DEVELOPING MARKETS FOR WATERSHED PROTECTION SERVICES AND IMPROVED LIVELIHOODS"
IIED

TECHNICAL TRIP
ACTIVE LEARNING FROM COSTA RICA'S PAYMENT FOR ENVIRONMENTAL SERVICES

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The present document summarizes the goals and achievements of the Technical Field Trip: Active Learning from Costa Rica's Payment For Environmental Services, which tool place during the days 5-12 February, 2006.

It is divided in 3 main sections: 1) 10 key lessons learned from the Costa Rican PSA system; 2) the Costa Rican system evolution and legal framework and 3) the case-study profiles of all the cases happening in the country.

An assessment of the trip is presented in the Appendix at the end of the document. The appendix also presents the "on-line" diary of the activities, kept in the iied website. A CD is also included containing powerpoint presentations, additional documents and photos of the trip.

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1 Introduction

The Costa Rican Payments for Environmental Services program (PSA, in Spanish) was created in 1996, through the creation of the Forestry Law, which recognises the provision of environmental services from forests. This step was the culmination of a series of policies affecting land use, and the beginning of a new era of environmental policy. Paradoxically, PSA was mostly driven by the need to "replace" old reforestation subsidies that had to be eliminated in order to comply with the Structural Adjustment Programs of the World Bank during the 1990s. The forest sector was desperate for new ways of obtaining funding and the conservationist groups were looking for a window to get their share. Other things were also happening, such as Agenda 21 and the Kyoto Protocol. A few key people started moving the wheel within the government, and a willing president (José Figueres) took it as his government seal (*"el sello verde"*). Additionally, the country began a process of creation of capacities oriented to the protection of ecosystems and a process of land use change.

The PSA 'bundles' four environmental services: carbon sequestration, protection of water, biodiversity and landscape beauty. The original commitment from the Government to finance the scheme was a 5% tax on fuel. This later became a fixed amount per year (less than the 5%). But the starting kick was given and efforts began to engage the private sector. Interesting examples are found for biodiversity conservation, carbon and landscape beauty. But perhaps the most interesting case is that of watershed services. At the moment, voluntary agreements include four hydroelectric companies, one brewery, and one water utility company. The reasons of why they took the idea on board vary. While the relation of forest-water is still strongly based on the myth that trees increase or regulate water flows, probably the most important reason for these companies was purely public relations. By making payments back to the communities some managed to tackle directly previous problems of bad public relations. It is difficult to know for how long these arrangements might work, but all of them have already signed for a second 5 years series of contracts.

2 The Key lessons from the CR PSA system

2.1 Keep it simple

FONAFIFO has kept the concept of environmental services wide and this has facilitated their ability to adjust as the context changes. Bundling services maximises funding possibilities. The '"judgement of Solomon" applied when dividing the payment into four equal parts for each service was not fair at all, but it allowed the system to begin working.

2.2 Be transparent and inclusive

Transparency is key in building up trust in the participants. The inclusion of as many groups as possible from the beginning will provide future support for the initiative. A participatory process is key in building capacities. Costa Rica started with isolated and spontaneous actions towards conservation. Since the beginning different stakeholders were involved in the process of creation of laws and policies. The participatory process paves the way for the later implementation of instrument such as the PSA. But it is important to remember that an over democratic and complicated process might also hinder the project. Be ready to draw the line – but make sure to include flexibility in the operation.

2.3 Be flexible and allow for change

FONAFIFO has allowed for adaptation of their operational rules continuously through annual decrees. This is a double-edge sword, as it helps to incorporate lessons from previous years (such as setting up critical areas), but it can also confuse the rules of the game. Don't be afraid of criticism – use it to improve the system.

2.4 Align your project with "influential friends"

Political support and leadership were key aspects in the initial creation of the PSA. But it is also important to note that the programme has managed to survive several administrations, some with heavy blows and some with stronger support.

2.5 Learn from previous experiences

The PSA was not built from scratch and it is the result of long-term evolutions in the system. It benefits greatly from experiences (good and bad) from previous policies, legislation, such as the use of incentives that resulted in further deforestation or technical lessons from failed projects.

2.6 Continuous funding: keep your eggs in different baskets

FONAFIFO has tried to keep different options for funding, with the view of ensuring a continuous, secure flow of money. While still relying heavily on the fuel tax, they steadily look for other funding options such as carbon sales, agreements with private water users, environmental service certificates, loans, debt-swaps, donations, etc. The ESPH charges an extra water fee in their water bill, easy to tract and collect. Local intermediaries try to do several activities, such as consultancies to ensure their costs are met, and do not rely completely on funds from PSA.

2.7 Keep transaction costs low

FONAFIFO has transaction costs of 7% of its annual budget. Intermediaries, such as FUNDECOR or CODEFORSA, charge between 12-18% of the payment to cover all their

expenses (including technical support). The ESPH has managed to keep transaction costs down by incorporating the environmental service unit into their regular work. The key rule here is to build on existing capacities, and avoid unnecessary expenses (such as office supplies, cars, etc).

2.8 Delegate, delegate, delegate

Do not try to do all the work by yourself. Hire out specialists to provide the financial expertise, manage the funds, etc. Engaging with local and international universities and research institutes through thesis and research projects provide "cheap" and robust studies that might be incorporated into the system. This will let you concentrate on the project activities. FONAFIFO has also benefited a lot from the work and innovations suggested by local groups. For example, intermediaries such as FUNDECOR and CODEFORSA have paved the way for direct deals with private users; and the local water utility ESPH has tested the model of water charges for upstream conservation.

2.9 Add value to forests

The most important objective for the government was to try to add value to forest activities as means to encourage their conservation. This is done by a combination of strategies, such as direct Payments for Environmental Services for conservation, reforestation and agroforestry, and by adding value to the timber industry.

In the Northern region of the country NGOs like FUNDECOR or CODEFORSA have supported and lead a process transforming the structure of the timber industry. They have promoted activities such as using small diameter species (which implied a whole transformation of machinery) that allows farmers to use timber from thinings in forest plantations, taking the pressure away from natural forests.

Photos: Ina Porras/ Nanete Neves

2.10 A "tree-loving" culture

Much of what is happening in Costa Rica is the result of the cultural evolution of people's preferences towards forest protection. This is a continuous, long-term process linking the education sector, the government, private companies with high corporate responsibility standards, economic opportunities such as ecotourism, etc. But is important to remember that it was not always like this, and barely 20 years ago the country was near deforested, almost with the exception of National Parks (and even some of those were created by force by the government).

3 Paying for Watershed Services in Costa Rica

3.1 The evolution of a concept

The concept of paying for environmental services did not appear overnight in Costa Rica. It is an evolving product of an evolving forestry system.

By the 1970s, a combination of policies encouraging colonisation (including high international prices for beef and local subsidies for agriculture) was rapidly transforming the Costa Rican landscape. Even by the mid 1980s, most forested areas were reduced to those protected under the National Park System, which were becoming isolated environmental islands.

The government began a series of efforts trying to encourage reforestation, with different degrees of success and failure. For example, the introduction of income-tax deductions in the late 70s, although well intended, resulted in large companies making ghost investments in reforestation only to reduce their income tax. At the same time, this incentive left out small farmers who did not pay income taxes.

The government then tried a more direct route, through subsidies (*certificates*) for reforestation. These subsidies have also changed significantly over time and have learnt hard lessons through implementation.

- In some cases, people deforested primary forest just to claim the subsidies for reforestation. And even when the requirements were adjusted for this, there was little capacity for monitoring for illegal deforestation;
- The large upfront costs for reforestation left out many smallholders. This resulted in a proportion of the subsidy paid in advance. In order to qualify, properties had to be 25 hectares or less, should be part of an existing cooperative (see box) or legal capacity, and should have access to technical advice.
- The concept of natural forest began to take hold in the policy arena in the early 1990s with the introduction of a subsidy for forest management. This subsidy was established following criteria similar to the current FSC, primarily looking into diameters over 40 cm, roads design, protection of water sources, and leaving a proportion of the property as forest reserve.
- There has been progressive change. Right now the country has created more knowledge about managing native species in plantations (density, seeds, etc), but also how to select the best techniques for managing exotic species.

During the mid 1990s the country underwent a transformation of its internal economy. Pushed by pressures from the World Bank and the IMF following a series of structural adjustment plans, the government was forced to stop existing subsidies, including those for reforestation. At the same time, the local conservation movements were being supported by a series of international activities such as the Rio Declaration, the United National Climate Change Convention, Kyoto, Marrakech, COPS Milan, and the Convention on Biodiversity Diversity.

South Africa is considering cooperatives as ways of dealing with the Working for Water payments. What were the reasons for success or failure of cooperatives in the forestry sector in Costa Rica? (Christo Marais, South Africa)

Most cooperatives channelling subsidies for reforestation existed before the subsidies, and were primarily agricultural (coffee, sugar cane, etc). With time some of them became highly specialized in forestry. Others failed in the process. According to Oscar Sanchez, from FONAFIFO, the main reasons for failing are: 1) *bad management:* they did not have the managerial capacity to enter in large projects; 2) *technical knowledge was limited:* they tried to introduce native species in plantations, but the knowledge was limited and the species did not respond appropriately; 3) *difficult timber markets:* timber from exotic species had a hard time making a niche in local markets used to native species.

The ensuing gap proved both a problem and an opportunity. The forestry lobby immediately set off looking for alternatives, and the conservationist movement saw in this a chance for putting a stronger foothold on the door. Key political support came in the figure of the then Minister of Environment, Rene Castro, and the president of Costa Rica, Jose Maria Figueres.

The mid 1990s witnessed some of the most heated debates in the country, as the forestry private and public sector, the conservationist movement, academics, communities, farmer groups, NGOs, and different sectors from the government (like the Ministry of Environment, the Ministry of Agriculture, the National Park System, etc) sat together trying to draft a new Forestry Law. The new Law for Environmental Services was created, stating that forests and forest plantations provided (at least) four environmental services: carbon sequestration, protection of biodiversity and water resources, and landscape beauty. The Law also states that these services are entitled for compensation or payments, and established the origin and management of the funding (see Section 3.1.2).

"The task of creating the PSA programme is the result of an effort spanning many years and elements – minds, ideas, laws, incentives, political will, state leadership, corporate strength, *campesino* resolve, technologies and innovations, institutional strengthening, international support…"

Not that everything has always gone smoothly. Although created by Law in 1996, funding from the Fuel Tax did not reach FONAFIFO until 1998 (and much lower than the initially pledge amount). In 1997, a US$2 million carbon sale agreement with Norway provided precious funds to begin work. An open bidding process was called to choose a trusteeship for the money and this was placed in a Trust Fund with BANCOOP. Luck did not hold, and the Bank declared bankruptcy at the end of 1998 leaving part of the assets frozen. There followed a long time filling complains and looking for a new trustee. But FONAFIFO has survived the start trial and managed to invest a significant amount between 1997 and 2000.

Rodríguez, JM (2005).

3.1.1 Objective: 70% forest cover

The challenge faced by FONAFIFO was to restore the country's forest cover that had been destroyed, and 'get as close as possible' to 70% forest cover. This represents the percentage of the country that has forest potential (Rodríguez, 2005)[1].

Watershed Protection Functions provided by forests:

Water quantity (base flow): the most important variable is geology. If there are no aquifers, most of the water that infiltrates is discharged to the rivers- presence or absence of trees won't make a difference;

Sedimentation: "natural forest is the best vegetation cover to reduce sedimentation". Trees stabilize the soil, prevent surface soil erosion, gully erosion and (shallow) mass soil movement.

Perception is reality: The PSA scheme is based on common sense and political will.

Fallas, J. (2005), personal communication/ presentation given to our group.

3.1.2 Overall legal framework

The overall legal framework dealing with the environment in Costa Rica is given by a series of Laws and agreements. These include (see Annex 1)

- Regional Agreement for Management and Conservation of Forestry Natural Ecosystems and Development of Forestry Plantations.
- Law of the Regulating Authority of Public Services
- Organic Environmental Law
- Soil Conservation Law
- Biodiversity Law
- Forestry Law No.7575 (1996)

[1] Rodríguez, J.M. (ed). 2005. The Environmental Services Payment Program: A success story of sustainable development implementation in Costa Rica. San Jose: FONAFIFO and MINAE

The Forestry Law established:

1. The Payments for Environmental Services Programme (PSA). The law suggests the use of "polluter pays" and "beneficiary pays" principles to forestry strategy. The environmental services stipulated by law are:
- Mitigation of greenhouse gasses (reduction, sinking, fixing and storing carbon);
- Protection of water for rural, urban or hydroelectric use;
- Protection of biodiversity for conservation, scientific and pharmaceutical use;
- Landscape beauty for tourism;

2. The National Forestry Financing Fund (FONAFIFO) (see next section for a description) as administrator of the programme;

3. The National Forestry Office (ONF);

4. The Fuel Tax as one of the main sources of financing for forestry activities (see Section 3.2 for description of financing of the PSA. It is important to note that it wasn't until 1998 that revenues began tricking to FONAFIFO (after much public uproar at the Government for not passing the promised funds).

5. The possibility of using forest and trees as collaterals for loans granted by the national banking system.

Each year a decree is issued setting up priorities for approving projects[2]. While this might lead to confusion, it also allows for flexibility in the implementation of the projects and a window to learn-by-doing from implementation (Box 1). One problem of the PSA is the competition against other land uses, such as urban developments, in areas that are highly strategic for water recharge. A new law proposal has been sent to prohibit any land use apart from forest conservation in land areas declared as water recharge. The proposal would limit agriculture, ranching, urban development, landfills, greenhouses and petrol stations. While this might be extreme, it could begin a rolling motion towards some kind of zoning.

3.1.3 Institutional framework

The concept of environmental services has been promoted, primarily, by the forestry sector in Costa Rica. The forestry sector in Costa Rica includes a large variety of groups, ranging from large landowners to peasant groups.

In 1995 the Ministry of Environment consolidated in a single system several forestry trust funds and administrative offices that had been operating for the previous 10 years. One year after the National Forestry Financing Fund (FONAFIFO[3]) was created (and ratified by law) to reduce costs, increase efficiency and transparency. The creation of a single Fund "provided a leadership mechanism to steer the development of forestry in Costa Rica in the right direction".

[2] Copies of all the decrees and publications in the Official Paper *La Gaceta* are included in the CD with materials. The information is in Spanish.
[3] The main objective of FONAFIFO is to provide small and medium-scale producers with financing for reforestation, planting forest and nurseries, development of agroforestry systems, recovery of degraded areas and implementation of technological change, all for the productive use and industrialization of forest resources (Rodríguez, edit, 2005).

The institutions involved are:

- Ministry of Environment (MINAE)
- Costa Rican National System of Conservation Areas [4] (SINAC, *Sistema Nacional de Areas de Conservacion*). It includes7 different categories of wildlife areas.
- FONAFIFO
- ONF
- Forest Regents
- Association of Agricultural Engineers (Colegio de Ingenieros Agronomos);
- Agricultural Centres (Centros agrícolas cantonales);
- NGO
- Farmers;

3.2 Mechanisms for rewarding environmental services

Costa Rica has at least three main ways of rewarding investments in watershed conservation. These are a national programme, direct negotiation, and direct investment projects.

3.2.1 The National PSA

The PSA Programme, a Government-led, national scheme ongoing since 1997. This programme rewards forest owners for the environmental services provided by their forests (biodiversity conservation, watershed protection, carbon sequestration and landscape beauty).

While most of the funding still relies in state funds derived from a fuel tax, the scheme has evolved significantly and keeps trying new forms to engage more the private sector (mostly HEP producers). The scheme is mediated by FONAFIFO (National Forestry Fund). FONAFIFO pools funds from different users (at local, national or international level), and then channels payments directly to farmers. (See Sections 5.3, 5.4, 5.5, and 5.6 for details on the different schemes currently under contract).

FONAFIFO has also developed a new streamline, over-the-counter mechanism called Certificates for Environmental Services (CES). Its objective is to reduce transaction costs by simplifying the commodity. Each certificate, sold for US$60, guarantees the protection of one hectare of forest for one year. Section 5.2 present details of this mechanism.

An auction-based system? There are proposals about the possibility of using Auctions for conservation. In a nutshell, this will imply that, on an annual base, FONAFIFO calls for bids for conservation. Each farmer will then choose the number of hectares they wish to enter for conservation, and at what price. FONAFIFO will then select the best offers and allocate payments according to their selection criteria. The practicalities of this approach are far from easy. For example, lack of equal information would make PSA very difficult to access for small, isolated farmers. Similarly, farmers with small properties will find it more difficult to lower their bids and yet cover their transaction costs, while wealthier landowners who do not depend on their land could easily reduce their bid (Miriam Miranda, local PES expert, personal communication). On the other hand, FONAFIFO might be able to protect more area for the same amount of money if farmers are willing to protect at a lower rate to what is currently being offered. At least in theory, the current excess demand for payments means that this would be the case if the 'market' opens.

3.2.2 Direct negotiation

Direct negotiation between downstream water users and upstream landowners. There are two examples of direct negotiation. The hydroelectric company La Esperanza, which pays for conservation of the forests in their catchment area an amount of US$10/ha. There is only one landowner upstream, a private reserve, already committed to protecting the cloud forest (see Section 5.7). The second example is the Procuencas Fund, in Heredia (Section 5.8). The ESPH is a water utility that makes collects funds from downstream users through an additional water fee, directs payments upstream for conservation and watershed management, administers and monitors the programme. The ESPH

[4] The SINAC model seeks for the decentralization of responsibilities, activities and actions, formerly concentrated in the capital of the country, to regional units. These units increase the local offices, civil society and local groups in the capacity of decision-making process. The country has been divided into 11 Conservation Areas: Guanacaste, Arenal (which is actually divided into 2 sections, Arenal-Tilaran and Arenal-Huetar Norte), Tempisque, Tortuguero, Amistad Caribe, Amistad Pacifico, Osa, Pacifico Central, Cordillera Volcanica Central and Isla del Coco.

also works together with FONAFIFO in another area where they overlap with a brewery company already making PSA for conservation.

3.2.3 Direct investment programmes

Direct investment in strategic catchments for hydroelectric generation made by the Costa Rican Electricity Institute (ICE) (section 5.9). Despite being the largest owner of hydroelectric projects, ICE does not make direct payments to farmers upstream through FONAFIFO. Their approach to watershed management has changed through time and they now make significant efforts in working together with farmers in their catchment areas. In the Peñas Blancas watershed, ICE is developing a PES scheme targeting their priority areas for sedimentation reduction (through conservation of forest cover, recuperation of degraded areas through reforestation and agroforestry). Although it is a tailor made scheme, independent from the national PSA, it is nevertheless to be processed through FONAFIFO.

3.3 Payments levels

3.3.1 Origin of the Funding

In 2004 the National PSA Programme had a budget of approximately US$15.5 million. This is equivalent to an investment in environmental services of US$3,780 per capita! FONAFIFO's sources of funding are:

Source	Period	Approximate amount
State resources (approximately US$ 3.5 million/year		
Fuel Tax	1997-indefinite	App. US3.5 million/year
40% of the stumpage tax revenues (timber)	1998 (the only year when funds were received, after this it was legally challenged and stopped);	App. US$0.15 million. These funds were recirculated as loans and by 2004 their value is US$0.23 million.
Agreements with private corporations (Approximately US$560,000 per year)		
Energía Global HEP	1997 –onwards (renewable 5-year contracts)	US$40,000/year;
National Power and Lighting company (CNFL)	1998-onwards (renewable 5-year contracts)	US$436,000/year
Platanar HEP	1999-onward (renewable 10-year contracts)	US$39,000/year
Florida ICE& FARM (brewery)	2001-2009 (initial contract for 8 years, renewable)	US$45,000/year
Loans, grants, and market instruments (Approximately US$9.35 million /year)		
Ecomarkets (World Bank)	2000-2005 (second phase entering now)	US$ 8 million/year (total 40 million)
KFW (German Bank)	2000-2007	US$1.8/year (total US$12 million)
Reforesta (sales of bonds)	2002-2004: design phase 2005-onwards bond issues	US$300,000 for design phase and projected fund recovery from bonds at 2.6 billion colones.
CSA (Environmental Services Certificates)	2002-onwards	US$1.35 million/year

Source: Rodríguez, 2005.

Using Trust Funds in FONAFIFO. Trust agreements are subject to the Commercial Code and subject to private (rather than public) law. This gives flexibility in the management of funds, although the institution has to abide by the code. When public funds are involved they must follow the rules of the Office of the Comptroller General (Oficina de Contraloria General). A trust fund is useful for its flexibility and efficiency, but also because it allows FONAFIFO to focus on the technical, strategic and conceptual aspects of its activities. All accounting matters are taken care by the specialized financial entity. (Hilda Arroyo, financial adviser to FONAFIFO, in Rodríguez (2005).

Although there is no lack of studies pointing at the differentiated values by service and by type of forest or land use, for practical reasons FONAFIFO basically 'splits' the value of the PSA into four, and each quarter corresponds to each environmental service. Negotiated agreements with private water users vary. The private hydroelectric companies of Energía Global and Platanar pay between US$10-$15/ha/year for conservation. FONAFIFO then "tops up" these funds to the level that farmers receive. In the case of the Platanar HEP they also pay US$30/ha/yr for participants without property titles that cannot otherwise take part in the FONAFIFO PSA scheme.

On the other hand, the CNFL group pays the full amount of the payment. According to Gabriela Soto, the main reasons for this are:

- They want to see as much area under protection, natural regeneration or reforestation of particular area;
- They can use their own criteria for distributing the payments. For example, they can "bypass" some requirements, such as property titles, that apply for the national programme;
- The national programme rules are strongly based on the "first come, first served" principle. CNFL does not want funds to be distributed in areas that are not priority for their purposes.

It is important to highlight that the main funds that FONAFIFO uses to make the PSA to farmers do not come from direct users. Most of the money comes from the National Budget through the Fuel Tax, and also from international donors working in particular areas of the country (GTZ, KfW, etc). Since the beginning of the PSA programme IN 1997, FONAFIFO has allocated 27billion colones (**roughly equivalent to US$60 million**[5]**)**

In the case of the ESPH, payments are collected directly from water users through an "environmental fee" charged in the monthly water bills. ESPH also acts as an intermediary, channelling user payments to watershed protection. Funds are administrated by PROCUENCAS the (ESPH) programme that promotes protection and reforestation in the microcuencas in case. Initial Willingness to Pay studies suggested a tariff of 15 colones ($0.03)/m3, but the tariff approved by the Government was 1.90 colones (US$0.004/m3) for all water users. This fee is being requested for revision since 2003 (the company has requested a fee of 6 colones/m3). The ESPH has also purchased lands located in critical aquifer recharge areas.

3.3.2 Payments to farmers

Payments channelled through FONAFIFO were originally directed to forestry plantations, conservation and forest management[6]. Values are determined in colones (the local currency), and adjusted by inflation. Current payments levels are:

- US$820 for forestry plantations for 10 years, with 46% given during the first year, and successive payments of 6% for the following 9 years.
- US$320 for conservation of forest over 5 years, in equal payments of US$64/ha/year.

[5] Using an average exchange rate of 450 colones/dollar. Source: FONAFIFO (2005) The Environmental Services Payment Program: A Success Story of Sustainable Development Implementation in Costa Rica. FONAFIFO: Over a decade of action.

[6] Due to pressures from the conservation lobby, forest management contracts are not entitled to receive PES anymore. However, those areas of the forest that must remain untouched according to the management plans (for example, riparian areas) receive payments for conservation.

- US$1.3 per tree for agroforestry, made in 3 payments of 65%, 20% and 15% during the first 3 years.

