
**Fair and green? Social impacts of payments for
environmental services in Costa Rica**

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December 2010

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ISBN: 978-1-84369-783-1

This paper can be downloaded free of charge from
<http://www.iied.org/pubs/display.php?o=15518IIED>. A printed version of this paper is also
available from Earthprint for US\$20 (www.earthprint.com)

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Acknowledgements from the author: I would like to thank Oscar Sanchez, Bayardo Reyes and Ana Lucrecia Guillen from FONAFIFO for their support in providing the database and responding to endless questions about the programme. Maryanne Grieg-Gran from IIED and Juan Robalino from CATIE provided many useful comments on earlier drafts, which helped focus the approach and determine what should be left for future research. The initial drive for this research came from an article prepared for the World Bank, which attempted to discuss the social impacts of the PES programme on the basis of existing literature, and which raised more questions than answers at the time. For that, I thank Stefano Pagiola for his many questions and comments, and hope that this research has helped answer or raise more issues regarding the social impacts of the Payments for Environmental Services programme.

Disclaimer: The views expressed in this paper are those of the author and not necessarily those of IIED.

Contents

Executive summary.....	1
1 Introduction	3
1.1 Why is it important to track social impacts?	3
1.2 Study objective and methodology	4
2 The PES programme in Costa Rica	6
2.1 Brief history of the programme.....	7
2.2 Equity in access: who participates in the PES programme?.....	11
2.2.1 Private companies.....	13
2.2.2 Individual farmers.....	15
2.2.3 Conservation and development associations.....	15
2.2.4 Indigenous communities	15
2.3 Removing obstacles by reducing transaction costs	16
2.3.1 Group contracts.....	17
2.3.2 Creation of regional offices	18
2.4 Encouraging participation by smaller properties	21
2.5 Policies specifically directed at poorer farmers.....	23
2.5.1 Social Development Index as priority criteria	23
2.5.2 Possession rights and legal land titles	26
2.6 A proposal to increase the social impact of the PES programme.....	26
3 Conclusions.....	28
References.....	29
The Markets for Environmental Services series	31

List of tables, boxes and figures

Box 1: The Costa Rica PES programme	6
Box 2: Who is getting paid?	14
Figure 1: Distribution of contracts and funds, by year and activity (1997-2008)	8
Figure 2: Total contract and budget allocation for each activity (1997-2008)	11
Figure 3: Distribution of total funds by type of beneficiary (1997-2008)	12
Figure 4: Allocation of funds (US\$ million) by category of contract (1997 and 2008)	13
Figure 5: Company participation in the PES programme (1997-2008)	13
Figure 6: Proportion of group contracts (1997-2002)	18
Figure 7: Map of FONAFIFO regional offices	19
Figure 8: Impact of new regional offices on the number of contracts signed	20
Figure 9: Overall distribution of contracts by farm size (1997-2008)	21
Figure 10: Allocation of contracts for small farms (≤ 5 ha) and large farms (> 200 ha) (1997-2008)	22
Figure 11: Distribution of contracts by activity and property size	23
Figure 12: Contract allocation for areas categorised as poor	25
Table 1: Main PES activities and distribution (between 1997 and 2008)	10
Table 2: Allocation of individual contracts by property size (1997-2008)	15
Table 3: Distribution of group contracts (1997-2002)	17
Table 4: Areas where PES is more active	20
Table 5: Suggested indicator for poverty	27

Acronyms

CATIE	Centro Agronómico Tropical de Investigación y Enseñanza (Center for Tropical Agricultural Research and Education)
CDM	Clean Development Mechanism
CODEFORSA	Comisión de Desarrollo Forestal de San Carlos (Forestry Development Commission of San Carlos)
FONAFIFO	Fondo Nacional de Financiamiento Forestal (National Forestry Fund)
FUNDECOR	Fundación de Desarrollo Cordillera Volcánica Central (Foundation for the Development of the Central Volcanic Mountain Range)
IDA	Instituto de Desarrollo Agrario (Agrarian Development Institute)
IIED	International Institute for Environment and Development
IMF	International Monetary Fund
MES	Markets for Environmental Services
PES	Payments for Environmental Services
REDD+	Reducing emissions from deforestation and degradation, conservation of existing carbon stocks and enhancement of carbon stocks
SDI	Social Development Index (0-100)
SINAC	Sistema Nacional de Areas de Conservación (National System of Protected Areas)

Executive summary

Costa Rica is a small, relatively well-off country. Covering some 51,000 km², and with a population of just over 4 million people, it is comparable in size with Scotland. Per capita income levels put the country well ahead of the rest of Central America, and it has topped the Happy Planet Index,¹ a measure that combines environmental impacts with human wellbeing.

The country has also developed an interesting social and environmental policy through a complex process of trial and error. It was Costa Rica that conceived the idea of the Payment for Environmental Services (PES) programme, a unique experiment in developing countries at that time. With this programme, economic recognition of forests moved from a 'timber-only' approach to a wider concept of ecosystem services that feed directly into human and industrial functions of production or consumption. Farmers who own forests were able to receive a payment for the externalities their forests produce and people who benefit from those services were expected to pay for them. A new law created in 1996 recognised four main environmental services that could receive payments, and provided both the institutional framework to manage the new programme and the funds to make it financially viable.

By 2008 the managing institution FONAFIFO had allocated just over 10,000 contracts and more than US\$206 million, an average of US\$17.2 million per year. The main category of land use receiving payments is forest protection, which represents 67 per cent of all contracts and accounts for 73 per cent of the financial resources. Reforestation activities account for approximately 20 per cent of contracts and funds; and the programme also covers forest management and agroforestry activities.

But who benefits and who loses in the PES programme? A clearer understanding of distributional issues in PES-type projects is becoming increasingly important for the design of large-scale projects such as REDD+, in Costa Rica and elsewhere. This document looks in detail at the social impacts of the programme, and tries to address issues related to equity and poverty on the basis of long-term data from all the contracts signed.

Results show that a significant proportion of payments tend to go to areas with lower opportunity costs, relatively large farms and private companies. The PES programme's lukewarm approach to dealing with poverty has limited its impact in this field, for while many poor landowners theoretically meet the criteria to participate in the programme, it is actually the wealthier landowners who tend to benefit most from its policies.

Analysis of the data and previous studies show that although FONAFIFO is moving in the right direction and increasing its impact on the poor, it needs to do more to be able to claim to have a genuine social impact. Transaction costs are multiple and expensive, and many of the requirements are fixed costs that weigh more heavily on small properties. Attempts to reduce the entry costs for small farmers have not been entirely successful, and most small farmers still face significant barriers to entry. The experience of group contracts highlights the problem of local intermediation and the heterogeneity of the groups concerned, while using the Social Development Index (SDI) as a priority criterion has mostly benefited relatively wealthy landowners and companies. Furthermore, given the decreasing levels of the SDI across the country (showing rising levels of poverty throughout), FONAFIFO might be better off to cease using the SDI as the main criterion for eligibility and make more effort to reach poorer farmers directly.

¹ <http://www.guardian.co.uk/environment/2009/jul/04/costa-rica-happy-planet-index>

Introducing detailed social filters can make the application process cumbersome. Most applicants do not like providing information about their income, especially when it comes from different sources. Furthermore, poverty is relative in Costa Rica, especially in rural areas and for those who own land. Measures used in other countries (such as having a thatched roof, electric cooker, car and so on) either do not apply in this context or would be too expensive to verify on the ground. Nevertheless, the Social Development Index could act as a useful filter, if three indicators that would be relatively easy to verify in the field were used as a criterion for poverty:

- SDI at district level < 40
- Maximum property size of 30 hectares
- Individual or indigenous property ownership (excludes companies and associations)

In addition to this, there should be a criterion limiting the number of valid contracts a particular owner (or company) can have at one time for the same property (if it is over 300 hectares) or for multiple properties. This would address the issues raised by multiple contracts. It should be possible to obtain this information relatively quickly by updating the FONAFIFO database (at the moment the database does not include this information).

While the PES programme was designed with environmental objectives in mind, there is no denying that political pressures from the government and donors keep pushing the social agenda forward. Strategically, FONAFIFO needs to show a more hands-on approach that delivers sizeable social impacts. As managers of a largely public-funded programme, its agents need to walk a careful line between raising political goodwill and keeping administration costs down.

1 Introduction

1.1 Why is it important to track social impacts?

Although sustainable development is based on the four theoretical pillars of equity, economic efficiency, environmental effectiveness and political legitimacy (OECD 2007), in practice, social issues such as fairness and legitimacy tend to be treated as a sub-goal and sidelined from optimisation processes.

Early proponents of markets and payments for environmental services highlighted their potential as a tool for sustainable development, with the capacity to deliver in terms of economic efficiency, environmental efficacy and rural development (Pagiola and Platais, 2002; Landell-Mills and Porras, 2002). At the same time, attention was drawn to the existence of bottlenecks (such as access to information and property titles) that could seriously undermine participation by poorer landowners (Landell-Mills and Porras, 2002; Albán and Argüello, 2004; Grieg-Gran *et al.*, 2005; Rosa *et al.*, 2003; Smith and Scherr, 2002).

Since equity is a central concept in global environmental justice and sustainable environmental governance (Scholsberg, 2004), a debate began about the extent to which conservation policy should be burdened with social issues. Pagiola *et al.* (2005) stress that PES is not intended as a mechanism for poverty reduction, although it is expected to have some impact through spatial correlation (poor people tend to be located in environmentally fragile areas), and by providing additional income for poor participants. Wunder *et al.* (2008) warn that adding too many objectives to conservation policies will reduce their effectiveness, and the administrators of the PES programme in Costa Rica (FONAFIFO) have been most emphatic on this point (Rodríguez, 2008²). However, the question of whether conservation policies should actively address poverty can be debated on several grounds (Peskett *et al.*, 2008):

- Moral grounds: the Millennium Development Goals put poverty alleviation as a clear end in itself. Where the poor have claims to resources, they have a right to an equitable share of their benefits.
- Long-term sustainability: some argue that conservation initiatives will only be viable in the long term if resource-dependent communities and local groups benefit from them (Landell-Mills and Porras, 2002).
- Making projects less risky for investors and buyers: the risks of leakage and lack of permanence can be reduced if local people are less likely to be driven to undertake resource-depleting activities elsewhere; also, projects that deliver tangible social benefits are less likely to be blocked by local communities and governments.
- Conservation policies may lead to the creation of niche markets for products (Peskett *et al.* 2008).
- Political motivation: policies that work for the poor are more likely to gain acceptance in the national and international arenas. Donors are increasingly demanding proof of the social impacts of international aid, and national governments need to justify funds invested to the general electorate.
- Contractual and legal obligations: (also linked to the previous point) some organisations have to ensure that their policies have positive or at least minimum impacts on social terms.

