



Sustainable Livelihoods and Biodiversity in Developing Countries

Direct Payments for biodiversity protection and protecting livelihoods in the Térraba River Basin, Costa Rica

July 28, 2010

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Seventh Framework
Programme (FP7/2007-
2013) under grant
agreement No. 211392

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Foreword

This research project has been conducted within the framework of the LiveDiverse project. The LiveDiverse project is investigating socio-economic, ecological and cultural spiritual vulnerabilities, among other aspects in four case study areas. This report has been written under the supervision of IVM researchers Dr. J.A Bouma and Dr. Dave Huitema. The field research in Costa Rica was conducted with the Universidad Nacional de Costa Rica, led by Dr. Alexander López Ramírez. Dr. Ramírez has acted as external supervisor of this report. The research project is submitted to meet requirements for MSc Environment and Resource Management at the VU, Amsterdam.

Acknowledgments

I would firstly like to thank both Dr. Jetske Bouma and Dr. Dave Huitema for giving me the opportunity to partake in the incredibly interesting LiveDiverse project. I would also like to thank Dr. Bouma for her support during the research project and her valuable feedback as academic supervisor during the writing stage. I would also like to thank Dr. Dave Huitema for his input and suggestions in writing this report.

In addition, I would like to thank the case study partners at the Universidad Nacional de Costa Rica for their role in implementing the data collection phase and for providing valuable knowledge and contacts. The research leading to these results has received funding from the European Community's Seventh Framework Programme [FP7/2007-2013] under grant agreement n° 211392.

Abstract

The Millennium Ecosystem Assessment (2005) found that over the last fifty years, changes in biodiversity due to human activities have been more rapid than at any other time of human history. These changes have resulted in losses in biodiversity, degradation of ecosystem services and exacerbation of poverty for other peoples (MA, 2005). Concurrently, the global population doubled to reach 6 billion in 1999. It continues to rise, estimated to reach some 9.1 billion in 2050 (UN, 2009). This growth puts increases strain on ecosystems. Considering this current trend, the aim of this research is to establish whether direct payments for environmental services can be used as a tool to conserve nature and improve livelihoods in the Térraba River Basin, Costa Rica. It focuses on two villages, Boruca and Sierpe. The analysis is based on a data set collected through household surveys and focus groups. The framework for analysis is provided by the theory and past experiences of direct payment schemes. The results show that a direct payments scheme for conservation is already established in Boruca and the scheme is not affecting the poor of the community. They also show that it may be possible to adopt a direct payments scheme in Sierpe to protect the native clam and fish species from over extraction. Direct payment schemes however do not provide the single golden solution to the environment and development issues concerning these communities. Rather there are trade-offs involved.

1 Introduction

The Millennium Ecosystem Assessment (2005) found that over the last fifty years, changes in biodiversity due to human activities have been more rapid than at any other time of human history. Some have benefited from the conversion of natural ecosystems and the exploitation of biodiversity. However, there have been costs in the form of losses in biodiversity, degradation of ecosystem services and exacerbation of poverty for other peoples (MA, 2005). At the same time, the global population doubled to reach 6 billion in 1999. It continues to rise, estimated to reach some 9.1 billion in 2050 with growth concentrated in less developed regions (UN, 2009). This continued rapid growth will place further strain on global ecosystems as the poorer communities of the world strive to develop.

It is within this wider context of the challenges the global community faces in both achieving sustainable development and understanding the conflicts between sustainable livelihoods and biodiversity conservation in developing countries that the Live Diverse project is situated. The project is conducted in four case study areas, the Greater Kruger Area, South Africa, the Térraba River Basin, Costa Rica, the Ba Be National Park and Na Hang Nature Reserve, Viet Nam, the Warna River Basin, India. The aim of the project is to produce knowledge that will contribute to improving and assessing value-based strategies that promote sustainable livelihoods and the protection and preservation of ecosystems (LiveDiverse, 2009).

To achieve this goal, the project is divided into a number of work packages; within this is Work Package 6 Socio Economic Vulnerability (WP 6). This focuses on two aspects of socio-economic vulnerability, the trade-offs between conservation and development, and agency in multilevel governance. The trade-offs between conservation and development surround the often-tense relationship between biodiversity protection and poverty reduction. It is within this context of socio-economic vulnerability in relation to biodiversity and the trade-offs between conservation and development that this research project is set. The conceptual framework of WP 6 identifies potential approaches to reducing socio-economic vulnerability and protecting nature, including eco-tourism, eco-labelling and payment for ecosystem services. This last approach will be investigated in this report.

