

CASE STUDY: Payments for Ecosystem Services in Costa Rica

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Executive Summary

Faced with a high deforestation rate which endangered the existence of one of its most important natural resources, Costa Rica began building a strong policy framework around reforestation, forest management and forest protection in the early 80s. These efforts have allowed the country not only dramatically decrease deforestation rates, but also to gradually regain the forest coverage in the it had lost. One of the key pieces in the policy mix developed by the country is the Payments for Ecosystem Scheme (PES) introduced by the Forestry Law in 1996. The programme is a mix of rules, regulations and rewards that invite stakeholders to respond to incentives and disincentives for reforestation. Through the programme Costa Rican private landowners receive financial incentives from a fund financed by the government, private and international public donors, in exchange for ecosystem services in the form of forest protection, commercial reforestation, agroforestry, sustainable forest management or regeneration of degraded areas. The programme addresses an environmental externality by collecting taxes from polluters and by channelling them to agents protecting the environment. The programme is structured around four ecosystem services: capturing and storing atmospheric carbon, protecting water sources, conserving biodiversity and safeguarding scenic beauty.

This Case Study is part of the Donor Committee for Enterprise Development's Guide: "The Search for Synergy: Business Environment and Green Growth. A practical Guide for Policy Makers" Please consult <http://www.enterprise-development.org> for the full guide and all associated acknowledgements.

The Costa Rican PES scheme represents one of the earliest payment schemes introduced globally. As such it is one of the most known and cited examples of forest protection measures implemented in a developing country context. The program has undergone significant changes and evolutions over time, as it has adapted to changing economic, political and social realities. Adaptations have been possible thanks in part to the flexibility of the management and governance structure, but also because of the relative autonomy of the managing body – the FONAFIFO.

The 1996 Forestry Law creating the PES programme sets out to achieve environmental, conservation, social and economic goals. In spite of this, there appears to be no explicit link between the social and economic objectives included in the law, the specific activities implemented by the programme, and its result and impact indicators. In other words, despite being clearly identified as priorities, the social and economic ambitions of PES cannot be clearly traced within its intervention logic beyond the general objectives stage. No explicit reference is made by the programme or the Forestry Law to BER or investment climate. However, there are several components of the programme which represent a direct tie to BER and investment climate, and private sector development more generally. These include the provision of payments provided to program participants, property tax exemptions for participants, as well as the guarantee of squatter eviction; and the requirement that PES participants have no outstanding debts with the national social security system (FONAFIFO, 2009). There is an additional intended impact of the programme which is of direct relevance to the Business Environment: protecting and regenerating forests can significantly reduce environmental and natural risks and hazards, which may have a direct impact on the stability of markets and the capacity to conduct business.

No policy trade-offs are explicitly recognised by the programme. Perhaps the most important of these is the trade-off stemming from the protection of forest-covered lands vs. the creation of economic activity and jobs through agricultural activities performed on these lands. Existing evidence however points to the fact that the negative impact of PES on economic activity and jobs is limited. An additional trade-off between the programme's environmental, social and economic objectives often materialises in the programme's targeting strategy. Historically a significant proportion of the PES programme was captured by larger properties, many of them held by legal entities or foreign nationals. Whether this fulfils the programme's mandate to support small- and medium-scale farmers is debatable.

Based on this, it can be said that the programme was designed on the principle of 'co-benefits' between green growth and private sector development objectives. Some of the objectives and principles upon which the programme was designed to relate directly to intended outcomes of BER such as improving tax policies and administration, enabling access to finance, and improving land titles, registers and administration. However, there is no explicit recognition of the importance of these measures in improving the business environment of key sectors such as forestry, agriculture and eco-tourism, and no attempt has been conducted to measure the impact of the programme on this front.

1 Background and context of the case

Costa Rica experienced one of the fastest deforestation rates in Latin America during the second half of the XXth century: forest cover dropped from 70% of the country in 1950 to just 20% by 1987. However, at the end of the 1980s, forests began to recover and reforestation and afforestation have shown a steady upward trend – recently flattening out at around 52% of the country’s land area (IIED, 2013). These transformations in the landscape are thought to result from a combination of policies affecting land use, as well as international market and political pressure. The early period of deforestation saw forest rapidly converted into agricultural and cattle ranching areas, which benefited from generous land titling and cheap bank loans as part of the Government’s efforts to colonise new land. High international prices for beef and expansive crops such as coffee and bananas further contributed to deforestation. The trend was decreased by pressures which emerged in the 1980s. Political and economic instability created by the wars in Central America, and the collapse in global meat, sugar and coffee markets, led to abandonment of a significant proportion of agricultural land.

In parallel in the 1980s, a number of environmental and conservation groups gained importance in calling for a change, as well as for the introduction of measures limiting deforestation and protecting national forests (Porrás, 2013). The government took initial steps to implement a policy framework aimed at protecting the country’s forest resources. The creation of several national parks across the country was an important first step. In addition, the central government implemented reforestation incentives (i.e. subsidies and tax-breaks) which did not always prove to be effective (Watson et al., 1998). It is worth highlighting that at the time, incentives were considered a risky policy measure, and in some cases they generated negative effects (i.e. people deforested areas in order to make lands eligible for incentives later). Despite the existence of mitigated results, those early incentives partially paved the way for the creation of the Payments for Ecosystem Services (PES) programme.

In 1996 Costa Rica adopted the Forestry Law 7575 establishing one of the first nationalised PES programmes in the world, which had been in the making since the early 1990s and had been the subject of multiple stakeholder consultations (IIED, 2013). The Forestry Law provided the institutional and governance framework required to implement the PES, as well as the initial funds to kick-start the process. Since then, the National Forestry Fund (FONAFIFO - <http://www.fonafifo.go.cr/>) is the primary intermediary charged with administrating the PES programme. This structure was created by the 7575 Forestry Law. In exchange for the payments, the landowners transfer the ‘rights’ to the ecosystem services to FONAFIFO, where they make up the wider portfolio of approved ecosystem services (ES) credits. FONAFIFO then sells some of these credits to its buyers (i.e. international donors, private hydroelectric producers, etc.).