It is difficult to identify key factors that foster win-win outcomes on all sustainable development fronts. Barrett *et al.* (2005) note that there is no natural synergy between rural

² Personal communication with Jorge Mario Rodríguez, director FONAFIFO.

poverty reduction and the conservation of renewable natural resources. They warn against wishful thinking that payment for environmental services (or indeed, most conservation policies) can deliver winners in all corners, and accept that trade-offs are the norm.

A clearer understanding of policy processes and outcomes is required to understand trade-offs and impacts on equity. Equity in process and decision-making refers to participation in the design and setting of rules, and inclusion in strategic management (Brown and Corbera, 2003). Equity in access and outcomes relates to the distribution of benefits, who wins and who loses, and why this is so. Pagiola *et al.* (2005) deepen the analysis by exploring the spatial, proprietorial and technical obstacles to participation (such as environmental targeting), the actors' desire to participate in relation to expected outcomes, and how income and non-income benefits are actually distributed among participants.

1.2 Study objective and methodology

This document attempts to provide insights into the distributional impacts of the Payments for Environmental Services programme in Costa Rica (PES).

The analysis is guided by the following questions:

- Who participates in the PES programme? And more specifically, to what extent do poorer farmers benefit from it?
- What measures has the PES programme taken over the years to address social issues?
- What impacts have these measures had on the pattern of contract distribution?
- What measures can be proposed to make the programme more effective in reaching the poor?

This study aims to inform policy-makers in Costa Rica on how to improve the social reach of the programme, and show how conservation policies impact on equity. The long-term learning process provided by the PES programme in Costa Rica can also help shape the international agenda of REDD+ projects in the future. The main policies analysed in this document are:

- 1) Policies to reduce transaction costs for all participants:
 - a. group contracts
 - b. creation of local rural offices
- 2) Policies to encourage participation by small properties:
 - a. agro-forestry contracts
 - b. forest regeneration
- 3) Policies to encourage participation by poorer farmers:
 - a. priority allocation for areas with low Social Development Index scores
 - b. possession rights instead of legal titles

Several policies have combined objectives or impacts. For example, reducing transaction costs is expected to encourage participation by poorer landowners, while encouraging agroforestry not only benefits small landowners, but could also potentially help poorer households by providing short-term income. For this analysis, they will be grouped according to the main expected beneficiaries of the policy.

This study uses information collected by FONAFIFO on all signed contracts (valid and expired). Where possible this information is supplemented by other publicly available sources, including:

- Information on the Social Development Index (SDI) from the Planning Ministry (MIDEPLAN).
- Information on exchange rates, inflation and other monetary variables from the Banco Central de Costa Rica (BCCR).
- Information on property prices gleaned from sale prices given by real estate firms and classified advertisements. Although the Land Registry has property values for all farms with PES contracts,³ most of the reported values are absurdly low in order to keep land taxes to the minimum – a regrettable but very common practice.
- Information about the nature of the participants was obtained after careful analysis of the name of the main applicant on the contract.
- Information from several companies receiving payments, which was obtained from their websites. In the case of individual farmers, we tried to gather information from the national registry.
- *La Gaceta* was also consulted continually to obtain legal information relating to the PES programme and some of its beneficiaries.
- Literature review of other studies of the PES programme.

It is important to emphasise that this is a desk-based study, prepared with the intention of exploring the main trends and direction of the programme thus far. One major gap in this study is the limited amount of personal information on programme participants (income, education and so on), and the fact that there is none whatsoever on non-participants and rejected applications. The next steps of the analysis should include social and economic mapping of the country, and linking this information with biophysical aspects of the programme (risks of deforestation, hydrologically sensitive areas, flood-risk areas, flood-prone areas, etc.) to determine environmental priority areas and how social and economic variables can affect programme uptake. Additional information provided by participants (taken from existing studies and additional field surveys) and non-participants would be beneficial for regression analysis.

³ www.registronacional.go.cr

2 The PES programme in Costa Rica

By common standards, Costa Rica is a small, relatively well-off country. Measuring some 51,000 km², it has a population of just over 4 million people and a per capita income of US\$6,590, putting it in 63rd place in the world ranking.⁴ According to the new economics foundation (nef), Costa Rica is at the top of the Happy Planet Index, a measure that combines environmental impacts with human wellbeing.⁵

The early 1990s saw big changes in the country's environmental policy. A decade of expensive expropriations to create the National Park System had drained the Ministry of Environment and created considerable antagonism amongst local communities. Government deals with the International Monetary Fund (IMF) meant that most subsidies were to be discontinued, including those for reforestation. The newly created national parks were increasingly becoming islands, as nearby farmers had no financial incentive to keep existing forests outside the park limits, and were reluctant to do so in case of further park expansions. In-depth consultations with government sectors, the forestry industry, conservation, peasant and civil society organisations highlighted the need to include private landowners in the debate. Internationally, the concept of 'sustainability' was beginning to gain ground following the Rio Conference in 1990, the framework convention on climate change, and the Biodiversity Convention in 1992. Forests began to be publicly recognised as a source of income, not just as dormant assets.

Recognition that forests provide a wide range of environmental services that feed directly into human and industrial functions of production or consumption led to a more holistic view of these natural resources, which are now seen as more than just a source of timber. In 1996, the principle that farmers who own forests should be paid for the externalities they produce, and that those who benefit from those services should pay for them was enshrined in a new law. This recognised four main environmental services that could receive payments, and provided both the institutional framework to manage the new programme and the funds to make it financially viable.

Box 1: The Costa Rica PES programme

The Costa Rican Payments for Environmental Services programme was created in 1996 through Forestry Law 7575, which recognises that forests provide environmental services. Based on the principle that the 'beneficiary pays', it suggests that forest owners should be compensated for the following services:

- Mitigation of greenhouse gases (reducing, sinking, fixing and storing carbon)
- Protecting water for rural, urban or hydroelectric use
- Protecting biodiversity for conservation, scientific and pharmaceutical use
- Landscape beauty for tourism.

Although there have been attempts to measure the level of service provided (especially for carbon sequestration), payments do not depend on the quantity or quality of the environmental service. In return for payment, landowners agree to specific land uses (protection, reforestation, forest management, natural regeneration or agroforestry) for a given time (five years for conservation, ten for reforestation). The level of payment was initially determined through a combination of background studies, available funding and common sense, which put the initial sums very close to the recently abolished subsidies for reforestation and conservation, and the rental value of land for pasture (Rojas and Aylward, 2002; Landell-Mills and Porras, 2002).

⁴ World Bank statistics, 2008.

<http://siteresources.worldbank.org/DATASTATISTICS/Resources/GDP.pdf>;

<http://siteresources.worldbank.org/DATASTATISTICS/Resources/POP.pdf>

⁵ <http://www.guardian.co.uk/environment/2009/jul/04/costa-rica-happy-planet-index>

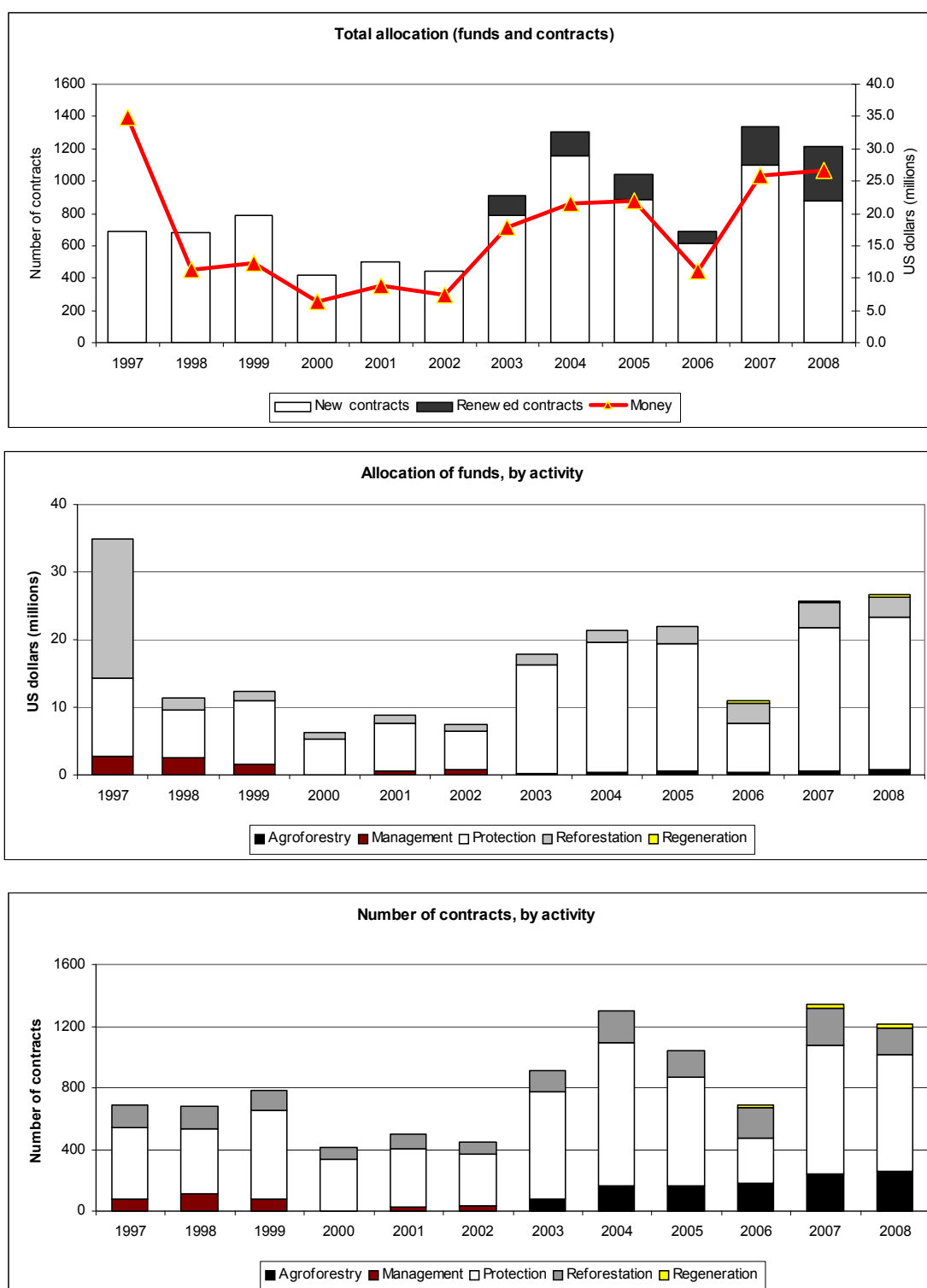
2.1 Brief history of the programme

With the legislative, institutional and financial tools in hand, the Payments for Environmental Services (PES) programme was officially launched in 1997. Although demand for payments has been strong from the beginning, contract allocation has fluctuated significantly over the years (see Figure 1 below). The main reasons have been political, and the steep dips in the early years are the result of (sometimes severe) teething problems. This section discusses the main policies and issues affecting the PES, and how they are reflected in contract allocation and distribution of money over time. In-depth discussion takes place across the rest of the document.