Other than the type of activity promoted, payments are equal across the country and do not depend on the quality of the environmental service produced. For example, biodiversity from a rich and diverse cloud forest 'receives' the same compensation than biodiversity from a secondary forest in the lowlands. Although this is not ideal, the practicalities of a differentiated system of payments are far from easy and the transaction costs involved would significantly escalate.

Contract length: Estimation of the 'value' of the environmental service was initially done by simply estimating the opportunity cost of pastureland as the proxy for forest protection (roughly US$50/ha/year during the early days of PSA). Initially, payments were suggested only for 5 years with farmers agreeing to protect for 20 years. However, resistance was very high, as farmers feared that after 20 years their forests would be expropriated for 'conservation'. Contract length was then matched to payment delivery. In general, payments are for 5-year contracts, unless there are specific requirements for watershed-based buyers (such as the CNFL contracts for 10 years).

Payments for forest plantations were substantially higher than for conservation (and about 40%-60% of the reforestation costs). They were also based on the previous reforestation subsidy that was eliminated after the Structural Adjustment Programmes. The explanation used for their justification, nevertheless, comes to the (expected) returns from carbon sequestration. In 1996, Costa Rica had high hopes in the international carbon markets, and the objective was to create fully certified, high-producing forest plantations geared towards timber and carbon. The high expectations did not materialise, but the higher payment for reforestation remains.

Timber from these plantations has to be commercial. In practice, this clashes with potential benefits for watershed protection. Because of current legislation that forbids tree-cutting along riparian areas, PSA cannot be used for reforestation in these areas that could be critical for reducing sediment load into waterways.

Payments made through the ESPH in Heredia are higher. The main reason for this that is opportunity cost of land in their catchment area is much higher than the national average. Being an independent organisation, they do not depend on FONAFIFO or the Government's regulation to decide the level of their payments. The ESPH pays approximately US$60/ha/year with 20-year contracts for conservation and natural regeneration and US$92/ha/year for reforestation. One of their catchment areas overlaps with a brewery currently paying FONAFIFO for environmental services (Florida ICE&FARM). In this area, farmers are paid US$65/ha/year.

The payments received directly by the Monteverde Conservationist League (MCL) from La Esperanza Hydroelectric Project are based on US$10/ha/year, and adjusted by the amount of energy produced during the month or season.

3.4 Practical issues

3.4.1 Requirements for application

Pre-application sent to FONAFIFO specifying: personal information of property owner (including identity card number), total area of the property, total area and modality applying for PSA (reforestation, conservation or agroforestry), information from Registry Office, cadastral maps, location of the property (province and administrative borough) and whether or not the farm has limitations with the IDA or mortgages with Banks (see 3.4.2).

The pre-application is checked to verify legal requirements, against the national priority areas, and existence of funds for the payments (Box 1) FONAFIFO had direct on-line access to the Land

Register Office, which speeds up the verification. FONAFIFO is bound to give a reply within 10 working days.

Applications submitted by intermediaries have usually been fully "proofed" by the time they are submitted to FONAFIFO (as recovery of these costs, incurred by the intermediaries are only recovered if the application is successful), and applications that are not robust enough are usually not pursued by the intermediaries in the first place (for example, if there are conflicts over property rights) (Pedro Gonzalez, FUNDECOR, personal communication February 2006).

ESPH's scheme is similar to FONAFIFO. It also abides by the forestry law and the regimes for conservation and reforestation, but prioritises its own critical areas according to the hydrogeological study that identifies areas of total protection and recharge areas. Requirements for participation are similar and contracts can be individual or shared.

In the case of independent initiatives, such as the ESPH and ICE, the water user sets particular recharge areas where they target their efforts.

ICE's PES scheme is still in very early stages but there will be contracts, processed through FONAFIFO, targeting specific areas where the risk of erosion is high (according to the condition of forest cover, use and capacity of the soil and proximity to streams).

Box 1. Criteria for Participation

Eligibily criteria. Landowners who wish to participate in the programme have to provide the following a) Application form to the regional MINAE office; b) Proof of identity or statutes of an organisation; c) Proof that they hold a legal title to the land. If applicant only have possession rights then other official requirements are necessary: proof of sale, three independent witnesses, description of the property and its limits, proof that there are no conflicts over the property, etc. All of these have to be publicly authorised by an official lawyer (notario público). d) Proof that they have paid local taxes; e) An official cadastral map of the property; f) Verification of the size of the area by a professional topographer; g) (Copy of) a cartographic map on a scale 1:50.000 to indicate location of the area; h) Legal authentication of representative; i) For sustainable forestry activities, a Forest Management Plan drafted by a professional forestry engineer and approved by the National Conservation Areas System (SINAC). Reforestation can only be financed after additional official approval by the Ministry of Agriculture; j) Prioritiy areas for approving projects are selected every year through a decree.

Priority criteria: (i) location in relation to protected areas, biological corridors or areas of importance for water resources (for conservation projects); (ii) aptitude of the soil for forestry and type of trees used (commercial, native or endangered), in the case of reforestation projects; (iii) for agroforestry activities, risk of degradation of soil or water resources is considered as well as the capacity of the candidates to see the project through, as top priority is given to projects being submitted by organizations or individuals with certified capacity in managing 'forest'/timber trees in agroforestry regimes; (iv) areas targeted by projects financed by donor agencies and (v) social characteristics of the host areas: projects located in areas where the Social Development Index is under 40%, are prioritised;

Size of projects:
i) for reforestation: single applications: 1ha-300ha/year;; group applications: 50ha/year for each of the landowners; ii) protection 2-300ha; iii) in indigenous reserves: maximum area is 600ha, per PSA modality, each year; iv) Agroforestry: 350 to 3500 trees, per landowner, with limited densities according to the type/use of the trees.

3.4.2 Limitations and strategies for small, poor farmers

Limitations with IDA

The Agrarian Development Institute (IDA) has distributed unoccupied lands to landless peasants. These properties are used for agriculture, but some have remained partially covered with forests. Farmers who received land from IDA are not entitled to receive PSA, thus limiting the access of many small, poor farmers who would like to enter forestry activities.

Mortgages

Some limits apply if the property has a mortgage. The only cases accepted are for conservation, and the payment is given at the end of each year. This tends to limit the participation of poorer groups who depend on bank loans for their activities and might restrict their participation in the

PSA program. FONAFIFO has entered some contracts with the National Bank and IDA that helps overcome the restriction of properties with mortgage. On the other hand, a study by Zbinden and Lee (2004) shows that landowners with farm debts consider the guaranteed payments over the 5-year contract as an important variable in their decision to participate.

Lack of property titles

For a long time farmers without property titles were not allowed to participate in the PSA. Some initiatives, like Platanar HEP, have agreed to pay a fixed amount of US$30/ha/yr to farmers without property titles that cannot participate in FONAFIFO.

If the applicant (s) do not have an official property title, they must present the following documents: proof of sale authorized by a public notary or declaration from three witnesses in public procedure; owner's declaration against public notary describing the property (location, limits, number of cadastral plan, and they way it came into possession); declaration from the property neighbours indicating that they know about the possession claim and do not have conflicts (same applies if neighbour is a public entity). Applications are only received for conservation.

Time of application

A problem that many smallholders face is the delay between sending the application for PSA and the time they receive the payments. In many cases, the length of the procedure can be very long, and the land under application must remain "unchanged" since the application. This can have a high opportunity cost for small farmers, whose livelihood strategies are usually restricted and cannot afford the waiting time.

Using intermediaries is a useful solution for small holders. FUNDECOR, for example, groups several small farmers for group application. Initially the full application to FONAFIFO for the PSA was done as a group. However, problems began to arise for non-compliance. If one farmer failed with his commitments, this meant that all the project would be cancelled. Currently FUNDECOR makes each contract separately, but they agree to do group-monitoring and technical assistance, which helps reduce transaction costs for the participants. Even if this reduces transaction costs, FUNDECOR still sometimes partially bears the costs of dealing with small farmers by reducing their intermediation percentage fee (from 15% to sometimes 10%). Source: Pedro González, FUNDECOR, personal communication February 2006.

3.4.3 Grouping smallholders

Properties of less than 50 hectares for reforestation that present their project as part of a larger group can receive 50% of the PES ahead to help with investment costs. However, appropriate letters must be drawn to guarantee the plantation. The programme benefited more than 4,400 farmers and forest owners during the first 5 years.

When in doubt: monitor!

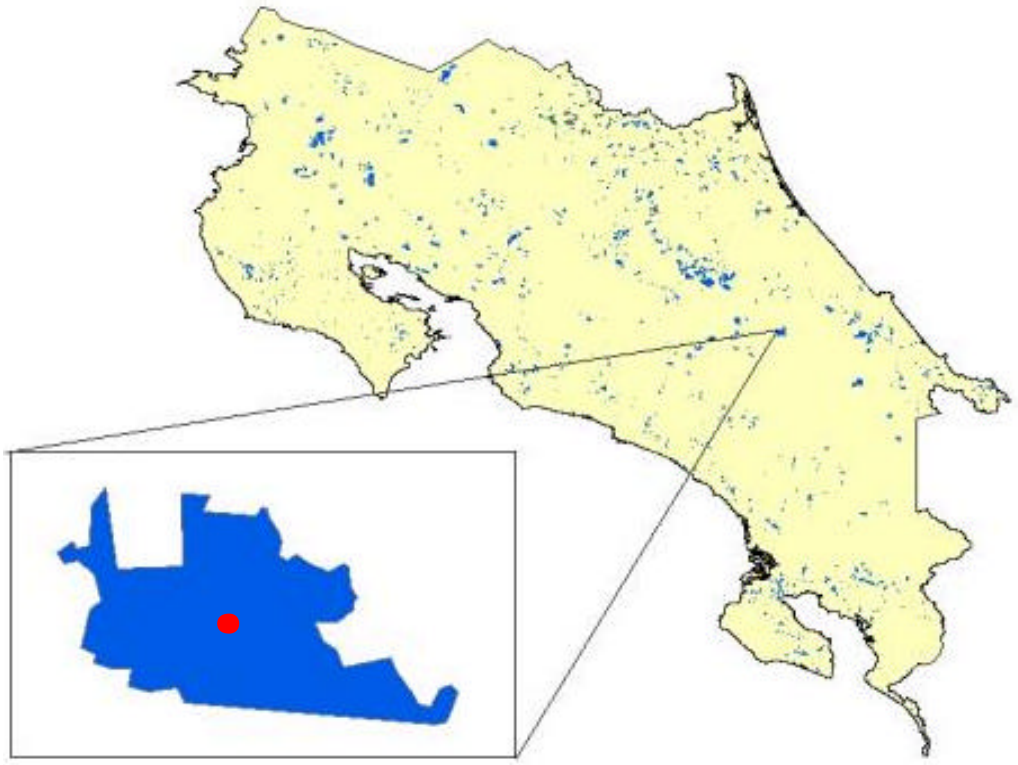
In the absence of scientific evidence, we should invest in our best bets and monitoring outcomes becomes vital…that's a way to learn; (Nicole L.) "reality proves theory" (Gordon P.)

Since we're not really sure about the science, what we need is long-term, even if simple, monitoring; donor funds maybe be large, but are usually to short lived to support such long-term effort; (Jorge Fallas)

In watersheds, forests play a very important role in terms of erosion and landslides, which are equally important watershed services [as water yield]- therefore PES should be seen as a precaution or insurance. (Christo Marais, South Africa.)

3.4.4 Monitoring

- Conservation Areas Staff
- Regents
- External Audits
- Monitoring of vegetation cover
- GIS



Beneficiario	Cédula	Contrato	ha PSA	Folio Real	Ha Total	Plano	Cuota
Carlos Alvarado Quesada	1-1060-078	SJ-01-22-008-2003	150	1-123456-000	250,5	P-147258-2000	2

FONAFIFO

Monitoring sheet, Fonafifo Presentation 2006

4 Assessment and impressions

4.1 Objective of the trip

The objective of this trip is to learn from the Costa Rican experience in the development and implementation of initiatives for markets for environmental services, with emphasis on those oriented to secure the provision of watershed services.

The trip includes visits and conversations with:

- Private companies that are paying for environmental services.
- The suppliers. We will arrange visits with farmers receiving the payments, both under direct private agreements and the government PSA.
- The intermediaries. We will be talking to the main leaders of FONAFIFO, the main government body who designed and administers the national scheme of PSA. But we will also talk to the more "on the field" intermediaries that deal with smallholders. FUNDECOR and CODEFORSA are sources of information. We will ask them to explain how they do it, what type of monitoring systems they have, how do they get their funding, their objectives for joining the PSA, etc.

4.2 Target group

The trip was targeted to 11 participants will come from India, Indonesia, South Africa, Granada, Bolivia and China. This included two representatives from each country: a local level practitioner and a high level policy-maker especially targeted for his or her interest in supporting PES schemes in their country (note: the policy representative for India was not able to attend the workshop).

IIED

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Brief Biography	Ina Porras (from Costa Rica) works as a researcher at IIED. She has been involved in analysis of market-based schemes for environmental services (MES). She has previous experience working in Costa Rica with an institution leading the design of the Payments for Environmental Services in 1995-96 (Tropical Science Center). In 2001-2002 participated in a global review of initiatives worldwide (Landell-Mills and Porras, 2002), as well as analysis of individual cases of watersheds and carbon initiatives in Costa Rica, and Ecuador, and has been supporting he development of environmental services aspects in IIED through the review of experiences and writing training material. She is about to complete a PhD on markets for hydrological services with the University of Newcastle. She has participated in international workshops (including the Katoomba Group), and is a contributing author to the Millennium Ecosystem Assessment report: Chapter 3 Responses Assessment. While her knowledge of MES experience is global, her main expertise and contact network is in Latin America.

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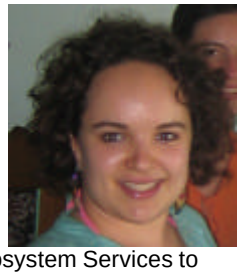
Brief Biography	Nanete Neves, originally from Portugal, holds a degree in Geography from University of Coimbra, a five-year course combining both physical and human geography, part of which she did as an ERASMUS student at Utrecht University, wher e she got more ecological insight into environmental management. Most recently she completed a MSc in Environmental Sustainability at the University of Edinburgh, where she was introduced to ecological economics issues and market–based mechanisms, leading her to build her thesis around the potential of Markets for Ecosystem Services to contribute for local Sustainable Development. Her current work has been as a research consultant for the IIED, working closely with Ina Porras, to conduct a worldwide review of the ongoing cases of markets for watershed services, as part of IIED's "Developing markets for watershed protection services and improved livelihoods".



COSTA RICA

Name	**Miriam Miranda Quirós**
	Professor at CINPE, National University, Costa Rica
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Brief Biography	Miriam Miranda holds several degrees in the field of geography and social sciences, Sustainable Development (University of Tennessee, USA, 1991) and most recently a PhD in Environmental Studies and Policy (Utrecht University, The Netherlands, 2003). She is currently a researcher at CINPE (International Centre of Economic Policy for Sustainable Development, of the National University) and her expertise is in environmental services and valuation of natural resources, particularly in terms of participatory methods and local stakeholders involvement. Her published work is extensive and has been done in collaboration with several national institutions and international organizations, such as Cifor, TNC and the IIED, where she has been a long-term collaborator and has co-authored several IIED studies.

BOLIVIA

Name	**Maria Teresa Vargas**
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Brief Biography	Maria Teresa Vargas holds a Master of Science in Environmental Science and Forestry from the Yale University, USA and has more than 12 years of experience designing and implementing conservation and development projects in Bolivia. She has led several Environmental Organizations in Bolivia and has also contributed to various research projects from international organizations such as CIFOR, BIC and the IIED. In addition she has also led the project " Integrated Participatory Management of the River L os Negros". Currently she is leading a national research project on Environmental Services, particularly on its application to hydrologic resources. She has expertise in natural resource policy, especially sustainable forestry policies, environmental management and application of market-based mechanisms.

Name	**Edwin Aguilera Antunez** **ex Minister of Environment of Bolivia**
Contact	
Email	
Brief Biography	Dr. Aguilera was the national director of the Bolivian Forest Service for 7 years. He also has been the Vice-Minister of Natural Resources and in the last gover nment was the Minister for sustainable development and planning. He led the development of forest certification in Bolivia and has a real interest in promoting PES as a tool for forest protection and management.

CARIBBEAN

Name	**Nicole Leotaud** **CANARI**
Contact	
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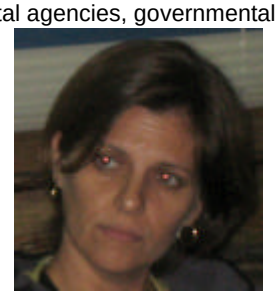
Brief Biography	Ms. Nicole Leotaud is currently part of the project team in the Caribbean Natural Resources Institute (CANARI) that is coordinating the "Who Pays for Water" project in the Caribbean. Nicole has a diverse range of experience working in non-governmental agencies, governmental agencies, and academia in the Caribbean. She has expertise in: researching and analysing biodiversity management and sustainable development issues in the Caribbean; facilitating capacity building in government and civil society stakeholders in organisational development, project management, proposal development, and participatory natural resource management; managing conservation lands to protect biodiversity while providing for public participation, passive recreation and environmental education; and in designing, implementing and managing environmental education programs in USA and the Caribbean. Nicole holds a Master of Science in Conservation Biology & Sustainab le Development from the University of Wisconsin-Madison, USA and has professional training in participatory natural resource management, land management, environmental economics, organisational development and environmental education.



Name	**Gordon Paterson**
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Email	g.paterson@grenadaforestry.com
Brief Biography	Mr. Gordon Paterson has served as a member of the Caribbean Action Learning Group (ALG) of the “Who Pays for Water” project for the past several years, where he has well represented the interests of his home country of Grenada. He is employed in the Forestry and National Parks Department of th e Ministry of Agriculture in Grenada, where is has worked for the past 23 years. He is currently serving as Head of the Watershed Management Unit within the Forestry and National Parks Department. His main area of responsibility is ""all upland watersheds above water abstraction points"". The goal of this Unit is ""In participation with key stakeholders, to protect and improve the ability of upland watersheds, through soil and vegetation management, to optimise water supplies in terms of quality, quantity and timing for present and future generations.”  Gordon is a Forester graduated from Kenya forestry college, Kenya, East Africa. He also graduated as a Wood Scientist from Buckinghamshire College of Higher Education, High Wycombe, England and as Watershed Manager from Edinburgh University, Scotland. He has training in collaborative/participatory resource management with the Caribbean Natural Resources Institute (CANARI) in the Caribbean and in Participatory Integrated Water Resource Management (PIWRM) at the National institute for Rural Development (NIRD) in Hydrabad, India.

CHINA

Name	**Jin Leshan**
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Brief Biography	Mr. Jin Leshan got his PhD. Degree in environmental economics in 1997. He works with the College of Humanities and Development (COHD) of China Agricultural University (CAU), teaches environmental economics and does research in the fiel d of natural resource management. He has got involved in a number of research projects funded by international organizations such as Asian Development Bank, WWF, CIDA, and GTZ. Mr. Jin Leshan acts as the contact person between IIED and Chinese project partnership in this DFID funded research project “Developing Watershed Protection Markets with Improved Livelihood”. He is eager to learn more in CR, a very different world to a Chinese. 

Name	**Wang Dehui**
	Department of Ecological Conservation, SEPA **Deputy Director General**
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Brief Biography	From 1980 Mr. Dehui Wang was a senior engineer & a chief of laboratory of environmental sciences in Chinese Research Academy of Environmental Sciences. From 1989 he was a director of Plan Department, State Environmental P rotection Administration (SEPA), China and participated a serial international meeting in U.K., Costa Rica, Japan, U.S.. From 1997 he was a Deputy Director-General, Department of Nature and Ecology, SEPA, and a chief of National Office of Implementing the Convention of Biological Diversity (CBD), and a chief of National Office of Biosafty. He was also as a head of Chinese delegation participated in serial numbers of the 

	Negotiation Conference of the “Cartagena Protocol on Biosafety and the Conference of Parties of the CBD, and responsible for national ecological compensation policy-making and Ecological EIA.

INDIA

Name	**Chetan Agarwal** **Winrock International - India**
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Brief Biography	Since Dec 2003, Chetan Agarwal has served as a Senior Prog ram Officer with the Natural Resources Group at Winrock International India, New Delhi. Here and previously, he has worked to sustain forests, in the Western Himalayas, nationally in India, and elsewhere in Asia. His interests include market and regulatory analysis for sustainable production of forest produce and ecosystem services, forest tenure and community ownership, and the application of tools such as certification, incentive mechanisms, GIS and Remote Sensing for the same. Chetan's training includes a masters in rural management from the Institute of Rural Management, Anand, India (IRMA), and a masters in public affairs (environmental policy) from the School of Public and Environmental Affairs (SPEA), Indiana University, Bloomington, Indiana, USA.

INDONESIA

Name	**Munawir** **Head of Center for Land and Water Resources Management, LP3ES**
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Brief Biography	Mr. Munawir has been working for LP3ES, an NGO based in Jakarta. At present he acts as IIED Partner in Indonesia for the Project: "Action-learning to develop upstream-downstream transaction for watershed protection services and improved livelihoods." He keeps communication with stakeholder running to get support for the project implementation. Previously he has been involved in management of irrigation system and water resources.

Name	**Isa Karmisa Ardiputra** **Deputy Ministry of Environment**
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SOUTH AFRICA

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Brief Biography	Nicola King is employed as a senior environmental and resource economist at the CSIR in Pretoria, South Africa. The focus of her work is on the economics of water management with projects that include the economic value of domestic and industrial water in South Africa, the economic value of river health, water governance, and integrated water management. She is currently managing the South African component of an international DFID/IIED funded project focused on developing payments for catchment protection services and improved livelihoods. The project is being implemented in two catchments in South Africa and has a strong focus on applied learning and capacity building on payments for environmental services. The project promises to deliver significant new insights that will expand existing approaches to catchment management. Nicola also has research experience in the development of economic indicators for the environment, and the environmental economic assessment of infrastructure development projects. Prior to working at the CSIR, Nicola was employed by the University of Pretoria where she lectured in environmental economics and worked on developing mineral quality and water resource accounts in South Africa. She has also gained experience working for the World Conservation Union (IUCN), South Africa; Shell (STASCO), London; and Barclays Bank, London.

Name	**Christo Marais** **Executive Manager: Strategic partnerships - National Working for Water Programme**
Contact	National Working for Water Programme, Department of Water Affairs&Forestry Cape Town 8000, South Africa Tel +27(0)21-441-2726/27 Fax +27(0)21-441-2781 Mob +27(0)82-551-8316
Email	chris@dwaf.gov.za
Brief Biography	Christo was born and grew up in the Breede River Valley, famous for its wines and racehorse breeding, 140 km north east of Cape Town in the Western Cape Province of South Africa. He completed a diploma in Forestry (1983), his B.Sc (1986) and B.Sc Honours (1989) in Forestry (Nature Conservation) at the University of Stellenbosch. In 1998 he completed his Ph.D on the economics of invasive alien plants in wat ersheds at the same University. During this period he co-authored a number of papers and book chapters on the economics of invasive alien plant management in watersheds and riparian systems. Initially he worked as Nature Conservation Scientist responsible for reserve management and later as coordinator for monitoring and fire management in the then Cape Nature Conservation. He stayed involved in watershed management in the Western Cape until 1994, when he started specializing in economics of invasive alien plant management but still with a strong focus on watersheds. With the inception of the Working for Water programme in 1995 he managed the Western Cape projects, until 1999 when he was transferred to Working for Water head office to head up scientific services. He is currently responsible for strategic partnerships in the Working for Water Programme.