Table 1 Key facts & figures

Official Project Name / Reference	Payment for Ecosystem Services - PES (<i>Pago por Servicios Ambientales, PSA</i>)
Country/Countries	<ul style="list-style-type: none"> • Costa Rica • Similar schemes have been implemented in other countries such as Brazil & Mexico
Total project/programme volume (USD)	<ul style="list-style-type: none"> • Total annual budget allocation: USD 30.5m (average on 2009-2012 period) with contributions from public and private sectors and international Donors • Total budget allocation 1997-2012: USD 341m • Management budget information is not readily available.
Funders and Distribution of Funding	<ul style="list-style-type: none"> • Government funding: The primary funding source for the original PSA program was a 15% consumer tax on fossil fuels established under the 1996 Forestry Law. Its Article 69 stated that FONAFIFO was to receive one-third of the revenue. The

	<p>Ministry of Finance, however, rarely delivered that amount, and in 2001 the legislature repealed Article 69 and adopted the <i>Ley de Simplificación y Eficiencia Tributaria</i>, which assigns 3.5% of the tax revenue directly to the PES program (Camacho & Reyes 2002). This provided less money in theory, but increased actual transfers from the Ministry of Finance (Camacho & Reyes 2002). As of 2003, such tax revenues provided an average of \$6.4 million/year to the PSA program (Pagiola et al. 2002).</p> <ul style="list-style-type: none"> • Private funding: Funding to the PES program also comes from voluntary contracts with private hydroelectric producers, who reimburse FONAFIFO for payments given to individuals such as upstream landowners in watersheds. These private agreements have generated only about \$100,000 to finance about 2,400 ha of PSA contracts. When fully implemented, however, these agreements are expected to provide about \$600,000 annually and to cover close to 18,000 ha (Pagiola et al. 2002). • Carbon-abatement trading was expected to provide significant funding through sales of certified tradable offsets. However, no significant market for carbon abatement has emerged. The only sale has been to Norway, which consisted of \$2 million in 1997 for 200 million tons of carbon sequestration (Pagiola et al. 2002). • International donors: Funding was also provided by a World Bank loan and a Global Environmental Facility (GEF) grant through a program called Ecomercados (a term used to define the second phase of the PSA program after the year 2000). The World Bank/GEF loan for \$32.6 million was designed to support current PSA contracts. Of the total \$8 million, \$5 million was used for conservation contracts along the proposed sites that will eventually form part of the Mesoamerican Biological Corridor. The other \$3 million was intended to increase human, administrative, and monitoring capacity in the various institutions associated with the program, including FONAFIFO, SINAC, and MINAE (Ortiz & Kellenberg 2002).
Start & End Years	<ul style="list-style-type: none"> • 1996 - ongoing • Programme creation - 1996, Programme operational - 1997
Evaluation carried out	Continuous monitoring on behalf of programme authorities & external independent assessments on behalf of the research community.

Source: Technopolis Group. Information on funders and distribution of funding is drawn from Sánchez-Azofeifa et al, 2007.

The Forestry Law 7575 of 1996 was part of a broader legislative framework adopted by the government which set the basis for the PES program. Three laws form the framework within which Costa Rica established the program. The 1995 Environment Law 7554 mandates a “balanced and ecologically driven environment” for all. The 1996 Forestry Law 7575 mandates “rational use” of all natural resources and prohibits landcover change in forests. Finally, the 1998 Biodiversity Law promotes the conservation and “rational use” of biodiversity resources.

The Forestry Law 7575 established two complimentary measures which form the basis of the PES programme:

- First, it banned all conversion of established forests punishable by prison sentences rather than fines, effectively lowering the ‘opportunity cost’ of converting existing forests.
- Second, it introduced the offer of payments for reforestation, protecting forest, or managing existing forest in private properties outside national parks: the PES programme was born.

The PES approach at the time received a significant amount of criticism, particularly since it was seen as unnecessary given the introduction of measures banning deforestation. Some critics considered the PES as ‘redundant’ given the existence of these bans. Other described it a ‘rebranding’ of previous subsidies; or a necessary incentive for keeping forests standing, given low capacity for enforcement; and a quid pro quo or pre-condition for popular acceptability of the ban (IIED, 2013). In spite of this criticism, the PES scheme is believed to have been introduced in order to respond to some of the failures of previously existing forest conservation programmes and initiatives, particularly from a legal and institutional standpoint.

Despite the fact that the adoption of the Forestry Law 7575 marks the official birth of the PES programme in Costa Rica, it is important to highlight that the design of the PES scheme began since the early 90s, and has lasted well beyond that point. In other words, the PES programme that emerged in 1996 was not fully formed at the time. This is mainly due to the highly innovative nature of the programme, and the fact that policy makers had limited examples of similar initiatives to go by. In addition, since the introduction of the law, the programme has been continuously updated and modified through a process of ‘learning by doing’ based on lessons drawn from previous periods of implementation. The administrative flexibility that has allowed for this continuous process of improvement is recognised as one of the programme’s major strengths (IIED, 2013).

The rationale leading to the creation of the PES programme was clearly predominantly environmental and conservation-oriented. BER, or more broadly speaking, investment climate were not necessarily a key concern of policymakers responsible for the design of the scheme. However, as illustrated in the following section, the ambitions of the programme do include socio-economic dimensions, such as poverty alleviation of indigenous communities and job creation around forest-based industries. Some of these have been strengthened as a result of the involvement of foreign donors, such as the World Bank. As the scheme has evolved in time, these dimensions and expected impacts of the programme have gained importance.

2 Theory of Change, Objectives and Results

2.1 Mapping the theory of change

The PES programme of Costa Rica was established to protect and regenerate the country's rainforest, which was in rapid decline until the end of the 80s. The dramatic deforestation was threatening water provision, biodiversity and the integrity of the country's landscape, while reducing the planet's absorption capacity of carbon dioxide. The 1996 Forestry Law implementing the PES programme sets out the following dual objectives:

- To conserve, protect and administer natural forests, and oversee the adequate use, industrialization and development of forest-based resources to this end, based on the principle sustainability
- To ensure the creation of employment and improve the quality of life rural communities by effectively integrating them to forest-based economic activities.

As can be seen, the objectives of the programme are not only environmental in nature. The Forestry Law clearly identifies socio-economic ambitions linked to the deployment of the PES programme and related measures. In practice, actions taken in order to ensure and measure social and economic spill-overs as part of the programme have been limited.

A PES programme can be defined as a “voluntary transaction in which a well-defined environmental service or land use that can ensure this service; is purchased by at least one buyer, from at least one provider, on a condition that the provider ensure the provision of this service (conditionality)” (Wunder, 2006).

Costa Rica's PES programme acknowledges that owners of forests are entitled to apply for payments for the vital services that these ecosystems provide. A detailed framework defines these ecosystem services, which come under four main categories:

- Carbon sequestration: the capture and long- term storage of atmospheric carbon dioxide.
- Water ('hydrological services'): the protection of water catchment areas.
- Protection of biodiversity: for conservation and sustainable use.
- Scenic beauty.

To motivate participation on behalf of landowners, the financial incentive must compensate for the opportunity cost of deforestation plus the costs of compliance. By delivering financial incentives, the programme promotes environmental sustainability while supporting landowners' incomes. The programme can also contribute to poverty reduction through the additional income it may provide to small landowners from fragile or isolated social groups. As well as receiving direct payments, private forest owners who manage their forests through PES are also exempt from property taxes. Property taxes were recently reviewed and raised throughout the country, so the benefits of the exemption have increased. Participation in PES also provides a guarantee of squatter eviction, a further benefit for land tenure (IIED, 2013).