The programme became operational in 1997 under the tutelage of the National Forestry Fund (FONAFIFO), starting off with nearly 700 contracts and US\$34 million allocated from a fuel tax, plus additional funds from international sales of carbon credits. The vast majority of these contracts (70 per cent) were for forest protection, followed by reforestation (20 per cent) and forest management (10 per cent). In the first year of operations the largest share of the money went to reforestation contracts, which accounted for 60 per cent of all funds. The money allocated to reforestation subsequently dropped to between 10 to 15 per cent of annual funds, and never regained the levels of the first year of the programme. The initial allocation was problematic, as the promised government funding did not materialise until late in the year, and then only after a major public outcry. Most of the money allocated that year came from a US\$2 million deal with Norway for the sale of carbon credits. The programme's first contract with a private company (Energia Global) was for watershed services. For the first five years the programme was jointly managed by two government institutions (FONAFIFO and SINAC), making it slow to react and more difficult to manage.

Contract allocation halved in the next two years of the programme (1998-1999), as the teething problems continued. The government finally allocated the money from the fuel tax, which was placed in a trust fund with the Banco Cooperativo (Bancoop). Unfortunately, Bancoop went bankrupt just a few months later, leaving FONAFIFO with empty pockets and a major legal battle to try to recover the money. With nearly no funding available and opponents of the programme closing in on all sides, FONAFIFO faced its worst two working years. Nevertheless, it still managed to allocate approximately 600 new contracts per year, mostly to the relatively cheap option of forest conservation. In the meantime the search for private investors brought two more hydroelectric companies on board (Platanar and La Esperanza).

Figure 1: Distribution of contracts and funds, by year and activity (1997-2008)



Contract allocation fell to its lowest point over the next three years, with fewer than 300 new contracts allocated per annum between 2000 and 2002. One significant development in this period was the start of the Ecomarkets project, which FONAFIFO began in 2001 in conjunction with a private water quality company, Florida Ice & Farm. Much of the project's total budget of US\$49.2 million (Hartshorn *et al.*, 2005)⁶ was tied to priority biological areas and strengthening the administrative structure of FONAFIFO. Another landmark for the PES programme was that no new contracts for forest management were allocated after 2002. Until then, these contracts had accounted for approximately 10 per cent of the total area under contract and funds allocated.

Several changes occurred simultaneously in 2003. The first batch of contracts for conservation signed in 1997 came to an end, and farmers were allowed to reapply for them. In the end, 13 per cent of the 900 or so conservation contracts signed in 2003 (covering 70,000 hectares of land) were renewals (covering nearly 12,500 hectares) of the first batch of contracts signed in 1997.

Administratively, the PES programme became the sole responsibility of FONAFIFO. In order to expand the programme in rural communities, FONAFIFO opened seven regional offices to work with the central office in San José,⁷ and introduced agroforestry contracts in an attempt to improve participation by small farms with a less restrictive activity. Although this policy had an impact on the type of contracts signed (more, small contracts), most of the funds were still primarily used for forest protection. The requirement to have legal property titles was officially dropped, provided participants could demonstrate 'clear possession rights' of their land. In an effort to streamline dealings with service users and eliminate the need to draft extensive contracts, FONAFIFO started issuing Environmental Services Certificates (CSA) as an over-the-counter mechanism enabling companies or people to pay for environmental services.

Funding for the programme increased in 2003 and continued to rise slowly but steadily, except in 2006. By now, field experience was showing that the focus on environmental criteria (such as biological corridors across the country) ignored many of the poorest cantons, which are mostly located on the edges of the country (Porrás *et al.*, forthcoming). As a result of this, Law 31767 introduced the Social Development Index (SDI) in 2004 to encourage participation by poorer farmers.⁸ The eligibility criteria were initially set at SDI<35, and then raised to 40 for subsequent years. In an effort to encourage reforestation projects FONAFIFO also started the REFORESTA project, which made available significant technical support and funds, and formalised legal agreements with several banks to enable mortgaged properties to participate. Access to information is crucial in encouraging participation, so the National Public Registry in Costa Rica opened an online system to check on the legal status of properties, making it much quicker and cheaper to apply for funding.

The period 2005 to 2006 marked the beginning of the 'second half' of the PES programme. Contracts with hydroelectric companies signed in 1997 to 1998 were extended for another five years, and renewals accounted for an increasing share of contract allocation.

⁶ The Ecomarkets Project received a grant of US\$8 million from the GEF, a loan of US\$32.6 million from the World Bank and US \$8.6 million from the Costa Rican Government.

⁷ Before 2003 the programme was managed from San José, with some technical support from local SINAC offices.

⁸ The Social Development Index measures social differentiation in different geographic areas of Costa Rica (cantons). It is based on several social variables, including education infrastructure, child mortality, average electricity consumption in residential areas and the proportion of children born to single mothers. The SDI value ranges from 0 (minimum) to 100 (maximum). The highest value of 100 is found in the Flores Canton in Heredia, and the lowest in Talamanca, Limón. As a practical rule-of-thumb in social analysis, cantons with SDI values of less than 40 are considered poor.

Approximately 15 per cent of the contracts signed in 2006 to 2007 were renewals for conservation activities, accounting for over a quarter of the land covered by the programme. In 2008, contract renewals represented 28 per cent of the area under conservation, suggesting two things. First, that certain participants were happy with the programme and wished to prolong the experience; second, that if the trend continues, fewer new areas will be taken on for conservation unless the programme can secure additional funding. As it is over-subscribed, it cannot accept every application or guarantee that contracts will be renewed on expiry.

Payment levels increased significantly for the first time since the beginning of the programme, rising to US\$320 for conservation and US\$816 for reforestation.⁹ A new source of funding from water tax was made available to FONAFIFO, strengthening its financial capacity, but also highlighting the need for it to better target its efforts. As a result, a new criterion for priority in hydrological areas was announced. Contracts for regeneration were introduced in 2006, but uptake was low until 2008. The number of agroforestry contracts increased substantially over this period, rising from 78 in 2003 to 262 in 2008. These are small contracts, accounting for just one per cent of overall annual funds in 2003 and three per cent in 2008.

By the end of 2008, FONAFIFO had allocated just over 10,000 contracts for forest protection or reforestation (10 per cent of which were renewed), and planted over 2.3 million trees. The main category of land use for which payments were made was forest protection (see Table 1).

Table 1: Main PES activities and distribution (between 1997 and 2008)

Activity	Valid from	Contracts	% of total contracts⁽¹⁾	% of total fund allocation⁽²⁾	Totals to 2008 (in thousands of hectares)
Protection	1997	5657 (new) 1073 (renewed)	57% 10%	73%	460.4 (new) 113.4 (renewed)
Reforestation	1997	1813	18%	21%	69.8
Forest management	1997-2002	318	3%	4.02%	22.6
Natural regeneration	2006	63	0.63%	0.52%	3.4
Agroforestry systems	2003	1084	11%	1%	2.3 million trees

⁽¹⁾ Total number of contracts: 10,008 (of which 1,073 have been renewed). ⁽²⁾ Total fund allocation approximately US\$206 million.

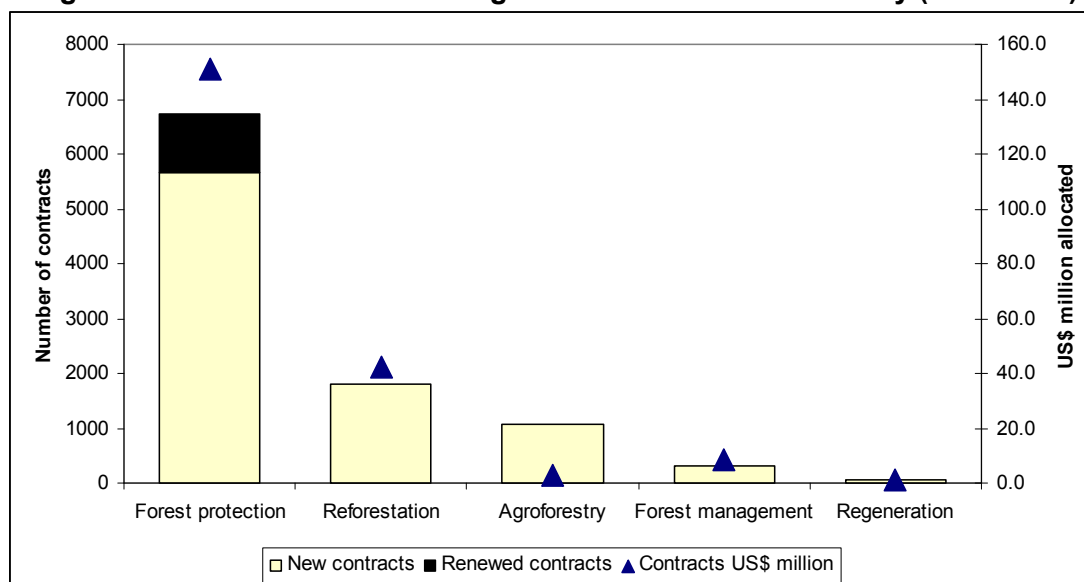
Although FONAFIFO establishes the categories covered by the programme, the budget is allocated and contracts are distributed according to the strength of demand. FONAFIFO originally intended to concentrate on reforestation activities in order to ensure timber supply to the country, but forest protection was the most sought-after activity funded by the programme from the outset (see Figure 2). To date, conservation activities cover 460,400 hectares (plus 113,400 hectares covered by renewed contracts¹⁰), accounting for 67 per

⁹ These figures were announced in 2005, but apply to contracts signed in 2006. The following amounts were paid in 1997: US\$230/ha/contract for protection, US\$545/ha/contract for reforestation and US\$353 ha/contract for forest management.

¹⁰ So far only contracts for protection have been renewed.

cent of all contracts and 73 per cent of financial resources. The average value of contracts for forest protection over this period is US\$22,775. Over 40 per cent of all the resources for conservation were taken by companies, followed by individual farmers (36 per cent) and indigenous groups (14 per cent).

Figure 2: Total contract and budget allocation for each activity (1997-2008)



The second most important activity is reforestation for commercial purposes, which so far involves approximately 1,800 contracts (18 per cent of the total) covering almost 70,000 hectares, and accounts for 21 per cent of the total funds allocated. The average value of a reforestation contract in this period was US\$23,335. Over 50 per cent of reforestation contracts were group contracts, and 36 per cent were signed with companies.

