States of America and Colombia. Initially created to execute a bilateral debt for natural swap, the fund today executes funds from multiple donors.

This knowledge exchange was a fruitful opportunity for both EFs. On one hand, MMCT was interested in learning about PES schemes in order to assess the possibility of implementing them as one of the strategies to fund the recently created Shire Basin Environment Support Trust – BEST. On the other hand, Fondo Accion had supported the implementation of two such initiatives since 2010. Both initiatives have significant lessons to share with other interested EF and the general public.

3. Mentorship Objective

To provide MMCT with relevant knowledge on minimum conditions to design, implement and consolidate PES initiatives, including lessons learned and recommendations, using two PES initiatives funded by Fondo Accion as case studies, one managed by an organization called Manantiales de Chucurí in Santander and one as part of the Sustainable Cattle Ranching Project (SCRP) in Colombia

3.1 Objective of the MMCT Mt Mulanje PES

Mt Mulanje in Malawi is a Global Biosphere Reserve and state Forest Reserve that has the direct financial assistance from MMCT for the conservation of the endemic biodiversity, unique ecology and for the wise use of its rich natural resources. With high rainfall, Mt Mulanje's significant water resources can be utilized for a variety of purposes for local community benefit and to sustain this with planned watershed catchment management activities.

MMCT established the social enterprise Mulanje Electricity Generation Agency (MEGA) to generate and distribute electricity to village homesteads and businesses both for local socio-economic improvement and to provide funds for catchment management through a *Payment for Ecosystem Services* approach. The need for a high standard of catchment management was underlined by a major storm experienced in January 2015, which caused widespread death and destruction that severely affected the riverine power generation infrastructure.

To date:

- MEGA is a fully authorized IPP with both generation and distribution licenses.
- 1 power scheme has been completed and 2 additional are under construction.
- 50kW were reliably available for the past 2 years and will expand to 200kW within the next 12 months.
- Over 20km overhead power cable mini-grid are already in place and will extending 3km each month.
- 300 households, 25 enterprises, 2 schools, and 1 clinic are connected to power.
- Prepaid metering system is fully installed thus enabling variable tariffs.

The scale of the area of intervention is less than 10km^2 but this is a pilot PES that will have guaranteed long-term support and could be expanded to other areas around the mountain with involvement of other downstream water users.

An Innovation Seed Fund grant from Project K with counterpart funding from Practical Action and MMCT will enable a reliable PES fund-flow based upon a percentage of electricity sales. This shall be a small start that will be complimented by MMCT funds and tree seedlings from the tree estates in the area. The MMFR forest above shall be monitored for illegal activities and planting of Mulanje Cedar trees will enrich the cloud forests. The riverine area of the Lichenya River after leaving the forest is typically degraded due to cyclone flash floods and bad land practices, and so all 70 neighboring farmers have been registered and will be assisted to change cropping patterns with win-win resources such as bamboo, sugar cane, fruit trees, tea plants, vetiver, napier and guatemala grass for livestock feed. The Ministry of Agriculture Land Husbandry Officer will design interventions together with the smallholder farmers to ensure high uptake.

Funds will be calculated on a monthly basis at MEGA and transferred to MMCT account held for supporting community action that will be jointly decided with the Area Development Committee. Actions within the riverine area on land that is not owned will be developed and implemented using the vulnerable women from single-headed households to channel an income opportunity to these who commonly over-harvest firewood for local sales.