As described by Barton et al. (2013), the programme is a mix of rules, regulations and rewards that invite stakeholders to respond to incentives and disincentives. The legal underpinning establishes the structure by which the PES programme secures funding, how it is managed, and who is eligible to participate. The policy mix in this case includes the Forest Law that created the PES (Law 7575, 1996), annual presidential decrees determining PES priorities, the PES Operational Manual, and other 'soft' instruments like regulatory plans and the determination of buffer and conservation areas.

The following table presents the main mechanisms or 'rules in use' through with PES is implemented.

Table 2 Rules in use for the implementation of PES

Rule-in-use	Examples in PES in Costa Rica
Aggregation rules	<ul style="list-style-type: none"> • Voting rules of FONAFIFO board in determining priority-setting criteria and weights (sector representation) • Regional versus national annual PES allocation quotas • Rules for group contracts (previously)
Information rules	<ul style="list-style-type: none"> • Application procedures online and by telephone • Grace periods for obtaining necessary documentation for application process
Boundary rules	<ul style="list-style-type: none"> • Priority land uses, landowners' eligibility set by annual presidential decrees • Official requirement for FONAFIFO to support small and medium-sized forestry producers and rural development (work and wellbeing) • System of points passed scoring and ranking of proposals • Property titles correctly registered in the National Register or uncontested possessory right in order
Position rules	<ul style="list-style-type: none"> • Responsibility of the state to guarantee a balanced use of its ecosystems • FONAFIFO board determines priority setting criteria and weights (sector representation) • FONAFIFO is mandate to manage the PES allocated state funding and has the authority (but not a monopoly) to search for alternative sources of national and international funding for PES • <i>Regente forestal</i> (forest engineer) as contract intermediary

Source: Barton et al. (2013) as presented in IIED, 2017.

The PES programme focuses on five uses of private land: 1) forest protection, 2) commercial reforestation, 3) agroforestry, 4) sustainable forest management, and 5) regeneration of degraded areas. Contracts signed between the central government and programme participants specify the type of uses that will be given to land providing ecosystem services.

The PES programme is accessible to any private landowner who has a property title or possession rights, with a minimum land area of one hectare. There are four main categories of participants:

- Individuals
- Legal entities under Costa-Rican law, including micro-enterprises, family businesses, small and medium enterprises (SME), large companies and their subsidiaries.
- Development or conservation cooperatives.
- Indigenous communities.

Between 1997 and 2012, FONAFIFO distributed approximately \$340m. The greatest part of these funds went to legal entities (49 per cent), followed by individuals (31 per cent), indigenous groups (13 per cent) and cooperatives (7 per cent). The strategy adopted by the programme in terms of target populations has continuously evolved over time, and has also been a source of criticism. There is significant evidence pointing to the fact that the programme benefits large landowners rather than small and medium ones (IIED, 2013) whereas the Forestry Law 7575 identifies the latter group as priority targets.

The sources of demand, and therefore funding, are presented in Table 1.

The National Forestry Fund (FONAFIFO) is the primary intermediary charged with administrating the PES programme. It signs legal contracts agreeing land use with forest owners, and monitors their compliance through local forestry technical facilitators (*regentes forestales*). In exchange for the payments, the landowners transfer the 'rights' to the ecosystem services to FONAFIFO, where they

make up the wider portfolio of approved ecosystem services credits. FONAFIFO then sells some of these credits to its buyers (IIED, 2013).

The following table presents the overall intervention logic of the PES program. It is worth highlighting that the main instrument are conditional payments used as an incentive to maintain and increase forest cover. However, protected areas have also been included in the table due to the importance of the measure in establishing a framework condition of payments to be implemented. Two additional instruments have been included in the intervention logic (cf. complimentary instruments – property tax exemptions & land tenure measures) which were originally introduced as incentives for participation in the payment scheme. These have been singled out due to their relevance to the BER component of the PES programme.

Table 3 Intervention Logic of the Measure

Instruments used		Intended outcomes	Intended impacts	Relevance to BER	Relevance to GG
Primary	Payment for ecosystem services (conditional payments)	Maintaining and increasing forest cover levels in the country & avoiding deforestation Uptake of sustainable forestry practices & activities	Carbon sequestration, protection of hydrological services provided by the ecosystem, biodiversity conservation, preservation of scenic beauty. Reducing poverty, particularly for segregated communities, & increasing forest-related economic activities.	Medium	Very high
	Protected Areas	Avoid deforestation and maintain levels of forest cover	Environmental protection, biodiversity protection, carbon sequestration	Low	Very high
Complimentary	Property tax exemptions	Incentive for landowners to participate in PES scheme		High	Medium
	Land tenure measures	Incentive for landowners to participate in PES scheme	Increase tenure security, ensure PES programme beneficiaries comply with national regulatory framework	High	Medium

Source: Technopolis Group.

2.2 Analysis of synergy and trade-offs between BER and Sustainable Development in programme intervention logic

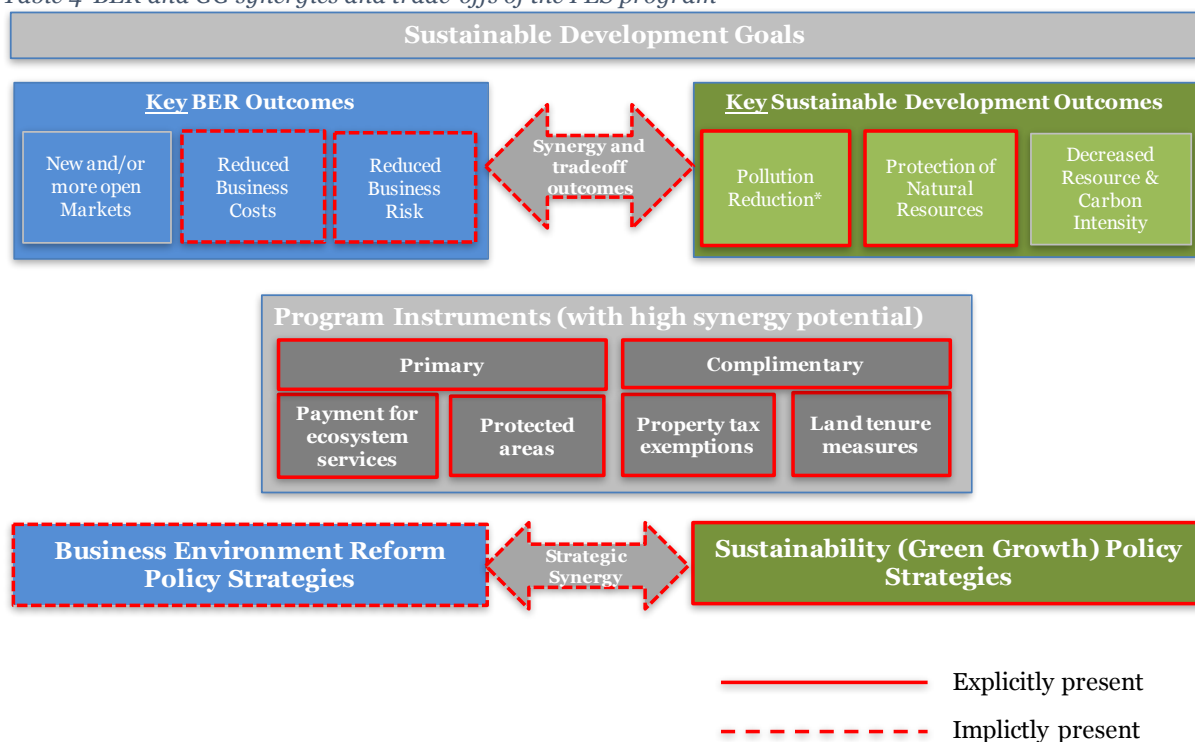
As previously mentioned, the 1996 Forestry Law creating the PES programme sets out to achieve environmental, conservation, social and economic goals. The mission of FONAFIFO, the agency responsible for managing the programme, also includes an important social and economic component. In addition to its environmental and conservation ambitions, the programme is often presented by the Costa Rican government as an instrument to promote rural development and redistribution of wealth (Sanchez, 2016).