Forest management activities ran from 1997 to 2002, with about 320 contracts covering almost 23,000 hectares of forest. The average budget allocation for this category was the highest of all activities, standing at US\$26,026 per contract, equivalent to four per cent of all the funds allocated since the programme began. On the other hand, demand for the relatively new agroforestry activities has been strong: 1,084 agroforestry contracts with an average value of US\$2,700 have been issued since their introduction in 2003, and a total of over 2.2 million trees allocated. Forest regeneration (with and without profitable reforestation) was also introduced recently, with a view to ensuring the incorporation of lands that fulfil the additionality criteria for carbon projects. So far only 65 contracts have been issued for forest regeneration, mostly on medium to large farms – representing less than one per cent of all contracts.

2.2 Equity in access: who participates in the PES programme?

Crucially, the PES programme is designed to benefit private landowners, thereby excluding landless people, national parks and public lands.¹¹ The main types of participants in the PES programme are:

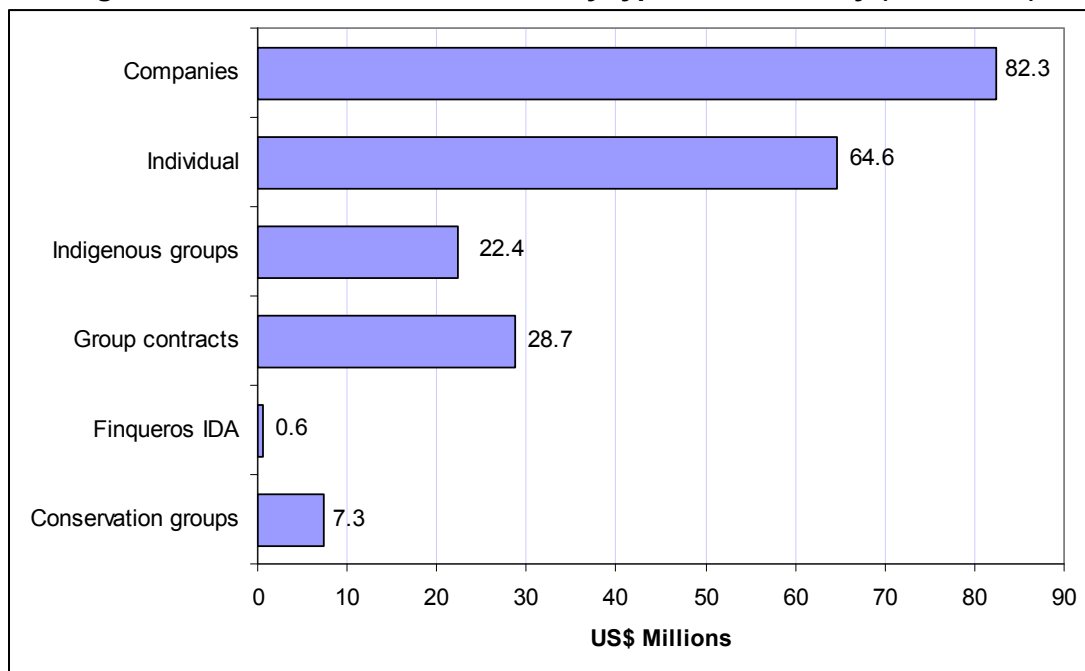
¹¹ FONAFIFO recently agreed to pay landowners whose lands have been declared 'wildlife protected areas' but have not been compensated by the government. This category (*protección dentro de Areas Silvestres Protegida*) is not active within the data available for 1997-2008.

- Individual farmers: contracts signed by individuals (as opposed to companies or organisations).
- Companies: mostly for-profit companies.
- Conservation or development associations: usually not-for-profit organisations. These include conservation associations, church or development associations and wildlife reserves.
- Group contracts: valid between 1998 and 2002, these were umbrella projects bringing together farmers (usually small) in one collective contract in order to minimise transaction costs (Section 2.3.1 below deals with group contracts).
- Indigenous communities.

Contracts tend to cover up to 300 hectares and are renewable every five years, apart from indigenous reserves, which can apply for contracts covering up to 600 hectares. This restriction was intended to prevent large properties from taking most of the funding, but there is nothing to stop landholders that already receive payments from applying for another contract in a different year. Thus, a large property eligible to apply for 300 hectares one year can make an application for another 300 hectares the following year.

Between 1997 and 2008 FONAFIFO distributed US\$206 million, an average of US\$17.2 million per year (see Figure 3). This money went to different types of participants or beneficiaries. The largest share went to companies, which were allocated funds amounting to over US\$82 million, and accounted for 37 per cent of all contracts. The second largest share went to individual farmers, who received almost US\$65 million. While they were in operation, group contracts accounted for US\$28.7 million. Indigenous groups received the sizable sum of US\$22.4 million, although they represent only two per cent of all contracts (203 out of 10,008); while conservation groups received the smallest share, accounting for US\$7.3 million of funds, or four per cent of all funding.

Figure 3: Distribution of total funds by type of beneficiary (1997-2008)

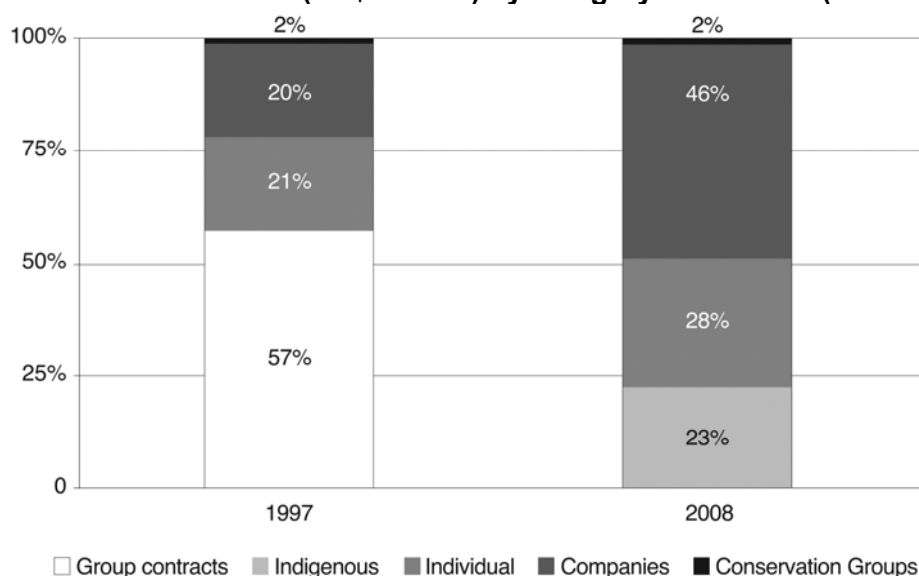


Note: 'Finqueros IDA' are farmers who have received land as part of the agrarian land reform through the IDA institute.

The allocation of funds has changed significantly over the years. Figure 4 below shows allocation during the first year of the programme (1997) and for the last year of the data

covered by this analysis (2008). Group contracts initially accounted for a substantial majority of the funds, followed in equal shares by individual and companies, while conservation and indigenous groups received less than three per cent of the total sum distributed. The pattern of distribution changed considerably by 2008, when almost half of the total funds were allocated to companies. Another major change is the participation of indigenous groups, which accounted for 23 per cent of the funds distributed in 2008.

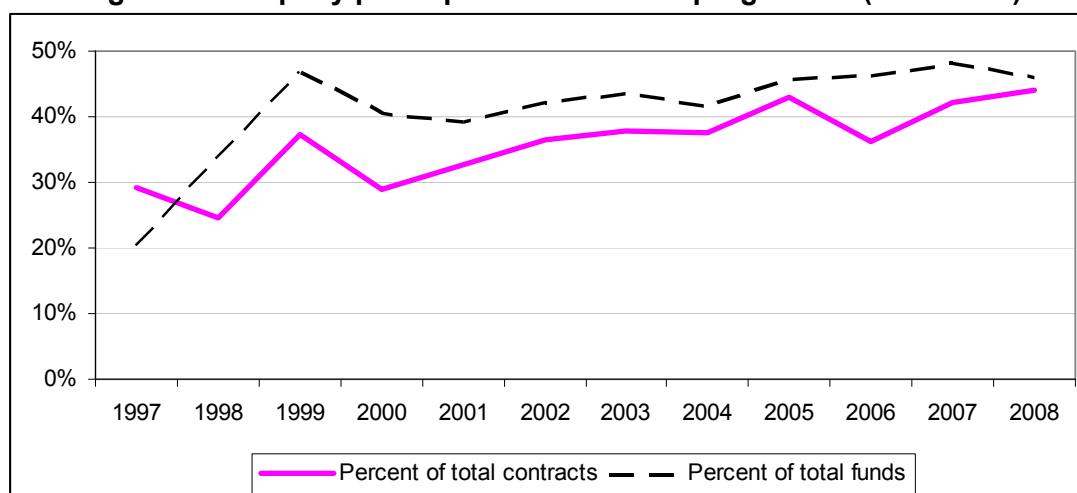
Figure 4: Allocation of funds (US\$ million) by category of contract (1997 and 2008)



2.2.1 Private companies

By the end of 2008 FONAFIFO had signed 3,736 contracts with companies, which accounted for 37 per cent of all contracts. Company participation has increased steadily since the beginning of the programme, rising from about 30 per cent of all contracts (and 20 per cent of annual funds distributed) in 1997 to almost 50 per cent of contracts and funding by 2008 (see Figure 5 below). The great majority of company contracts are for conservation (68 per cent), followed by 22 per cent for reforestation, with the remainder equally distributed between agroforestry and forest management. Bodies receiving payments for environmental services include family companies (such as a farm inherited by several children who choose to keep it as one property), agricultural and reforestation groups, forest producers, ranching-related companies, ecotourism agencies and investment societies.

Figure 5: Company participation in the PES programme (1997-2008)



FONAFIFO does not collect the personal details of members of these societies; however, they are unlikely to be poor, even if they are located in areas with lower land values.¹² Companies tend to have relatively large properties (almost 50 per cent have more than 100 hectares) and account for 40 to 45 per cent of all payments made. Almost 70 per cent of these contracts are for conservation. Furthermore, although the law limits the total amount of hectares that can receive payments on each farm, there is no limit to the number of contracts (or money) that one particular person, group or society can sign with FONAFIFO, provided they are for separate farms or different years (see Box 2).

Box 2: Who is getting paid?