4.3 Itinerary

	Day	Activities	Description
1	**04 Sat** (arrival)	Hotel El Tirol (+506 267 6228)	
2	**05 Sun**	Hotel El Tirol (+506 267 6228) Diasry Day !- IIED	
	Morning	Breakfast 7-10 am	
		10 am: Morning Session: Introduction of the trip	**1. Who are we, and what are we doing here?** • What this trip is about; • Introduction of participants • Discussion of methodology; **2. Expectations** (introduce Assessment) • Make list of questions to prompt brainstorming. • Country -team discussion. Make list of issues that you would like to know about from the trip.
		Welcome Lunch At El Tirol Hotel	**2. Objectives and Methodology of Trip** • Institutions, people and projects that we will visit. • Type of presentations they will make • Potential gaps – how can we address them? • Preparation of 'guiding' list of questions
	Afternoon	14h: Description of the PSA 17h: Presentation by a Local Hydrologist	**3. Introduction to the PSA in Costa Rica** • Main stakeholders involved • Financial instruments • Institutional framework **4. Science and beliefs in the design of the PSA** Short presentation and discussion by a local hydrologist (Jorge Fallas) on the theory and evidence from science, and their interaction with beliefs and policy.
3	**06 Monday**	Bamboo Hotel Sarapiquí (+506 766 60 05) **Diary Day 2- China**	
	Morning	7h-8h30 Breakfast	
		8: 30 – 10:30: Visit to FONAFIFO	**1. Visit to FONAFIFO** (national intermediary). (http://www.fonafifo.com) • What is FONAFIFO • Main Project • Process of building capacities • Impacts of forestry policies on poverty • Requirements for PSA • Evolution: challenges for the future?
		12h: Lunch	Presented by Oscar Sanchez and Alexandra Saenz.
	Afternoon	14h Braulio Carrillo National Park	14:00 Aerial tram in Braulio Carrillo (www.rainforesttram.com) Arrival to Puerto Viejo de Sarapiquí
4	**07 Tues**	Bamboo Hotel Sarapiquí (+506 766 60 05) **Diary Day 3- Bolivia**	
	Morning:	8:30- 10:00 Visit to **FUNDECOR** 10:00- 12:00 Visit to a local farm receiving PSA	• Presentation and discussion of **FUNDECOR** (local intermediary) (www.fundecor.org)
	Afternoon	14:00- 16:00	• Visit to natural forest under PSA- management (sustainable timber extraction)

	Day	Activities	Description
	Evening	18:00	• Forest Vs ecotourism: Presentation and discussion by the Sarapiquí Tourism Chamber
5	**08 Wed**	Hotel Los Lagos (La Fortuna, +506 441-1818) **Diary Day 4- South Africa**	
	Morning:	8:00 am - Departure to San Carlos 10:00 am. Visit to **Platanar Project** 12:00 Lunch	Field trip around the **Platanar** watershed with **CODEFORSA**. Hydroelectric company paying for sediment control and flow regulation.
	Afternoon:	14:00 Visit to La Gloria agroforestry 16:00 pm. Departure to La Fortuna	**La Gloria agroforestry** and reforestation project with CODEFORSA (http://www.codeforsa.org/). CODEFORSA is a local intermediary supporting forestry activities and dealing with smallholders.
6	**09 Thurs**	Hotel El Tirol (+506 267 6228) **Diary Day 5- Indonesia**	
	Afternoon	12 am. Return to Heredia 16:00 pm. Presentation on **CNFL**	CNFL/FONAFIFO project Parastatal company (CNFL) paying PSA to farmers in HEP www.cnfl.go.cr • How has the CNFL policy changed over time with respect to PSA? For example, activities promoted? Size of participants? Etc. • Impact of PSA on local landholders
7	**10 Friday**	Hotel El Tirol (+506 267 6228) **Diary Day 6- Caribbean**	
	Morning	8.00 am- departure to **Penas Blancas** LUNCH	**Visit to Peñas Blancas watershed (managed by ICE)** Discussion of the ICE's (and specifically the PB project) policy on watershed management and PSA. **(ICE** is the national electricity producer/distributor, and they DO NOT pay PSA but have direct investments in their watersheds). • Welcome and introduction • Presentation of Environmental Flows Research Project (Alexia Pacheco H.) • ICE's approach to integrated watershed management (German González H.) • ICE's approach towards PSA (Jorge Escribano M.) • Environmental education (Laura Arguelo)
	Afternoon	Return to Heredia	• Visit to the local school and to the Peñas Blancas Hydroelectric Station (Laura Arguelo and German González H.)
8	**11 Saturday**	Hotel El Tirol (+506 267 6228) **Diary Day 7- India**	
	Morning	8:00 am-Presentation and discussion of the Empresa de Servicios Públicos de Heredia (ESPH) initiative. Lunch	• Presented by Luis Gamez. • The **ESPH** has a private (separate from FONAFIFO) PSA programme in their watersheds. • Discussion of new sources of funding for the PSA (canon de aprovechamiento y de vertido, Biodiversity Fund, etc).
	Afternoon	3:00-6:00 pm Closing **Discussions and Evaluation**	Field Trip to Rio Segundo Watershed. Visit to Jorge Steninworth Farm in the area. "What to take and what to drop" – evaluation of the trip • Discussion of the learning experience; • Ideas for in-country work • Feedback for CR institutions • Evaluation of the project
9	12 Sunday	Return to each country	

4.4 Expectations

During the first session, the participants discussed their expectation for this learning experienced. They are registered in the table below.

Table 4-1. Expectations

Scientific and indigenous knowledge

- Are payments based on scientific knowledge and to what extent have there been efforts to include indigenous knowledge into this process?
- How important was it to get the science 'right' first in Costa Rica before implementation and how relevant is this science for continuing. Is it not more important for academics rather than for practitioners?
- To what extent was biophysical knowledge available at the time of implementation? And was implementation dependent on the availability or lack of this knowledge?
- Did you do Cost-Benefit analysis to distinguish between different options and solutions, how did you choose to implement the PSA programme over another?

Criteria for implementation

- Within CR: under what criteria is this MES approach the best or not the best approach? (instead of direct regulation?).
- How do you in Costa Rica deal with property rights? Who gets what, who sells what?
- ***Note:*** In Costa Rica you mostly have private property so people providing services will be smallholders and not 'communities'.
- What tenure programmes are targeted (public or private) in Costa Rica?
- What types of land use changes are implemented? Is it protection or conservation of land versus treatment orientated solutions?
- Targets and objectives: how do you choose them (reverting degradation, protecting forest, reducing poverty?). So what is the ultimate target in Costa Rica and does it require restoration or maintenance or both? Are they different at national level and local level? Can they be adjusted to respond to local levels?

Institutional capacity

- What are the challenges and obstacles faced in developing institutional capacity and support? What worked and what failed?
- Is the institutional framework changing, how is this managed and controlled?

Enabling environment / policies

- What catalysed MES, what are the key drivers of MES, how did you get political buy-in and support, how did you get the private sector to buy-in?
- Who is key? "on who's door to knock first?"
- Perception of the programme?
    - Are local communities satisfied with the scheme?
    - How does the Government see the programme – is it satisfied with the outcomes of the programme?
    - Is there effective communication between farmers/intermediaries/businesses/ and FONAFIFO?
- Integrated policy:
    - How do you develop integrated policy when you have different departments such as one for water and one for forestry? (integration at horizontal level)

    - How do you integrate policy and implementation across a decentralised management system? (vertical integration)
- Critical to Bolivia is that PES in Costa Rica and Mexico is top-down driven but in Bolivia this process is driven by NGOs and are bottom-up, they are the leaders and develop the platform for government interest, what is the level that these initiatives should be developed at? How much time should be spent on small-scale development and learning versus starting at a national level and addressing the problem at a national scale?
- Can we identify the key enabling factors that drove and supported the development of the process of the PSA?
- How is it advertised?

The role of intermediaries

- How are intermediaries established?
- How do you ensure they are accountable, transparent etc?
- How much money do they keep from the final payments to farmers?
- Are they "good" and "bad" intermediaries? Does FONAFIFO have any hand in choosing or dropping intermediaries? Have they had bad experiences and how do they deal with them?
- What other things do intermediaries do for funding? How much of the process is "subsidised" by other activities?
- What is the role of the intermediary?
- How do they group small farmers? If they are group and a few of them don't comply, how do they deal with it? What type of penalties applies?

The role of legislation

- Environmental service law: want to read/know about the Law, how it is implemented and operationalised? (get Law – translate into English?)
- Are there any penalties linked to responsibilities and rights? What happens if the contract is broken? Does the law hold legal penalties over and above the contractual law?
- Is there a link between payments and water rights?
- How do you deal with the problem of free-riders?
- What is the content of the law for payments, are all water users obliged to pay water tax?
- How do you deal with short-term contracts for environmental management in the face of longer-term environmental goals?
- How do you define the legal mechanisms for managing a market?
- What are the property rights of suppliers, how do you identify who has the economic power to warrant being a buyer?
- Does investment in PES protects water use rights of the investor? (Munawir)

The role of providers/ stakeholders

- Are there selection criteria for farmers who qualify for providing these services?
- If the project is participatory in nature, were the stakeholders included in the development of the monitoring indicators?
- Top-down versus bottom-up approaches? How do you involve stakeholders at all levels? Who is included, who is left out, who comes, who goes?

Financing mechanisms

- As CR is a government scheme how is the public funding operationalised? How did the 5% fuel tax figure get selected, what revenue is earned from this, and is the revenue allocated to different services such as carbon and watersheds?

- Are transaction costs fully covered by the fuel tax contribution?
- How do the tax revenues flow to farmers?
- Who manages the scheme and the flows of money?
- How do you set up the financing schemes and payments systems? What criteria do you use to decide between choosing a public payments or a private payment?
- How sustainable are private payments versus public payments?
- Four services are identified in Costa Rica (carbon, water, biodiversity, and landscape beauty) – how is the fuel tax divided between these four services?
- How will the next five years of signing be done as this five-year phase comes to a close?– How was the transition managed? Renovation of contracts?
- How do you get the private sector to voluntarily pay ES when they are already paying taxes for environmental goods (ie in China).
- Public schemes have high transaction costs – in Costa Rica how are these transaction costs covered by the available funds and what is the scale of them (% of total payments)? Is there any guidance on the breakdown of costs between investment and protection; payments; and transaction costs?
- How do you maintain sustainable payments on a voluntary basis?
- How is the money transferred to a grassroots level? How is the process kept transparent and free from corruption?
- How do you decide on or manage payments in cash versus payments in kind?
- What criteria are used to determine the price (15 or 10 dollars)?

Monitoring and evaluation

- How do you link payment and monitoring systems, is the payment a once off payment or is it contingent on delivery and monitoring?
- How do you deal with contingency in payments? Additionality? Penalties for non-compliance? (see also under Law issues).
- How is it monitored? Is it participatory? And continuous? And at all levels?

Bundling services – and other issues

- In terms of the forestry component, where trees are established how does this impact on water conservation and biodiversity protection. How do you bundle services when they are not complementary? Can we combine landscape beauty and biodiversity?
- How do you define biodiversity (is it based in specific species indicators or a suite of species), how do you monitor activities for delivery of biodiversity services?
- Are sectors other than forestry supported by this programme, such as other land use activities/options?
- Interest in trans-boundary water issues, how does CR deal with trans-boundary services management and delivery? Note: CR does not deal much in trans-boundary issues; some experience may be learned from carbon.
- What is the process flow chart? How does the system work, what is the process cycle for government, buyers and sellers?

4.5 Assessment and Evaluation

4.5.1 Methodology:

One of our main goals with this technical trip was to provide first hand accounts of Costa Rican practitioner's learning-by-doing experience, in order to generate insights useful for application to your work back home. The other was to create an environment where practitioner and policy-maker's paired experiences and discussions could create a better understanding between the two sides and generate multiplier effects later on.

In order to evaluate the trips success in creating the right environment for this to come about, we created conditions to assess the participant's baseline, monitor the progress of the initiative and finally evaluate and assess its impact. This process is described in Annex 2

4.5.2 Design and Implementation

Contents

The trip's contents and schedule were devised according to the objectives explained above, covering issues from the national level scheme to the work of organizations implementing it (or carrying out their own scheme) at the local level. Within this wide range of situations and in a case as such, where the actors have so much experience, the interest of the participants was great and during the discussions in the introductory session it was clear that participants had a wide range of expectations about the trip and were interested in vastly different aspects of PES- from more practical issues related to contracts and GIS applications, to political motivations and issues of scale. [see Expectations 4.4]

However, we soon realised that it would have been very useful to have assessed these interests and expectations earlier, in order to focus our visits and questions, in such a way that we could cater for these needs, as much as possible. The list of expectations is very long, and basically includes all questions that the participants have on PES in general and that they were hoping that this visit to such a foremost example, would provide many of these answers.

In this way, we consider that it is crucial that the team of participants is identified with certainty early enough for this discussion to take place, which in this case did not occur; confirmation of who would be taking part, and on whether or not their visa requirements would allow them to do so, was only obtained almost too late.

In addition, some participants have suggested that this trip would have benefited them more if it had taken place in the middle of the project rather than at the end.

Contents
Very good cross-reference between the sites visited and the "pieces coming together along the week"; provided hands-on experience; The workshop was excellent in providing direct interaction with stakeholders and field work.

Lesson 1:
For future similar activities, it is important to: i) aim for early planning and potential re-shape the original plan prior to the visit. Provide information in advance in order for participants to review them in advance prior to the trip; and ii) seek consensus on the specific objectives of the trip and have a thorough introduction of what's expected from each visit and a list of potential questions to ask. iii) In addition, it is important to determine what are the expectations of the organizers towards the contribution of the participants.

Institutions visited and guest presenters

Contributions were of mixed value: excellent value was given by the speakers from FUNDECOR, CODEFORSA, and ESPH. Other institutions, such as ICE were mostly guided by their own PR agenda (telling us about their Corporate Social Responsibility projects and highly technical minimum flows study), while others (such as CNFL) were not really aware of who we were and what kind of information we were interested in. In this particular case, it is important to recall that the visit to the CNFL plant was cancelled at last minute because of political problems with the CNFL director during those days. The guess speaker, Ing.Gabriela Soto, from CNFL, was called in at last minute to brief the group on the CNFL approach, with the obvious limitations that implied. Additionally, even though a briefing was always done in the beginning of each session, it did no longer allow the speakers to re-shape their presentation and materials. This often resulted in too many "tourist" introductions of the Costa Rican national scheme, which did not allow us to go deep enough into the particular practical issues of each case, in which we were interested in (Annex 3).

Some of the participants have also mentioned that, for some of the information they were interested in, alternative methods of conveying it might have been more useful; for example panel discussions instead of the standard "lecture" presentation. This approach has many advantages, but its use was limited in this case because of the language barriers (most of the speakers only spoke Spanish).

Having said that, it is important to note that the all the institutions visited, received us *ad honorum*, therefore even though we could have made our interests clearer, we could not have prevented them from showing us what they wanted us to see.

Institutions visited and guest presenters

" Best Outcome: meeting groups such as FUNDECOR and CODEFORSA and seeing how they organize things, and sharing experiences carried out in other countries (in this case mostly with the Indian and Caribbean teams), gave me very useful ideas to apply back home: "this provided a triangulation" that allowed him to come up with "cooperative" scheme for one of his projects." (Christo M, South Africa)

Lesson 2
Following the first stage of clearly defining what we were after thoroughly brief guest presenters and/ or engage in alternative means of presenting the case, instead of a purely expository method. Alternatively, if funding allows it, hire the speakers as in a consultancy.

Schedule

The trip's ethos was to be a field-trip, where we would be able to see the people and the places where these schemes take place, therefore, it would always include a fair amount of time on the road. Initially we believed that this time would actually be of use to allow for discussions among the participants. However, although this did happen, according to some participants the organizers should have prompted this in a more structured way. The combination of long hours on the bus and/or long day activities, did lead to the absence of time available for analysis of each day's activities.

Schedule

The absence of any time for participants and IIED facilitators to conduct a deeper analysis of what was being presented did not allow for a deep analysis of the complexities of fundamental process and institutional questions. The interaction among the teams from the different project countries was excellent but took place on an ad-hoc and unstructured basis as there was inadequate time in the agenda for this kind of sharing. The extensive amount of bus travel required by the agenda took away valuable time and mental energy from the participants. (Caribbean team)

It was very good to have meetings in the morning in field activities in the afternoon (after lunch…); however some of the "lectures" were pretty long- there was no other way..and besides, some of them even that long, weren't long enough (FONAFIFO)- need to cover a lot of ground. In addition, simultaneous translation did delay things; (Christo, South Africa)

Work session were usually long, but in cases like FONAFIFO all participants considered that an entire day would have been more suitable, as it is the key institution in the scheme, it deserves a longer discussion.

Several participants stressed the appropriate combination of morning sessions + field visits in the afternoon.

Lesson 3:

Consider focusing trips on fewer locations and focus on in-depth analysis; and/or and have presenters come to the group.
Ensure adequate time regularly (preferably daily) for analysis. Include sessions in the agenda for sharing, comparison and analysis among project countries.

Facilitators

The trip facilitators clearly had an in-depth knowledge of the PES system in Costa Rica and many of the deeper questions on the impact of PES programmes on the natural resources and livelihoods. It was unfortunate that the structuring of the programme did not fully take advantage of this expertise. You were good at finding the right people who were also very analytical. Also very good to be responsive to our needs and adapting our agenda; The organizers also made efforts to be open and responsive to feedback from the participants (including on logistical arrangements, schedules and evaluation) and to expose participants to Costa Rican culture and this was well appreciated! (Caribbean team)

Ina worked so hard to translate and coordinate; Excellent! It was my most sophisticated trip with visa and transit issues. It finally happened when I almost gave up any hope (Chinese team)

Practical Arrangements

Role of the facilitators:
The participants considered that the organizers were extremely diligent in preparing the events and in making sure that the participants were getting what they needed, both in terms of contents as well as in practical needs.

Translation process:
Due to the fact that virtually all presentations and question/answer sessions were made in Spanish, this required continuous simultaneous translation. In addition, in the rare occasions when the presentations were made in English and whenever a participant would ask a question (in English) a translation back into Spanish was required both for the presenter and for the D. Edwin Aguilera, the policy maker from Bolivia, who did not speak English. This resulted not only in considerable delays, but also, and perhaps most importantly in "dead-moments" during the translation slot into the language that not concern them. In addition, some of the participants also considered that since the translation was being done by the same person who was chairing the events this left too much room for interpretation (in order to frame the questions with the available background knowledge of the PES schemes being discussed and context of the participants) and may have not been literal enough.

Logistics:
Some of the participants were surprised on how cold Costa Rica may be, if you're up on the hills, therefore they consider that in such cases, clear advice on the kind of clothes necessary, should have been sent prior to the trip. The same applies to information about social events or leisure facilities in the hotels.

Although the hotels were fully advised of the particular dietary requirements of the participants, in reality this was not actually taken into account seriously enough, and they ended up improvising meals in a rather poor way.

Materials:
Participants demonstrated great interest in getting hard copies of many of the materials that mentioned from copies of the slide presentation to hydrological studies, contracts, leaflets etc.

> ***Lesson 4.***
> *Have a facilitator who will chair and another person to translate. The Chair will then have the responsibility to maintain control of the focus of the discussion.*
>
> *Where possible, request slides and resource materials from guest presenters and compile an electronic and hard packet for participants in advance (which can be added to if needed). Give participants a full list of what to bring considering, not only for the trip's activities but also for leisure activities as well.*

4.5.3 Outcomes

<u>Perception that the Costa Rican PSA scheme left on the participants:</u>

Many of the participants were both impressed and disappointed with the scheme, considering remarkable the political drive and public support for this scheme, while reaming disappointed with the longstanding absence of scientific evidence substantiating such a large and ongoing initiative.

Perception that the Costa Rican PSA scheme left on the participants:

Political priorities and processes seem to be driving Costa Rican PES rather than economic or ecological principles.

The Costa Rican PES is not a true market. It seems to be almost akin to a marketing tool to "sell" the idea of forest conservation.

The actual provision of environmental services by a group of "sellers" to a group of "buyers" is arbitrary and artificial in terms of environmental services as the market product.

It has been driven by the forestry agenda, rather than by the larger picture of environmental services and the wide variety of land use choices that provide these.

Monitoring of the impact of the Costa Rican PES on the natural resource and provision of environmental services is not being done.

The impact on livelihoods is unclear and not being monitored and evaluated. Some benefits, apart from the obvious economic gains, were seen e.g. land tenure.

Some "buyers" are participating more along the lines of corporate social responsibility or corporate image. This can be an entry point but how can this be made sustainable?

The institutional arrangements are interesting: i) there is an enabling "culture" (political and social); there is an enabling policy and legislative environment; Costa Rica seems able to adapt its institutional arrangements; some key individuals and processes (national and international) have played an important role as drivers and catalysis; there are linkages between national, regional and local organisations and processes; NGOs are playing a significant role at regional and local levels and have been very influential in the national process; sectors such as tourism and agriculture are getting involved; academia is involved in research (and monitoring?); the private sector can potentially play a huge role (e.g. ICE) in developing a PES arrangement that will be able to effectively monitor the impact of environmental services (and livelihoods?). **(Caribbean)**

My first impression when coming here was that the CR was mostly into tourism, and the government wanted to maintain the forest for tourism. **(Munawir-Indonesia)**

Costa Rica is a special environment, where people engage with the environment is a special way. This is not so much the case in South Africa, and while in Costa Rica the focus is mostly on Forests, in South Africa the same role is attributed to wetlands and mountain catchments; therefore such a scheme is not really replicable. I expected more scientific evidence from a prime example as CR; in addition he was surprised that they are venturing to use reforestation with exotic species as a PES measure- in south Africa their experience is the situation is inverse: their work to protect water resources is by eliminating alien species; (Christo Marais, South Africa)

PES is based on good advertisement, good name and right momentum and not so much on scientific evidence of rational and impacts- [as Jorge Fallas was saying: Perception is Reality!]

"In the agroforestry farm it's unbelievable to me that in such a flat farm the farmer says that that it's better to plant trees than crops. (…) water quantity is not a problem, but politicians could convince people to pay higher water fee – this is unbelievable in China. For example, the hydrological companies do not have a very critical sediment problem, but they are convinced to pay for preventing such things. It really puzzles me how it happens. In CR is mostly based on forest (conservation and reforestation) but in China is mostly targeting upland areas, due to its goal of contributing to the re-distribution of wealth, through PES compensation they foster development in the upland rural areas - China that the Government wants to compensate and promote development of the poor upstream. This is the main interest of the Government. In this context the Chinese PES might be very different from here, there's also a lot of scientific puzzles in CR but it doesn't matter because it has a momentum and political will. In CR NGOs play a large role, in China NGO influence on shaping policy and decision-making is still very week. Civil society is underdeveloped in China- large PES initiatives have been designed and implemented at high levels only; hence there is a clear difference in the role played by NGOs and Government between both countries. But things are changing: the ministry of environment is now preparing to write guidelines for implementation of the Ecological Compensation Programme (Eco) based on the feedback provided by local-scale initiatives; In China, policy usually arises from a problem to be solve- in CR this is not the case! Water is not a problem at present, even so government and civil society are willing to pay- in china this would not be acceptable! "Paying for prevention is impressive! Investing in the Future!" **(Jin Leshan, China)**

"Huge difference between Costa Rican clean and academic example, in comparison with Bolivia where things are very different (…) Here in CR there's more leadership and commitment, I don't think that we have that kind of situation in Bolivia (…) there wasn't rocket science, but adapt-and change style, and we have to do this." (Bolivia)

Perception of the possibilities of application in your country: obstacles and opportunities

From these 8 days of discussions and presentations on the Costa Rican experience, the participants received plenty of "food for thought" in relation to the application of PES in their countries. In most cases, one of the most visible "take-home" lessons was the range of favourable conditions that have supported the development and evolution of the Costa Rican PSA scheme, especially in terms of i) political support, ii) institutional arrangements and capacity, iii) public support (more based on perception than on scientific evidence of result) and v) international attention and, to some extent, financial support.