In spite of this, there appears to be no explicit link between the social and economic objectives included in the law, the specific activities implemented by the programme, and its result and impact indicators. In other words, despite being clearly identified as priorities, the social and economic ambitions of PES cannot be clearly traced within its intervention logic beyond the general objectives stage. As mentioned by Porras et al. (2013), “using an appropriate theory of change, it is important to define what the likely socio-economic impacts from PES are, such as increased income or more jobs; how to address participatory justice by specifically targeting providers of ecosystem services who need support, for example more vulnerable farmers or indigenous groups; and what indicators to use to

evaluate who wins and who loses, such as income at farm level, or aggregate district data (see Grieg-Gran et al., 2013)”.

No explicit reference is made by the programme or the Forestry Law to BER or investment climate. However, the lack of formal recognition in programme design of the potential spill-overs (positive or negative) it might have on BER, does not necessary that these are inexistent. However, a closer look at the programme’s intervention logic does reveal the existence of a number of ‘tacit links’ between the programme’s environmental objectives and BER, and private sector development more generally. However, most of the synergies and trade-offs presented below are mostly hypothetical, and are not back by any type of robust evidence. The following figure graphically represents the main synergies and trade-offs (identified ex-post) between environmental and BER objectives in the PES intervention logic.

Table 4 BER and GG synergies and trade-offs of the PES program



Source: Technopolis Group. *Only from end of pipe perspective.

The most important synergies are:

- **The provision of payments provided to program participants**, which may be invested in support of business activity development leading to job creation. Compensations provided to small and medium farmers and landowners can represent an important source of income, which may be used to develop business activities, in addition to covering subsistence costs. Lower business costs through lower property taxes (cf. following point) and financial assistance, may improves the business environment for sustainable economic activities (eco-tourism and sustainable agro-forestry).
- The programme includes **property tax exemptions for participants, as well as the guarantee of squatter eviction - a further benefit for land tenure**. However, these measures were introduced mainly as an incentive for participation in the programme, rather than as a means to improve the business environment or conditions for economic activity. The positive effect on land tenure and security may generate positive spill-overs in terms of business risks.

particularly due to the positive effect has on land tenure and security as mentioned in previous sections. This may also act as an enabling factor for growth and investment in sustainable business activities (i.e. sustainable agro-forestry).

- **The requirement that PES participants have no outstanding debts with the national social security system** (FONAFIFO, 2009): This is a direct example of cross-compliance designed to guarantee that farm employees have access to social security financed health services.
- **Land taxation:** Although land under PES is exempt from property tax, a long-term effect of PES-driven tenure regularisation may be an increase in the tax base once properties leave the PES scheme (Barton et al., 2013).
- **Protecting and regenerating forests can significantly reduce environmental and natural risks and hazards, which may have a direct impact on the stability of markets and the capacity to conduct business.** Environmental risks are increasingly acknowledged as important factors to take into account in business plans and operations within the private sector. Mitigating such risk can contribute to stability and long term development.
- In addition, **private sector participation in the scheme as source of funding**, may represent an interesting opportunity for companies to improve their image and roll-out their corporate social responsibility agendas. Both of these may eventually increase their market appeal and visibility, leading to growth. In a country like Costa Rica which is heavily dependent on tourism, branding participation in PES can be a strong marketing tool leading to increased economic activity and consumer appeal.

The most important **trade-offs** include:

- **The trade-off stemming from the protection of forest-covered lands vs. the creation of economic activity and jobs through agricultural activities performed on these lands.** Existing evidence however points to the fact that the negative impact of PES on economic activity and jobs is limited.
- **Interest in receiving financial assistance** and tax exemptions may lead some farmers to **deforest land** in order for it to become eligible to receive PES
- **BER** (e.g. regulation concerning access to resources, taxes on business activity) **can influence opportunity costs**, which are one of the key determinants of payment levels. Payment levels act as a key incentive for participation in the programme.
- **Protection of forest areas may reduce economic activity** in the agricultural and forestry sectors, leading to job losses and reduced economic activity
- **Decreased availability of land for agriculture due to land restrictions** and forest protection may lead to **increased price pressures** for some agricultural / forestry products
- **BER which exists outside of the PES programme may also influence opportunity costs** which are a key consideration in the definition of payment levels used by the programme. It is thus crucial to understand how the existing BER framework may positively or negatively influence opportunity costs for different types of participants.

Table 5 Synergies and trade-offs: preliminary overview

	Short-term synergy (positive)	Short-term trade-offs (negative)
BER OUTCOMES -> Synergy with Sustainable Development Outcomes		
Market creation & higher market pressure	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Interest in receiving financial assistance and tax exemptions may lead some farmers to deforest land in order for it to become eligible to receive PES • BER (e.g. regulation concerning access to resources, taxes on business activity) can influence opportunity costs, which
Reduced Business Costs	<ul style="list-style-type: none"> • Lower business costs (e.g. tax exemptions and financial assistance) for production of products & services with positive externalities can improve sustainable outcomes 	