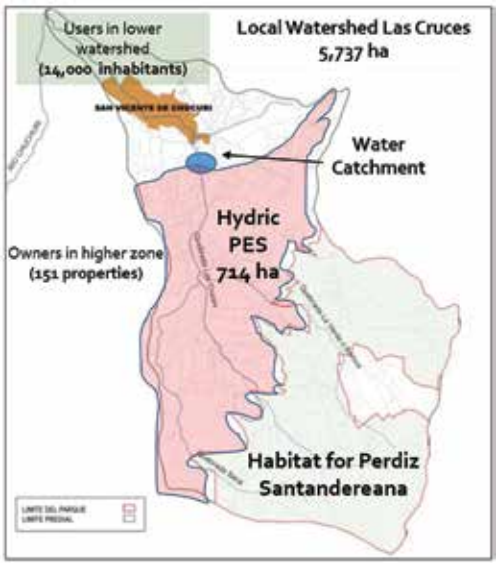
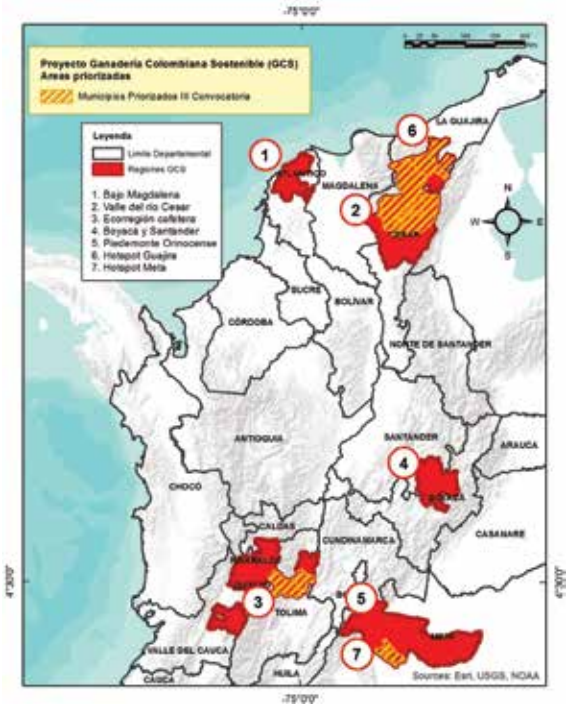
4. What we did/ our approach

1. Fondo Accion and MMCT shared basic information on their projects, including documents and internal information, and held online meetings on the topics that framed the two-way mentorship: impact investment and payments for environmental services (for the purpose of this particular case study, Fondo Accion was the mentor and MMCT the mentee).
2. MMCT made an exchange trip to Colombia to get mentoring on impact investment and see the PES initiatives on the ground. The exchange focused on: a) meeting and working with Fondo Accion's administrative and directive team to understand impact investment and analyze investment alternatives and scenarios, and b) visiting two sites where PES are being implemented with the intervention of Fondo Accion, to identify enabling conditions, challenges and lessons from real experiences.
3. Fondo Accion then visited Malawi to watch and learn about MMCT work and tailor the PES mentoring. The visit focused on: a) providing guidance on how to set a PES scheme under the particular conditions of the Shire River basin, and b) seeing first-hand the Mulanje Electricity Generation Agency -Bondo Hydro-Power. Determining the administrative and technical capacity that needs to be set up in order to run a business of such nature, and learn from staff about the challenges involved.
4. Finally, a case study was built, based on the experiences of Fondo Accion in the design and implementation of schemes of payment for ecosystem services, addressing water quality, biodiversity targets and emission reduction. The methodology to build the case study included:
   a) Review of secondary information provided by Fondo Accion about the two PES programs.
   b) Identification of MMCT needs and expectations on the case study.
   c) Elaboration of semi structured interviews with coordinators from the relevant institutions working on the PES initiatives (Fondo Accion, Fundación Natura, Proyecto Ganadería Colombiana Sostenible and The Nature Conservancy).
   d) Identification of timelines and maps of actors in both PES initiatives.
   e) Field visits to both PES areas and interviews with important actors:
   - In San Vicente de Chucurí, the interviews included two farm owners, providers of the environmental service; the manager of Manantiales de Chucurí, the public services company; the mayor; two residents of the urban area, users of the environmental service, one technical assistant and a representative of the PES council.
   - In the Sustainable Cattle Ranching Project, the interviews included six farm owners, providers of the environmental service, two technical assistants and the coordinator of the technical assistants of the Coffee Region.
   f) Analysis of primary and secondary information.
   g) Sharing a first draft with Fondo Accion and MMCT for comments and recommendations.
   h) Final document elaboration in English and Spanish.

"One important finding is that the sustainability of PES schemes is challenging. They require constant funding for a long period, and it is crucial to find different funding sources, identify the main demand for the environmental service and implement strategies to keep all the parties committed and motivated."