Perception of the possibilities of application in your country: obstacles and opportunities

The trip made us see what we do not have in the Caribbean, what is missing and is determinant condition to develop and sustain such a scheme; The team gained a better understanding of how the PES scheme works and how it can (or not) contribute to environmental improvements. We can now disseminate these lessons, for example in terms of potential environmental and social impacts, institutional framework used and relationship between stakeholders";

Four of the main lessons that the Caribbean took home: 1) better understanding of the process of PES. In the Caribbean there's no implementation at all. We think that its important to disseminate this learning, potencial benefits for the Caribbean, in technical workshops, for ex; 2) Key criteria is the legislative environment, baseline data, monitoring, this lessons would let us see gaps in our projects and we would be able to apply this range of criteria. 3) General learning of the institutional framework. We need more on relationships with other stakeholders, We feel that the institutional framework is interesting enough to bring our group here and see in more detail – we have worked with Miriam preparing this workshop; 4) we need more communication with other countries from iied to see if we can do more work together and we need to share more this lessons that are not being shared in London.

One of the general issues is that the PES can actually work and benefit people – and it can contribute to environmental enhancement (Caribbean team)

Political driver was and continues to be key in the Costa Rican case, in Indonesia the absence of this is a serious obstacle to the development of such schemes, particularly because they involve the stage giving up on part of its tax revenues;

On the other hand, local institutions local institutions are under-funded which greatly limits their capacity to push the development of schemes from the local level- due to this we are now trying to push PES-like approach through the central government (that is on what Ms Isa is working on); in particular, the ESPH approach is very interesting and the Indonesian partners will consider adapting some of its characteristics to their action-learning sites;
(Indonesian team)

FUNDECOR shows an enormous capacity for innovation and creation of useful tools for forest management, conservation and reforestation, such as future markets for timber and conservation certificates. They also show the importance that local organisation has for the success of the national-level programme, and how adapting and learning from doing are vital for the evolution and survival of the organisation.
(Bolivian team)

There are some learnings that can be replicable: extending the use-life of dam reservoirs through reduction in sedimentation is applicable; He also made a parallel between the role of the intermediary in CR and that of the "implementing agencies" in South Africa;
(South African team)

In china a scheme like this would never work: people would not pay without scientific certainty- we don't have the "tree-loving country" culture. Enabling environment: publicly lead but private sector engages and follows- In China this would not happen: private sector would wonder why do they have to pay more

However, it is very interesting to see the work of FONAFIFO since, as a national scheme, it has some parallels with the Chinese approach to PES, especially with the forthcoming national technical guideline for ecological compensation;
(Chinese team)

Team-up of practitioner-policy maker:

Our goal with this pairing up of practitioner-policy maker was to test whether to share field experiences is useful to develop a common understanding of each others role/opportunities in developing PES in their countries.

During the trip the interaction between policy makers and practioners was extremely active and visible- there were constant one-to-one discussions and this has already produced some results. However, in order to assess whether this has led to the developing of a better understanding and relationship, can only be measured at a later stage, and we hope to contact each team in the following months in order to assess the impacts of the trip in this relationship.

Practitioner-Policy-Maker rapport

D. Edwin has always wondered " what is worst/more dangerous: for a politician to make technical decisions or the other way around. What he knows is that if the decisions are not the right ones, society is always the one that looses" therefore improving the understanding between the two sides is extremely important. (Bolivia)

Having a team of two persons to share and catalyse the application of lessons in the Caribbean is now a huge advantage. (Caribbean)

It was very useful especially for China policy maker to come here since (…) the quick way to Change something in China is to change the mind of policy makers. Once policy makers buy the idea it could be enforced anyway in China. But the bad thing is that Chinese policy makers might drop the idea as quick as he takes it. The arena of policy making in China is an experimental field. (China)

Closing remark:

"This trip makes me think that PES could take place for whatever reason if people need it. In Costa Rica the reason is the tree-loving culture. In China, it could be the high political commitment to solve the issue of development imparity." (Jin Leshan, China)

4.6 On-line dairy

Day 1
Costa Rica began its day at the Polling Stations. The electoral process receives the same enthusiasm as football, and seeps into the creation of the national Payments for Environmental Services scheme (PSA).

A group of practitioners and policy-makers from Indonesia, India, the Caribbean, Bolivia, China and South Africa met on the cool and misty slopes of Heredia, where a wooden cottage provided a cozy retreat for jet-lagged bodies. Despite the huge different backgrounds, everybody met with enthusiasm to discuss their expectations from the trip and begin the introduction to the Costa Rica's PSA. This was followed by a discussion of the evolution of the political process and the science-evidence-perception of the linkages between land use, forest and watershed services.

This provides us with an excellent base to make the most of the opportunity we will have tomorrow to discuss many of the issues with the centrepiece of this whole process: The Costa Rican National Forestry Fund (FONAFIFO).

Day 2: Comparing two national-scale programmes: from China to Costa Rica *(Jin Leshan and Wang Dehui, China)*

This morning we went to FONAFIFO, the coordinating institutions for the national PSA. We were received and attended by the executive director, the national coordinator for the PSA, the director of resources, and the coordinator for monitoring and the GIS systems. The executive director, Jorge M Rodriguez, stressed the importance of a two-way exchange.

The CR PSA is the result of a process that began, at least in the form of incentives, in 1979 as an urgent response to alarming rates of deforestation. Many blunders were made with the introduction of incentives that created perverse situation, but slowly the country gained experience in the technical details of forestry as an activity, species, and responses from farmers. Although basically a top-down approach, there are plenty of instances where grass-level experience feeds back into the process. Eventually, the process led to the creation of the PSA program.

Although at first sight a difficult task, we can feel some common things with respect to China:

- Both governments are very active and interested in promoting Payments for Environmental Services (PES), which has resulted in the creation of schemes. China's

main programmes include the Sloping Land Conversion Program (SLCP) in which the central government pays cash and grain to farmers for reforesting grassland in slopes; and the Forest Ecological Service Compensation Program (FESCP) in which forest owners are given an amount of money ($9/ha/yr) for maintaining specific areas of forest.
- Both countries have recognised environmental services by Law, which lays the foundations for the mechanism, and at very similar times. In Costa Rica the Forestry Law was passed in 1997, and in China in 1998.
- The forestry sector is main unit initiating, promoting and implementing the PES schemes in China and Costa Rica.

There are also differences between Costa Rica and China:

- Transaction costs in Costa Rica are considerably lower. FONAFIFO's costs are 7%, plus a top cost of 18% for the forest engineer, while some research in China suggests a figure of 65%.
- The China's PES is carried out, at all levels, by government agencies. FONAFIFO, while state-created, has the ability, and flexibility, of being able to behave as a (relatively) private organisation.
- In CR the funds come from earmarked taxes, while in China they come from general budget. The non-earmarked nature in China might be one of the reasons whey there are big fluctuations in funding (SLCP shrank considerably since 2004).

Day 3: Puerto Viejo de Sarapiquí *(by Dr. Edwin Aguilera and Maria Teresa Vargas, Bolivia)*

The day began with birds singing, the soft shine of the tropical sun, and hundreds of evergreen leaves, showing the majestic rainforest outside the door. After some quick coffee we began a heavy but interesting day of work. With the help of Pedro Gonzáles, local director of FUNDECOR, we looked at the role of intermediaries in PES.

FUNDECOR shows an enormous capacity for innovation and creation of useful tools for forest management, conservation and reforestation, such as future markets for timber and conservation certificates. They also show how adapting and learning from doing are vital for the evolution and survival of the organisation.

Another lesson for us from FUNDECOR is the positive effect of the efficient use of tools such as GPS, GIS and maps to approach the private sector, producers and the Government. In summary, FUNDECOR shows that intermediaries play a central role organising producers for which direct access to PSA could be difficult. They are also strategic partners for the Government, and it depends on their innovation and local experience to provide the feedback for the process.

In the Bolivian case, intermediaries are important not only to organise producers, but also to create the institutional framework, which does not exist in many cases. However, intermediaries, producers and government can only work alongside if there is space for trust and transparency. In Costa Rica both the Government and the producers trust the professional and technical

abilities of FUNDECOR and this helps the process. In Bolivia we are still building that trust with the communities and the different government offices.

In a similar way, the great advances that Bolivia is making in terms of forest management are due to help from local organisations. Already 2 million hectares out of 8.5 million are FSC certified, and this would not have been possible without the technical support of BOLFOR and local NGOs. Their role is key in promoting, explaining, and socialising these new instruments.

We also visited an integrated farm with don Dennis, who showed how to maximise values with different activities. Don Dennis receives payments for environmental services for conservation, reforestation, and agroforestry, which allows him to have several activities at the same time. This strategy helps to reduce risk and provides several possible income sources for farmers' livelihoods. The activities promoted in the farm, like biofuels, also seem cost-effective. Bolivia lacks the type of incentives that, as for the Costa Rica's case, moves farmers in a more sustainable direction.

After the farm we also visited a forest under management. Full of mud, we learned about the design of roads with minimum impact, tree census, maps and timber extraction. For the Bolivian representatives it was reassuring to compare our systems with those of FUNDECOR, since some of these mechanisms are beginning to be used in Bolivia.

The day ended with an excellent presentation about the potential for ecotourism in the Sarapiquí area. Some of these are still ideas, but as it is the speciality of ticos, they are a bit outrageous and cheeky, which will probably end with support from the tourists and will become tomorrow's new way of funding for the conservation of biodiversity. We ended singing Happy Birthday to Miriam and teasing Chetan for the timber boards he plans to take along to India.

Day 4: Codeforsa and Platanar-San Carlos, Huetar Norte
Written by Nicola King and Christo Marais (South Africa)

Day four commenced with the departure from Sarapiquí as we headed Northwest into San Carlos to learn about the initiatives lead by a local intermediary CODEFORSA and the PLATANAR Hydroelectric company. While the later contributes with cash payments for the landowners, CODEFORSA assists them in entering the scheme and improving their practices. The goal is to protect the headwaters of the river Platanar in order to secure good water quality for the city of San Carlos, and less

sediments for their hydroelectric operations. The company also claims that protecting the existing forest guarantees a continuous flow of water for their operations.

A number of observations were made of the overall concept of payments for environmental services in Costa Rica and these include:

- The social value system of the country is underpinned by a strong social and environmental ethic. This encourages and enables payments to made for environmental services when the relationship between the desired service and the prescribed land use change is based on historical perceptions rather than scientific results (although it is widely accepted that well managed environmental systems do optimise soil stability and other services that improve watershed functioning);
- Amongst the general public there is still a perception that forests create water and that planting trees translates into more water. The payments programme really focuses on water quality and retention rather than water supply protection and the focus should be shifted towards this through education;
- In light of what has been observed, it is recognised that further scientific research needs to be done to quantify the impacts of land use changes on water quality, quantity and retention;
- An example of the role of paymnts being made in order to address water quality improvements downstream was the PLATANAR hydroelectric company paying farmers upstream for forest protection;
- Costa Rica has well-established institutions to manage payments for environmental services and support information flows. The system of flows of payments from government (FONAFIFO) to intermediaries such as (FUNDECOR or CODEFORSA) and ultimately farmers. There are opportunities for intra-country learning of these structures and processes;
- The scale of management in Costa Rica is small compared to some other countries such as South Africa and this needs to be considered for learning exchanges, for example, South Africa is responsible for managing alien vegetation of 650,000ha/yr while Costa Rica managed forest restoration programmes of about 100,000ha/yr.

Day 5: From geothermal grounds to hydroelectricity PES
From Arenal volcano to "base-camp" Heredia to learn about the CNFL's experience with PES- a hydropower company that is compensating the landowners for being stewards of the water resources of which they plants depend upon. A full account of the activities of this day, and their potential applicability to other countries, such as Indonesia, will be available shortly.

Day 6:
Written by Nicole Leotaud and Gordon Paterson (Caribbean)

On Day 6 the study tour visited ICE, a parastatal government agency that provides most of the hydroelectricity in Costa Rica. The key learning that emerged was that this agency has collected a substantial amount of baseline data on the hydrological and ecological systems and some data on the socioeconomic context in the watershed. The agency was felt to have the capacity and organisational culture that would enable for perhaps the first time the implementation of a detailed study on the impact of the payments on the provision of ecosystem services. Participants felt that this would require a substantial investment in resources and was therefore not feasible for every watershed but detailed pilot studies should be conducted to determine the relationships between

changes in land cover and provision of different environmental services and that these relationships could then be applied to PES in other watersheds.

In order for PES to be applied in the Caribbean and other countries it is essential that the payments for changes in land use can be directly linked in a quantifiable and precise way to the provision of environmental services. It is only then that buyers of specific environmental services would be willing to make an investment to protect or enhance the services on which they depend.

Day 7: **ESPH and "what to take and what to drop" from all these discussions.**
Saturday, 11 th February
The last day. Our last session was from ESPH a Public Utility Company that has been conducting a PES scheme for the past 5 years, here in our host city of Heredia. We ended the day, and this 10-day long activity, with a discussion on what lessons to take home and the overall balance of the experience.

A full account of the activities of this day, as viewed by the eyes of our Indian participant, will be available shortly.

Closing Note

These were eight days of brainstorming and discussing the obstacles and potential of PES schemes, with the people that have lead this process for the past 10 years, learning by doing along the way. We believe that this has created positive changes in our views of this environmental management tool, while at the same time, strengthening the understanding between practitioner and policy-maker sides of the pitch- they played the game together for these days, and we are certain that this will have multiplier effects in the future. A full report of the trip's activities and achievements, written together with the country-teams, will be available shortly.

Finally, the IIED would like to thank the country-teams for coming all the way to Costa Rica and for sparing so many days of their busy schedule to conduct this experiment with us. We hope it was useful and that it will deliver long-term results.

We must thank Miriam Miranda and her team for their invaluable work in planning and organizing the whole event as well as to the DFID for making all this financially possible.

Finally, we want to thank the Costa Rican National Forestry Fund (FONAFIFO), the Central Volcanic Range Development Foundation (FUNDECOR), San Carlos Forestry Development Commission (CODEFORSA), Platanar Hydroelectric Company, The Costa Rican Electric Light and Traction Company (CNFL), the Costa Rican Electricity Institute (ICE) and the Public Utilities Company of Heredia (ESPH), for receiving us, and for sharing and discussing their work with this very inquisitive international team. And so it is… the team that converged in this Central American isthmus from both East and West hemispheres, scattered again back to their countries and their projects (some with more delays and flight scares than others…)

5 Summary Sheets for each project

5.1 The National Level PSA Programme

Costa Rica (general PSA program)		
ACRONYMS		**P**PSA: **P**rograma por Pago por Servicios Ambientales; MINAE: Ministry of Environment; FONAFIFO: National Forestry Fund; IDA: Agrarian Development Institute;
SUMMARY		Government led national scheme, ongoing since 1997 that rewards forest owners for four bundled ES services they provide. While most of the funding still relies in state funds derived from a fuel tax, the scheme has evolved significantly and keeps trying new forms to engage more the private sector (mostly HEP producers). The scheme is mediated by FONAFIFO (National Forestry Fund) and local NGOs like FUNDECOR.
		Costa Rica has been implementing its Payments for Environmental Services Programme (PSA, in Spanish) since 1997. The programme rewards forest owners for the environmental services (watershed protection, carbon sequestration, landscape beauty and biodiversity protection) their forests provide. While most of the funding still relies in state funds derived from fuel tax, the scheme has evolved significantly and keeps trying new forms to engage more the private sector.
NAME OF THE INICIATIVE		Costa Rica's Payments for Environmental Services Programme- *"a financial mechanism for the recuperation and conservation of forest cover in Costa Rica"*
MATURITY OF THE INITIATIVE		Ongoing, since 1997. Since then, and until 2004, 404,313 ha of forest were incorporated in the programme, benefiting 7,000 families.
DRIVER		***"Costa Rica, a forest-loving country" (in Fonafifo, 2005). Government led.*** A combination of politics, leadership, and the product of the continuous evolution of forestry sector laws since the 1960s [forest cover had decreased from a 72% national cover in 1950 to 26% in 1983; in 2002, it was already 45%]. During the mid 1990s CR, faced with the Structural Adjustment Programs of the World Bank, CR was forced to withdraw the heavy subsidies for reforestation. This resulted in the forestry lobby searching for a way out, and it opened the window to a strong environmental movement (still fresh after Rio) to try to reshape the forestry tactics. Political support was ready in the form of the Ministry of Environment (Rene Castro), the president of CR (Jose Figueres), and a team of key environmental advisors. The PSA programme was launched with the creation of a law for Environmental Services, in 1996, and the government commitment of dedicating 5% of the fuel tax.
		from Miriam's presentation: the write-up of the forestry law that underpins the PSA scheme was a result of dedication and particular support from the then Minister of Environment, who assessed the feasibility of the scheme as his PhD thesis.; the draft of the strategy was widely circulated for comments (the conservationist groups had the chance to contribute), and after 5 years it was approved, having dealt with the criticisms and oppositions; there were also socio-economic changes that supported the implementation of the new legislation (decrease of the price of meat, increase of tourism, general changes in the active structure of the population, who was becoming more urban)
STAKEHOLDERS	SUPPLY	"In 1996, FONAFIFO was consolidated and, from 1997, the programme PPSA began being implemented, to benefit small and medium landowners, whose land is forest or has forestry aptitude. The aim is to promote the maintenance and recuperation of the country's forest cover."
		Private landowners. Although initially the PSA was thought as a way to provide additional resources for the national park system, it quickly evolved into focusing on private lands. Landowners apply to the programme on a "first come-first served" basis, although this is evolving and now strategic areas are created to support the creation of biological corridors or protection of strategic water catchments. (see under commodities for levels of payments).
		The activities promoted under PSA are conservation of forest (priority areas and areas for protection of water resources) and forest plantations (commercial species or native species in natural regeneration areas). A recent category is agroforestry, where landowners receive payments depending on the number of trees they plant as part of agro-forestry systems (eg. wind barriers, live hedges, shade, etc). The programme initially included sustainable forest management but this category was later eliminated, due to the fact that it was perceived that the landowner would have enough returns from the timber extracted- however, in reality this was mostly a political decision. A new natural regeneration modality "Kyoto lands" is to begin in 2006.

		Priority criteria include: (i) location in relation to protected areas, biological corridors or areas of importance for water resources (for conservation projects); (ii) aptitude of the soil for forestry and type of trees used (commercial, native or endangered), in the case of reforestation projects; (iii) for agroforestry activities, risk of degradation of soil or water resources is considered as well as the capacity of the candidates to see the project through, as top priority is given to projects being submitted by organizations or individuals with certified capacity in managing 'forest'/timber trees in agroforestry regimes; (iv) areas targeted by projects financed by donor agencies and (v) social characteristics of the host areas: projec ts located in areas where the Social Development Index is under 40%, are prioritised; All these priorities are overlapped on their GIS database and that allows FONAFIFO to identify highest priority, which is very useful, especially because the scheme works on a "first-come-first-served" basis. **A) projects for Protection:** - areas located in biological corridors (SINAC) especially those considered of high priority by the Ecomarkets project (GEF); - areas within the influence area of the Huetar Norte Fores try project (KfW); - renovation of previously existing contracts, as long as they are located within the above mentioned priority areas; - forest areas located in strategic areas for the protection of water resources of interest for rural aqueducts, national or municipal utilities); - privately owned areas, within the protected areas, that haven't been acquired or expropriated by the State; - Projects located areas where the Social Development Index is under 40%, are prioritised;
		B) Reforestation projects: - Land use aptitude for forest plantations; - Location in relation to: i) in which Conservation District the project is located.; however, in the case of reforestation with native or endangered species, or for natural regeneration, this does not apply, as the entire country is prioritised; ii) donor target areas (Huetar Norte Forestry Project-KfW); - renovation of previously existing contracts; - Projects located areas where the Social Development Index is under 40%, are prioritised; **C) Agroforestry** - top priority is given to projects being submitted by organizations or individuals with certified capacity in managing 'forest'/timber trees in agroforestry regimes. - land use aptitude for forestry; - areas of high risk of soil or water degradation and biodiversity loss;
		D) Natural generation (beginning in 2006) in "Kyoto lands" - areas that were deforested before 1986 and that can now be left for natural regeneration: payment is US$41/ha/year during 10 years.
		Size of projects: i) Reforestation: single applications: 1ha-300ha/year; group applications: 50ha/year for each of the landowners; ii) conservation 2-300ha; iii) in indigenous reserves: maximum area is 600ha, per PSA modality, each year; iv) Agroforestry: 350 to 3500 trees, per landowner, w ith limited densities according to the type/use of the trees. However, properties have to be usually over 10 ha to make up for the transaction costs. Up to 2003, there were 420 thousand ha under the scheme, 87% of which for protection.
	DEMAND	***Demand of environmental services comes from several sources***. The most important contribution comes from the Fuel Tax, partly justified as the Country's investment in carbon sequestration and clean air. Other funds come from agreements with pharmaceutics companies interested in bioprospecting, sales of carbon credits under (and outside) the Kyoto protocol, grants from international donors such as KfW and GEF, a loan from the World Bank to support market creation (Ecomarkets, which is now entering its second phase -to be approved April 2006-, although under a different name [Scaling Up and Mainstreaming Payments for Environmental Services Project currently under preparation -P098838], and private agreements with companies in the country for water protection. Some of these include contracts with Hydroelectric Projects (Energia Global, Platanar, CNFL), a brewery, and the tourism industry. Currently, a proposal has been made to charge a tax fee on water users (CANON DEL AGUA) at national level. Part of these funds will come to FONAFIFO and will be targeted to strategic water-recharge areas, and part will go to support the National Parks System.