	Short-term synergy (positive)	Short-term trade-offs (negative)
	<ul style="list-style-type: none"> • Lower business costs for PES beneficiaries promote the development of sustainable activities (eco-tourism, sustainable forestry) 	are one of the key determinants of payment levels. Payment levels act as a key incentive for participation in the programme.
Reduced Business Risks	<ul style="list-style-type: none"> • Improved land tenure security reduces business risks and increases likelihood of growth and investment in sustainable business activities 	
SUSTAINABLE DEVELOPMENT OUTCOMES -> Synergy with BER outcomes		
Pollution reduction	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Protection of forest areas may reduce economic activity in the agricultural and forestry sectors, leading to job losses and reduced economic activity • Decreased availability of land for agriculture due to land restrictions and forest protection may lead to increased price pressures for some agricultural / forestry products
Protection of natural resources / ecosystem services	<ul style="list-style-type: none"> • Better protection of ecosystems leads to new economic opportunities such as ecotourism and sustainable forestry market creation • Improved ecosystems reduce the likelihood of environmental hazards leading to potential impacts on private sector activities • Private sector participation in the scheme (e.g. private sponsorship) provides an opportunity for 'environmental marketing' and promoting social corporate responsibility, which may lead to increased share of markets and growth • Introduction of sustainable forestry practices and contracts may lead to development of new markets and increased exports 	
Decreased resource & carbon intensity	<ul style="list-style-type: none"> • N/A 	

Source: Technopolis Group

2.3 Description of results

The following section presents PES results for which evidence has been collected. Evidence illustrating the effectiveness of the scheme relates mainly to high level indicators and objectives, and is unsurprisingly, predominantly environmental in nature.

The main indicator used to illustrate the impact of the PES programme in Costa Rica is the forest surface that has been protected or reforested through the programme. Effects are measured as forest gain, forest loss, and net deforestation (Arriagada, 2008). According to Porrás et al. (2013) "between 1997 and 2012, (PES) has protected more than 860,000 hectares of forest, reforested 60,000 hectares and supported sustainable forest management in almost 30,000 hectares. More recently, it promoted natural regeneration of almost 10,000 hectares. This totals nearly one million hectares under the PES scheme at one time or another, as well as 4.4 million trees planted under agroforestry systems since 2003." By 2010, roughly 52% of the territory was under some sort of forest cover, which is a significant improvement especially considering the 1983 low of 21 % (Kleinn et al., 2002) These numbers are quite substantial for a developing country of just 51,100km. Forest surface is generally used as a proxy to measure the contribution of the programme to ecosystem services.

However, these numbers should be taken with a grain of salt, since there does not appear to be consensus around the notion that these improvements would not have happened were it not for the PES programme. In other words, there is a lack of evidence stemming from counterfactual scenarios based on 'no conservation measures', or only the existence of protected areas measures. For example, a study conducted by Pfaff et al. (2008) found that in a counterfactual scenario, over 99% of enrolled

parcels in PES would have provided Eco services without payments, indicating that the additionally of the programme is extremely limited.

There are a number of social and economic impacts which are generally associated to the programme. For instance, at the individual level, the programme benefits people directly, through direct payments and potentially new jobs, and indirectly, for instance by promoting healthier ecosystems.

According to Porras et al. (2013) **the US\$340 million distributed between 1997 and 2012 is probably the PES’s greatest direct socio-economic benefit.** The greatest part of these funds went to legal entities (49 per cent), followed by individuals (31%), indigenous groups (13%) and cooperatives (7%). These relatively stable periodic payments are an important income source which diversifies participants’ livelihood opportunities, so that revenue comes from the provision of ecosystem services from forests as well as from agriculture. The direct impact is highest in remote rural areas, where PES is one of the principal sources of cash for many participants and a source for income diversification within the farm or group and redistribution within the local communities (for example in cooperatives or indigenous associations). Direct social impacts tend to be particularly visible among indigenous communities participating in the programme, which tend to invest financial assistance received through the programme to develop infrastructure and public facilities (Sanchez, 2016). Participation in the programme has increased for both indigenous communities (from 3 to 26 per cent of budget allocation between 1997 and 2012) and female- headed properties (from 16 to 23 per cent in the same period).

Impacts on the individual level differ significant among participants, based on their size, business capacities, geographic location. It is thus very difficult to come to a general conclusion on the impacts financial assistance generates at the individual level, or how financial support is being used by participants. It is worth noting however that historically the main beneficiaries have been larger landowners.

“One of the weaker aspects of the programme’s social impacts is its de facto bias towards relatively better-off landowners”. (IIED, 2013)

The trend analysis of PES beneficiaries reveals the existence of a **trade-off generated by the programme’s targeting strategy.** Given that historically a significant proportion of the PES programme was captured by larger properties, many of them held by legal entities or foreign national, the extent to which the programme is fulfilling its original goal to support small- and medium-scale farmers is debatable. While not all legal entities are necessarily wealthy, and many of them are family enterprises, it is likely that the owners of legal entities in PES are, on average, wealthier than individual PES contract holders, given the high legal costs of keeping a private company up to date. On the other hand, it is also possible that legal entities are better placed to invest in improved management techniques for reforestation, regeneration, and forest management, as well as having a better grasp of marketing which increases the chances of reinforcing the attractiveness of forestry activities and the creation of more jobs. More information is required to understand how to promote participation of one group without negatively affecting access by another (IIED, 2013).

There is very little evidence regarding the net job creation which can be associated to the programme. While some studies state that the programme may have contributed to support the creation of green jobs in Costa Rica (i.e. employment for forest conservation), others have identified job destruction or lost employment creation opportunities linked to the lower employment intensity of forest protection compared to traditional agricultural activities.

Table 6 Overview of outcomes and impacts

Type of outcomes & impacts	Evidence
Outcomes	
Market creation & higher market pressure	The PES scheme it itself has not led to the creation of new markets or increased market pressure. Certain stakeholders indicate it has allowed to increase the forest-based industry’s