5. Description of the PES initiatives

TABLE 1: Geographical context, timeline and map of actors

Manantiales de Chucurí	Sustainable Cattle Ranching Project
Project: Reciprocal Agreements for Water as strategy for hydric connectivity in the Local Watershed Las Cruces, San Vicente de Chucurí Municipality (Dept. Santander)	Project: Colombia Sustainable Cattle Ranching Project (SCRP).
 Location: Colombia, Santander department, San Vicente de Chucurí municipality Author: Fundación Natura Colombia with the support of Fondo Acción and the TFCA Program. Program: Tropical Forest Conservation Alliance (TFCA) in Colombia.	Location: 6 areas of the country The coffee region Boyacá and Santander The lower Magdalena region The piedmont in the Orinoco region Guajira Cesar  Author: TNC. Project: *Sustainable Cattle Ranching in Colombia* project. Image designed for the ToRs of the third call for beneficiaries.
Ecosystem: 5,737 ha of Las Cruces Watershed, 3,859 ha in the higher zone the most relevant for the Environmental Service. According to National Parks, the ecosystems in the Yariguíes Park are: premontane humid forests, montane humid forests, and montane rainforest.	Ecosystem: A varied mosaic of tropical ecosystems in prioritized areas near conservation corridors prioritized by the project executing organizations from an assessment performed by The Nature Conservancy (TNC).
Total area under PES: 714 ha (18.5% of the higher zone).	Total area under PES (Oct/2017): Payment for baseline: 83,354 ha First payment: 80,368 ha Second payment: 80,368 ha Third payment: 54,473 ha
Timeline: 2010 first initiative with RARE and implementation of reciprocal water agreements through social marketing. 2012 – 2014 grant from TFCA. 2014 the public services company and the mayor's office provide the financial resources for the continuation of the project. 2015 a new Major takes over the municipality and Fundación Natura works very hard to convince him of continuing with the project. 2016 economic crisis at the public services company due to change in management.	Timeline: 2003 -2007 Pilot study in the coffee region, only 110 land owners 2010 Global Environmental Facility- GEF 2011 First call for participants 2012 Second call for participants 2013 First PES (biodiversity conservation) base line and first payments 2014 UK grant for second PES (carbon sequestration) 2015 Third call for participants

Map of actors: Donors: Fondo Accion, Fondo Patrimonio and USAID (TFCA) Partners: Fundación Natura, Conservation International, Ministry of the Environment, National Natural Parks, WWF, RARE. Providers of the ES: 61 land owners in the watershed. Users of the ES: 14,000 inhabitants of the urban area. Operator of the PES: Manantiales de Chucurí (public services company) Monitoring: Manantiales de Chucurí (public services company).	Map of actors Donors: GEF, UK, Fondo Accion Partners: TNC, CIPAV and Federation of Cattle Ranches (FEDEGAN) Providers of the ES: 1,926 landowners Users of the ES: International community (Donors) Operator of the PES: FEDEGAN Monitoring: Self-declaration landowners at the farm scale. TNC at a regional scale. Environmental Services promoted by the project: between 2010 and 2013, biodiversity conservation. With the UK grant in 2014, carbon emissions sequestration.
Environmental Services promoted by the project: Water supply and biodiversity conservation (charismatic specie: an endangered and endemic species Gorgeted Wood-quail (Odontophorus strophium))	Environmental Services promoted by the project: Biodiversity conservation and carbon emissions sequestration.
PES scheme: A voluntary PES, where the users of water in the lower watershed pay for changes in the use of land to landowners in the higher part of the watershed. A SWOT analysis was used to identify the landowners and an examination of connectivity corridors at the landscape level guided the liberation and restoration of natural forests. The providers of the service receive an in-kind payment, represented in Technical Assistance, to undertake changes in their productive system (mostly silvopastoral arrangements) and other relevant goods and services, according to an investment plan made every 5 years. In exchange, they liberate and protect corridors and forest areas within their land.	PES scheme: This PES relies on international resources to pay for the environmental service. In that sense, the user is the international community. The providers of the environmental services are cattle breeders. For the biodiversity PES, there is no restriction for providers, and for the carbon PES, only small and medium landowners can participate. The environmental services are paid in cash and this payment is calculated considering the management practices implemented on the property as compared to the list of practices promoted by the project and their impact on the provision of the service (either biodiversity conservation of carbon sequestration). In the case of biodiversity, there is a payment for natural forests conserved inside the land. The amount of money paid for carbon emission sequestration was determined by the international price of carbon, with an added bonus, and for biodiversity by a land use scoring system developed by TNC.
Total funds: TFCA 2012-2015 US$ 209,500* Counterpart US$ 63,000* Average investment/ha: US$ 278 *Exchange rate (0.0005 US$/COP)	Total funds: GEF: US$ 7,000,000 DECC UK: US$ 20,700,000 Fondo Accion: US$ 1,877,021 TNC: US$ 1,500,000 CIPAV: US$ 935,000 FEDEGAN: US$ 5,082,000 Funds for PES only: US$3,154.926 Average investment/ha: US$39.25 (In PES only)

5. Strategies

5.1 Manantiales de Chucurí PES Strategy

The PES was structured on the RARE behavioral change strategy, in which social marketing is key to change the perceptions and some cultural values of a community to promote sustainable resource management (www.rare.org). With this in mind, Fundación Natura (local NGO) and RARE (international NGO) started working with the San Vicente de Chucurí community to find a charismatic local specie: The Gorgeted Wood-quail (*Odontophorus strophium*), as a way to bring the community together around the idea of conserving the Las Cruces watershed and recovering the bird's natural habitat. Fresh water for the municipality comes from this watershed, and its conservation is essential for increasing water quality and availability.