For the purposes of this report, the focus is on the Térraba River Basin located in the south Pacific region of Costa Rica. It is an area rich in biodiversity with some parts protected by national parks, reserves and national wetlands. The area faces an increase in the number of poor households whose livelihoods primarily depend on agriculture, livestock, fishery and tourism. Two priority areas in the Térraba River Basin have been identified; the Térraba Sierpe National Wetlands and the territory of the

Boruca indigenous community. The former has been identified as it forms the principle ecosystem in the case study area and is home to communities of considerable size. The latter has been identified as it is one of the chief areas of influence for the huge and hugely significant Diquis Hydroelectric project. The villages of Sierpe and Boruca, located in these priority areas are the focal point of this report.

This report will investigate direct payments for ecosystem services as a potential approach for protecting biodiversity and improving livelihoods in the case study area. The research question is “to what extent are direct payments a feasible option of protecting biodiversity and improving livelihoods in the villages of Boruca and Sierpe?” To do so, it is necessary to establish what the essential elements in implementing direct payment schemes are, and what is necessary for direct payments to protect nature, and improve livelihoods. By doing so, feasibility can be measured in terms of whether these essential elements can be met.

The following sections of the report consist firstly of a literature review, establishing the conceptual framework for analysis. The methodology and limitations for conducting field research are presented in the third section. The results are presented in the fourth section, followed by the discussion and conclusion in the last sections.

2 Conceptual Framework

2.1 Direct payments for environmental services

This report will focus on direct payments for environmental services as a tool to protect biodiversity and improve local livelihoods in the villages of Boruca and Sierpe in the Térraba River Basin, Costa Rica. It will use Wunder's (2005) definition of payments for environmental services: "a voluntary transaction where a well-defined environmental service (or a land-use likely to secure that service) is being 'bought' by a (minimum one) ES buyer from a (minimum one) ES provider if and only if the ES provider secures ES provision (conditionality)" (Wunder, 2005: 3).

Direct payments for environmental services is a broad term and under different schemes it is also known as payments for environmental services, direct payments for biodiversity protection, conservation performance payments, conservation concessions, conservation incentive agreements and conservation contracting (Milne and Niesten, 2009; Ferraro, 2001; Niesten and Rice, 2004).

For the purposes of this report direct payments for environmental services are considered within two contexts. The national Costa Rican Pagos por Servicios Ambientales (PSA) program, administered by FONAFIFO (National Fund for Forest Financing) provides one context. This program is primarily funded by revenues generated from the nationwide fossil fuel tax. It also receives additional funding from the Global Environment Facility under a grant scheme, a loan from the World Bank, a grant from the German aid agency KFW, and individual water users (Wunder and Wertz-Kanounnikoff, 2009). In the current application of the PSA program, four environmental services are included; carbon sequestration, scenic beauty, biodiversity protection and hydrological services (Pagiola, 2008). For the purposes of this study, the focus is on biodiversity protection as the environmental service provided.

Direct payments are also considered within the context of conservation organisations. The reason for this is that experiences of the national PSA program lie primarily with carbon sequestration and watershed protection. In addition, while biodiversity protection does come under the framework of the program, there have been challenges in attaining funding, particularly long term funding for conservation under the PSA program (Pagiola, 2008). In this case, conservation organisations may be able to provide experience and funding in the case study area.

While mounting environmental concerns motivate direct payment schemes, there is growing interest in their potential to provide positive side effects. In particular these schemes are scrutinized for their potential to deliver development benefits and poverty alleviation (Wunder, 2005; Grieg-Gran et al,

2005). In fact, some donors of direct payment schemes are only interested because of their pro-poor potential (Wunder, 2005).

In order to answer the research question, it is necessary to examine the existing literature to determine the essential elements to implementing these schemes. Also, the elements necessary to achieving the primary goal of biodiversity protection and the positive side effect of improving local livelihoods can also be determined from existing literature.