Type of outcomes & impacts	Evidence
	export activities.
Reduced business costs	<p>By means of the economic assistance received through payments, it may be considered that there is a direct effect on the economic burden of operating businesses. There is limited evidence however regarding how payments are invested subsequently by beneficiaries. For example, it is unknown if payments are investment for productive or innovation purpose by beneficiaries. Property tax exemptions however do have a direct impact on business costs.</p> <p>There is some evidence that forest protection measures may lead to increased prices of agricultural goods, due to the limitations land availability for agricultural activities. This may in turn lead to increased business costs (i.e. price of raw materials and other production resources).</p>
Reduced business risks	<p>Risks are reduced by two means:</p> <ul style="list-style-type: none"> • Increased land tenure security offered by the programme's complimentary measures. It can also be considered that by requiring participants to demonstrate the existence of property rights and demonstrating having non outstanding debts with the national security system, the programme also indirectly reduces business risks. • Environmental protection and protection of natural resources also limits business risks (i.e. raw material scarcity, and limiting exposure and likelihood of environmental hazards)
Pollution reduction	Forest protection and increased forest cover directly improves carbon sequestration capacities.
Protection of natural resources*	<p>Protection of water and forest resources, biodiversity. By some estimates, nearly one million hectares of forest in Costa Rica have been part of the PES programme at one time or another since 1997. Partly as a result of this forest cover has now returned to over 50 per cent of the country's land area, from a low of just 20 per cent in the 1980s. Studies have generally found that programme recipients have higher forest cover than non-recipients (61% v 21% in Northern Costa Rica and 92% v 72% in Osa Peninsula) (Pagiola, 2008).</p> <p>Other studies however indicated that the impact of the programme on forest protection is very limited. A recent econometric study shows that during 1997-2000 the programme avoided deforestation in only 2 out of 1,000 hectares of forests enrolled. This is because in an appropriate counterfactual the deforestation rate was already very low (Robalino and Pfaff, 2013). In other words, it is likely that most of the land under the programme would not have been deforested in the absence of the financial incentive.</p>
Decreased resource and carbon intensity	None
Other outcomes	Participation in the PES scheme by private companies as sources of demand or funders, for marketing or social corporate responsibility purposes. This may in turn lead to increased market share and exposure. There has been a recent surge in the number of private sector companies sponsoring the program.
Impacts	
Private sector-driven growth	<p>Some qualitative and mostly anecdotal evidence points to the growth of the eco-tourism sector thanks to the existence of more protected areas and the quality of the natural landscape, which can be directly linked to the PES program. Similar evidence also points to a certain decline of forest-based industries in the country, partially due to the existence of increased restriction on the use and extraction of forest resources.</p> <p>While some studies state that the programme may have contributed to support the creation of green jobs in Costa Rica (i.e. employment for forest conservation), others have identified job destruction or lost employment creation opportunities linked to the lower employment intensity of forest protection compared to traditional agricultural activities. There is no evidence allowing to demonstrate whether payments are being invested by beneficiaries for productive or innovation-related purposes.</p> <p>Generally speaking, the economic impacts of the PES have not been studied in detail. There is very little evidence regarding the net job creation which can be associated to the programme.</p>
Green growth	There is little to no evidence that these services (with the potential exception of carbon) have increased due to the effects of the programme: most efforts to quantify are limited to monitoring actions expected to lead to better ecosystem services; and obtaining evidence of actual impact on these services is potentially very expensive.

Source: Technopolis Group. *Drawn from IIED, 2013.

Until now, there have been few efforts to account for all impacts on people beyond the direct financial benefits of those participating directly. It is generally acknowledged however that, the programme's intended improved ecosystem services are essential to improving resilience to climate change, as well as being inputs to agriculture, generation of hydroelectricity, and the ecotourism industry. According Morse et al. (2009) the money obtained through the PES is regarded as a crucial co-investment for activities like reforestation, forest management and agroforestry, and promotes the economic attraction of forest activities.

On the downside, the introduction of the PES has often been criticized due to its potential negative impacts on the agricultural sector. One study finds that "as the result of conserving forests under the PSA Program, aggregate economic activity is slightly lower in 2005 than if those forests had entered agricultural industries... this leads to slightly lower wage rates and thus household income (on the order of one-tenth of one percent by 2005)" (Ross et al., 2007). In addition, increased restrictions on land use can result in higher prices of certain agricultural products which can in turn lead to increased prices in a number value chains (e.g. food processing). They may also lead to the destruction (or lost opportunity to create) employment and economic activity on protected forest lands.

One expert interviewed as part of this case study indicated that one of the most important missed opportunities of the program was not creating the enabling conditions for ecosystem service payments were to strengthen the country's forest-based industries. For example, there is no evidence pointing to the use of payments on behalf of beneficiaries to strengthen competitiveness or productivity. On the contrary, the introduction of a strengthened forest protection framework may have acted as a barrier for forest-based economic activities.

Additional programme effects, particularly those relating to the BER dimensions highlighted in section 2.2 have not been studied in detail (i.e. regularisation of property ownership among smaller landowners, encouraged compliance with farm employees' social security obligations, income diversification in small farms through agroforestry, sorting out possession or tenure rights).

3 Programme implementation

3.1 Governance

Forestry law 7575 also defines how PES is to be governed and managed. As mentioned in previous sections, the law created the National Forestry Fund (FONAFIFO) as the primary intermediary charged with administrating the PES programme. It is worth highlighting that in addition to its PES-related responsibilities, FONAFIFO is also responsible for overseeing the REDD+ process in Costa Rica. FONAFIFO itself is governed by a board composed of representatives of from the ministry of the environment and the ministry of agriculture, public national banks and the private sector. Private sector representatives include a representative from the industrial sector and a small producer / farmer representative. According to a FONAFIFO official, “this private – public governance model works”.

The programme’s implementation strategy has been continuously updated since the time of its launching. Improvements and alterations to targeting strategies (geographical and population), selection procedures, payments levels have been modified on a permanent basis, based on what could be described as a continuous feedback cycle facilitating the introduction of innovations and adaptations. Being able to make these adjustments throughout time illustrates the flexibility of the governance and management of the PES programme, which has often been identified as one of its major strengths. For example, FONAFIFO, began by allocating budget to applicants on a first-come first-served basis in 1997. However, interest in the scheme far outweighed the funds available so that FONAFIFO decided to implement a selection based on landowner and land-use characteristics. Allocation and selection criteria have subsequently been reviewed on a number of occasions:

- 1998-2002: There was no national strategy for allocation and the criteria varied according to the regional office of the National System of Conservation Areas.
- 2003-2010: FONAFIFO took full management of the programme and selected applications on a first-come-first-evaluated-basis, with quotas assigned to the regional offices.
- 2011 – present: FONAFIFO applies a national level priority setting across “pre-applications” using a revised matrix; for example, applications with the same objective would received different points based on regional needs. (IIED, 2013)

The governance of the programme has also undergone continuous changes since the mid-90s. According to Porras et al. (2013),

“as the programme matures, a clearer approach to overall governance emerges, with more focused efforts to reduce transaction costs, the creation of local offices in areas of high risk of deforestation, a clearer institutional structure that promotes inter-sectorial cooperation (for example, between government ministries), legal and technical capacity building for programme managers, and simplified contracts with clear guidelines”.

3.2 Monitoring, Evaluation and Learning

There have been two sources of monitoring and evaluation of the PES programme until now:

- Continuous monitoring techniques conducted by the programme itself to ensure and verify PES contracts are being effectively implemented and monitor the surface of forest being protected or regenerated. This work is conducted by FONAFIFO in order to ensure resources being allocated to programme participants are effectively being used. The main criteria and indicators used are disbursements, types of contracts being supported, forest cover (hectares of land) as a proxy for ecosystems being delivered. This work relies mainly on visits conducted by programme personnel to beneficiary farms and properties, and advanced satellite and imaging techniques allowing to measure forest land coverage. Internal monitoring procedures have been significantly strengthened as a result of support received from foreign donors (e.g. World Bank)

- A number of studies have been conducted by independent experts and researchers on the results and impacts of the PES, particularly during its first ten years of existence. Porras et al. identified approximately 13 studies analysing the results and impacts of the PES programme. FONAFIFO works regularly with the Tropical Agricultural Research and Higher Education Centre (CATIE - <http://www.catie.ac.cr/en/>) to better understand the effects of PES. These studies have looked at a range of issues including some of the socio-economic impact of PES such as the effect of PES on employment and growth. Most of the BER-related synergies identified in earlier sections remain to be explored and analysed. Most of them are however somewhat outdated. Some of the key findings drawn from these studies are presented in section 1.