In this strategy, social marketing (*mercadotecnia social*[1]) in the community was fundamental to promote the participation of water users and their voluntary payment for the ES as an increase on the water bill every year, and the commitment of public officials. The public service company, Manantiales de Chucurí, was essential and played the role of operator, receiving and investing the financial resources collected. Both the company and the Mayor Office

[1] "mercadotecnia social" or marketing for social good, promotes behaviors that benefit individuals and the society as a whole. It uses marketing tools to catalyze actions within a community and change social norms, identifying who to change and the reasons preventing such change.

provided significant funds to finance the initiative. This strategy was in a sense a "Bottom-up" given that every aspect of its design was agreed upon with the different stakeholders and everyone could participate in the numerous workshops undertaken.

The service providers were selected according to the priority areas in the watershed for water provision. Fundación Natura, used the Soil and Water Assessment Tool to identify those areas (SWAT: http://swat.tamu.edu/).

The payments to ES providers are in-kind, including materials, tools and necessary equipment, to implement changes according to the land use practices agreed by the landowner with the technical assistant´s aid. The changes include a plan to liberate areas to restore natural ecosystems and establish connectivity corridors, according to a landscape analysis done by Fundación Natura in the watershed. The plans are designed for 5 years and Manantiales de Chucurí is in charge of providing the technical assistance.

5.2 Sustainable Cattle Ranching Project (SCRP) Strategy

The PES was built upon the results of an early pilot that included 110 farms, funded by the World Bank and implemented in the Coffee Region by CIPAV in 2003 - 2007. During the pilot, the management practices at the farm level, like protein banks, dispersed trees and live fences, and their relationship with increasing biodiversity at the farm level, were defined and used as the basic information for the table of payments of the ES in the SCRP (see table 2).

The PES was designed as a "Top-Down" approach, with technical experts in TNC and FEDEGAN defining the menu of management practices, the target in terms of biodiversity conservation and the value given to the provision of the ES associated to each practice. No participation of the service providers was included in the design.

During the implementation, the landowner and the technical assistant decided on the management practices to be implemented at the farm level to reduce the total area of pastures, increase the system productivity and make it more sustainable in general. The fact that the implementation cost has to be paid directly by the owner evidently affects the practices and the extent of the change in each farm. Less costly practices are generally preferred (live fences), even if the expected payment for the ES associated with these practices is relatively low.

There is no participation of the public sector in this initiative.

TABLE 2: Payment calculator tables

ES: BIODIVERSITY CONSERVATION

N	Land use practices	Baseline payment			Forest conservation payment			Changes in land use payment		
		Per ha	Additional payment (US$)		Per ha	Additional payment (US$)		Per ha	Additional payment (US$)	
		(US$)	In connectivity corridor	Native species use	(US$)	In connectivity corridor	Native species use	(US$)	In connectivity corridor	Native species use
1	Mature forest or private wetland	23.00			18.00			75.00		
2	Secondary forest	21.85			17.10			71.25		
3	Scattered trees in pastures and managed successional forest	16.10	2.30	2.30				52.50	7.50	7.50
4	Agroforestry corps (at least 2 strata)	11.50	4.60	2.30				40.00	15.00	7.50
5	Green fences and wind barriers (km)	2.30	1.15	1.15				37.50	6.50	6.50
6	Agroecosystem with more than 80% cover	2.30		2.30				7.50		7.50
7	Intensive sylvopastoral system (>5,000 trees/ha)			2.30						7.50
8	Other agricultural practices (transitory crops)			2.30						7.50
9	Degraded soils with pastures									

Source: Terms of reference of the third call of the *Sustainable Cattle Ranching in Colombia* Project.

ES: REDUCTION OF CARBON EMISSIONS: payment for the establishment of the intensive silvopastoral system (>5.000 trees/ha) in the following baseline land use practices

N	Land use practices	Carbon payment (US$/ha)
3	Scattered trees in pastures and managed successional forests	97.50
4	Agroforestry crops (at least 2 strata)	112.50
6	Agroecosystems with more than 80% cover	142.50
8	Other agricultural practices (transitory crops)	150.00
9	Degraded soils with pastures	150.00

Source: Third call for participants, terms of Reference.