2.2 Theoretical basis for direct payments for environmental services

Direct payments for environmental services are based on the willing buyer-willing seller model, where the sellers deliver the desired conservation outcome in exchange for a pre-negotiated cash or in kind payment (Ferraro and Kiss, 2002). As an approach, they recognize that environmental services (ES), in this case biodiversity, are public goods and as such are not supplied in sufficient quantities by individuals acting in their own interest (ibid). They function under the premise that the costs and benefits of conservation are unequally distributed and this unequal distribution leads to misaligned incentives for conservation (Gjertsen and Niesten, 2010). Their conceptual basis lies in Coasean economics and the idea that problems with external effects can be overcome through bargaining and negotiations. The theorem proposes that 'as long as transaction costs are low enough and property rights are clearly defined, individuals, communities and even supra-national entities would trade their rights away until a Pareto-efficient provision of environmental goods and services has been achieved' (Muridan et al 2010: 1203).

In the absence of a direct payments scheme, the costs of conservation are typically borne by local resource users, who as a result of conservation efforts suffer a loss in both income and foregone consumption of resources. Therefore, the creation of markets for environmental services under these direct payments schemes are a way to resolve the undersupply of these services. As an approach they work by changing or creating incentives for local resource users to conserve biodiversity by making conservation a competitive land use option (Ellison, 2003), and by targeting those with the lowest costs (Jacks, Kousky and Sins, 2008). They function like market transactions; contracts are negotiated for the delivery of a particular service i.e. protected ecosystem, and payments are made by domestic and international actors to the resource protectors, subject to conservation outcomes (Ferraro, 2001; Ferraro and Simpson, 2002).

Direct payments provide an alternative to other instruments such as taxes and subsidies and command and control. As economic incentives, taxes and subsidies aim at changes in broader production and resource patterns (Wunder, 2005). Command and control instruments on the other hand, aim to protect a given resource without the use of economic incentives (ibid). Direct payment schemes operate around the idea of purchasing conservation and are a more direct way of achieving the desired outcome. They are also voluntary and more flexible in nature they above mentioned alternatives. In any given site, a number of instruments may be possible and a decision always has to be made about the most appropriate alternative.

2.3 Essential elements to implement direct payments for environmental services

Studies and experience point to a number of key components that need to be in place if direct payment schemes are to be implemented in any given site. The following provides evidence from literature regarding these key components.

Clearly defined environmental services are required; the feasibility of the conservation agreement depends on this clear definition. Defining these services may require scientific investigation into the linkages between the service in question and the land use in the selected area. In the case of carbon sequestration, the link between carbon sequestration (the desired service) and forestry (land use) has long been understood, however linkages between the desired environmental service and the land use are often assumed without sufficient scientific understanding and biophysical evidence, leading to a inefficient schemes (Wunder, Engel and Pagiola, 2008). For schemes to be efficient, the induced land use changes must result in the desired service, also referred to as conditionality. Conditionality, however, is difficult to measure. By conducting a scientific analysis of the assumed biophysical linkages between the land use and generation of the desired ES, a sound scientific base for the direct payments scheme is provided. Using this information, a baseline scenario can be established which will serve as a point of reference to monitor the delivery of the desired service (ibid). However, conducting such scientific analysis increases the costs of implementing direct payment schemes.

The existence of property rights in threatened ecosystems is a requirement for the success of a direct scheme. Property rights serve to give legal power to the landholder (individual, community or government) providing legal legitimacy and access to financing to undertake the land use changes necessary to generate the desired environmental service. For those without property rights, access to financing is limited and will hamper their participation in these schemes (Lemiona et al., 2009). The key

task of the schemes is to ensure that those who invest in the environmental service have clear, enforceable rights to the benefits of their efforts; whoever is receiving payments for the maintenance of a healthy ecosystem must be secure in her control of it (Ferraro, 2001; Simpson and Sedjo, 1996). In theory, this should also discourage migration; newcomers cannot capture a share of the benefits by simply arriving in a region as they do not hold a conservation contract. If however, property rights have not been allocated prior to the establishment of a scheme the allocation of such can be an expensive and conflict-ridden task subject to manipulation (Sobhan, 1993 cited in Ferraro, 2001). Allocating property rights can pose a serious challenge to direct payment schemes and in the absence of strong institutions to enforce these rights, direct payment schemes will contribute little to ecosystem protection and may be impossible in some cases (Ferraro, 2001).