In general terms, evaluations and impact assessments have not provided a solid amount of evidence indicating whether the PES is generating expected results and impacts. Most existing evidence focuses on the environmental dimensions of the programme, while little attention has been given to the social or economic objectives. The heterogeneity of studies and the lack of understanding of PES cohorts make it difficult to provide generalised conclusions about PES impacts.

The main issues and weaknesses stemming from existing studies are (IIED, 2013):

- There is a tendency to focus on changes in forest cover, and mostly deforestation rates, without distinguishing between forest types and their biodiversity and water conservation value, carbon sequestration and landscape beauty.
- Studies have neglected to identify where in the mosaic of various land uses (e.g. old growth, regeneration) PES and Protected Areas measures are most effective, given that they address different environmental and social objectives. If PES is seen as just one part of a policy mix purposefully targeted to complement multiple-use PAs, impact evaluation should also be designed to look at the combined effect of PES and PA.
- Intended and unintended secondary impacts on people are generally overlooked, mainly as a result of the lack of understanding of the causal relationships between environmental and social measures.

4 Good practices and lessons learnt

4.1 Conclusion on synergies and trade-offs

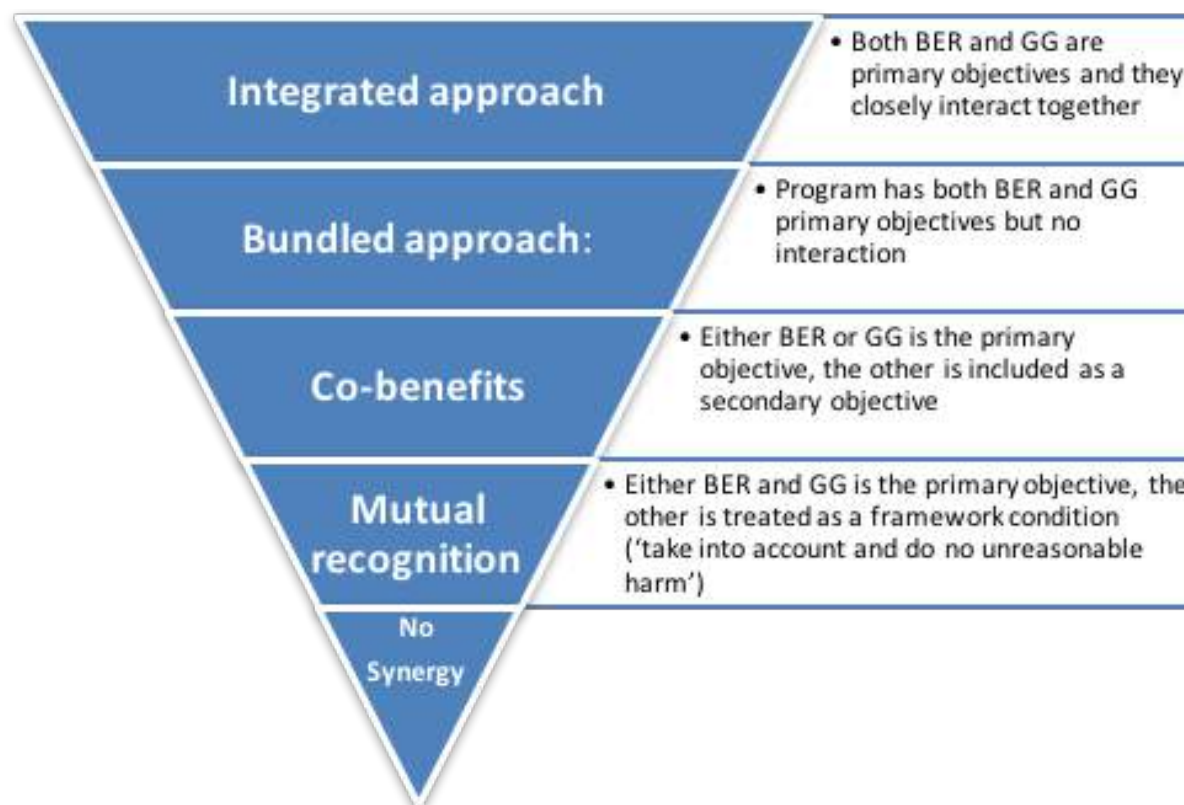
As illustrated in previous sections, positive synergies between the GG and the social and economic objectives were envisaged and built into the original program design. However, there is limited evidence illustrating the real impact that the program – which is primarily focused on achieving environmental objectives - has had on issues such as poverty alleviation, or the growth of forest-based industries in the country. According to one interviewee contacted as part of this case study, much more could have been done during program design to ensure it generated more positive social and economic spill-overs. There is however a small body of mostly anecdotal and qualitative evidence pointing to the fact that ecosystem payments provided to isolated communities have provided as a source of income, and are being used to support investments improving the quality of life of these communities (i.e. public infrastructure).

The synergy between conservation and social and economic objectives described above can be described as a ‘captive’ synergy, to the extent that it was planned and explicitly built into the program by its designers. In addition to this, there are a number of other ‘non-captive’ synergies and trade-offs that have been identified between the BER and private sector development component of the program, and its environment and conservation objectives. These ‘non-captive’ links are not explicitly integrated into the program’s intervention logic. In addition, there is limited evidence allowing to make an exact assessment of the importance, or in some cases the existence, of these synergies and trade-offs.

In terms of synergies it can be said that the positive impacts of the program on BER (i.e. reduced business costs and business risks), can act as a driver of ‘sustainable economic activities and economic diversification’. This includes the development of sustainable agroforestry practices, or a strengthened eco-tourism sector. On the other hand, enhanced conservation measures and the effects they bring about may also generate positive spill-overs in terms of reducing business risks (i.e. reducing the likelihood of environmental hazards, guaranteeing existence of raw materials). Eco-system payments being offered to landowners may also be considered as a mechanism allowing to reduce business costs, and improve access to financing for business development.

In terms of trade-offs, the main concern is the negative impact on certain economic activities (i.e. agriculture, forest-based industries) that may be generated by enhanced forest and land protection measures. Some interviewees pointed to the fact that forest protection measures and the PES program introduced by the government may explain in part the decline of the country’s forest-based industries in recent years. Other studies however, point to the existence of very limited impacts of the PES program on GDP or agricultural goods-prices.