6. Challenges

6.1 Shared Challenges

1. Maybe the most significant challenge on a PES initiative is identifying and keeping the commitment of the ES payer (either the direct user or other potential funder). In both schemes under review, this has been a time consuming activity and neither two has assured complete funding in the long term.
2. Selection of service providers and contract formalization were complex tasks in both PES. The initial requirements established by the donors, particularly the need to demonstrate due landownership or tenure to participate, were too difficult to fulfil in the selected areas. This delayed the activities and limited the expected achievement in the initial years. In this sense, it is important to adjust requirements and processes to the reality of the regions where the PES is going to be implemented and not base them on ideal scenarios.
3. For both processes, the adaptation to changing conditions and unexpected situations was critical, and all partners have to be open to change. This means that PES developers have to be patient and need to design mechanisms to respond diligently to new situations.
4. It is important to improve the ability to coordinate a diverse set of partners with different views and interests, where open and direct channels of communication, committed individuals and innovation solutions are key.
5. One fundamental challenge in these initiatives is maintaining the commitment of all stakeholders in the long term. This requires trust, constant interaction and a good communication strategy.
6. The provision of ES was based on promoting certain land use changes at the farm level, formalized through Conservation Agreements with the landowner and in accordance to a landscape analysis of the priority areas. In this sense, a GIS and a monitoring system at the farm level are essential in determining the level of payment and compliance of ES providers.
7. There is need for innovative solutions to assure the payment. The method has to be easy, the amount enough to motivate the ES provider to participate and there must be an accountability system.

6.2 Manantiales de Chucurí Challenges

1. The voluntary payment could not be directly charged in the water bill due to legal constraints on public water service´s regulation in Colombia, and the users had to fill in a complicated form to be able to pay. This was identified as a barrier for the participation of more people of the community, and the total amount of money raised by this voluntary payment was always very low.
2. When the resources to keep the social marketing strategies in place were over, there was a huge challenge to keep people encouraged and the amount of voluntary payments from the community dropped significantly. In that sense, voluntary payments are likely to stop if there is no significant investment in keeping people motivated. This could be linked to the fact that the project was initially devised and funded by external actors, meaning that the community had to sustain a cultural change to fully commit to the initiative and this type of transformation needs significant financial resources and time.
3. As the international resources for the project ended, other funding sources were necessary. Thus, the public service company and the Mayor's office became the main contributors to the PES sustainability. This made the initiative very fragile to changes in public servants, and there were two critical moments for its sustainability when the manager of Manantiales of Chucurí and the Mayor of the municipality were changed. To

tackle this issue, Fundación Natura worked very hard to convince the new officers about the importance of the project and were able to maintain the initiative at least for the time being.

4. Given that the actual funding is coming from public institutions, there has been a challenge in the budget execution, because the expenses are not accounted for in the same month they take place. In order to tackle this, the program had to create new strategies, like a pre-expenses form.
5. Motivating and integrating the providers of the ES in the watershed was complicated. Mistrust in the agreement fulfilment, resistance to change and low participation rate in workshops and empowerment activities were the main causes.

6.3 Sustainable Cattle Ranching Project Challenges

1. According to the interviews, the PES payment is appreciated by the landowners. Nevertheless it is almost neglected in the sense that they are not aware of how much money they receive and when they are paid. The total amount paid is relatively low in their point of view, but still they expressed their concern to the possibility of eliminating the payments.
2. The poorest landowners consider that the payment system is unfair. Given that big landowners are richer and have more land, they not only have more natural forests (the land use practice with the highest payment level), but also have the means to make more changes in their farm with smaller efforts. Consequently, they are paid much more than small, poor, landowners who work hard to improve their lands in line with the project requirements and invest considerable labour and resources for a pretty low monetary return. In their view, this is a weakness of the project that promotes inequality.
3. The formal conditions for program participation were not adapted to the realities of the Colombian countryside and changes had to be made. For example, in Colombia, most landowners do not have a legal title on their land and the difficulty of getting this legal documents delayed the inclusion of many participants in the program for almost a year. More than 50% of the first call applicants were disqualified altogether. This limited the number of participants, delayed the achievement of expected outcomes during the initial years and was adjusted to make the due diligence procedures more flexible.
4. The payment tables were very complex from the beginning. First, they had too many land use possibilities for evaluation, making this task time consuming and difficult not only for the technical assistants in the field, but also to Fondo Accion, which had to calculate the respective payment. This was adjusted to the actual nine options (Table 2). Nevertheless, for the landowners this table still is complicated to understand and to calculate the amount of money they would receive for a specific change in their farm. This is an important incentive limitation in this PES.
5. Monitoring changes at the farm level was a critical challenge. At first, the idea was to map with a GPS all the land use practices at each farm to build the base line and then monitor the changes in a GIS to calculate the payment and the impact on biodiversity. The reality showed that this was just not possible. Some farms were too big to be able to map everything on a reasonable amount of time (this activity in some cases took more than a week in a single farm and delayed significantly the base line payment in the first and second calls for participants). They solved this problem with an "auto-declaration", a map for the farm base line drawn between the landowner and the technical assistant. This reduced precision and increased the margin of error but was more feasible for the realities and needs of the project.
6. The sustainability of this PES depends heavily on international resources given that there are no in-country funding sources. This is also a barrier for its potential expansion to other regions (the actual number of farms participating in the project is very low compared to the total number of cattle ranching farms in the country).