	INTERMEDIARY	**Government-intermediary at first level, and NGO-intermediary at second level.** The National Forestry Fund, FONAFIFO, is the main intermediary of the system. FONAFIFO distributes payments to landowners who agree in exchange to commit their land uses either to conservation or forestry reforestation. They forfeit the environmental services to FONAFIFO, who then "sells" these services either to local companies interested in watershed/landscape services, or to the global community through carbon or biodiversity. Basically, FONAFIFO is able to sell "pre-packed", fully guaranteed, bundles of services to the buyers. Although the process can be directly made from the landowner, there are many intermediaries.
		By law, forest engineers (regentes forestales) and forestry organisations act as intermediaries. Intermediaries working with FONAFIFO must comply with some criteria, including signing up an agreement of collaboration, they have to keep a separate bank account to deal with the payments, pre-qualify applicants for the PSA, agree to give payments to landowners within 15 days of FONAFIFO making the funds available, collaborate w ith FONAFIFO with technical assistance, monitoring, and forestry regency contracts, have a written agreement of how much they charge the landowners for their services (it cannot exceed 18% of the payment), have individual contracts with the landowners, and present to FONAFIFO twice a year bank statements showing payments received and made.
		The tasks of these "second-stage" intermediaries varies. For example: a) grouping smallholders under one umbrella to reduce transaction costs, b) approaching large landowners who are not interested in the paperwork involved, c) helping landowners overcome the bureaucracy of the process. In all the cases, the intermediary supports the landowner and, in exchange of a fee (usually 12-18% of the payment, but no more than that according to FONAFIFO guidelines), assists with technical assistance and monitoring. An example of intermediary is FUNDECOR, a long-established intermediary, which promotes FSC certification and works with small holders. However, according to FONAFIFO (personal communication, meeting in CR during June 2005 with Ina Porras from IIED), sometimes intermediaries can actually burden the process and take away too much of the payment that should go to the landowner. Unfortunately, there are not written rules about the best intermediary and this is a process that must be learn in the way.
	FACILITATORS	SINAC, MINAE
MARKET DESIGN	SERVICE	**Bundled:** biodiversity protection, watershed protection, carbon sequestration, and landscape beauty. Although for a long time watershed protection read (in between lines) increases in water flows, this idea is being dropped by FONAFIFO in their new contracts following the evidence from hydrological studies that forests are not likely to increase water flows.
	COMMODITY	**Use-restriction** mostly, through conservation. Over 80% of payments go to conservation. **Asset-building** through forest plantations. Some forestry plantations receiving PES also receive the FSC certification and the possibility of receiving a premium in the value of timber, or a least access to specialised certified timber markets. Whether they receive a significant premium or not is not clear.
	PAYMENT MECHANISM	***Over the counter, Intermediary based, pooled transaction.*** FONAFIFO collects funds from users (global and local), grants, donations, and loans, and puts it together in one general fund. Funding is then distributed to private landowners. The initial strategy has been "first come-first served", although the system moves slowly towards a more defined strategy of biological corridors and important water-recharge areas. Landowners enter a detailed contract with FONAFIFO, (or local intermediaries) who monitors and (in some cases) provide technical assistance. FONAFIFO has devised a new system, the Certifies for Environmental Services, where the private sector can purchase *over the counter*, without the large paperwork usually involved in previous agreements. Each certificate ensure the protection of one hectare of forest, that can be allocated in a place where the buy er is interested, or go for general protection in other areas (see separate explanation sheet for the Costa Rican CSA)
		Strength of the link provider/user: weak in most parts, although more local initiatives are encouraged.
		Eligibly criteria. Landowners who wish to participate in the programme have to provide the following a) Application form to the regional MINAE office; b) Proof of identity or statutes of an organisation; c) Proof that they hold a legal title to the land. If applicant only have poss ession rights then other official requirements are necessary: proof of sale, three independent witnesses, description of the property and its limits, proof that there are no conflicts over the property, etc. All of these have to be publicly authorised by an official lawyer (notario público). d) Proof that they have paid local taxes; e) An official cadastral map of the property; f) Verification of the size of the area by a professional topographer; g) (Copy of) a cartographic map on a scale 1:50.000 to indic ate location of the area; h) Legal authentication of representative; i) For sustainable forestry activities, a Forest Management Plan drafted by a professional forestry engineer and approved by the National Conservation Areas System (SINAC). Reforestation can only be financed after additional official approval by the Ministry of Agriculture; j) Priority areas for approving projects are selected every year through a decree.

	TERMS OF PAYMENT		**Cash payments.** Payments to landowners made in cash instalments during the length of the contracts. Most contracts are for 5 years, although in some cases it could vary depending on the intention of the buyer. For example, contracts where CNFL is the buyer are for 10 years (see separate sheet). Buyers of services make both on-going payments through the length of a contracts, or one-off payment. The choice depends on the firm, and each arrangement has been, until now, negotiated individually. The introduction of the new Certificates for Environmental Services seeks to reduce negotiation time by simply allowing the firms to make one-off payments, valid for 5 years, and giving them the possibility to renew their certificates at the end of the period.
			Payment levels for the PPSA are: i) forest conservation (US$ 64/ha/year for 5 years), ii) forest plantations (known as reforestation), (US$ 816 distributed over a period of 10 years) and, iii) agroforestry - payments are made per tree (US$ 1.3 per tree) and there are special requirements in terms of species used and densities allowed.
	FUNDS INVOLVED		Main source of income is from the fuel tax. Initially it was 5% of the tax, and since 2002 it was changed to 3,5% *in FONAFIFO's presentation in CR this was not clear- Miriam's impression is that this is no longer coming from the fuel tax, but from the general public budget- 3%, Senor Oscar Sanchez continues to see the fuel tax as a source; an important new source will be the contributions from all water users, under the new canon del agua (see separate profile sheet);*
			Other sources are: i) private voluntary agreements with private companies mostly interested in water ES (see profile sheets of Energia Global, Platanar, CNFL, ESPH, Florida Ice and Farm), ii) grants and loans: GEF (Ecomercados Project supporting biodiversity conservation by sponsoring of 100,000ha under PSA in the priority area of the Costa Rican section of the Mesoamerican Biological Corridor [among other measures]; and social inclusion (increase of participation of women and indigenous communities); and KfW carbon offset project: 2000-2007 for € 10.2 million: covers 70% of the state's PSA investment in 75,000ha in Huetar Norte and Sarapiqui; iii) and the sale of Environmental Services Certificates (CSA-see separate profile).
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	transaction costs are only 7% (No 32226 MINAE, art 1); The most important economic benefit is the existence of a steady cash payment during the length of the contract, and the expectation of future payments in the form of timber for reforestation projects. Many private reserves benefit from PSA, and use them towards tourism activities. Being part of the PSA also helps with protection from squatters, which is an important benefit for landowners with forest who fear land invasions.
			Properties of less than 50 hectares for reforestation that present their project as part of a larger group can receive 50% of the PES ahead to help with investment costs. However, appropriate letters must be drawn to guarantee the plantation. The programme benefited more than 4,400 farmers and forest owners during the first 5 years.
			Mortgages and debt. There are limits to properties with mortgages. The only ones accepted are for conservation, and the payment is given at the end of each year. This tends to limit the participation of poorer groups who depend on bank loans for their activities and might restrict their participation in the PSA program. FONAFIFO has entered some contracts with the National Bank and IDA that helps overcome the restriction of properties with mortgage. On the other hand, a study by Zbinden and Lee (2004) shows that landowners with farm debts consider the guaranteed payments over the 5 year contract as an important variable in their decision to participate.
			A study about ***poverty impacts of the PSA in CR*** (Malavassi et al, 2003) suggests that although the objectives of the Forestry Law initially declared that PSA should be a way to strengthen livelihoods in rural areas, the actual PSA program (especially protection) was not initially designed with a poverty -alleviation angle. Using focus groups and interviews, the study concludes that most of the participants are relatively well-off, and only 15% of them could be within the limits of poverty line. These group tends to: use mostly family labour, depend on agriculture for their livelihoods, their declared profession is farmers, use PSA for family expenditure, live in their farms, have less than 30 ha, and would return to agriculture if they did not have PSA. However, this description puts them more into the "campesino" class, and not necessarily poor. The PSA-Protection is mostly neutral in terms of generation of new jobs, especially if compared to other economic activities in marginal areas, but it is less if the PSA takes place in areas with agriculture potential.
			The authors suggest that this could be happening in about 23% of the PSA-Protection area. The program has transferred, to the end of 2002, almost US$ million 5,3/year, covering approximately 242,000, over 80% for conservation. A large percentage of this money is used in the farms, and 80% reported hiring labour to fulfil obligations for protection. One of the reasons of why the poverty impact has been limited is because most of the contracts, until 2002, had been allocated in areas with an Social Development Index (IDS) of 40%-70%. The authors suggest to target these areas with low IDS. The study concludes that the PSA, as has been developed in CR, is not applicable to other countries where the objective is to reduce rural poverty. If that is the case, the program should reconsider the types of land use to encourage, the maximum area allowed, and the legal requirements to enter the programme, especially land titles.

		ENVIRONMENTAL	**Additionality: i) Conservation:** During the first 5 years (1997-2001) the programme covered 284,000 ha, most of it for conservation. Only in 2004 FONAFIFO contracted over 78000 hectares for forest protection, and 8150 ha for reforestation. This is a sharp turn with respect to pre-PSA policies, when most government funds went to forestry plantations. However, there are many places where conservation would have taken place anyway, for example, where land prices reward the existence of forest for tourism, or wealthy people keep their second homes. **ii)** Reforestation can only take place in areas were logging is allowed. That is, PSA cannot be used to reforest alongside riparian areas, or on very steep hills, where they could have very important effects on sediment control. [In plots under PSA-reforestation, these riparian areas are also reforested but with no intention of future harvest];
			Priority for reforestation is given to projects with native species and natural regeneration in areas with logging potential. Conservation projects are encouraged alongside biological corridors, and in areas of interest for water recharge.
			Link forest-water: Pagiola (no date, see below) suggests that at the time when the PSA was established there was not enough information available about the linkages between forest and water. Although the majority of the literature review around the world shows that forests tend to reduce water flows (with uncertainty about dry season flows), this seemed to be left aside when justifying some of the initiatives. For example, a study by CT Energia (in 2000) analyses 6 watersheds and shows a positive relation between forest and water. Those results have been challenged on the basis of not enough data (two observations per watershed!), no control-data, and at least two of the watersheds show a different direction. Nevertheless the study was used as the basis to develop a formula to estimate the benefits from reforestation for hydroelectric projects (estimated between US$6-50/ha/year, with an average of US$20).
			Another study by CRESEE (in 2001) concludes that forestry cover increases water flows and its quality. However, this study only looks at runoff, without attending to other key hydrologic variables like evapotranspiration. Despite this limitations, the study was used as a basis to justify the ESPH environmental-adjusted water fee. However, personal communications with representants from FONAFIFO (Edgar Ortiz, 2005) indicate that in light of recent hydrological evidence, FONAFIFO is not promoting the "increase in water flows" principle, and rather suggesting that the Forestry Law indicate that the protection of forests *protects* water resources, and in no place it indicates that water resources are increased.
		SOCIAL	**Encouragement of small holders.** Reforestation and Conservation contracts have priority in areas where the Social Development Index is below 40%. *Information barriers.* Zbinden and Lee (2004) shows that providing information through meetings and technical advice are very significant in encouraging landowners to participate in the PSA. Intermediaries and forest professionals should actively seek and advice potential forest owners who they think are likely to qualify. The lack of such advice is likely to result in less participation, as in the case of the Monteverde area, where small and medium farmers do not access PSA because they do not have enough information about it (Porras and Miranda, 2005).
			Limitations from application requirements: i) a pplicants have to submit proof that they do not owe anything to the National Health System CCSS and proof that they had not received land from the Agrarian Development Institute (IDA). This meant that many small and poor landowners were left out of the PES system. This is a strange limitation since it is difficult to see what the linkage is between environmental services and debts with the Health Service, but government regulations forbid people from receiving state-funds (which the PSA are) if they are debtors to the state in other ways. **ii)** there is a minimum size required for the plots submitted to the programme (1 or 2 ha depending on the modality), however, that does not necessarily rule out poorer groups, as the value of a plot of this size varies considerably according to its location.
			Benefits: i) **funds for maintenance and improvement of farms, forests and plantations and consequent income and quality of life;** ii) it can also clarify property rights, protection rural properties against squatters; **iii)** PPSA also leads to the development of knowledge and institutional capacity building, and iv) empowerment of grass-roots organizations and NGOs, who have supported the participation of groups who due to the requirements, individually would be excluded from the programme;
			iii) effects on vulnerable groups: according to several studies, cited by FONAFIFO in a flyer on Social Benefits of their programme, the scheme is especially beneficial for participants living in extreme poverty, for those of which the PSA payment represents either the main or the second most important source of income (as is the case, for the participants in the Osa Peninsula)

	LEGISLATION ISSUES	Environmental services were explicitly recognised by the Forestry Law No7575, introduced in 1996. The law lays the groundwork for the design of a new national strategy that became the Payments for Environmental Services programme (PROGRAMA DE PAGO POR SERVICIOS AMBIENTALES, PPSA). The law suggests the use of "polluter pays" and "beneficiary pays" principles to forestry strategy. The services recognised are: carbon sequestration, protection of watersheds, biodiversity conservation, and the provision of scenic beauty. Each year a decree is issued setting up priorities for approving projects. While this might lead to confusion, it also allows for flexibility in the implementation of the projects and a window to learn-by-doing. One problem of the PSA is the competition against other land uses, such as urban developments, in areas that are highly strategic for water recharge. A new law proposal has been sent to prohibit any land use apart from forest conservation in land areas declared as water recharge. The proposal would limit agriculture, ranching, urban development, landfills, greenhouses and petrol stations. While this might be extreme, it could begin a rolling motion towards some kind of zoning.
		Legal Framework: SINAC, FONAFIFO, National Forest Office(ONF), Forest Regents, Agronomy Engineers Board, cooperatives, regional agricultural centres, NGOs and the beneficiaries.
		PSA contract is attached to the land, so if the land is sold, the PSA goes with it; ii) although the negotiation may be done is group, the contracts are always signed individually;
	MONITORING	Monitoring is done by FONAFIFO's regional offices, forest engineers (regentes forestales), or as a joint task between FONAFIFO and the intermediary, if they exist. State-of-the-art technology has been devised for FONAFIFO using GIS tools and satellite photography to keep track of changes in land use. Penalties: stop payments, must return payments (from that year only?); infractions are only about 2% and if they are serious, FONAFIFO passes it on to the judicial system.
	MAIN CONSTRAINS (PROBLEMS)	There have been many constraints to the programme, that result in the continuous revision of its objectives and direction. For example pressure from environmental groups stopped the sustainable management projects payments, and keep pressure to ensure that funds are available for reforestation only with native species. Another problem has been properties with mortgages, but recent agreements with some banks are helping to overcome it. Farmers that have received land from the Development Agrarian Institute (IDA) have to approach IDA first and get their permission to apply for PSA (land given from IDA are supposed to be for agriculture uses). Funds initially pledged by the State (5% of the fuel tax) have been cut and reduced to 3.5%.and currently? Political support depends on each government and although the programme is relatively solid and strong at the moment, uncertainty is palpable before a new government is elected. The program is trying hard to switch their dependency on national (and international) funds towards other private funds, but most of their income still depends on the fuel tax funding.
		FONAFIFO identifies as limitations, i) legal requirements that difficult the assess of some land users to the programme; ii) lack of endorsement from some higher authorities, especially institutions that are important users of Environmental Services [such as ICE perhaps?]; iii) lack of adequate accounting to include the contribution of the PSA and of the forestry sector in general, into the GDP; Fonafifo, 2006
	MAIN POLICY LESSONS	***The PSA evolves quickly and it is good at learning by doing.*** The PSA was bound to make many mistakes along the way as no other experiences existed before that could guide it. But the programme shows high flexibility and a willing team working with FONAFIFO that tries to combine both the demands at policy level with the real work at field level. ***The most vulnerable groups are being left out.*** A study by Zbinden and Lee (2004) shows that on average, farms with PSA are larger and dedicated to labour-extensive and land-intensive agricultural activities, compared to non-participants. This is confirmed by other studies, showing that larger properties, with "room to spare", are more likely to enter the PSA, leaving small properties out (Hope, Porras and Miranda, 2005). Zbinden and Lee says that on average participants in the PSA are better educated, more likely to be urban-dwellers, had more income from (and proportionally more reliant on) off-farm sources, and enjoyed higher farm incomes than non-participants.
		Information is key to spread participation. Providing information and technical advice increases the participation in the PSA. Active intermediaries could locate potential candidates, but also help smaller ones overcome the barriers to participation. Establishing, managing and following PSA contracts are difficult and this tends to leave out the less educated, and often poor, farmers. ***Weak linkages between forests and hydrology,*** especially for reforestation projects. While most of the current initiatives are based either on perceptions of a positive relation, or bank on improved public relations, the lack of clarity of the linkages prevents expanding up to cover other potential hydrological service users.

		It is important to consider the trade-offs between environmental, economic, and social objectives. Although the forestry law initially formulated objectives of outreach for small and medium farmers, and provision of income and employment in rural areas, the benefits tend to be enjoyed by the relatively better-off. However, judged from an environmental point of view, equity could become an obstacle (Zbinden and Lee, 2004), as larger areas might work better for conservation than small, possibly segregated, plots. Administrative costs are also reduced with few and relatively larger participants, whose main source of income is off-farm and therefore might have less interest in converting the land. But the converse is also true, it might be the smaller properties that are more at risk of changing and targeting should be done there. Transaction costs might be reduced by having active intermediaries. FONAFIFO could set aside a part of their funds to specifically target those groups and give additional incentive to intermediaries.
		lack of systematic spatial targeting results in under funding (S Wunder (2005); Pagiola 2002 (?) and perhaps loss of higher environmental benefits if other areas could be integrated in the scheme; "the number of forest owners who apply for enrolment of areas in the scheme far exceeds the availability of funds. This is probably due to a combination of under funding of the scheme and its lack of systematic spatial targeting. In many cases, those receiving PES funds may not have had genuine intentions in the ?rst place of putting the land to an alternative use, thus implying limited additionality of the system, i.e. the PES systems buys less extra environmental protection than would have been possible with increased targeting." Roberston and Wunder (2005)
		New water charge law: i) the voluntary agreements with large water users were **in the origin of the new water law** : when FONAFIFO approached these companies to offer this as a voluntary investment (both in the environmental service that they require and for CSR purposes), and they came to an agreement of the level of the contribution, this showed the Ministery of Environment an indication of the WTP; **ii)** the new water law, aims at charging all water users (surface and ground) a new water use fee [that will constitute a 300% increase- current water rates are extremely low**would be good to give examples, Irrigation 25US$ year, brewery 400US$ year** - over a 7-year introduction period], proportional to the amount of water used (consumptive and non-consumptive uses are charged the same) but different according to the type of user. These changes have encountered strong opposition and FONAFIFO had to invest in conflict resolution measures; still, the increase instated is lower that the original proposal and below the real price of water. This fee includes an earmarked share, to be invested in watershed protection of the area of origin of the funds. ii) Users that were already investing in watershed protection were exempt from this part of the new charge, as is the case of the ESPH; (see case profile)
	OUTSTANDING ISSUES	
REMAINING INFORMATION GAPS		
CONTACT		
REFERENCES		In FONAFIFO: Edgar Ortiz, Alexandra Saenz
		Zbinden and Lee (2004); Hope, Porras and Miranda (2005); Malavassi, Sage and Borge, 2003;
		Rodriguez, J.M (ed), 2005, 2006 [presentation during technical trip]
		La Nacion, information about the Water Resources Law (25 August of?) link?
LINKS		http://www.fonafifo.com/paginas/psa.htm
		Pagiola (no date): www.ine.gob.mx/ueajei/publicaciones/libros/423/cap3.html
		http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=64290415&theSitePK=40941&menuPK=228424&Projectid=P052009
		http://www-wds.worldbank.org/servlet/WDS_IBank_Servlet?stype=AllWords&all=P098838&ptype=sSrch&pcont=results&sortby=D&sortcat=D
		Note: FONAFIFO defines forest as: minimum 2h, 60% of native species, diameter larger than 50cm at breast level and 70% canopy cover; FONAFIFO is not a large machine: it's 46 people, 8 local offices, each of them with an forest engineer and an assistant

5.2 Certificates for Environmental Services

COSTA RICA (Certificate of Environmental Services)	
SUMMARY	Certificate of Environmental Services (CES) is a new (2005) system prepared by FONAFIFO to facilitate business' participation in the PES scheme and capture funding beyond the already over-subscribed PES scheme. The Certificate of Environmental Services (CES) are sold to "sponsors", and each represents one hectare of forest for conservation. The first stage of the CES is focusing on protection and regeneration of 7000 ha of forests in Guanacaste. This is the driest part of the country with a strong dry-season period and with several large water-dependent industries, that pay very little for their water use and/or can use some improvements in their PR. Buyers range from these local industries, to private individuals or foreign ethical investment companies.
NAME OF THE INICIATIVE	Certificate of Environmental Services (CES or CSA in spanish)
MATURITY OF THE INITIATIVE	ongoing since 2005
DRIVER	FONAFIFO's interest in speeding negotiations with potential buyers. According to Alexandra Saenz, from FONAFIFO (personal communication 2005), there is already a lot of interest in several firms. Initial work is focusing in the Guanacaste area, where water is more scarce than in the rest of the country. There are also several large water-dependent industries (sugarcane, rice, and tourism), who pay very little at the moment for the actual water. The use of CES can help boost the local PR.
	Why invest in CSA? -As an investor, you may use the CSA logo to market your business as one that fosters environmental conservation; -Ensuring the Environmental Services necessary to develop your activities both in your specific areas as well as in the forests in Costa Rica; -Verifying the use and destination of the resources guarantees that the funds really reach the peasants and ares of your interest; - The investment can be deduced from your gross income as an expense in Costa Rica, with the possibility to apply this method in other countries;
STAKEHOLDERS SUPPLY	Supply of the services is left open to "protection of forest located in strategic aquifer recharge areas or areas important to protect superficial water". The first stage of the CES is focusing on protection and regeneration of 7000 ha of forests in Guanacaste, the driest part of the country with a strong dry-season period.

	DEMAND		Companies interested in protecting forested areas in strategic water catchments. Their investment can be either directed to a particular area or forest, or contributions to the general upkeep of forests in the country. See below for details. **Reserva CONCHAL S.A.** (used to be called here: Desarrollos Hoteleros Guanacaste). A hotel chain paying to keep forests in the Rio Nimboyobes watershed. They pay to protect 900 ha of forests. Tel 654-47-37; E-mail: toncas@racsa.co.cr **Azucarera El Viejo**. One of the largest sugarcane producers, located in Guanacaste. They need a lot of water for irrigation. Paying to protect 550 ha of forests is part of their environmental policy. Tel 296 0007 / 232-11-92 688-80-00 / 671-12-50. Email: azviejo@racsa.co.cr **Costeña S.A.** Melon producer and exporter firm in Caimital de Nicoya. They are the first firm in CR that receives the european certification EUREPGAP for quaility and hygiene. They protect 100 ha of forests. Tel.685-50-42. e-mail: alimencr@racsa.co.cr ExporPack S.A.(NEW). Located in Sardinal de Carrillo, Guanacaste, produce melon for exports. They pay to protect 100 ha of forest located in the aquifer recharge area around Sardinal. Tel 697-00-55 / 697-01-07 / 697-04-66, e-mail : exmelon@exporpack.co.cr **Milenio Comunicación Integral**.A firm working in communication, media, and PR. They protect 1 ha of forest. Tel.222-3173 Fax.223-6079. e-mail: comunicaciones@milenio.co.cr. www.milenio.co.cr **Life Gate** (Impacto Zero) NEW. Private investors located in Italy, they are interested in protecting forests in indigenous areas. They pay for 91.98 ha of forests. Tel (in Italy) 390-316-180-3, Fax 390-316-180-310. **Grupo OLEFINAS** NEW. Firm dealing with sales and distribution of inputs for agriculture. They protect 30 ha. Tel 250-54-54, Fax 219-24-45 www.Olefinas.Com. **Ing. Edgar Ortíz Malavassi** Private investor. Professor at the ITCR. Pays to protect 2 ha of forests. Tel. 550 2511. E-mail: eortiz@itcr.ac.cr edgarom@costarricense.cr. **ASOFIFO**. FONAFIFO's Workers Union. They pay to protect 1 ha of forest. Tel. 257-84-75
	INTERMEDIARY		FONAFIFO. Funds collected are used to pay for PES administerd by FONAFIFO. This is a intermediary-buyer negotiation and FONAFIFO then deals with the legal and technical requirements to guarantee protection of the forest.
MARKET DESIGN	SERVICE		the first certificates emited were correspondent to areas of importance for watershed protection in Guanacaste. For the next stage, FONAFIFO plans to sell certificates that will revert to the protection of biodiversity in the Osa Peninsula and in the Indigenous territories of the Atlantic part of the country, as well as under the "Clean Travel" scheme, whereby they aim at collecting funds for the Biodiversity Conservation Fund, through sales of carbon offsets from travel emissions.
	COMMODITY		*Mostly use-restriction although asset-building is proposed.* OTC-Certificate of environmental services.
	PAYMENT MECHANISM		OTC/intermediary. The Certificate for Environmental Service (CES) scheme, designed and administered by FONAFIFO, is directed to private companies and individuals. The certificate guarantees the protection of forests, and the investment can be deduced from gross income as operational costs (up to 30%). The buyer can decide whether he wants to "sponsor" an PSA area in its own region, or in the country in general. The first emission was only for the Guanacaste area (particularly in Nicoya), for a total of US$1995 million. The face value is $285/ha and guarantees protection for 5 years (minimum length of contracts). The amount covers the payment to the landowner, administration costs and legal and technical certification. It also includes $1 for fire control and $1 for environmental education.
	TYPE OF PAYMENT		**from users:** One-off payment valid which guarantees protection for 5 years. Renewal is possible but it depends on the buyers. **Providers** receive the general FONAFIFO **regular cash-payments** (see Costa Rica PSA page for details)
	FUNDS INVOLVED		Total area negotiated so far 1, 775ha; total funds US$ 532, 794
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Price paid by buyer: $60/ha/yr for minimum of 5 years (=$300 per ha) Desarrollos Hoteleros de Guanacaste @ Nimboyares river aquifer 900ha= $270 000 Azucarera El Viejo @ Corral de Piedra Wetland 550ha = $ 165 000 La Costeña @ Rio Potrero aquifer 100ha= $ 30 000 Exporpack SA @ Sardinal 100ha= $ 30 000 Life Gate (Impacto Zero) @ ? 91.98ha= $ 27 594 Grupo Olefinas @ ? 30ha= $ 9 000 Other small investors @ Nimboyares river aquifer 4ha= $1 200 (Millenium Communications 1ha= $ 300;Ing. Edgar Ortíz Malavassi 2ha= $ 600 and Asofifo 1ha=$ 300) Holcim (swiss ciment production multinational) "gracias al personal altamente motivado y capacitado, respeto al medio ambiente y profunda responsabilidad social" = 100 ha of forest of high hydrological importance around its production plant in Agua Caliente de Cartago."