It is noted that contract design will vary on different sites depending on the particular threats, opportunities, the institutional characteristics (legal, political and social) and the local laws that must be complied with in each case. Practitioners must identify the institutions that are going to implement and enforce the program taking into account that the use of payments implies long-lived institutions and financial support as conservation contracting requires periodic payments and monitoring over time (Ferraro, 2001). In addition, the institutions should be designed to ensure that participating rural residents receive their rightful benefits (ibid). Parties and stakeholders should be defined clearly within the agreement, as should the roles and responsibilities of the parties, the duration of the agreements, and systems of performance monitoring, payments, sanctions and decision-making (Milne and Niesten, 2009).

The performance payments should also be site specific, depending on the local conditions and negotiations. The size of the payment, its form, the frequency with which payments are delivered, the penalties and sanctions when performance standards are not met are decided on through negotiations in the contract design process. The success of a direct payments scheme in attracting the providers of the desired environmental service depends on the size of the payment as long as participation in the scheme remains voluntary. The size of the payment needs to be sufficient to induce the desired land use change and should therefore compensate the opportunity cost of conservation in the face of more profitable yet environmentally damaging activities (Grieg-Gran et al, 2009). Several projects that Milne and Niesten (2009) analysed including projects in Burma, Cambodia Madagascar and Russia included payments matching the opportunity costs of conservation. However, the benefit amount may go beyond the financial opportunity costs; in some cases they are lower in cases where communities already value

conservation benefits, while in others they may be higher, as funds may be needed for patrolling etc. (Milne and Niesten, 2009). Opportunity costs may in some cases be prohibitively high and beyond the budget of the environmental service buyers or conservationists.

Strategic behaviour must be anticipated by practitioners as the promise of payments will encourage some people to; express interest in converting lands that in the absence of payments would not have converted (additionality); convert or harvest from substitute ecosystems that would not have been exploited in the absence of payments (leakage); seek short term conservation projects for the sole purpose of raising cash for making ecosystem degrading investments; seek unusually high rents (Ferraro, 2001). This last issue of landholders seeking unusually high rents brings us back to the aforementioned information about opportunity costs. Here, payment schemes are subject to information asymmetries as landholders have better information than the conservation agent about opportunity costs of supplying an environmental service, leading to a scheme that is expensive to implement (Ferraro, 2008)¹. While there are options for reducing informational rents, they will not eliminate them and may distort the conservation outcome.

The form of the payments could be in cash, paid once off or periodically, or in kind for example, technical assistance, construction of roads, building of schools etc. Under the PSA program in Costa Rica, payments for forest conservation contracts are paid annually over the five year contract period, while payments for timber plantation contracts are front loaded so that most of the payments were paid during the first years to compensate for the high implementation costs; 50% in first year, 20% in the second year, 15% in the third year, 10% in the fourth year and 5% in the fifth year (Pagiola, 2008: 717). Other schemes provide in kind payments, which may be more suitable for some participants. One participant receiving beehives under the Santa Rosa watershed project commented “If I receive cash, I know I will spend it right away. Instead, I want these payments to create something that lasts (Wunder, 2005: 15).” However, there were also opponents to this payments method. Some participants would have preferred cash as they saw beehives as an inflexible asset that required skills and labour, while others would have preferred barbed wire as the in kind payment (Ibid: 16). The nature of the agreements whether they are made with individual landholders (e.g. Santa Rosa watershed project, Bolivia (Asquith et al, 2008)) or with communal landholders (e.g. PROFAFOR and Pimampiro projects, Ecuador (Wunder and Albán, 2008)) will affect the nature of the payments.

¹ See Ferraro 2008 for a discussion on reducing in formational rents from hidden information.

In general, negotiation between buyers and sellers concerning the amount, form and frequency of the payments will play an important role in shaping the scheme. In many cases an honest broker or intermediary plays a role in such negotiations. Indeed, in some cases an intermediary may be required to provide a certain level of trust between buyers or conservationists and service providers. NGOs may serve as intermediaries in some cases, for example, Fundación Natura for Los Negros, Bolivia (Asquith et al., 2008) and CEDERENA for Pimampiro, Ecuador (Wunder and Albán, 2008), while national agencies, for example the FONAFIFO for Costa Rica's PSA program, may serve as intermediaries, often in government-financed schemes. As well as serving contract negotiators, intermediaries may also monitor compliance and make the payments.