- C and M Investment Group Ltda, an investment group based in Miami, has signed a total of 71 contracts with FONAFIFO. Some of these contracts, which include agroforestry and regeneration projects, are very small, but others are large conservation or reforestation projects. In total, this company alone has received almost US\$1 million. A report on Clean Development Mechanism (CDM) activities in the Nicoya Peninsula suggests that over 200 communities benefit from these activities (www.ceroco2.org). What it does not say, however, is that 26 out of 35 contracts signed are for this company alone, representing 64 per cent of all the land under PES in the region.
- Tecnoforest del Norte, S.A., a subsidiary of Masonite de Costa Rica S.A., is a reforestation company that owns several farms in the Atlantic region of Costa Rica. Tecnoforest works alongside FUNDECOR promoting sustainable forest management (Wager, 2006), and has so far signed 38 contracts with FONAFIFO for a value of over US\$1.1 million.
- Eco Direct is a Dutch investment and assets management company specialising in reforestation projects in Costa Rica. Timber is exported to Europe and the Far East, and the company sells pension schemes to investors based on future timber values. Two of the subsidiaries they own include Ecodirecta S.A. and Corazon Verde Ecológico S.A. Together they have signed 28 contracts worth almost US\$1 million with FONAFIFO, all between 2007 and 2008.
- Maderas Cultivadas de Costa Rica S.A. and Reforestación Industrial Los Nacientes S.A. are forestry companies operating in Costa Rica and Nicaragua. Both are part of Grupo Forestal Los Nacientes, which recently received a US\$1.5 million loan from the Interamerican Investment Corporation Group (<http://www.iic.int/newsrelease/view.asp?id=640>). Together, they have signed 57 contracts with FONAFIFO worth almost US\$1.3 million.
- Heartwood Timberlands LLC, an international forestry company based in the USA, has signed five contracts with FONAFIFO for which they have received over US\$0.6 million.
- Arcoaba, S.A. has signed 32 contracts with FONAFIFO for a total of US\$0.5 million. The company has large farms of over 100 hectares (one of approximately 1,000 ha) located in Los Chiles and Sarapiquí *Note: they also seem to have several other farms, recorded in the Land Registry as Arcoaba Sociedad Anonima, which they have rented to Grupo Forestal Los Nacientes S.A.*

What does this information really tell us? On the one hand, that it is better to invest in experienced companies that increase the project's chances of success, and where research and development are likely to feed back into the system, especially when dealing with international markets and potential REDD+ credits. Large properties managed with a shrewd business perspective will always present better economies of scale than small, fragmented individual farms. What these companies are doing is legal, and also economically and

¹² In fact, over 80 per cent of company contracts are located in areas where land is less expensive, and 25 per cent in areas scoring less than 40 on the Social Development Index.

environmentally justifiable. Furthermore, in the case of sustainable forest management and reforestation, there are international arguments promoting payments for ecosystem services as an attractive option to make the activity economically viable.

On the other hand, looking at the PES programme through a social lens, to what extent do these well-connected and well-informed companies have an advantage in the 'first-come, first-served' policy for contract allocation? This is a particularly important question given that many of them are located in areas with lower Social Development Index rankings.¹³ (See Section 2.5.1 for further discussion).

2.2.2 Individual farmers

There are 4,729 contracts with individual farmers, who account for 47 per cent of all contracts and approximately 30 per cent of the total funds distributed between 1997 and 2008. The majority of farmers entering PES contracts have medium to large farms (see Table 2 below): 36 per cent of all individual contracts cover farms of between 30 to 100 hectares, and 25 per cent relate to larger farms of 100 hectares or more. The majority of contracts (65 per cent) with individual farmers are for forest protection, which accounts for 85 per cent of funds.

Table 2: Allocation of individual contracts by property size (1997-2008)

Property size	Number of contracts	Percentage
Less than 10 ha	976	21%
10 to 30 ha	887	19%
30 to 100 ha	1,703	36%
More than 100 ha	1,163	25%
Total	4,729	100%

2.2.3 Conservation and development associations

Usually not-for-profit, these are organisations whose main objective is to provide a public service. They include conservation associations, church or development associations and wildlife reserves.

Overall, contracts with conservation associations do not represent a large share of the PES programme. According to the analysis, they receive two to five per cent of all the funds and contracts signed over the years, the vast majority of which (90 per cent) go to forest conservation. The allocation of contracts was not affected by the opening of FONAFIFO's local offices.

2.2.4 Indigenous communities

The PES programme has always included indigenous communities, represented by their associations. They are the only group legally allowed payments for up to 600 hectares (the maximum is 300 hectares for other contracts). So far, FONAFIFO has signed 203 contracts with indigenous communities, making it the smallest group of recipients. Nevertheless these contracts account for US\$22.4 million (11 per cent of all funds) because larger amounts of land are involved. Although modest in terms of number of contracts, their participation has been steadily increasing, from less than one per cent of all contracts in 1997 to approximately five per cent in 2008.

By their very nature, indigenous reservations are large. Over 95 per cent of this type of contract covers farms of 100 hectares or more, and the average property size for indigenous

¹³ Using the newer Social Development Index for 2007, almost 75 per cent of participating companies are located in areas with SDI<40.

groups is actually over 20,000 hectares. Nevertheless, poverty levels are high in these areas. Talamanca, the site of the main indigenous reservations, consistently has the lowest Social Development Index in the country. Economic activities are limited, and most of the land is covered in forest. This is reflected in the fact that over 80 per cent of payments to indigenous groups go to forest protection, although small agroforestry contracts are beginning to emerge as well.

Although there are not many indigenous communities in Costa Rica, these groups represent a significant proportion of the participants in PES programmes in other countries, such as Mexico, Ecuador and Panama.

2.3 Removing obstacles by reducing transaction costs

There are two main types of transaction costs involved in PES contracts: (i) those borne by FONAFIFO or other actors in the programme, which may dissuade the programme manager from enrolling smaller holdings; and (ii) those borne by applicants, which may dissuade them from participating in the programme (Pagiola, *et al.*, 2005).

The overall cost of managing the PES programme is roughly seven per cent of the total annual budget. This includes the cost of reviewing and checking each application, and monitoring and disbursement of payments. This cost is covered by the institution and does not fall on participants. Other intermediate institutions that provide services to programme participants charge a percentage of the payment (up to 18 per cent), which is borne by the participant, although some NGOs (such as FUNDECOR or CODEFORSA) help smaller farmers by cross-subsidising their applications with profits from larger applications. In both cases, economies of scale make medium-sized and larger farms more attractive to FONAFIFO and intermediate groups than small or scattered properties.

The transaction costs of the PES programme¹⁴ borne by the participants can be high, and are arguably the greatest obstacle to greater uptake by the poor in Costa Rica and elsewhere (Pagiola *et al.*, 2005). Technical information is detailed and expensive to obtain, and the application process can be long and tedious, especially for those who are not familiar with it. Some of the earlier programme requirements were seemingly unrelated to PES activities (Miranda *et al.*, 2003). For example, participants had to provide proof that they had paid local taxes, did not owe money to the National Health System, or that their land had not been part of the IDA land distribution process.¹⁵ Properties had to be free of mortgages and covered by full legal titles. Many farmers used an intermediary to apply to the programme. A field study by Miranda *et al.* (2003) indicated that the majority of participants in the Virilla area joined the PES programme through an intermediary (Fundecor, CNFL or ESPH), who helped with the process in exchange for a fee. These farmers seem to have had a shorter wait between application and payment than those who made the application themselves – who reported that legal costs were high and considerable time was spent collecting the necessary paperwork. The process could be very daunting for applicants without an intermediary or the necessary literacy skills to pursue it, ultimately deterring them from taking part.

FONAFIFO has dropped several requirements (such as National Health System debts) in order to help reduce the transaction costs for participants, and negotiated with the National Banking System to enable certain properties with mortgages and IDA farms to participate. Internet access to the National Land Registry has substantially reduced the time and cost of

¹⁴ FONAFIFO publishes a Proceedings Manual in the official Gazette every year indicating priority areas, individual and/or group requirements, etc.

¹⁵ Smallholders were assigned lands by the Agrarian Development Institute (IDA) as part of the agrarian peasant reform.

obtaining information for many, but excludes those without Internet access, especially poorer farmers living in remote rural areas. Apart from this, the two main policies to actively reduce participants' transaction costs are the creation of group contracts, which require an intermediary to bring farmers together under an umbrella project, and the opening of rural offices, which reduce the need for intermediaries by providing a direct programme presence in the area.

2.3.1 Group contracts

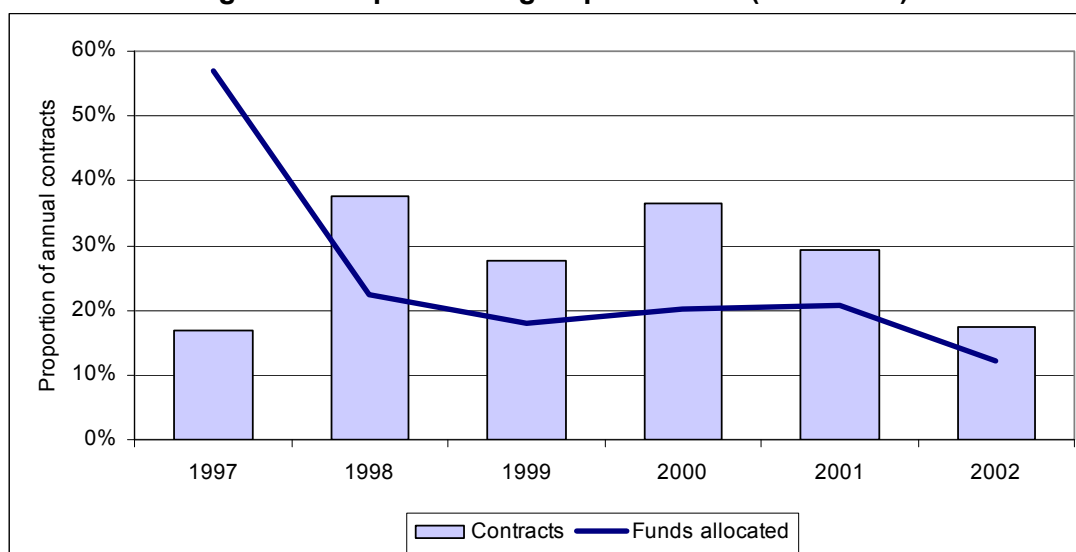
Small properties face higher transaction costs than larger ones, as it is proportionally more expensive for small farmers to prepare technical studies and management plans. Ortiz *et al.* (2003) suggest that farmers prefer to enter into protection contracts because the management plans are simpler and less expensive. Preparing an application, entering into a contract and managing a PES project requires special skills not found among less educated and usually poorer farmers (Zbinden and Lee, 2005).

In an effort to overcome the obstacles created by the high transaction costs for small properties, FONAFIFO introduced the system of group contracts at the beginning of the programme. These brought small farmers together under one umbrella contract. Uptake was high, and they accounted for a considerable proportion of annual contracts (see Table 3 and Figure 6): 27 per cent of all contracts between 1997 and 2002, and nearly 40 per cent in the years 1998 and 2000. In the early days of the programme almost 60 per cent of funds were distributed through group contracts, although levels soon fell sharply, reaching their lowest point in 2002. Group contracts were highly concentrated in a few areas, and access to them was restricted by the lack of suitable intermediaries. Because contracts were allocated on a 'first come, first served' basis, better-organised groups were more likely to receive them. In fact, 70 per cent of all group contracts were allocated in just 10 of the country's cantons – Nandayure topping the list with 109 contracts and US\$2.2 million.