		ENVIRONMENTAL	By protecting the forests and encouraging natural regeneration the project supports the creation of biological corridors. Also, funds are trying to be directed to specific strategic recharge areas. It is unlikely that protection or regeneration of forests will result in higher water flows, **but accordign to FONAFIFO they are being clear with the investors that this is not one of the services that should be expected.**
		SOCIAL	Funds are very useful to support the PES scheme which is already over-subscribed and new sources of funding have to be found. There is no information yet as to who are the people who benefit from these payments, but the Guanacaste area has many small holders with limited access to other alternatives and PES can provide an important alternative income. On the other hand, the buyer can decide where to invest their funds. For example, the Reserva Conchal (a 5-star residential development with high demand of water and already many water conflicts with local communities) is using the funds to enlarge their own private reserve, so that these money does not go to help any local smallholder, but they support environmental education programmes in local schools. Azucarera El Viejo invests in protecting a (already protected since 1994) wetland.
	LEGISLATION ISSUES		
	MONITORING		The CES are backed by FONAFIFO and the PES scheme. FONAFIFO has local offices throughout the country and monitoring is done through GIS systems and field visits to check for changes in land use. There is however no monitoring of the water services.
	MAIN CONSTRAINS (PROBLEMS)		By letting the companies choose the areas where they want to invest funds could be invested in areas that are not so important and can lead to agents pursuing their own interests. For example, the Reserva Conchal has "paid" for protection of their own 900 hectare reserve, which adds significant value to the cost of the housing developments they sell.
	MAIN POLICY LESSONS		Water is a problem in the area of Guanacaste. Although they have an average of 2500 mm of precipitation per year, this tends to happen during 4 months of the year, leading to very dry seasons and wet seasons where flooding is usual. The coastal areas are highly important for tourism, and there are several large important (and expensive) hotels with high demand of water for their swimming pools and golf courses. This has led to significant problems with local communities which complain of decreasing levels of water in rivers. The payments for CES can be seen as a way to soften this general perception, a public relation strategy, or directed to improve/protect landscape beauty for tourism.
	OUTSTANDING ISSUES		
REMAINING INFORMATION GAPS			
CONTACT			
REFERENCES			http://www.feconcr.org/contents/opinion.htm; Malavasi (2003) RM 455;
LINKS			www.fonafifo.com/; http://www.fonafifo.com/paginas_espanol/invierta_bosques/e_ib_que_es_csa.htm
			For details on dispute over water with Reserva Conchal and local communities, see UNDP website (who are providing funds to negotiate for a solution for water): http://www.undp.org/sgp/cty/LATIN_AMERICA_CARIBBEAN/COSTA_RICA/pfs6308.htm

5.3 Private HEP through PSA-Energia Global

Costa Rica (Energia Global)		
SUMMARY		Agreement between HEP producer and FONAFIFO, to channel payments to neighbouring landowners with the aim of regulating water flows and reducing sediment load. Initial emphasis from Energia Global hopes was to increase the water quantity, but renewal of contracts are now placing the emphasis on water quality (contracts renewed in 2003, for another 5 years). Monitoring of land use shows an increase of 217 ha of forests. The company claims that with the PES they can guarantee the required flows for the HEP operation, and are willing to pay for that, although there is no data to support improvements in the water services. Participants without land titles that cannot access the FONAFIFO PSA programme receive 30US$ paid directly by the company.
NAME OF THE INICIATIVE		Energia Global payments, Central Plateau - watershed protection contracts
MATURITY OF THE INITIATIVE		emerging since 1997-renewed in April 2003 for another 5 years
DRIVER		***demand driven -*** hydropower companies are interested in regulating flows (control runoff) and reducing sedimentation. Initial emphasis from Energia Global hopes was to increase the water quantity, but renewal of contracts are now placing the emphasis on water quality (Edgar Ortiz, FONAFIFO, personal communication 2005).
STAKEHOLDERS	SUPPLY	***private landowners (sellers)*** in neighbouring areas to the HEP generators in the watersheds of the rivers S.Fernando and Volcan . Until 2005 more than 1400ha [the original target was for over 4000 ha] were receiving payments (31 households) for forest protection;
	DEMAND	***Private corporate (buyer).***Energia Global, a HEP company, is interested in protecting the basins that drain into the rivers San Fernando and Volcan, which feed their plants. Two run-of-the-river electricity generators are involved: (1) PH Don Pedro, a 12 MW project using water from the San Fernando River, and (2) PH Rio Volcan, a 17 MW project which uses water from a small dam along the Rio Volcan River. The HEP companies supply 40,000 electricity users. The replenishment of aquifers is of particular importance to ensure water flow in dry season when prices for electricity are highest. Company interested in protecting 1818ha in San Fernando and 2493 ha around R Volcan (FONAFIFO Website).
	INTERMEDIARY	***NGO (local) & government (national) intermediaries*** . FUNDECOR is a NGO created in 1989 to protect and develop forests located in the Central Plateau. FUNDECOR charges approximnately 15% of the payment directly to landowners and in exchange deals with the paperwork and provides technical assistance.
	FACILITATOR	Other parties involved in the project are FONAFIFO and the National System of Conservation Areas (SINAC)
MARKET DESIGN	SERVICE	***flow regulation and sedimentation reduction.*** Company interested in reducing the speed of runoff and raise water quality (lower siltation) associated with deforestation that affects the efficiency of electricity generation.
	COMMODITY	***use restriction and asset building:*** watershed protection contracts through forest protection and reforestation
	PAYMENT MECHANISM	**Government [Fonafifo] & NGO [Fundecor] intermediaries, pooled transaction and OTC (standardised contracts)** - FUNDECOR has an agreement with Energia Global whereby the company channels $12/ha/yr to FONAFIFO, who then tops it us and allocates total payments for environmental services worth about $64/ha/yr to farmers. These payments compete with alternative land uses, e.g. cattle ranching and cropping. FONAFIFO charges a 5% overhead to cover its costs.
	TYPE OF PAYMENT	Continuous cash payments over the length of the contract. Contracts have been renewed once already and price renegotiated: since 2003, the buyer pays additional US$2/ha/year.
	FUNDS INVOLVED	Total value of contracts US$ 0,053 million (Ortiz, 2003); US$ 120,000 according to Fonafifo

ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Low level of competition- government intervention undermines the link between buyers and sellers and price discovery for this service. Energia Global pays US$10/ha/yr for conservation of forests (US$12 since the renewal of contact in 2003). FONAFIFO tops up the rest to make up to US$45/ha/yr for the participants. To date, payments have been made to 833 ha in SFernando and 568 ha in R. Volcan. The initial contract was for $200,000 for five years. FONAFIFO tops up to almost half a million (to reach the 45US$/ha/year). Participants without land titles that cannot access the FONAFIFO PSA programme receive 30US$ paid directly by the company. The farmers benefit from increased income (up to US$45/ha/yr), while electricity users benefit from more stable and efficiency electricity supplies. Overall economic efficiency should be increased.
		ENVIRONMENTAL	Expected benefits include reduced erosion and sedimentation in streams, which in turn improves water quality. Water quality is critical for drinking water, HEP plants and fisheries. It is unclear what impact has on the volume of water in the dry season. Monitoring of land use shows an increase of 217 ha of forests. The company claims that with the PES they can guarantee the required flows for the HEP operation, and are willing to pay for that, although there is no data to support improvements in the water services.
		SOCIAL	Approximately 30 families receiving PSA in the area. Larger number of beneficiaries if knock-on effect of electricity impacts through improved water quality and electricity supplies, although the price of electricity is not controlled by the hydroelectric company. Improved health associated with better water quality. Improved environmental awareness due to environmental education scheme funded by FUNDECOR. FUNDECOR has helped clarify property rights for landowners through the registration of land in the National Property Registry. **POVERTY IMPACTS.** With the renewal of the contract, ENERGIA GLOBAL pays $30/ha/yr to landowners without legal land titles that cannot access the FONAFIFO scheme. In some cases, FUNDECOR helps with paper work to legalise land rights. Most of the social benefits are felt by the poorest, especially the awarding of land titles. In general FUNDECOR has organised 371 households (not necessarily in the Energia Global interest area) many with less than 5 ha plantations, with 22,000 ha in the government's Payments for Environmental Services scheme. FUNDECOR has provided TA to 500 small forest dwellers. Since this payments is embedded within the broader system, cannot clearly attribute local benefits to this transaction.
	LEGISLATION ISSUES		Market is intertwined with government payment scheme. Payments are channelled into broader government payments for environmental service scheme
	MONITORING		participants **feel** that the system helps maintain water quality and quantity; (Rosa 2003), but there are no systems in place to monitor the changes in water quality and quantity.
	MAIN CONSTRAINS (PROBLEMS)		
	MAIN POLICY LESSONS		It is uncertain whether the pay ments are actually resulting in improved delivery of the environmental services. However, the renewal of the contracts by the company suggests that at least their perception is that the programme is working and are willing to continue. No monitoring of changes in water quality or quantity are in place. In this particular case, the benefits from improved public relations in the area might be enough to justify the company's investment in PSA, but it is still a weak argument for extrapolating to other places or countries.
	OUTSTANDING ISSUES		
REMAINING INFORMATION GAPS			
CONTACT			Follow up with Agustin Fallas on afallas@fundecor.or.cr; afallas@alum.mit.edu; or FONAFIFO
REFERENCES			Chomitz et al (1998); Heindrich (1997); Fallas Santana (2000); FUNDECOR and Energia Global; Rojas pers.comm (2000); FONAFIFO personal communications.
LINKS			http://www.fundecor.org/transferencia/financieras.shtml
			http://www.fonafifo.com/paginas/EneGlobal.Htm

5.4 Private HEP through PSA: Platanar

Costa Rica (PLATANAR)			
Acronyms			CODEFORSA: Forestry Development Commission of San Carlos (Comisión de Desarrollo Forestal de San Carlos)
SUMMARY			HEP company pays neighbouring landowners to reduce siltation of water used. Through Fonafifo and Fundecor. Interesting case for landowners without land titles, the buyer subsidises their participation!
NAME OF THE INICIATIVE			**River Platanar**, San Carlos
MATURITY OF THE INITIATIVE			Agreement accepted in 1999 and valid for 5 years
DRIVER			***demand driven:*** Platanar HEP was concerned about over-grazing (high rates of erosion, greater risk of landslides) and the its impact in terms of sediment load into their reservoirs
STAKEHOLDERS	SUPPLY		The watershed has 3655 ha, of which 1243ha are natural forest. Payments are made to 26 landowners living in the high and upper-middle parts of R.Plantanar. Agreements include 24 projects for protection of forest and 2 for reforestation, for a total of 820ha.
	DEMAND		The HE company Platanar pays for PES during 5 years to protect forests located in the high and upper-middle parts of Rio Platanar.
	INTERMEDIARY		*Local NGO:* FUNDECOR: the company pays the intermediay FUNDECOR which in turn will transfer the funds to FONAFIFO. Platanar pays FUNDECOR $1000/month for promotion and identification of property owners, and for technical studies. The intermediaries provide technical assistance, deal with the paperwork, and offer forest regency services in exchange of a fee, usually a percentage of the payment received (12-18%).
	FACILITATOR		FONAFIFO and SINAC
MARKET DESIGN	SERVICE		regulation of flows and reduction of (risk of) sedimentation
	COMMODITY		***use-restriction:*** forest protection contracts and ***asset-building:*** reforestation and agroforestry contracts
	PAYMENT MECHANISM		1) HE company pays $15/ha/yr to FONAFIFO who then tops it up to their standard payment levels, 2) The programme is executed (studies and contracts made with the producers) by CODEFORSA, the most experienced forestry NGO in the area; 3) FUNDECOR is responsible for monitoring;
	TERMS OF PAYMENT		***ongoing cash payments:*** from user (Platanar HEP): US$15/ha/year for landowners with property titles and 30 for those without; from FONAFIFO: 40; **providers get** the standard FONAFIFO payments according to the modality of their contracts
	FUNDS INVOLVED		transaction costs? until 2003 the company had invested US$ 85 000 in the PES scheme (RM 455); total amount is US$ 162,357.
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Farmers benefit from payments for the environment services provided by their forests. HE company benefits from reduction of uncertainty as to the effects of changes in land use on water and sediment flows.
		ENVIRONMENTAL	it has positive impacts in the water quality as well as in the positive transformation of the landscape. Effects on water quantity (or quality) are not monitored.

		SOCIAL	The agreement includes environmental education programs and community protection in the areas of influence of the project. This PES has positive effects on local organizing capacity and supports a wide range of jobs associated wth the PES and forest products. **Poverty issues:** Farmers without legal property rights benefit through the participation in the project. They would not be entitled to receive payments through FONAFIFO (at the time $40/ha/yr) but instead received direct payments from the COMPANY for $30/ha/yr during 10 years. This location situation led to changes in the national policy, and nowadays, landowners without property titles have other ways of assessing FONAFIFO's scheme.
	LEGISLATION ISSUES		
	MONITORING		Monitoring is done by FUNDECOR and CODEFORSA, using GIS-based systems and field visits.
	MAIN CONSTRAINS (PROBLEMS)		stakeholders consider PES access procedures time-consuming and complex, with many requirements; and information is not well disseminated
	MAIN POLICY LESSONS		the high value attributed to the positive impacts that benefit the whole community, partly explain the interest of producers in participation in PES and in efficiently investing the resources obtained. Rosa, H. et al 2003, p. 22. this PES is not considered profitable except for large landowners, or those with land on steep slopes that could be used for nothing else except forestry; For small landowners, the profitability of PES depends on its complementarities with agriculture, tourism, NTFP and other activities. Therefore it should be implemented integrating agro-forestry and environmental services management.
	OUTSTANDING ISSUES		
REMAINING INFORMATION GAPS			
CONTACT			Ing. Gilberth Solano Sánchez, CODEFORSA
REFERENCES			Arturo Venegas, personal communication (2001); Rosa, H. et al 2003; Ortiz (2003)
LINKS			
			http://www.codeforsa.org/s_proteccionbosques.php
			http://www.fonafifo.com/paginas/Platanar.Htm
			http://www.fundecor.org/transferencia/proyectos_es.shtml
			we additional of information about the work of CODEFORSA in this region, mostly related to their reforestation projects under PSA, but not necessarily in the watershed in which Platanar HEP is interested; we could perhaps make a box to describe the example of this intermediary(CODEFORSA act as intermediary between local landowners and FONAFIFO's national scheme); **would be interesting to know how many projects/ha under PSA is CODEFORSA working with**

5.5 Parastatal HEP using PSA: CNFL

COSTA RICA (CNFL)		
SUMMARY		HEP company pays landowners in four watersheds to reduce siltation. The company created it's own environmental department to run the PES programmes (payments still go through FONAFIFO); the department works also on environmental education, waste management and agro-conservation. Due to the fact that PES was including mostly larger landowners ('non-additional' conservation) and because PES for forest regeneration cannot compete with more profitable agriculture activities, since 2004, investment is being redirected to improve these practices.
NAME OF THE INICIATIVE		CNFL PSA project for protection of the Aranjuez, Balsa, Cote and Virilla watersheds, where the company operates (map in images folder)
MATURITY OF THE INITIATIVE		Ongoing -Aranjuez: Agreement between demand and intermediaries began in 1998; payments in 2001, and construction of the hydropower in aranjuez is expected for 2005 but delayed.
DRIVER		**Demand driven:** the initiative seams to have come from CNFL, but mostly due to the "hype that existed around the national PES programme in the late 1990s" (de Man, M. et al 2003) there wasn't a CBA done by the company, and available data on forest-hydrology links was not consulted.(de Man, M. et al 2003)
STAKEHOLDERS	SUPPLY	**total area under PSA Protection: 7,356ha; 45 contracts: private landowners; coffee cooperative; conservation area. Goal 11,000ha of forest land (either primary or secondary)**
		i) Aranjuez: private landowners, monteverde conservation association and coffee cooperation Coope Montes de Oro. private landowners (20 contracts by 13 households in the upper parts of the watershed, which represents a participation of 3% of of the 400 producers in the middle and upper parts of the watershed), monteverde conservation association (for 746ha) and coffee cooperation Coope Montes de Oro (with a smaller area)- a total of 2305ha (originally it was intended to be 4000ha) in a total watershed area of 15 638ha;
		ii) Balsa: 4257ha of forest are under PES contract. (of the intended 6000ha in a total watershed area of 18 926ha) Payments are made to 11 different types of societies with an average area of 316,4 ha per contract. Only 5 private landowners receive a payments for a mean of 155,3 ha. **iii) Cote**: 1 private corporation with a 500ha land, and 12 other forest owning companies with an average of 300ha (total of 800ha of the intended 900ha in a total watershed area of 1259ha). **iv) Virilla 4000ha** (1000ha reforestation, 2000ha conservation primary forest and 1000ha conservation secondary forest);
	DEMAND	**CNFL: private corporate** (but majority-owned by the state utility- Costa Rican institute of electricity ICE) - power generation through small run-off-river hydropower plants. CNFL created an environmental department to run the PES project; Payments continue going through FONAFIFO. 7 extra US$ each month paid by CNFL to FONAFIFO as overhead ii) in the case of Virilla, the buyers are CNFL and the Norwegian Government, who was buying carbon credits (200.000 metric tons of carbon storage (conservation) and sequestration (reforested areas) for which they paid US$2 million)
	INTERMEDIARY	CNFL environmental department
	FACILITATOR	Fonafifo and MINAE
MARKET DESIGN	SERVICE	**erosion control and possibly also for water flow regulation** (mostly regarding volume is less rainy season)
	COMMODITY	**Asset-building** and **user-restriction** through watershed protection contracts (including forest conservation, reforestation and management) for a period of 10 years, in four watersheds where the company is developing new hydropower projects.
	PAYMENT MECHANISM	**Intermediary based**: CNFL pays fonafifo US$47 ha per year, from which US$ 40 ha per year are channelled to the landowners; during the first year the amount is US$53 to cover the initial costs of implementation - management plan, legal procedures...;
	TERMS OF PAYMENT	Cash instalments during a 10-year contract (longer than the typical FONAFIFO agreement in other watersheds, usually 5 years)
	FUNDS INVOLVED	For a total of 11,000ha under contract, funds involved are around US$ 602,186 (US$ 53 ha/year) for the first year and US$ 534,014 each of the following 9 years of the contract (US$ 47 ha/year), coming to a total of about US$ 5 million- amount entirely funded by CNFL (from its CDM project). This used to be the full amount received by landowners, and CNFL covered it fully, despite the fact that it is interested only for one of the environmental services (water).