7. Benefits Observed

7.1 Shared benefits

1. The land use changes implemented in both PES have resulted in the increase of the targeted ES at the program level. Nevertheless, at the farm level, the Sustainable Cattle Ranching Project has had some setbacks in biodiversity conservation.
2. The technical assistance component is recognized as an essential element for project success and sustainability in both PES. This could be related to the heavy reliance on land use changes for increasing productive system productivity and providing the ES.
3. Both initiatives have had significant spillovers: a) land owners who have implemented changes in land use practices in more area than initially agreed upon, b) neighbors interested in implementing the same activities

(other municipalities, in the case of San Vicente, and other landowners, in the case of the SCRP), c) new funding sources (the Mayor's office, in the case of San Vicente and the U.K., in the case of the SCRP, and d) national and international recognition.

4. Both projects have been relevant for policy design at the regional and national level.
5. Land use changes have been maintained over time by participating landowners.

7.2 Manantiales de Chucurí Benefits

1. Achieving the commitment from the Water Service Company and the Mayor's Office and the institutional arrangement established for hydric PES management and operation.
2. 61 conservation-production agreements signed by local small landowners (ES providers) in the priority area through a Participatory Planning Property (PPP) methodology, where the landowner, with the advice of the technical assistant, decide the land use changes and practices he want to commit to.
3. Landowners protecting forests and producing sustainability are recognized as guardians of water. This social recognition has proven to be essential for their continuous participation and the sustainability of the initiative.
4. 703 ha implementing good agriculture practices in coffee, cacao and pastures, with an increase of cattle per ha and an increase total productivity. This corresponds to 59 families and 300 people involved.
5. 484 ha of forest remnants preserved for the habitat of the Gorgeted Wood-quail.
6. 232 ha of riparian zones isolated and starting ecological restoration.
7. 1,194 ha covered by voluntary conservation-production agreements.
8. A monitoring and evaluation protocol implemented by Manantiales de Chucurí, with the participation of 100 people in the watershed.
9. Change of behavior in urban and rural communities through the marketing for social good campaigns. They focused on increasing knowledge, motivating conservation, promoting interpersonal communication and behavior change, reducing threats and achieving conservation results.
10. Farmers are satisfied with the results. Earnings in a relatively poor area have increased.
11. 2,855 voluntary contributions from users (May 2012 – December 2015), equal to US$1,152, and a functional operational mechanism for the collection of payments designed and implemented: a coupon that can be filled at the banks.
12. The legal constitution of a local fund for the conservation of Las Cruces Watershed.
13. Local communities were trained on basic techniques of field data compilation for the biologic monitoring (characterization, self-diagnosis, protocol design, implementation, analysis and participative experience systematization).
14. Positioning and identification of the PES case at local, regional and national levels.

7.3 Sustainable Cattle Ranching Project Benefits

1. More than 80,000 ha under PES sustainable practices and US$ 1,678,000 paid to service providers in five regions of the country.
2. A significant increase in the biodiversity index of the project at the regional level.
3. Reduced Deforestation, reduced forest degradation and increase in carbon sequestration at the farm level achieving 602,503 Ton CO2eq reduction since 2011.
4. 1,926 farms participating in one or both PES.
5. A highly trained team of technical assistants, with deep knowledge on silvopastoral practices and land use changes for increasing productivity and conservation in seven regions of the country.
6. An increase in efficiency and effectiveness in each new call for participants thanks to constant evaluation and correction of problems and limitations.
7. An increase in agroecosystem resilience to extreme climatic events in farms participating in the project.
8. Farmers satisfied with the results and committed with increasing the land use practices in their farms.