Table 3: Distribution of group contracts (1997-2002)

Year	Number of contracts	Proportion	
		of contracts	of funds
1997	116	17%	57%
1998	255	38%	22%
1999	217	28%	18%
2000	152	36%	20%
2001	148	29%	21%
2002	78	18%	12%

Figure 6: Proportion of group contracts (1997-2002)



The main groups promoting group contracts were local agricultural associations (*Centros Agrícolas Cantonales*), which gathered local farmers together, prepared their application and submitted it to the FONAFIFO offices in San José. They provided an important service for farmers who would otherwise have found it impossible to participate in the programme. PES activities and funds helped boost many of these organisations (Miranda *et al.*, 2003), although the benefits proved short-lived for some. FONAFIFO did not monitor the intermediaries, but did require them to provide basic facilities ranging from accountants and administrators to forest engineers and field vehicles (Gutiérrez, 2001). Many of these intermediary groups faced financial and managerial difficulties; while transaction costs could be controlled with group contracts, the problems entailed in coordinating groups soon became apparent, as a single farmer defaulting on his agreement could invalidate the whole contract. The system's problems are easily traced in Figure 8, which shows participation declining until 2002, prior to the complete elimination of group contracts in 2003.

This is where the new local FONAFIFO offices played an important role, as will be seen in the following section. Over 60 per cent of group contracts were signed in areas that were well served by local offices after 2003. Although it is very difficult to test the hypothesis, it is possible that without these new offices, the failure in intermediation would have resulted in withdrawal from the programme, loss of credibility and lower future uptake, especially by smaller farmers.

2.3.2 Creation of regional offices

Before 2002, applications for payments could only be made directly to FONAFIFO's central office in San José. The nature of the programme requirements could mean multiple visits to different institutions, including FONAFIFO, which made the process difficult and onerous, especially for farmers living far from the capital. Lack of regional representation not only made it difficult to apply for participation, but did little to quell misgivings about government programmes in remote areas (as in Monteverde, see Hope *et al.*, 2005).

In 2003 FONAFIFO opened seven regional offices in Limón, Guápiles, Sarapiquí, San Carlos, Palmar Norte, Nicoya and Cañas. Efforts were made to place the offices in areas well serviced by the national road network (see Figure 7) although distances are deceptive and rural roads can deteriorate quickly, especially during the rainy season.

Figure 7: Map of FONAFIFO regional offices

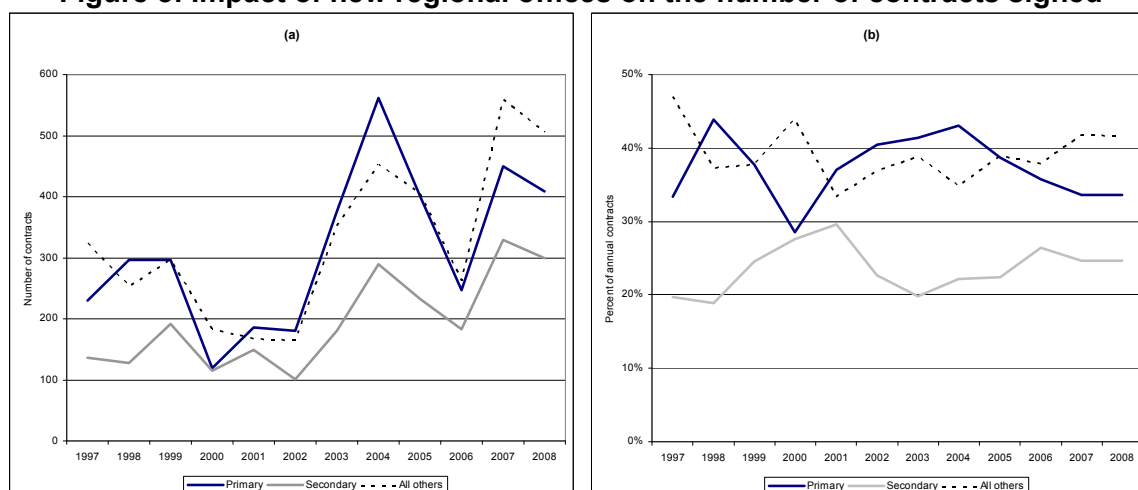


Note: Stars represent rough location of local offices, the largest being the central office in San José.

Figure 8(a) shows the number of contracts drawn up in the cantons where local offices opened in 2003 (listed as 'primary') and in easily accessible areas (listed as 'secondary'). The dotted line is used as a control group, showing all other contracts in areas without local offices. This figure shows an upward trend in the primary and secondary areas (albeit less marked in the latter), peaking in the year immediately after the offices opened. However, it is difficult, if not impossible, to attribute the trend to the new offices, as the same pattern can be seen in contracts signed in other parts of the country.

Figure 8(b) shows the impact of the new offices in relative terms, presenting the proportion of contracts signed annually in each of the three groups (primary, secondary, all others). The new offices are clearly strategically placed in areas where participation is significant, even before 2003, representing around 30 to 45 per cent of all annual contracts. This graph shows a high proportion of contracts between 2001 and 2004, followed by a decline in the total number of contracts signed. Primary areas account for approximately 35 per cent of all funds allocated, with a five per cent increase in funds allocated in primary areas after the offices were opened; while secondary areas account for 26 per cent of all funds allocated, with a two per cent increase after regional offices were opened in these areas.

Figure 8: Impact of new regional offices on the number of contracts signed



Note: 'Primary' denotes contracts in the cantons where regional offices are located; 'secondary' denotes nearby cantons with easy road access. 'All others' refers to the rest of the contracts drawn up. The first figure presents total contracts, and the second figure presents the percentage of total annual contracts.

Almost 4,000 PES contracts were drawn up in just five cantons (see Table 4), representing 40 per cent of total contracts and 30 per cent of the funds allocated. All of these cantons have local offices, apart from Perez Zeledon. Although the number of contracts in the areas where new offices were opened increased since 2003, they account for roughly the same proportion within the annual allocation. Paradoxically, the biggest increase (four per cent) in participation occurred in Perez Zeledon, which does not have a local office.

Table 4: Areas where PES is more active

Canton	(1997-2002)		(2003-2008)	
	Contracts	Percentage	Contracts	Percentage
San Carlos	413	12%	775	12%
Sarapiquí	372	11%	573	9%
Perez Zeledon	174	5%	575	9%
Pococi	146	4%	343	5%
Nicoya	146	4%	287	4%

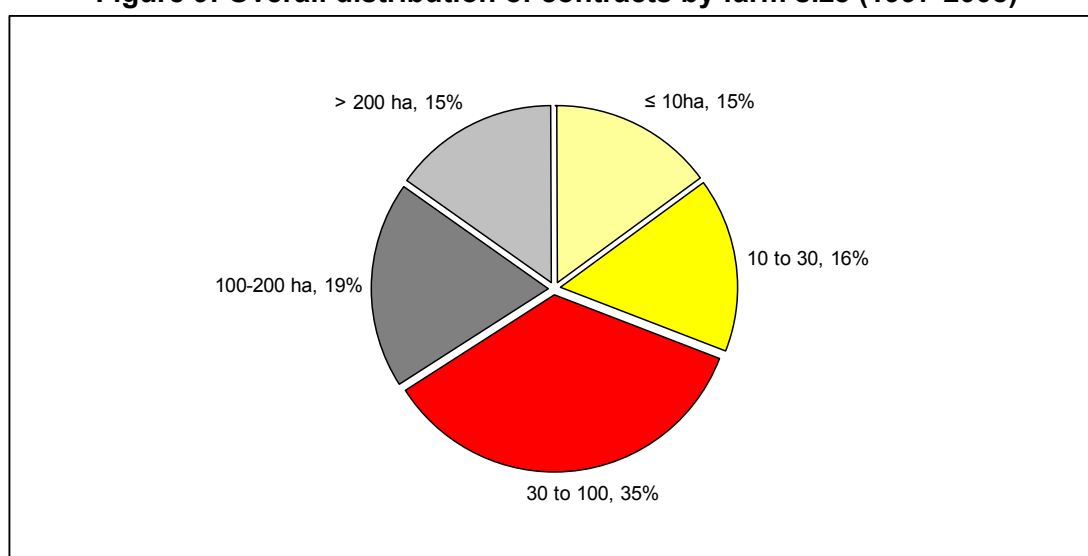
This analysis suggests that the new offices had a positive, although modest, impact on the allocation of contracts and funds in neighbouring areas. The result seems counter-intuitive, as one would expect local offices to reduce transaction costs and encourage participation. One reason why local offices may be important is that they reduce the need for intermediaries, who can charge the landowner hefty fees of up to 18 per cent of the value of the contract. Although FONAFIFO keeps records of the intermediaries' names, it is time-consuming to extract information in its current form, so this has been omitted from the present analysis. Also, when group contracts were eliminated in 2002, the new local offices enabled individual farmers to apply directly to the programme without intermediation (although farmers still have to pay for a forest regent. Therefore, while the figures show a modest impact on the number of participants, it is possible that they also mask a drop in participation that would have occurred had the local offices not existed.

2.4 Encouraging participation by smaller properties

Previous field studies looking at participants and non-participants in the PES programme highlight the importance of farm size as a factor in participation. Zbinden and Lee (2005) found that PES participants in the Northern region had considerably larger farms than non-participants. A farmer with ten additional hectares of land is 27 per cent more likely to enter the programme. Similarly, Miranda *et al.* (2003) found that farmers in the Virilla watershed with larger properties were more likely to enter the PES programme than those with smaller farms. Hope *et al.* (2005) made similar findings in the Monteverde area.

Data from overall contract allocation show that the PES programme reaches medium-sized properties rather than very large or very small farms (see Figure 9). Contracts for medium-size to large farms of 30 to 100 hectares have stayed most constant each year since the programme began, consistently representing the highest allocation of contracts per annum. Less than a third of contracts were allocated to relatively small farms of less than 30 hectares.