ANALYSIS	COSTS AND BENEFITS	ECONOMIC	**In the case of Aranjuez: i) costs:** a) Transaction costs are quantified by CNFL as US$13 for the first year, covering fonafifo's costs in promoting and implementing the programme (management plan). b) for the landowners to obtain a land title, costs could be US$350 to 800. This is likely to be a bigger burden for small land owners, since the costs are probably not proportional to property sizes, so costs are higher on a per ha basis for small landowners. **ii) benefits:** extra **income:** the distribution of the payments by the participants is as follows: a) 63% of the payments is received by two participants with land over 700ha (one private landowner and the monteverde conservation association) and 37% by all the other 12 participants, with forest lands covering an average of 66,8ha. Annually the extra income from the PES can in this way range from US$ 30 000 per year for the large landowner mentioned, or US 2676$ for the average size property of the other landowners, to only US$ 236. The relative importance of the contribution from PES can be estimated if we consider that the average annual income ranges from US$ 2820 to 5640.
		ENVIRONMENTAL	There are no environmental impacts actually measured. However, **i)** in 2002 CNFL created an environmental department to run the PES programmes in the different watersheds, and this department works also on environmental education, waste management and agro-conservation, so it is likely that there are important side impacts in terms of reduce waste in the rivers. **ii)** In de Man et al (2003) it is argued that in this case, the agricultural practices may contribute more to high sediment loads than deforestation, since in this area the (illegal) deforestation rate is presently low. In this way it is likely that CNFL will not really receive great improvements in the reduction of erosion from deforestation (economic efficiency of this considerable investment is likely to be low)
		SOCIAL	**i)** improvements are expected to be more employment in the construction phase and improvements to the poor road network; **ii)** Opportunity costs may not be very high in this case, since the participants do not depend on the forest for their livelihoods (their activities usually involve a combination of cattle ranching, coffee production and subsistence crops) If they were to convert forest land into cattle ranching the opportunity costs are estimated to be around US$40 anyway (accounting for long term profits of cattle ranching and (short term) timber harvesting) **iii)** A new cost for the landowners of the land under PES is the total ban on felling trees for wood or fencing; **Impacts on vulnerable groups** : **i)** In this area nearly all inhabitants have a basic standard of living:" although the area of the aranjuez watershed is considered to be a marginal rural areas, the vast majority of the inhabitants of the watershed is not poor and most people have access to sufficient income, proper housing, electricity, education and heath services (Ministerio de la Salud, 1995 cited by de Man 2003). main activities extensive cattle ranching and coffee production. **ii)** initially established rights of possessions were enough, but in 2002 due to conflicts in overlap of tenure, land titles were required;
	LEGISLATION ISSUES		**a)** since in this case the PES is financed entirely by the buyer (CNFL) there are some variations in relation to the usual way FONAFIFO organizes its PES schemes. For example, contracts last for 10 years instead of the usual 5; applications can be made throughout the entire year and there is no top limit in terms of area enrolled (FONAFIFO's limit is 300ha) **b)** this allows for cases where, for example, one single landowner can claim payments for an area greater than 700ha. In a person communication with Michiel de Man, he informed that CNFL is rather unhappy with this unequal distribution of its PES payments that seam to benefit large landowners.
	MONITORING		a) compliance is monitored by a forestry engineer from FONAFIFO, twice a year; b) in 2004 the environmental department of CNFL stopped making contracts for forest conservation in the three watersheds due to uncertainties on whether or not the PES scheme was being environmentally successful. There is no clear indication how they measure success, if in terms of land use, or of the actual service being delivered.
	MAIN CONSTRAINS (PROBLEMS)		According to de Man (2003) study the main obstacles may reside in: a) the selection processes by intermediaries prioritising large land owners; b) the legal requirement of land titles; c) complex and expensive bureaucratic procedures and implementation costs; d)lack of access to detailed information about PES. In this case the lack of confirmation on the delivery of actual hydrological improvements lead the environmental department of CNFL to stop making new contracts for forest conservation in 2004.
	MAIN POLICY LESSONS		**i)** in this case it is believed that **personal intermediation** by a promoter of the PES project seams to play and important role in motivating and informing landowners, leading to increased participation. **ii) sustainability of the initiative** , the buyer is becoming more interested in investing in wider agroconservation measures (due to erosion problems in marginal agricultural lands (in high steepness slopes and overgrazing) and due to the above mentioned uncertainty about the effectiveness of the PES.

		iii) because PES for forest regeneration cannot compete with more profitable agriculture activities, in these areas action is being diverted to better environmental management from agricultural activities. this is what CNFL is aiming at now! (however the contracts were made for 10 years, so now, even if the buyer wishes to end the PES, and divert more funds towards this new project, they can not do so) So, in parallel CNFL, the local producer cooperatives and the local Agriculture Ministry agencies are working on a plan for integrated watershed management, with funds from the japanese development agency JICA. According to a news release form WWF, there is already a Aranjuez Agro-ecological Association, that has been active since 2001, helping farmers transforming unproductive fields (for example due to degradation by cattle ranching) into organic agriculture productions, as well as other general sustainable production techniques (area: 6056 ha in the upper and middle watershed of the Aranjuez, 45 farms bordering the Aranjuez River). Support is given by WWF Central America and by Kenco coffee (a Uk coffee company)
		FONAFIFO and voluntary agreements: - In the case of CNFL, they are going through FONAFIFO because: o Contracts under FONAFIFO are backed up by the forestry law and are stronger in legal terms, for example they are attached to the property titles: land cannot be sold without carrying on with the PSA commitments; - FONAFIFO has experience in managing the funds, and CNFL does not 'want to be a bank'
	OUTSTANDING ISSUES	For the average size property owner, the contribution from the PES can considerably increase the family's annual income (by 50 or even 100%). (although this doesn't seam to be perceived by the participants: some consider them low, others like consider it as a present, since they wouldn't use their forests for anything else anyway; as mentioned earlier, most of the areas remaining under forest cover are areas less attractive for other purposes, or they weren't planning to convert it anyway (the additionality of the PES may therefore be negligible)
REMAINING INFORMATION GAPS		Presently FONAFIFO is paying more (64$/ha/year) through its national scheme: are they topping up this amount in the case of the landowners enrolled as part of CNFL's agreement? or not yet given that the contracts haven't been renovated yet?
CONTACT		Gabriela Soto J.(bosques@racsa.co.cr); deproamb@cnfl.go.cr;
REFERENCES		**407** de Man,Michiel and Verweij,Pita A.(2003) Local Impacts and Effectiveness of Payments for Environmental Services in Costa Rica. The case of payments for forest hydrological services in Costa Rica's Aranjuez watershed. unpublished Master Dissertation. Copernicus Institute of the University of Utrecht, The Netherlands; personal communication with Michiel de Man on 07/02/05 **414** Flores, C (2004) Costa Rica Grows Organic, news release 13/12/04 at http://www.panda.org/news_facts/newsroom/features/news.cfm?uNewsID=16871; information available online at **www.cnfl.go.cr** **Soto J., G. (2006)** Opcions for the development of payment for environmental services mechanisms: the case of CNFL. Personal communication/presentation. Heredia, February 2006
LINKS		http://www.fonafifo.com/paginas_espanol/proyectos/e_pr_convenios.htm http://www.grupoice.com/esp/invers/cnfl.htm

5.6 Water quality through national PSA programme- Brewery

COSTA RICA Florida Ice&Farm (Cerveceria CR)			
SUMMARY			Cerveceria Costa Rica (Brewery) pays neighbouring landowners to manage their forests in accordance to the FSC certification. Minimum area is 2 ha, so in theory it should benefit small holders, but it is more likely to benefit wealthy landowners with second homes in the area. The agreement is facilitated by FONAFIFO and FUNDECOR
NAME OF THE INICIATIVE			Cerveceria Costa Rica (a subsidiary of Florida Ice&Farm)
MATURITY OF THE INITIATIVE			ongoing since 2001 (5 year agreement)
DRIVER			demand driven. Company interested in protecting their water sources. There has also been significant amount of work by FUNDECOR and FONAFIFO in approaching the user (given that it is such a large one, and pays very little for the water used: currently US$400/year)
STAKEHOLDERS	SUPPLY		Forest owners in the catchment area of Rio Segundo. Their **compromise is to protect their forest through a management plan that guarantees its permanence and prevents changes.**
	DEMAND		Private user. Cerveceria Costa Rica (local brewery) is a subsidiary of Florida Ice & Farm. The company produc es beer, fruit juices, and bottled water. They pay a very low fee for extracting water. In the Rio Segundo Watershed their interest overlap with the ESPH and they have joined efforts to increase the level of the local payment.
	INTERMEDIARY		FONAFIFO acts as national facilitator, while the more local work of contacting landowners, developing technical studies of the properties, and petitioning the payments to the MINAE and FONAFIFO falls on FUNDECOR. They also provide the FSC certification for forest management. The company partly pays FONAFIFO and FUNDECOR for these activities, and FUNDECOR charges a percent of the payment to the landowner to fund the rest.
MARKET DESIGN	SERVICE		Water flows and water quality
	COMMODITY		*Use restriction: protection of existing forests.*
	PAYMENT MECHANISM		**A)** Florida ICE&FARM is the first manufacturing industry paying PSA, for a total of US$ 273,000 during 8 years that go to protection or recuperation of 1000 ha of forest in the upper part of the Rio Segundo Watershed. The company also pays 1 colon per bottle of water sold, and an additional 1 colon per bottle recycled, to the National Park Foundation. B) ESPH pays US$ 22 (plus US$ 4/ha overhead), for an area of 350ha (total US$ 9,100). These funds are channelled to FONAFIFO under the shape of purchase of CSAs (Environmental Services Certificates, sold by FONAFIFO). FONAFIFO then adds this to the contribution from La Florida and channels the payments to the landowners.
	TYPE OF PAYMENT		One-off cash payment from the company to FONAFIFO, who then distributes payments on an annual base to landowners during the length of the contracts. Contracts could be potentially renewed.
	FUNDS INVOLVED		Total volume of contract: 0,273 US$ million
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Florida Ice and Farm pays $45/ha for PSA, which is the full amount of PSA given to landowners (other water users only pay 1/4 of the payment, equivalent to one of the four services 'bundled'). In the Rio Segundo Area funds are higher because of the ESPH and landowners can receive US$65/ha, of which the ESPH pays US$22/ha.

		ENVIRONMENTAL	The initiative helps to protect important water recharge areas in the upper watersheds of the country. This provides benefits for biodiversity and landscape beauty.
		SOCIAL	The area is rather wealthy and there are no direct impacts on the poor. Minimum area is 2 ha, so in theory it should benefit small holders, but it is more likely to benefit wealthy landowners with second homes in the area.
	LEGISLATION ISSUES		The company pays very little for the water extraction rights (canon de agua). Some people argue that it is only fair that they should pay additional money for the environmental service but even that is not enough.
	MONITORING		FUNDECOR deals with monitoring through GIS and field visits.
	MAIN CONSTRAINS (PROBLEMS)		One-to-one negotiations with the company are lengthy and expensive. However, this type of negotiations have contribute to capacity building in FONAFIFO and help them design the stream-line certificates (CES) to deal with private firms (see CES in this review).
	MAIN POLICY LESSONS		The owners of FLORIDA ICE AND FARM are also main investors in the Melia Hotel, which is now paying for watershed services in Guanacaste (see case in this review).
	OUTSTANDING ISSUES		
REMAINING INFORMATION GAPS			
CONTACT			WWW.FLORIDA.CO.CR, contact infor@florida.co.cr
REFERENCES			http://www.fundecor.org/transferencia/proyectos_es.shtml; Ortiz (2003) RM 455;
LINKS			SEE ALSO: http://www.undp.org/surf-panama/docs/bcpr/soluciones_ambientales_servicios_ambientales.pdf P 46
			(www.florida.co.cr)
			Rojas and Aylward (2003)- IIED publication and Virilla, for the area under PES

5.7 Small HEP with direct negotiation: La Esperanza

Costa Rica (La Esperanza)		
SUMMARY		This is one of the few direct private agreements we've found so far: a HEP company pays the Monteverde Conservation League for the hydrological services rendered by the Children's Eternal Rain Foresta which represents most of the hydropower plant's upper catchments. Since the area is already a conservation area, environmental additionality of the PES is also an issue but the company contributes in this way for the management of the reserve and has also avoided costs linked to the construction of infrastructure in the reserve's property. Their PES contribution is treated as Operation and Management cost, which represents an increase of about 20% increase in annual O&M costs (note that the company receives a fixed price for the sales of electricity and therefore cannot pass on the bill to final users); contracts are signed for 99 years!
NAME OF THE INICIATIVE		HEP and cloud forest conservation
MATURITY OF THE INITIATIVE		ongoing, contract signed Oct 1998 (same year when the HEP began its operations)
DRIVER		demand driven - hydropower company are interested to regulate flows (control runoff) and to reduce sedimentation. An important driver for the company was to "win" the favour of the forest owner (in this case, the Monteverde Conservation League, owner of the forest reserve) because it needed to build part of its infrastructure in areas belonging to the reserve.
STAKEHOLDERS	SUPPLY	**NGO (seller)** Children's Eternal Rain Forest owned by the NGO Monte Verde Conservation League (note: they own 22 000ha of forestland in the Tilarán Cordillera). A significant proportion of the area in under cloud forest.
	DEMAND	**Private corporate (buyer) La Manguera, a HEP**, located downstream from the Cloud Forest. Within the watershed, water is only used to produce hydropower. Water in the periphery of the HEP is mostly used to supply aqueducts for household consumption and dairy farms. Downstream it is used for recreation purposes, and for cattle that drink directly from the watercourse of streams and rivers.
	INTERMEDIARY	no intermediary: direct negotiations between buyer and seller (= lower transaction costs)
MARKET DESIGN	SERVICE	Regulation of flows and control of sediments
	COMMODITY	*Use-restriction:* watershed protection contracts
	PAYMENT MECHANISM	Direct negotiation - payments made directly to the Monteverde Conservation League. The HEP payments are: Year 1: $3/ha/yr for construction of the project; Year 2: $8/ha/yr when beginning to produce power; $9/ha/yr in the second year of producing power; and $10/ha/yr during the third and fourth years of production. By the fifth year the HEP company pays $10/ha/yr multiplied by a factor which takes into consideration the production of power and **the price it is sold per KW. Private energy producers in Costa Rica have a production cap, therefore the level of the payment cannot exceed that amount.** The contract was signed for 99 years, and for 300 hectares.
	TERMS OF PAYMENT	On-going cash payments with no terminantion previewed.
	FUNDS INVOLVED	

ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Low level of competition. The private reserve increases its income. The HEP is guaranteed the current level of environmental service (as the area is already protected there is no expectation of increased ES). The company saves a significant amount of money in legal procedures that would have ensured linked to the construction of infrastructure in the reserve's property. The company treats PES costs as Operation and Management cost (US$ 30 000 from a total of US$ 140 000). It is a considerable additional cost for the hydropower project, representing a 21 percent increase in annual O&M costs. The company receives a fixed price for the sales of electricity and therefore cannot pass on the bill to final users. this HEP invests US$ 57kW7yr while the others that deal through FONAFIFO ultimately invest less than US$ 1,5/kW/yr (Rojas and Aylward, 2002 p 15: explanation of these figures in an interesting table p 16).
		ENVIRON MENTAL	Payments are used to protect the cloud forests in Monteverde, which host a large variety of flora and fauna
		SOCIAL	Environmental education. It is difficult to track exactly which social benefits accrue to the contract with the company as the MCL already has several environmental education programs in place.
	LEGISLATION ISSUES		Land use and forest cover in the area are unlikely to change as they are regulated by the Ministry of Environment (MINAE). This institution plays a role to ensure the conservation of forest cover, and is in charge of imposing fines or taking legal action for violations to the Forestry Law of 1996. Other laws impose restrictions on land use in areas close to springs and river courses, to preserve forest cover and avoid pollution (more about the laws in p. 8 of Rojas and Aylward, 2002).
	MONITORING		The MCL patrols the area to prevent forest fires, etc. Land use is very unlikely to change.
	MAIN CONSTRAINS (PROBLEMS)		
	MAIN POLICY LESSONS		In many ways the main driver for this initiative was to settle a dispute over a key area of land where some of the HEP infrastructure was to be built. However, this led to negotiations whereby both parties benefit. Although no studies have been done, protection of the cloud forest where the HEP takes its water from clearly provide important water quality and quantity benefits. The conservation organisation benefits from payments that support their protection programmes. It is doubtful, however, if the transaction would have taken place if the original dispute had not exist.
	OUTSTANDING ISSUES		
REMAINING INFORMATION GAPS			
CONTACT			
REFERENCES			Solorzano pers.comm (2000); Rojas pers.comm (2000); Vargas -Alfaro (2001); Rojas and Aylward (2002) RM 456
LINKS			http://www.fao.org/ag/agl/watershed/watershed/papers/papercas/paperen/costa2.pdf

5.8 Private Water Utility (direct negotiation) - ESPH

Costa Rica (ESPH)		
SUMMARY		Heredia Public Service Enterprise (private water utility through public concession) collects an environmental fee from water users (together with their water bill), to invest in watershed protection mainly through direct payments to upstream landowners. Funds are administrated by PROCUENCAS the ESPH programme that promotes protection and reforestation in the microcuencas. Interesting point is the low level of competition between the PES payments and the values of the land for other uses such as urbanization.
NAME OF THE INICIATIVE		Heredia Public Service Enterprise (ESPH, in Spanish)
MATURITY OF THE INITIATIVE		Environmental fees charged since 2000; contract signed with FONAFIFO in 2001; Payments to upstream landowners begun in 2002
DRIVER		***Demand-driven:*** Heredia's water company keen to maintain water quality and regular flows. ESPH serves 50,000 users and delivers 15.5 million m3/year; average use per family is 1000lt/day!. Water is not a scarce resource, but demand is high and growing. Water supply is sourced mostly from springs and rivers but during the dry season (2 months) underground water is the only source in the lower parts of the watershed;
STAKEHOLDERS	SUPPLY	***private landowners*** *(sellers) in the target areas (highest parts of the watershed+ microcuencas of the rivers Ciruelas, Segundo, Bermúdez, Tibás y Pará).* Forests in the Barba Volcano and the Braulio Carrillo National Park are thought to play an important role in maintaining water quality and regulating flows; recharge areas 5,500 ha; **Currently the programme covers 1191ha and involves 21 landowners; in addition ESPH has also made 2 land purchases;**
		Payments made by downstream water users are used for forest protection, slopes recovery, and an emergency fund for natural disasters. Funds are also used to reforest underused land or land currently used for livestock farming, although this is more difficult due to the high opportunity cost of land in the area (US$150/ha/year). Urban expansion is also a problem and ESPH is currently setting as a goal to protect between 0.5-1 km around strategic water sources through targeted payments (opportunity cost of land in these areas attractive for urban development is very high: price of land around US$60-100/m2)
	DEMAND	*Private water utility (t*hrough public concession). City of Heredia. Water is distributed through the Heredia Public Services Enterprise (ESPH in spanish), which is a **utility owned by three municipalities** in the province of Heredia but **administered privately,** and though the **National Water and Sewers Company**. Current demand of water in the area amounts to 76.24 mill.m3/yr from agroindustrial sectors (e.g. coffee, dairy farms, flower cultivation. In 2002 the Company Florida Ice & Farm (a brewery and bottlers of water and fruit juices) and the ESPH signed an agreement with FONAFIFO y FUNDECOR to protect and manage the Río Segundo watershed, which provides water to both companies. Pooling demand meant that payment to landowners was raised to US$67/ha/yr.
	INTERMEDIARY	*User Fees - two types of intermediation. (1)* The ESPH works directly with landowners in one of the watersheds. The company has created a programme (PROCUENCAS) to administer the payments. **(2)** For the Rio Segundo watershed the ESPH pays FONAFIFO to act as an intermediary with landowners and the Florida ICE&FARM. It is uncertain what the advantages and disadvantages are of both direct approach and intermediary. According to the ESPH, they have the resources and capacity to implement the programme without intermediation (Gamez, personal communication 2005). On the other hand, FONAFIFO feels that their experience and capacity allows them to access and deal with landowners in a more efficient way (Alexandra Saenz, FONAFIFO, personal communication 2005).
	FACILITATORS	FUNDECOR, FONAFIFO
MARKET DESIGN	SERVICE	***maintain water quality and regulate flows;*** the goals is to protect water abstraction areas from pollutants and inappropriate land use.

	COMMODITY		***Asset-building:*** integrated farm management through the provision of technical support, biologic waste management alternatives and environmental education; ***use-restriction:*** forest conservation contracts and purchase of land in strategic areas of high vulnerability. (see diagram to the right)
	PAYMENT MECHANISM		*Direct negotiation/User fees/OTC*- The water utility, managed by ESPH, pays for watershed protection by adding an extra (environmental) charge to water use, clearly specified in the water bill. ESPH also acts as an intermediary, channelling user payments to watershed protection. Funds are administrated by PROCUENCAS the ESPH programme that promotes protection and reforestation in the microcuencas in case. **i) use fees:** Initial Willingness to Pay studies suggested a tariff of 15 colones ($0.03)/m3 and final result of the valuation study came to 7 colones; however, given the uncertainty regarding the possibility of achieving the results and the inexperience of the institution in managing the scheme (particularly in terms o financial sustainability), the tariff approved by the Government, in march 2000, was 1.90 colones (US$0.004/m3).
			"The initial fee adjustment was useful to successfully begin the programme. Today we have more experience, knowledge of economic valuation, hydrology, soils, and water quality information to justify that the amount is not enough to operate" (pers comm Luiz Gamez). The company has requested a fee of 6 colones/m3 but such a rise was not granted and current fee (approved April 2004) is 3.8 colones/m3 (or US$0.01). **ii) land purchase:** The ESPH has also purchased lands located in critical aquifer recharge areas. "These funds come directly from the company, and not from the environmental fee" (Luis Gamez, personal communication).
	TERMS OF PAYMENT		**From users:** colones 3.8/m3 (US$0.01/m3), transferred by the ESPH onto the **providers**, who receive on-going cash payments of US$95/ha/year (for 10-year contracts) for **conservation** and US$880/ha/year (disbursed over 5 years; 15 year contracts) for **reforestation; existing plantations** are also eligible and payment level is equal to conservation (US$95/ha/year) but contracts are only for 5 years. [confirm this-note in an email from Carmen Monge, to Miriam...not mentioned by Luiz though] Previous arrangements were: $60/ha/yr (23,000 colones) with contracts over 20 years for conservation and natural regeneration, $92/ha/yr for reforestation.
	FUNDS INVOLVED		in the period 2002-2005: 67,485,360.32 (aprox. US$ 130,000); currently, per year ESPH collects 60 million colones (aprox 90,000 US$);
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	Low level of competition - one buyer in the form of the Heredia Public Service Enterprise; many potential suppliers. The tariff is based on the opportunity cost of land (I.e. ranching activities, approx. $165/ha/yr), and a correction factor of the hydrological importance of forests. The tariff has been in use since March 2000. They collect approximately 30 million colones/year (approx.$67,000). total volume of the contract: US$ 0,010 million.
			This PES increases land tenure security since it strengthens the landowners power to expel squatters, by having the PES related institutions backing them up to defend the land under 'invasion'. This benefit is particularly useful for wealthy landowners who keep forests and have second houses there but do not spend most of their time in the area. It is important to note that the quality of water distributed by the ESPH is very high, and their water sources are very much the same than those used by Florida ICE&FARM, who sales bottled water for almost $1/lt. The population of Heredia highly benefits from protecting the quality of their water (Luis Gamez, personal communication 2005)
			free-riders: S.Jose and other municipalities abstract (surface and ground) water from this watershed, but do not contribute for the scheme.
		ENVIRONMENTAL	Establishment and protection of forests in the upper part of the watershed can help biodiversity through informal buffer corridors extending from the National Park. Protection of key strategic water catchment areas in the mountains that are not protected by national parks.
			benefits of conservation vs reforestation: According to Gamez,L. pers communication Feb2006 "Question: Is reforestation having the same ES in watershed management than forest protection? R/ We are really not pursuing commercial values, we are using indigenous species, and we trying to recreate the diversity of the place. Most of the people who have engaged in this process are not seeking harvest, but restoration of their lands"

		SOCIAL	Part of the revenues used to fund environmental education projects, social infrastructure (bridges, roads, etc), and local research in ecological economics. Additionally, by protecting the water sources and investing in environmental issues the ESPH provides an important service for the general population. **POVERTY ISSUES**. The payments are unlikely to benefit poor upstream households since most landowners are rather wealthy (are with higher HDI in the country) and derive their income from other (non -land related) activities. WTP studies for downstream families indicate that WTP greater than actual charge so negative impacts on downstream households should be limited.
	LEGISLATION ISSUES		The payment scheme involves the introduction of a new fee, but otherwise builds on existing structures, e.g. water tariff system, monitoring agency. Any adjustment in public services fees (for example water) are highly regulated in Costa Rica by an independent authority, and the ESPH was required to guarantee that their other services (e.g quality, drainage, distribution) were of a certain level before allowing them to increase the water fee. This could be a restriction to other municipalities interested in using an environmental water fee, if their other services are not at the required level. This could also be a issue of debate if a national water fee is proposed (Luis Gamez, personal communication, 2005)
	MONITORING		Monitoring is done through GIS and visits to the area.
	MAIN CONSTRAINS (PROBLEMS)		i) lack of competitive power of the PES, given the extremely high values of the value (for urbanization) even 6 colones ($0.013)/m3 (in 2003 cannot compete with very high price of land (about $70,000/ha, and even more for urban purposes). It is difficult to see PES competing against that. Stricter regulation on land use in strategic recharge areas might be required. High demands from the ARESEP (independent regulatory institution) limits the capacity of small municiaplities for using an environmental fee attached to the water bill.
			this scheme tries to overcome the problem posed by the lack of environmental zoning, limiting urban development in the mid-upper watershed, which for some of these municipalities, is the main source of revenue. However, it is very difficult to compete with such alternative use of the land.
	MAIN POLICY LESSONS		**Reasons for success** (according to Gamez,L. pers communication Feb2006) - Easily enforced: users are well identified (metered) and their payments can easily be tracked on a monthly basis, in case of non-compliance supply of electricity and water can be terminated; In this way the company can count on a steady monthly flow of funds; - Earmarked: funds from the environmental fee go into a separate fund (they are assigned a separate accounting code) are can only be invested in environmental services activities. - good service deliver: ESPH already provides quality water through an effective distribution system; - Simple and transparent: The mechanism is kept very simple, it takes place on existing capacities with no "rocket-science".
			Obstacles for replication of the scheme (according to Gamez,L. pers communication Feb2006) - quality of the service delivered: other neighbouring institutions have failed because they do not deliver water quantity and quality, and therefore consumers are not willing to pay for protection. - lack institutional capacity: lack of qualified staff and funds financial studies to support the adjustment of their fees, and make the justification to regulatory authority (ARESEP); - land use restrictions: landowners don't want restrictions on land use and many farms are not interested as they feel that ES is an obstacle for future sale of their properties.
	OUTSTANDING ISSUES		**Benefits of this programme** according to (Ortiz, 2003): "Without a doubt, the programme developed jointly by the ESPH, Florida Ice and Farm, FONAFIFO and FUNDECOR, benefits directly landowners who receive a compensation for the environmental service their forest provides, and the users downstream who benefit from secured quality and quantity of water; benefits Florida Ice & Farm (in their overlapping area) because they use the water as main inputs for their production and Braulio Carrillo National Park, who receive funds to use for their general budget (adapt.)
REMAINING INFORMATION GAPS			
CONTACT			Director of the environmental programme: Luis Gamez (lgamez@esph-sa.com)
REFERENCES			Barrantes and Castro (1999), Rosa, H. et al (2003), http://www.esph-sa.com/procuencas.shtml; Miranda, Porras and Moreno (2003); Rojas and Aylward (2003); Ortiz (2003); personal communications with Luis Gamez.
LINKS			http://www.esph-sa.com/procuencas.shtml
			Figure: Watersheds where the ESPH protects through PES. Source: ESPH website