8. Remaining challenges

8.1 PES common challenges

1. Identification of a sustainable funding source in the long term.
2. Development of an information strategy for users and providers of the environmental services, where they can identify the impact of both, the project and the changes in land use as regards to water availability, biodiversity conservation and carbon emissions reduction.

8.2 Manantiales de Chucurí challenges

1. Lack of funding has delayed the development of the program after the first five-year agreement was established. This is a main concern for the participants, since they need the extra income coming from this compensation.
2. There are permanent difficulties for the commitment of new participants in the administrative council due to lack of information and differences in personal and productive interests.
3. Change of administration in the organization Manantiales de Chucurí from Santander generated instability and delay in the program operation, particularly due to strong political links of new company participants and the lack of information about the program.
4. The scale of the program needs to grow, to cover district aqueduct systems outside the urban area. This means that new rural actors need to be included and the municipality should dedicate more resources, both complex and challenging activities.
5. The marketing for social good must continue to keep all the stakeholders motivated and sustainable financial resources are needed for this.

8.3 Sustainable Cattle Ranching Project Challenges

1. Increase the scale of the project in order to have a significant impact at the national level (the number of cattle ranching hectares that participate in the project is small as compared to the total number of cattle ranching land in the country).
2. Reduce the scattered distribution of farms in the regions where the project is located.
3. Evaluate the impact of the project in biophysical terms, with the use of GIS, satellite images and biodiversity censuses.
4. Given that the implementation of land use practices have to be financed by the landowner and the level of payment of the PES is not perceived as an equivalent compensation, the expected impact on biodiversity has not occurred. In that sense, the PES is not driving the changes for biodiversity conservation that the partners are aiming for. This also means that the PES component is relatively weak and during the interviews it was clear that participation and commitment of providers of the ES is driven by the technical assistance component (and it´s results on efficiency and resilience in the productive system), more than by the payment for ES.

9. Key Points of Practice (lessons learned)

9.1 General lessons learned

1. It is important to select partners with track records and experience with the targeted local communities (TFCA has supported initiatives from organizations with track record and previous work in the 3 areas).
2. A reliable funding source is urgent, particularly during the design and the first years of implementation, while the initiative finds other sustainable funding sources. TFCA has provided continued support (consecutive grants).
3. The success of PES initiatives take time. Both projects reviewed took at least 3 years of work in the target areas (including the work done previously for the TFCA grants), for their maturation and significant results.
4. The process of implementing a PES scheme needs constant adjustment to change. In this sense, it must be managed as an adaptive complex system, and all the partners need to understand it (being flexible and open to change).
5. A community-based approach and local ownership are essential for success.
6. Capacity building in local implementing agencies is a must. This is critical for the sustainability of PES.
7. Early participants in a PES initiative are those who share the values and objectives of the project, and as so, would stay committed with a little incentive, like the technical assistance component in the Sustainable Cattle Ranching Project.

9.2 Manantiales de Chucurí PES specific lessons learned

1. Institutional arrangements are fragile, as they depend on the legal interpretation of normativity.
2. The implementation of most conservation and production activities depends on persuading and building trust with landowners. To achieve that, there is a need to invest in a customized and permanent mentoring strategy.

> **“The process of implementing a PES scheme needs constant adjustment to change. In this sense, it must be managed as an adaptive complex system, and all the partners need to understand it (being flexible and open to change).”**

3. At the beginning of the project, landowners feared to lose land ownership. This kept potential providers from participating at first and building trust with them was fundamental to counteract this.
4. Urban people require a strong and persistent social marketing strategy to consolidate their commitment to the program.
5. Voluntary contributions from users need to be clarified for legal and operational purposes.
6. Landowners protecting forests and producing sustainability are recognized as guardians of water. This social recognition is crucial for their continuous participation and the sustainability of the initiative.

9.3 Sustainable Cattle Ranching Project lessons learned

1. Technical Assistance is key for the adoption of silvopastoral system-SPS and for the long-term participation in the project.
2. Simple methodologies to gather information (auto-declaration for monitoring) were better suited for monitoring in an acceptable timeframe for the project.
3. Payments must be paid at the agreed schedule (this builds trust). Delays in this obligation can compromise the project success.
4. There is need for more education of the landowners on PES design and results.
5. Effects of climate change (CC) (periods of heavy rain and drought) have positively and negatively affected the project. Positively, because many landowners realize that the management practices promoted by the project increase the system resilience to CC and want to participate. Negatively, because there have been delays in implementation and loss of plants and trees.
6. The payment is not always significant and landowners are not even aware of it. The way the payment is evaluated and calculated (see Table 2) is very complex and the total amount received by the ES provider is generally low, both conditions affect the strength of this economic incentive.
7. The payment is not always reinvested in more changes into the productive system.
8. Non-monetary compensation has proven to be effective on the behaviour change of the farmers.