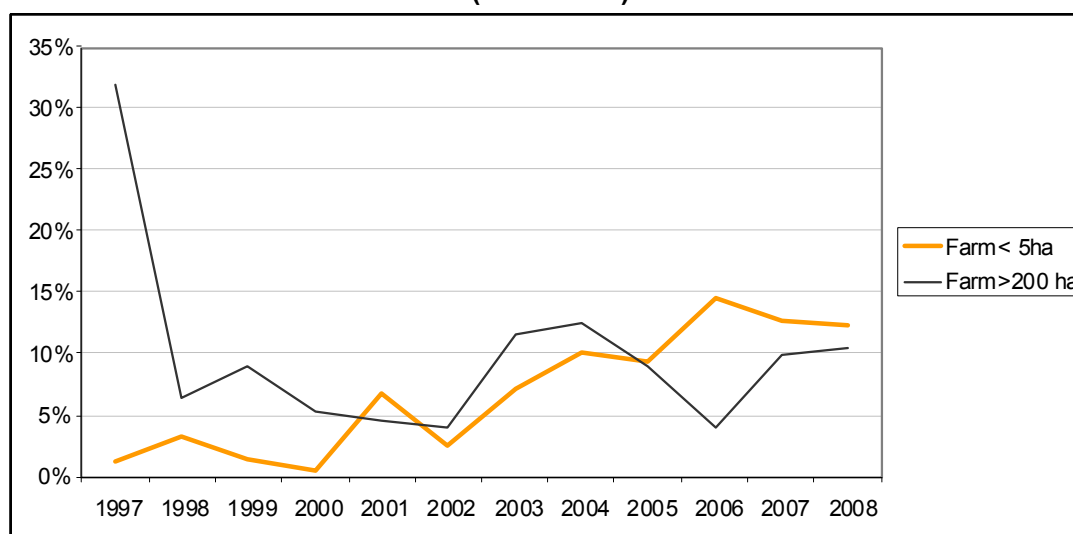
Figure 9: Overall distribution of contracts by farm size (1997-2008)



Note: Total observations 8,816 contracts. These figures do not include group contracts, contracts with indigenous groups or IDA farms before 2004.

The size of farms entering the PES programme has varied over the years, especially among very small and very large properties (see Figure 10 below). Initially, participation was dominated by larger farms of over 100 hectares, which represented between 40 to 55 per cent of contracts in the first six years of the programme, but their participation declined to 15 to 25 per cent of contract allocation in later years. Although the law states that farms must cover at least two hectares to be eligible for the programme, very few small farmers were involved in the first six years of PES, usually accounting for less than five per cent of total contracts during this period.

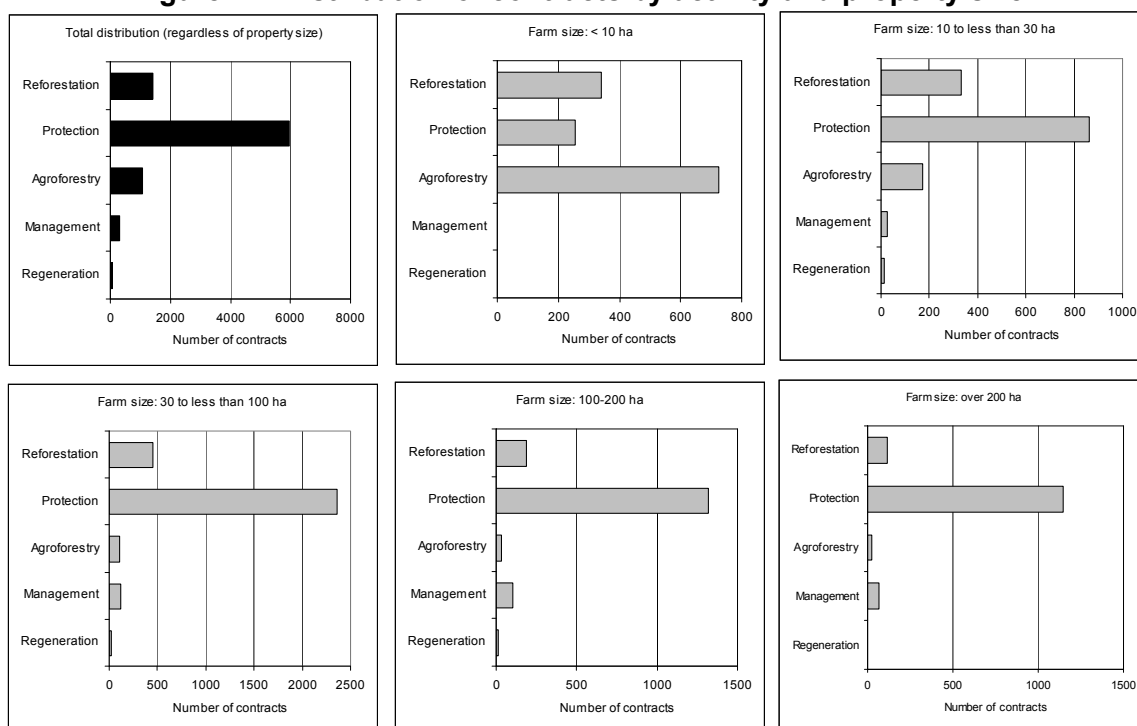
Figure 10: Allocation of contracts for small farms ($\leq 5\text{ha}$) and large farms ($>200\text{ha}$) (1997-2008)



To a certain extent, property size affects the choice of activity under PES (Figure 11). Large landowners are mostly interested in forest conservation and, to a lesser degree, reforestation. The majority of reforestation contracts are on farms of 30 to 100 hectares (over 75 per cent of these are signed by companies); and forest management is more likely on medium-sized to large farms. Conservation on farms of less than ten hectares varies according to the type of participant: individuals prefer a mix of income-generating activities like agroforestry (65 per cent) or reforestation (22 per cent) rather than conservation (13 per cent), while forest conservation accounts for 35 per cent of company contracts.

In an effort to encourage participation by smaller farms (and potentially by poorer farmers), FONAFIFO introduced agroforestry contracts in 2003, and forest regeneration in 2008. By relaxing the restrictions on what activities can coexist with PES, agroforestry offers farmers the option of generating alternative incomes from their land. They can plant trees between or around crops, and choose between valuable, slow-growing species, fast-growing timber that can be harvested within a short period, or even fruit and forage trees. These activities may also be more attractive to landowners living closer to urban areas, where the opportunity costs of land are higher. This policy had an immediate impact, and participation by very small farms (less than two hectares) increased from less than one per cent in 1997 (when there were only seven contracts) to over five per cent in 2008 (when there were almost 65 contracts). To date, FONAFIFO has signed almost 350 contracts with very small properties of this size. Almost 78 per cent of these are for agroforestry contracts, 18 per cent for reforestation and only four per cent (14 contracts) for forest conservation, reflecting the small farmers' need for short-term income-generating activities. Most of these small farms are owned by individuals (83 per cent).

Figure 11: Distribution of contracts by activity and property size



N= 8,886 cumulative observations from 1997-2008. This does not include group contracts, indigenous groups or IDA farms.

2.5 Policies specifically directed at poorer farmers

Reducing transaction costs through less cumbersome application processes, group contracts, local offices and, to a degree, encouraging participation by smaller farms, can have a positive effect on poor farmers. However, these measures benefit all participants alike, regardless of their wealth. Property size is not necessarily linked to poverty, as small, strategically located farms can be very valuable (as in some areas of Heredia or Cartago), while large properties in remote areas are not (as in Matina).

The two main policies specifically introduced by FONAFIFO to address poverty issues have been the priority given to cantons with a low Social Development Index, and relaxation of the requirement to have land titles in order to participate in the programme. As discussed below, these policies seem to have had a limited beneficial impact on the poorest farmers so far. This confirms the suggestion by Pagiola *et al.* (2005) that even if poverty rates in target areas are high, it does not follow that all or most of the payments will go to the poor.

2.5.1 Social Development Index as priority criteria

According to the national poverty criteria, approximately 23 per cent of Costa Rica's population is classified as poor, and six per cent as extremely poor (MIDEPLAN, 2007). Because almost 60 per cent of the total population live in urban areas, most of the poor are located there. In relative terms though, poverty rates are higher in rural areas: 25 per cent of the rural population is poor, compared to 21 per cent of the urban population; and almost a third of those below the poverty line live in extreme poverty in rural areas, compared to a fifth of those in urban areas.

Poverty levels are rising in Costa Rica. Thus, there were 12 cantons with a Social Development Index of less than 40 in 1997 (15 per cent of all cantons), and a further 22 cantons in this category after the most recent census in 2007. Poverty rose sharply in every

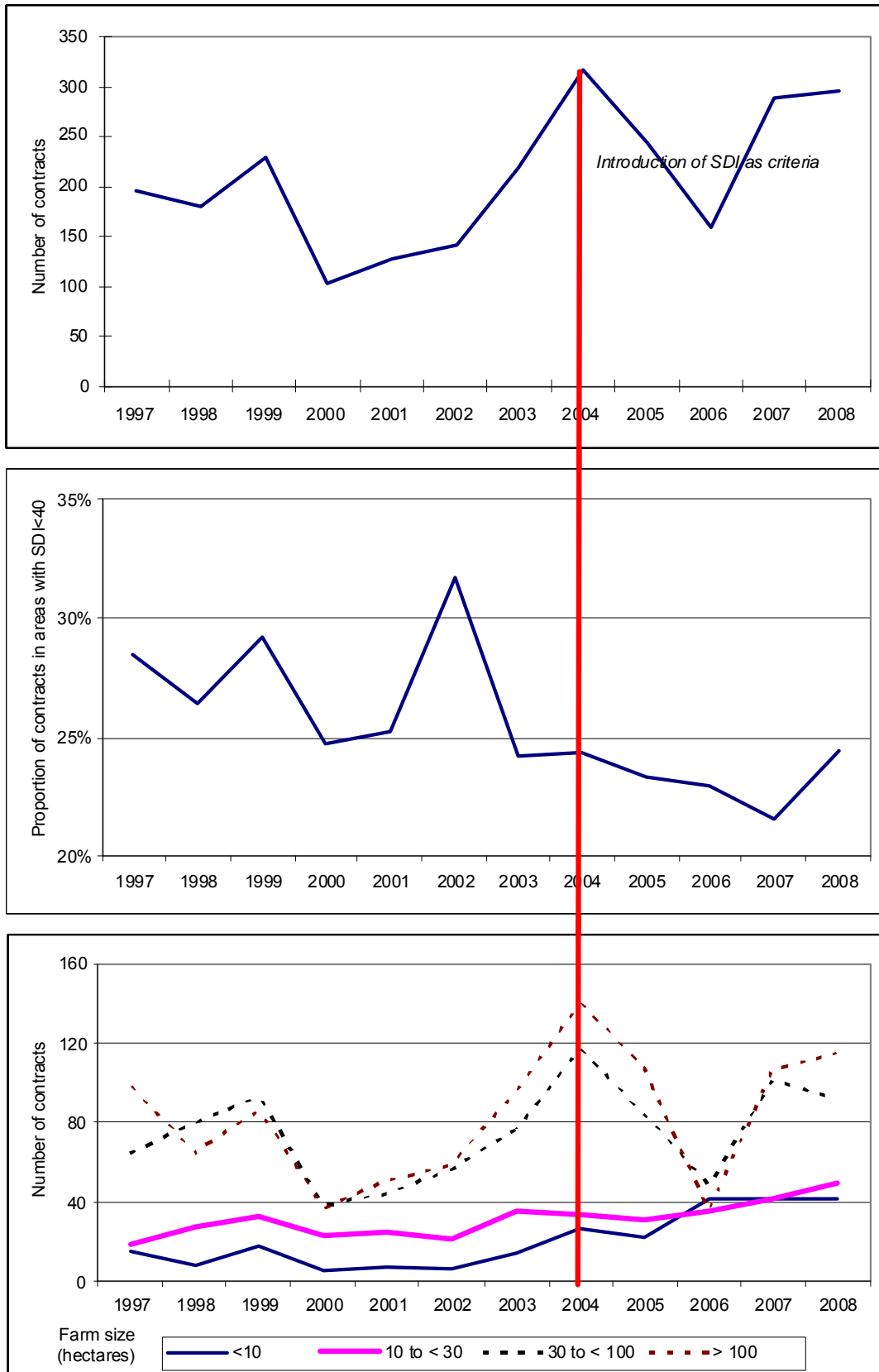
province apart from Heredia. The worst affected provinces are Alajuela; Limon, where all cantons are now officially classified as poor; Puntarenas, where 30 per cent of cantons were classified as poor in 1997, compared with over 70 per cent in 2007; and Guanacaste, which had only one poor canton in 1997 compared with almost 50 per cent in 2007. Despite having the lowest levels of poverty, SDI levels have risen significantly in the most urban provinces like Cartago and San Jose. Heredia still has the highest SDI in the country although total values are dropping.