5.9 National Institute of Electricity - ICE

Costa Rica (ICE)		
ACRONYMS		
SUMMARY		Despite being the largest owner of hydroelectric projects, ICE does not make direct payments to farmers upstream through FONAFIFO. Their approach to watershed management has changed through time and they now make significant efforts in working together with farmers in their catchments areas. In the Peñas Blancas watershed, they aim at developing a PES scheme to maintain forest cover and promote reforestation and regeneration of critical areas though agroforestry. The scheme target's ICE's priority areas and promotes activities that aim at delivering the service ICE is interested in: reduced sedimentation. Although it is a tailor made scheme, independent from the national PPSA, it is nevertheless to be processed through FONAFIFO.
		Erosion control is a concern in all watersheds, and is address in an integrated manner, through different approaches. In the case of the Peñas Blancas watershed, the development of a PES scheme is one of the tools whereby they aim at maintain forest cover and promote reforestation and regeneration of critical areas though agroforestry. The scheme target's ICE's priority areas and promotes activities that aim at delivering the service ICE is interested in: reduced sedimentation. Although it is a tailor made scheme, independent from the national PPSA, it is nevertheless to be processed through FONAFIFO.
NAME OF THE INICIATIVE		ICE Watershed Management Units
MATURITY OF THE INITIATIVE		Watershed Management Units active since 2000. (Reventazon and Penas Blancas watershed, since 2000; Piris and Sarapiqui watersheds are still conducting diagnostic studies)
DRIVER		"Due to pressure upon water resources it became necessary to draw management plans that cater for the needs of all users. ICE is not detached from this situation and saw the need to head the management of the watershed in which it works, or plans to work in the future." Previously ICE only had to consider was the physical and economic viability of their projects.
		EIA and consequent Management Plan for the watersheds where they have hydropower plants: they conduct a diagnostic study to find environmental problems that may affect their production, and devise mitigation measures (see commodity below)- these may or may not include a compensation, or payment. Often ICE's activities include in kind support for the improvement of infrastructure (rural roads, river channels), cattle waste management techniques...**Some of these watershed management activities happen downstream of their dams, as they are mitigation measures of the environmental impacts from the construction and operation of their plants (for example, their fish farming projects).**
STAKEHOLDERS	SUPPLY	activities happening in the watershed areas above their dams that are responsable for the sedimentation of their reservoirs, for example in i) Penas Blancas: small pasture plots along the river, just above their dam; ii) Reventazon: high pressure over the soil though intensive cattle and dairy activities and coffee, sugar cane, cocoa and banana plantations;
	DEMAND	in the case of Penas Blancas: the top parts of the watershed are 80% forest with no pressure on land use, as it is a private reserve (MCL?); in the middle watershed, just above their dam, there are small plots of pasture land along the river- these are the areas where they are planning to establish PES to reduce their sedimentation impact. [note: natural landslides, occurring in primary forest are also a major problem- one of such events has recently brought into their reservoir 3 million cubic metres of sediment- apparently these events are rare, but have became more frequent in the last 3 years due to changes in rain fall intensity]
		Ice produces 98e% of the electric energy used in the country, 70% of which is hydroelectricity.
	INTERMEDIARY	ICE's watershed management units
	FACILITATORS	FONAFIFO will still be involved as facilitator for the legal/official procedures.
MARKET DESIGN	SERVICE	sedimentation reduction;
	COMMODITY	***asset building***: reforestation, agroconservation, natural regeneration;

			Measures: - organic agriculture for lower production costs and less pollution; - soil conservation practices to increase soil fertility - conservation and management of vegetation cover to improve soil stability and water storage (increase of quantity and quality of water) - diversification of crops (permanent crops, agroforestry) to increase vegetation cover and diversify income sources; - capacity building and participatory processes; - rehabilitation of degraded areas, through reforestation and suitable land use options expected **Outcomes:** - savings in reservoir maintenance costs, due lower sediment loads; - savings on drinking water treatment (for the communities downstream)
			in the case of Penas Blancas: **Forestry Unit:** they will support activities to maintain forest cover and rehabilitate critical areas through natural regeneration and reforestation with native species (for protection of the soil, timber or food (either fruits for human or animal comsuption (including wildlife) or fodder for cattle.); add Cattle, agriculture, fish farming ...
			In Sarapiqui, ICE is promoting reforestation of areas affected by the construction of their plant, and is now providing incentives for reforestation of areas of hydrological importance, biodiveristy corridors in private land and potentially in areas of high erosion risk (since this is the service that actually matters to them). They provide the trees and technical assistance until 2007.
			In the case of the Reventazon River, there is a comprehensive Integral Watershed Management Plan, that includes: **Programme 1** involves projects for soil conservation agroforestry and fish-farming; **Programme 2** deals with management of vegetation cover by: i) supporting the work of the conservation areas in the higher parts of the watershed; ii) promoting sustainable land use in the buffer zones of the protected areas, in the southerner parts of the watershed; iii) reforestation of the riparian strips and infiltration areas; iv) establishment of tree nurseries; **Programme 3:** Rehabilitation of water channels/ river beds? and sediment control: i) project for flash flood control; ii) for control of erosion on roads; iii) works for rehabilitation of areas of geomorphologic instability (prone to landslides) and sediment control **Programme 4:** Education and Rural EXTENSION= diffusion of knowledge?: i) support EXTENSION of rural activities; ii) strengthening of rural social organizations and leader formation; iii) Environmental Education
	PAYMENT MECHANISM		***direct negotiation: direct investment by ICE, transferred through its watershed management units;*** amount to be paid to be based on the ones practiced by FONAFIFO; ICE will pay half of these values and FONAFIFO will top it up (confirm this! Because if it is s o, then FONAFIFO will need to make sure they are doing things in accordance with their own interests also...and what happens in the modalities that FONAFIFO does not practice?)
			contract between ICE and the landowners, through which ICE agrees to provide them with technical assistance and to deal with all the legal procedures of the application process (). ICE also contributes with the trees, transport and technical studies.
	TYPE OF PAYMENT		In Penas Blancas: potentially in cash (for forest conservation and natural regeneration) and in kind (for reforestation and agroforestry);
			In Sarapiqui, in kind- tree saplings for reforestation
			In Reventazon- in kind- training for agroconservation and potentially in cash?
	FUNDS INVOLVED		the Integrated watershed management plan for the river Reventazon the estimated cost is US$ 8.8 million, over a 6 year-period; In return, they expect a 21% to 55% reduccion o sediment load and consequent savings of US$ 9.8 in the productions costs.
ANALYSIS	COSTS AND BENEFIT S	ECONOMIC	
		ENVIRONMENTAL	Production of 1 3000 000 trees Reforestation of 1 100 ha 250 biodigesters (4500ton of animal effluents converted per year)

		SOCIAL	600 farmers receiving technical assistance and capacitating in conservation agro-forestry; environmental education activities reaching 15 000 people (from primary school kids, farmers, community leaders and heads of household) and production and dissemination of educational materials (written and audio-visual)
	LEGISLATION ISSUES		since they work at the watershed level, issues with inter-municipal activities can be an obstacle;
	MONITORING		
	MAIN CONSTRAINS (PROBLEMS)		
	MAIN POLICY LESSONS		ICE is devising this tailor-made PSA due to the fact that this allows them to target their investment to particular areas and to deliver the sedimentation reduction- for example natural regeneration;
	OUTSTANDING ISSUES		The watershed management units work in a range of areas: fishfarming, cattle,forestry [who deals with PES], Biology, Environmental Education, Infrastructure and Social issues. According to the needs in each watershed, different projects are proposed and led by these units.
REMAINING INFORMATION GAPS			
CONTACT			
REFERENCES			
LINKS			http://www.ice.go.cr/esp/ele/manejo_cuencas&arapiqui/areas.html

5.10 A failed initiative: The case of Del Oro

Costa Rica (Del Oro)			
SUMMARY			In 1998 a private producer of orange juice, Del Oro, agreed to pay the Guanacaste Conservation Area (GCA) a total of $480,000 in land for the provision of 20 years of environmental services. However this initiative did not take off because of important errors, lack of enough political support, and problems with environmental groups.
NAME OF THE INICIATIVE			Del Oro-Guanacaste initiative.
MATURITY OF THE INITIATIVE			Old proposal that was closed. Got as far as signing contracts, but intense campaigns forced them to close down.
DRIVER			**Demand driven** - Del Oro needed a place to process their product and their farm was adjoining the conservation area. Environmental groups against it say that the firm needed a place to "dump their orange peels".
STAKEHOLDERS	SUPPLY		**Public government land** in the form of the Guanacaste Conservation Area (GCA), which is one of Costa Rica's most important National Parks, with approximately 87,000 hectares of dry forest, rainforest and cloud forest ecosystems. The area adjoining the orange business is characterised by important areas of dry forests very prone to fires. The Guanacaste Conservation Area provides the neighbouring orange plantation with pest and disease control services. Flies, wasps, birds and other species in the area interact to control insects that could attack the plantation. It also has the appropriate technical staff to assist the Company with special advice in biological control.
	DEMAND		**Corporate business.** The private firm "Del Oro" owns an orange plantation adjacent to the Gunacaste Conservation Area (GCA). Working with the Rainforest Alliance Del Oro wished to obtain ECO-OK certification to market its orange juice as 100% environmentally-friendly. Organic production requires alternative forms of disease and pest control. A total of 1,200 ha of tropical dry forest are contained inside the Del Oro plantation, and the company has agreed to segregate these lands and set their value at $400/ha and pass them permanently to the GCA, in exchange for the environmental services provided by the GCA. In exchange, the company will benefit from biological services and biodegrading services. Del Oro has almost 2,000 hectares of orange orchards between La Cruz and Santa Cecilia in northwestern Costa Rica, near the Nicaraguan border. Part of the farm adjoins the northern boundary of the GCA
	INTERMEDIARY		Direct negotiation
MARKET DESIGN	SERVICE		Bundled: The services which make up the contract include: biological pest control, water supply, natural decomposition of orange peels, and ecological consulting services from the staff of the GCA.
	COMMODITY		**User-restriction** through protection of existing forest.
	PAYMENT MECHANISM		**Bilateral negotiation & retail-based trade** - Del Oro negotiated directly with GCA and agreed to pay an upfront fee of US$480,000 in the form of donation of 1,200 ha of tropical dry forest located within its property bounds. This amount of money is equivalent to biodiversity and ecosystem services from the GCA (described below) during 20 years. Del Oro values these services as part of its shift to organic production techniques and marketing of organically-certified oange juice. The services that the Company is paying for are: 1) biological control services from CGA forests, valued at $1/ha/yr; 2) technical services of the CGA; 3) provision of water to the farms of the drainage of a river that lies within the GCA; 4) biodegradation services of orange peels from $20/ha/yr within the GCA, which will rotate each year in four year rotation over 20 years; 5) Del Oro could also rent (at $1000) one hectare of old pasture within the GCA (but far away from the citrus plantation) for experiments with citrus trees.
	TYPE OF PAYMENT		
	FUNDS INVOLVED		
ANALYSIS	COSTS AND BENEFITS	ECONOMIC	The transaction would have yielded US$480,000 in the form of 1,200 ha of additional forest land, in exchange for 20 years worth of environmental services. To the extent that Del Oro achieved ECO-OK labelling and increased its market for organic orange juice, it would have generated new income and foreign exchange.

		ENVIRONMENTAL	The contract has the following provisions: **Biological Control:** Each year, the company will pay the GCA for the services of insects and other organisms living in the forest which help control pests in the company's orchards. This service will be paid at a rate of $1 per hectare of orange grove protected. With 1,685 in production around the GCA, this amounts to $1,685 per year. **Water Supply:** The watershed of the Rio Mena, which begins in the GCA, is 1,169 hectares. This watershed supplies water to the Del Oro groves and, for this service the company will pay $5 per hectare per year for a total of $5,885 per year. **Biodegradation Of Orange Pulp:** The company extracts juice from the oranges and essential oils from the peels, leaving a clean pulp. Some of this pulp may be fed to cattle. Some is used on the farms as natural fertilizer. The GCA is experimenting with the processed pulp to see if the organic material can help rebuild soils in areas that were deforested and used as cattle pasture. The company will pay $11,930 per year for the services of GCA (including its microorganisms, fungi, insects, etc.) in converting 1000 truckloads of this pulp into soil.
			Isolated Nursery: The company will pay $1,000 a year to rent one hectare of pasture inside the GCA to grow new orange seedlings that are free of diseases and pests. **Carbon Sequestration:** In addition, if the land transferred by Del Oro is used in carbon sequestration deals, the resulting credits will be divided evenly between the GCA and Del Oro.
			Increased funding channelled to GCA was to be spent on BD protection. Large portions of the CGA represent the last remnants of tropical dry forest in Central America. In addition to BD protection, the area provides valuable watershed protection, landscape beauty and carbon sequestration services. From Del Oro's side, by adopting organic production methods, the company would reduce its use of artificial fertilisers and pesticides, having positive knock on effects for air and water pollution in the area. Nevertheless, there has been a large cost involved. A large amount of conflict has arisen from the "biodegration" of orange peels, which for many local people and environmentalist it became simply a "dump" of large amounts of orange peels with no treatment at all, with serious negative effects on the environment.
		SOCIAL	Del Oro takes part on the Biology Education Programme of the CGA, which is very active in the area and involves children from local schools that visit and learn about the new production processes. Positive health benefits are likely from a shift away from using chemical off-farm inputs by Del Oro to organic production.
			Technical Services: The company will pay the GCA $3,500 per year for the consulting services of biologists and other scientists provided by the GCA. These experts will help the producers find natural solutions to agronomic problems.
	LEGISLATION ISSUES		
	MONITORING		
	MAIN CONSTRAINS (PROBLEMS)		
	MAIN POLICY LESSONS		
	OUTSTANDING ISSUES		The project has been cancelled due to irregularities in its procedures, evidence of negative environmental consequences due to the deposit of untreated orange peels inside the National Park, and resistance from competing orange juice producers.
REMAINING INFORMATION GAPS			
CONTACT			
REFERENCES			Source: Bayon, R. (2001) Policy brief: Innovating Environmental Finance, nr 25 March 20, 2001, Milken Institute. Accessed at: http://ecosystemmarketplace.net/documents/cms_documents/envfin.pdf Box 2.14
LINKS			Rainforest Alliance (1998); Personal communications with Ing. Alexander Bonilla, personal communication 2001

6 Annexes

6.1 Summary of Laws and Agreements.

Annex 1

Ley	Resumen	# de Ley	Año
Convenio Regional para el Manejo y Conservación de los Ecosistemas Naturales Forestales y el desarrollo de Plantaciones Forestales.	Este convenio compromete a los estados centroamericanos a proteger los sistemas boscosos e incentivar el manejo y desarrollo de la actividad forestal.	7572	1996
Convenio para la conservación de la biodiversidad y protección de áreas silvestres prioritarias en América Central.	Suscrito en Managua, Nicaragua el 5 de junio de 1992, contiene disposiciones acerca de los principios fundamentales, definiciones, obligaciones generales, medidas de ejecución, áreas prioritarias, conservación in situ, ecoturismo, impacto ambiental, transferencia de tecnología, intercambio de información, funciones de la Comisión Centroamericana de Ambiente y Desarrollo.	7433	1994
Ley de la Biodiversidad	Tiene como objetivo conservar la biodiversidad y el uso sostenible de los recursos, así como distribuir en forma justa los beneficios y costos derivados.	7788	1998
Ley de conservación, manejo y uso de suelos	Tiene como fin fundamental proteger, conservar, y manejar los suelos en gestión integrada en forma sostenible con los demás recursos naturales, mediante el fomento y la planificación adecuada.	7779	1998
Ley Orgánica del Ambiente	Se establecen objetivos, principios, fines; se crean los Consejos Regionales Ambientales. Se incluyen disposiciones sobre la educación e investigación ambiental, evaluaciones de impacto ambiental, protección y mejoramiento del ambiente humano, ordenamiento territorial, áreas silvestres protegidas, recursos marinos y costeros, humedales, diversidad biológica, recurso forestal, aire, agua, suelo, recursos energéticos, contaminación, agricultura ecológica, sanciones e infracciones. Se crean el Consejo Nacional Ambiental, el Fondo Nacional Ambiental, el Contralor Ambiental, el Tribunal Ambiental Administrativo y el Premio Guayacán.	7554	1995
Ley Forestal	Es función esencial del estado velar por la protección de los bosques y el aprovechamiento sostenible del recurso forestal. La ley contiene disposiciones sobre definiciones, nueva organización administrativa, patrimonio natural del Estado, propiedad forestal privada, incentivos, plantaciones forestales, áreas protegidas, Fondo Forestal, impuesto forestal, Fondo Nacional de Financiamiento Forestal, industrialización forestal, infracciones, sanciones y procedimientos.	7575	1996
Ley Reguladora de los Servicios Públicos	Establece los objetivos, obligaciones, facultades y responsabilidades de la Autoridad Reguladora de Servicios Públicos (ARESEP). Esta ley regula la función de ARESEP de fijar precios y tarifas a los servicios públicos relacionados con energía eléctrica, acueductos y alcantarillados, telecomunicaciones, combustible, tratamiento de desechos sólidos e industriales, transporte de carga por ferrocarril, servicios marítimos y aéreos en puertos nacionales, transporte semanal y concesión de obra pública.	7593	1996

6.2 Methodology for Evaluation and Assessment

Annex 2

Stages of the Assessment	Objectives	Methodology	Verification
Assessment of **Baseline** Situation in terms of the participants perceptions of PES as a tool and expectation towards the answers, example, ideas, discussions that the trip will provide	1. Assess participants Baseline impression of PES as a tool in general, and of the possibilities of application in their countries. From the practitioner point of view and from the policy maker point of view.	Group discussion, during the afternoon of the first day, on their learning expectations of the trip. What do you know about Markets / Rewards / Compensations for Environmental Services? Are MES being considered in your country? How? What have you heard about Costa Rica?	Has the trip changed your perception of the possibilities of application in your country, in terms of obstacles and opportunities? In what way?
	2. Determine the expectations the participants have from the events and discussions facilitated by the technical trip	What do you expect to learn from the CR experiences? Have you got concerns about this learning experience?	Registered in the list of expectations. 4.4
Monitoring of progress and the direction of ongoing change in participants' expectations and perceptions.	3. Proof if the activities happening everyday are contributing for the fulfilment of Objective 1. 4. Identify already points for objective 2.	We will prompt active country-group discussion by including a "brainstorming" slot into the schedule of everyday day, in order to create a more practical analysis of the issues discussed during the day- each day we will see a different case-study representing different PES approaches in terms of scale, public involvement and negotiation intermediaries	Country-team discussions registered in the "country-diaries" http://www.iied.org/NR/forestry/projects/water3.html One country team, each day, to write a short report comparing what was seen in the field and what happens back in their countries: - Would be useful to apply in the context of their country? - What would be the main obstacles they would face, were they to try to apply something of this type? This report is to be published online, on IIED's website.
The Evaluation of the quality, implementation, target relevance and impacts of trip will be done	5. Evaluate the performance of organizers and guest speakers, in designing and implementing this the trip's	Group evaluation of the trip in terms of design, implementation and outcomes (last day-afternoon) And an Evaluation form will be sent out by email after the trip. (Box below)	Records of these comments will be presented in the Assessment conclusions.

	activities. 6. Compare participants Baseline impression with the current view.		
Assessment	7. Distil lessons on the effectiveness of this initiative.	Combining all the materials delivered during the previous stages, whereby participants recorded their, impressions of the trip's events, discussions and results, we'll be able to assess how this initiative has (1) changed their baseline impression of PES as a tool, (2) corresponded to their expectations and (3) contributed to a better understanding between practitioner and policy-maker.	Assessment conclusions. **Error! Reference source not found.**

Trip Evaluation Form	
Design:	- What did you consider useful and/or irrelevant for you? - What else would you have liked to have seen/talked about?
Implementation:	- Performance of the organizers and guest speakers/institutions - Logistics (pre-trip advice and information, transportation, hotel and food…)
Outcome:	- Has the trip changed your perception of the possibilities of application in your country? ? in terms of obstacles ? and opportunities - Has the pairing-up of practitioner-policy maker been useful to develop a common understanding of each others role/opportunities in developing PES in your country? Do you think we created the right environment for this to happen?

6.3 List of unanswered questions

Annex 3

Some key questions from the Caribbean which were not clearly and specifically addressed are:
What is the "real" goal of the PES programme?
Are these true markets or imposed and artificial? Are the examples we saw markets or simply PR?
What are the drivers of and catalysts for the process (i.e. is PES merely fulfilling a forestry agenda)?
What were the barriers to creating the PES and how were these overcome?
How is the programme evolving and what is driving this?
What is the enabling policy and legal environment? Not enough information on the relation of PSA with parallel policies, for eg. Agricultural programmes? How PSA relates to Climate change measures in CR, and "how is this a problem for other countries

How was an enabling "culture" (e.g. political will, social will) created?
The way in which the CR PSA works and its impacts is not yet clear enough: What is the impact on livelihoods? What is the impact on the provision of environmental services? Are any of the impacts being monitored? And is the process being adapted according to the ongoing results?
Are key stakeholders participating equitably and effectively in the process?
How is the PES programme being monitored and evaluated?
What is the science behind the programme and is it valid?
When is PES the best strategy and when are they not? it remains to be clear when markets are the best option/when they are not an appropriate me asure;

One of the main questions was where is the best option and when not? We didn't address them.
Are these true markets or artificially imposed?
Are they being delivered? How do we know? Monitoring?
Impacts on poor, on environment?
Who is catalysing the process?
How is it evolving? Random?
Enabling institutional environment?
What generates political will?
Obstacles and barriers to process.
One of the main questions was where is the best option and when not? We didn't address them.
Are these true markets or artificially imposed?
Are they being delivered? How do we know? Monitoring?
Impacts on poor, on environment?
Who is catalysing the process?
How is it evolving? Random?
Enabling institutional environment?
What generates political will?
Obstacles and barriers to process.

More on the benefits that justify this kind of schemes (in terms of impacts on users and providers) but we didn't get that from the trip -they are not readily available in CR, as elsewhere- still he expected more scientific evidence from a prime example as CR;