Based on this, it can be said that the programme was designed on the principle of ‘co-benefits’ between green growth and private sector development objectives. Some of the objectives and principles upon which the programme was designed to relate directly to intended outcomes of BER such as improving tax policies and administration, enabling access to finance, and improving land titles, registers and administration. However, there is no explicit recognition of the importance of these measures in improving the business environment of key sectors such as forestry, agriculture and eco-tourism, and no attempt has been conducted to measure the impact of the programme on this front.



4.2 Lessons and Good practices for Policy Makers

The Costa-Rican PES system has gained considerable international recognition and visibility as a pioneer programme aimed at supporting the development of eco-system services via conditional payments. The programme has been used as the basis to develop similar schemes in other geographical contexts (exampl). Programme management and implementation teams are continuously contacted to share their experience and knowledge on the the program and its means of implementation. The existence of the programme of over 20 years has allowed to collect and gather a significant amount of information regarding its history and some of its achievements. There is little consensus however on the extent to which the programme has been effective and able to meet its main objectives.

On hindsight, there a series of key messages that can be drawn for policy makers seeking to develop similar initiatives in their home countries. The following lessons however relate mainly to the relationship between the GG and the BER components of the programme, and not to the program as a whole.

- Program design
 - The PES program is often described as being the product of a 'wide stakeholder consultation process' which took place since the mid-80s. It is indeed believed that for the time, this policy initiative received a good amount of public exposure and was widely debated among certain sectors of society. Environmental groups were particularly active in promoting social debates and consultations regarding the relevance and need for the introduction of a strengthened conservation policy framework. One must not forget a couple of decades before the introduction of the PES program, Central America had been the scene of several important armed conflicts, and the culture of public 'transparency and accountability' was still nascent. The existence of a public debate around the importance of forest conservation

measures certainly increased the levels of acceptability of the programme, as well as its ‘political clout’. Looking back on the program design phase however, one can regret the lack of stronger involvement of economic and industrial stakeholders in this process. This could have ensured the existence of stronger and more explicit links between the PES scheme’s environmental, and industrial and private sector development dimensions.

- The PES program can be considered as an ‘endogenous’ policy initiative, which is largely the product of a national or local policy debate and reflection process. It has been mostly developed by Costa Rican professionals and academics. International donors have however played a significant role in funding the initiative (i.e. World Bank eco-markets project) and as such, have heavily influence the design of the program. According to one program representative, the involvement of international donors has heavily influence the monitoring component of the program. The ‘local’ nature of the program has in all likelihood contributed to its capacity to withstand the test of time and become a true ‘State policy’ which has managed to survive despite the existence of numerous political changes.
 - Similar schemes and programs would gain from including a more explicit recognition of how environmental and ecosystem protection objectives and measures are meant to contribute to BER and more generally, to private sector development. Due to the important links existing between forest conservation measures and for example, the development of sustainable agroforestry activities, it is important to ensure the adoption of this type of environmental conservation measure is capitalised on as an opportunity to support the country’s innovation, competitiveness and economic development agenda.
 - One of the main strengths of the PES programme is that it represents a fairly coherent mix of complimentary instruments which tend to work in the same directly. For instance, tax exemptions and land tenure components seek to drive participation in the programme, but also seem to generate positive spill-overs. PES it itself is part of a broader forest conservation and protection policy mix which includes the creation of protected areas as well as a ban on deforestation. This combination of ‘carrots & sticks’ appears to be a paramount framework condition for the viability of such a program.
 - In spite of being a coherent policy or instrument mix, the PES program is fairly isolated from the country’s economic and social policy mix and agenda. Similar programs designed and implemented in the future should be considered as an additional and complimentary element of other policy initiatives being taken at the national level to address issues relating to rural and agricultural development, economic development, poverty alleviation and support to indigenous communities. Links between the PES program and these other policy initiatives and programs should be made explicit within the program’s intervention logic.
- Programme implementation
 - Ensuring a certain level of administrative flexibility for the purpose of program implementation is key to creating a ‘virtuous policy learning cycle’, allowing the program to continuously learn from previous mistakes and successes, and implement gradual adjustments and improvements (i.e. selection procedure criteria - cf. section 3.1). This has been identified as one of the key strengths of the PES program. Flexibility is facilitated by existence of a good level of autonomy of the executing agency (in this case FONAFIFO). This has allowed FONAFIFO to experiment with different yptes of selection criteria and contract conditions, allowing the program to adapt to changing economic realities, as well political priorities.
 - More targeted strategies for the identification and selection of beneficiaries (i.e. populations, territories), through for example beneficiary selection criteria, is likely to generate more visible and more intense effects with regard to specific program

ambitions and objectives. Strong criticism of the PES program in Costa Rica stems from the fact that it seems to have benefitted mostly large landowners and companies, with no evidence of a return on investment in terms of productivity, competitiveness or innovation on behalf of these populations. Small landowners and family-based producers have only marginally benefitted from the program, largely reducing its impacts on poverty alleviation, agricultural professionalization, and diversification.

- The programme lacks a strong and robust monitoring and evaluation system (incl. precise indicators) allowing to effectively measure its results and impacts (positive and negative, intended and unintended) regarding its environmental, social and economic dimensions. This is linked to the lack of a clear and concise intervention logic or 'theory of change' which explicitly articulates how it intends to reach its objectives and contribute to the generation of desired changes. Intervention logics as well M&E procedures should take into account the existence of negative externalities of the programme on private sector-led growth and the business environment.
- Governance structures should include a strong presence of private sector stakeholders as well as government agencies responsible for economic and private sector development, and social affairs policies. Sectoral ministries and agencies (i.e. agriculture, forests, social development, indigenous affairs) also need to be heavily involved in the development and implementation of this type of program.
- The 'agroforestry' component of the program has been largely underused. This has significantly undercut the ability of the program to drive the development of the forest-based economic activities and increase economic diversification, particularly of the agricultural sector. It has also limited the impact of the program on the regeneration of degraded areas and the development of secondary forests. Agroforestry could represent a key bridge between the environmental and the economic dimensions of the program, as well as a means to jump-start a declining wood industry and support the development of bio fuel industry.
- Private sector participation should be encouraged, not only from the payment beneficiary perspective (i.e. landowners or companies), but also from the funding perspective. There is currently an overreliance of the PES program on public funding a source of income. However, private sector entities (local or international) can be an important source of funding for the program.

Appendix A Sources and further reading

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A.2 Interviews

- David N. Barton, Senior Research Scientist, Economics of Ecosystem Services, Norwegian Institute for Nature Research – NINA Oslo
- Oscar Sanchez, Director, Environmental Services Unit, FONAFIFO
- Ina Porras, Senior researcher (environmental economics), Sustainable Markets Group" International Institute for Environment and Development (IEED)