References

- Proyecto piloto de aplicación de un Esquema Tipo – Pago por servicios ambientales hidrológicos – PSAH “Acuerdos recíprocos por el agua como estrategia de conectividad hídrica en la microcuenca Las Cruces – San Vicente de Chucurí – Santander” Reporte final. Fundación Natura, 2014.
- Tercera Convocatoria. Términos de referencia, primer semestre de 2015. Proyecto Ganadería Colombiana Sostenible.
- Datos misión de abril 2017. Proyecto Ganadería Colombiana Sostenible.

Sharing experiences with a beneficiary of PES for sustainable cattle ranching.
MMCT, Shire BEST, MCC, and Fondo Acción exchanging with a small holder of a mixed production farm that benefits from technical assistance and PES to improve the productivity of his cattle.

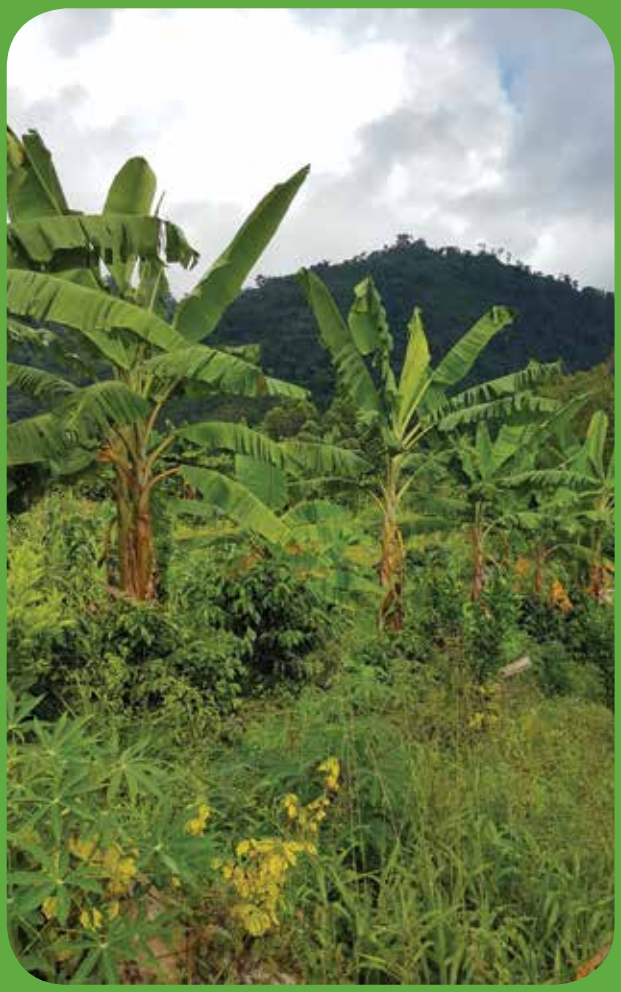
Interview with Hernán Botero Botero, a big landowner and an early beneficiary of PES in the cattle ranching project. He was explaining that he participates in the project because he believes in protecting the natural ecosystem and seeing the farm "this pretty", not because he is expecting a payment.

Lucero and Uber, their small farm is an example of sustainable practices in the region.
They are explaining to us that during the last rainy season, their farm was the only one which didn´t suffer a landslide, a direct result from the sustainable practices they have implemented with the SCRP.

Landscape changes with the SCRP: increase connectivity, increase in biodiversity and more resilience to extreme climate events.

Marcelino lives in “Las Cruces” watershed and has 5 has in conservation: He is an example of multipurpose farming. Cocoa, papaya, plums, guava, bananas and soursop are among the species he has in his property.

Leopoldo lives in “Las Cruces” watershed and has conserved 12ha of his 15 ha farm: With his unique way of thinking and the non-monetary compensation, his earnings from coffee have increased considerably. He wants to continue in program and extend it to apiculture.



Landscape changes: Las Cruces watershed is in its majority conserved. Surrounded by trees and multipurpose farms.

Protein bank and live fence, from the cattle ranching project.

In San Miguel, Jairo leaves scattered trees that grow spontaneously (self regeneration).
Other farmers pull them out because they think they are not compatible with grass. These trees do not need protection because the cattle will not eat them, as they do with planted trees that need fencing for protection.

Cattle ranching project at a farm where the owners have profited from the changes in the land.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