In 2004 the PES programme started giving special priority to cantons scoring less than 40 on the SDI, in order to encourage participation in poorer areas. These cantons are well represented in PES allocations, accounting for 2,500 contracts, or exactly 25 per cent of all contracts issued since the programme began in 1997. But contrary to expectations, their share of total contracts fell from 27 per cent to 23 per cent after the SDI criteria were introduced in 2004. Figure 12 shows the allocation of contracts in cantons with SDI<40 between 1997 and 2008. The first graph shows that the number of contracts in these areas increased significantly in the first year after the measure was introduced, declined sharply in the following years and then picked up again in 2007. However, the second graph shows that contracts in these areas account for a smaller proportion of the annual total after the SDI score was introduced as a priority criterion.

Land values in areas with poor SDI rankings are low, averaging less than US\$0.5/m². The majority of farms receiving payments in these areas are relatively large: approximately 40 per cent of them are over 100 hectares, and 36 per cent are between 30 and 100 hectares. Half of the larger farms (over 100 ha) belong to companies. Interestingly, contracts for smaller farms (less than 30 ha) increased after the SDI was introduced as a priority criterion (see third graph in Figure 12), and their share of contracts in these areas has nearly doubled since 1997, especially in the past three years. The vast majority (70 per cent) of contracts for these farms are with individual farmers rather than companies.

The pattern of contract allocation seems to suggest that the immediate beneficiaries of the priority criteria were large landowners, whose companies were able to act quickly to take advantage of the new arrangements. As more information trickled down, smaller farmers began to benefit as well, although the benefits are still mostly caught by larger landowners.

Figure 12: Contract allocation for areas categorised as poor



This measure seems to have had a limited overall impact four years down the line. While the PES programme does benefit poorer areas, with a quarter of funds allocated to them and a significant proportion of this money going to individual farmers and indigenous groups, it is also important to note that the bulk of funding for these areas is captured by relatively wealthy landowners and companies, which usually have larger farms.

It seems that the increase in contract allocation in poorer cantons is driven more by factors of demand (cheaper land) than by the programme objective of including poorer farmers. Given the fact that poverty levels are increasing throughout the country, the SDI is becoming less accurate as a priority criterion of poverty. It might be more useful for FONAFIFO to use the SDI as one of a number of criteria for eligibility rather than the sole criterion, and to increase its efforts to reach poorer farmers directly.

2.5.2 Possession rights and legal land titles

Another requirement for inclusion in the programme is a valid property title or possession right, which limits participation by applicants with unclear land titles. In some places, such as Monteverde, farms are divided among children and title deeds kept informal (Hope *et al.*, 2005). FONAFIFO has had difficulty tackling the issue of land titles, and tried to use possession rights instead (1997 and 2004), but was prevented from doing so by the central government, which ruled that public funds could not be distributed without legal titles to the land in question.

Possession rights have been used in specific projects where funding does not come from the government. For example, Ecomarkets has allocated funds to help farmers establish their possession rights or land titles, and some intermediaries like FUNDECOR assist farmers in formalising their property rights, provided they have legal possession and there are no disputes with neighbouring farms. But this is a difficult process and few intermediaries are willing to do it, especially if there are conflicts with neighbours.

About 75 per cent of participating farms that use possession rights are concentrated in 12 cantons. Some of these areas are historically known for their problems with land titles, which were partly caused by the departure of the United Fruit Company from Limon (Pococí, Guacimo and Limón) and certain areas of Puntarenas (like Golfito). Many of these areas are remote, which makes it harder to complete the necessary legal processes (Osa, Dota, Buenos Aires, Upala, Sarapiquí), and most have relatively high SDI ranking. Only three of these areas met the criteria of SDI<40.

2.6 A proposal to increase the social impact of the PES programme

Using social filters to select participants can be cumbersome, and in any case, poverty is a relative issue within the PES programme since all participants possess land. Information about income and property values is highly sensitive and difficult to verify, if it is reported at all. Measures used in other countries, such as having a thatched roof or owning an electric cooker or car, either do not apply to the context or would be too expensive to verify on the ground. The challenge is to design a new filter that is relatively easy for local FONAFIFO officers to apply without affecting administration and transaction costs, and which provides an effective entry point enabling more vulnerable farmers to participate in the PES programme.

Based on the analysis of the distribution of contracts, a suggested indicator for poverty that would be relatively easy to verify in the field even with current levels of information, is presented in Table 5.

Table 5: Suggested indicator for poverty

Indicator	Notes	Distribution of contract allocation 1997- 2008 ⁽¹⁾
<i>Overall poverty level in the region:</i> Social Development Index < 40	Inconsistent with current poverty policies	42%
<i>Rough indicator of wealth:</i> Maximum property size 30 hectares	Targets relatively small landowners	52%
<i>Nature of participant:</i> Individual Indigenous(2)	Excludes private companies, NGOs and other associations	52% 2%

Notes: ⁽¹⁾ N=9,018, excludes global contracts because they do not show information on the nature of the participant.

Taken individually, each indicator provides limited information. For example, the SDI will show that the programme allocates 42 per cent of its contracts in areas with high poverty levels, but does not explain who receives these payments. Targeting small properties (of less than 30 hectares) may enable the programme to reach smallholders, but these farmers are not necessarily poor.¹⁶ It is important that information on the participants' characteristics is easily available, so that a quick look at the main applicant will show whether an individual or an indigenous group is concerned (52 per cent of contracts are to individuals and two per cent to indigenous groups). While it is possible that private companies are not necessarily wealthy, the fact that they have the legal ability to become private companies puts them on a different level from regular farmers.

When these indicators are combined, they show that 20 per cent of all the contracts allocated since 1998 have reached relatively poor farmers, two per cent of whom are indigenous groups, and 18 per cent of whom have individual farms of less than 30 hectares located in areas with low SDI scores. This indicator is not foolproof, as what looks like a 'regular' smallholding may in fact be a weekend retreat for a wealthy plastic surgeon. But it is a start, as combining these indicators can provide a practical way of sifting through the applications and giving priority to poorer landowners.

In order to address multiple contract issues, a criterion should be introduced to limit the number of valid contracts that a particular owner (or company) can have at one time, either for the same property (if it is over 300 hectares) or for multiple properties.¹⁷ Relatively quick checks within the FONAFIFO database should be able to provide this information, which at the moment is not entered for each contract.

¹⁶ Land prices in Costa Rica can be strongly affected by their potential for urbanisation or tourism. For example, small farms in Cartago can sell for US\$6-10/m², while prices are similar or higher in the coastal areas of Guanacaste and Puntarenas.

¹⁷ This measure should not affect farmers who have several contracts for *different* activities at the same time. For example, a farmer may undertake simultaneous conservation, reforestation or agroforestry activities on the same property.

3 Conclusions

By 2008, FONAFIFO had allocated just over 10,000 contracts and over US\$206 million, averaging out at US\$17.2 million per year. Forest protection has been the main category of land use receiving payments, representing 67 per cent of all the contracts issued and 73 per cent of the financial resources deployed by the project. In the period covered by this study, the average value of a contract for forest protection was US\$22,775. Reforestation activities account for approximately 20 per cent of both contracts and funds, with an average contract value of US\$23,335. The contracts with the highest average value were for forest management, at US\$26,026; while agro-forestry contracts have been in high demand since their introduction in 2003, accounting for 1,084 contracts with an average value of US\$2,700 each.

The PES programme seems to be reaching more medium-sized farms than very small or very large properties. Although agroforestry activities have led to a significant increase in the number small farms participating in the programme, most contracts have been allocated to medium-size and large farms (of 30 to 100 hectares) each year since the programme began. This confirms the findings of previous field studies, which suggest that the likelihood of taking part in the programme increases with the size of the property concerned.

The results of this analysis show that most payments tend to go to areas with lower opportunity costs, relatively large farms and private companies. The PES programme's lukewarm approach to tackling poverty has limited its impact in this arena, for while many poor landowners meet the criteria to participate in the programme, the main beneficiaries of most of its policies are actually wealthier landowners.

Analysis of the data and previous studies shows that although FONAFIFO has been moving in the right direction to increase its impact on the poor, more needs to be done for it to be able to claim to have a genuine social impact. Transaction costs are multiple and expensive, and many of the requirements are fixed costs that weigh more heavily on small properties. Attempts to reduce the entry costs for small farmers have not been entirely successful, and most small farmers still face significant barriers to entry. The experience with group contracts highlights the problem of local intermediation and the heterogeneity of the groups concerned, while using the Social Development Index as a priority criterion has mostly benefited relatively wealthy landowners and companies, who are quicker to react to programme policies. Additionally, in light of the decreasing levels of the Social Development Index all over the country (showing increasing poverty throughout), FONAFIFO might be better off to cease using it as the main criterion for eligibility and make more effort to reach poorer farmers directly.

While the PES programme was designed with environmental objectives in mind, there is no doubt that political pressure from the government and donors is pushing the social agenda forward. Strategically, FONAFIFO needs to show a more hands-on approach that delivers significant social impacts. As managers of a largely public-funded programme, its agents need to tread a careful line between increasing political goodwill and keeping administration costs down.

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