A direct payments scheme needs to be appropriately monitored and enforced in terms of performance in relation to targets and compliance to ensure user confidence. Weak or biased monitoring undermines agreements, and makes it difficult to ensure accountability to investors or donors (Milne and Niesten, 2009). In terms of performance, this must be quantitatively defined and monitored over time to determine whether the long-term conservation goals are being achieved. This requires a performance metric or proxy indicator, the exact indicator chosen will be site dependent and based on the practical issues onsite (ibid; Jack, Kousky and Sims, 2008). This monitoring can be carried out by any number of parties including government rangers, local police, community patrol teams etc., and can be seen as an income source for the local communities involved (Milne and Niesten, 2009).

In terms of compliance, providers should be monitored to determine whether they are honouring the terms of their contracts. Ideally this is carried out by an independent third party (Milne and Niesten, 2009). Monitoring could be in the form of site inspections for example, as is the case for Los Negros, Bolivia with a yearly site inspection (Asquith et al., 2008), or site inspections with a satellite imagery for example, as is the case for PSAH, Mexico with a yearly satellite image analysis of forest cover and random site visits (Muñoz-Piña et al., 2008). However monitoring alone cannot guarantee compliance and should therefore be coupled with sanctions for non-compliance. Sanctions adopted in PROFAFOR, Ecuador were severe as offenders are required to payback the payment and land mortgage (Wunder and Albán, 2008), while in Los Negros, the penalty for non-compliance is temporary exclusion from the PES scheme. These sanctions may be difficult to enforce as they may be politically sensitive (Jack, Kousky and Sims, 2008).

2.4 Effectiveness in conserving nature

Direct payments for biodiversity protection have provided a workable strategy to conserve the world's threatened ecosystems (Simpson and Sedjo, 1996). The conservation objective that lies at its very core is, in theory at least, apparent through the entire process; payments received under such a scheme are conditional on the delivery of the desired conservation results, direct compensation is provided in return for biodiversity protection services, while sanctions are imposed in the case of non-compliance (Ferraro, 2001; Gjertsen and Niesten, 2010; Milne and Niesten, 2009; Niesten and Rice, 2004).

One can look to the experience of international conservation organizations in applying direct payments schemes for examples on how they are practically implemented. Conservation concessions have been applied in Guyana, where a 30-year renewable agreement was negotiated with the national government in 2002. The goal is to protect 80,000ha of forest in southern Guyana as an alternative option to logging. Similar conservation concessions to avert logging have been established in Fiji, where forest is leased from indigenous landowners to avoid logging, and Indonesia, where 101,000Ha of rainforest is leased from the government with a goal of restoration and protection. Under these schemes, lease and royalty fees are paid to the landowners by the conservation agent, and in all three cases, money is paid to some form of local trust or fund for local development (Milne and Niesten, 2009). In these cases, biodiversity protection is made possible through negotiated contracts with payments covering financial opportunity costs of the landowners.

To really consider their effectiveness, a closer look at schemes provides an interesting insight. A purchase and lease of permits program was established in the Northern Gulf, Mexico. This was established to protect the endangered endemic vaquita (*Phocoena sinus*) following unsuccessful attempts by the Mexican government to regulate the fishing industry in that area to protect the vaquita and other species (Gjertsen and Niesten, 2010). The incentives the fishermen operating in this area chose under the program included switching gear, full permit buy-outs or compensation for not fishing in the refuge for a year (ibid). These incentives were offered as a short-term option while more permanent possibilities are investigated. These included designs for new vaquita-safe fishing gear and the establishment of micro-credits projects to assist the fishermen in transitioning to other livelihoods (Gjertsen and Niesten, 2010). While these options lessen the impact on the fishermen of banning nets and provide a safer habitat for the vaquita, it remains to be seen whether the program will be successful in protecting the vaquita and indeed provide a long-term solution for the local fishermen.

Academic studies have also investigated direct payment schemes for biodiversity protection. One study investigated the potential of a direct payments scheme to restore pastoralism as a competitive activity in Amboseli National Park, Kenya (Bulte et al., 2008). However, a number of potential obstacles to the success of the scheme were noted. Both leakage effects in the form of the moving the destructive activity to outside the PES zone, and feedback, in terms of payments used to expand livestock, could possibly undermine the success of the scheme in conserving biodiversity (ibid). These obstacles may be generally applicable to direct payment schemes (Wunder and Albán, 2008; Asquith et al., 2008). In addition, complexities relating to the size and frequency of payments may also be problematic. It is uncertain whether complex schemes, for example that requiring payments to different economic agents, or payments that depend on extensive monitoring, can be successfully implemented or have the desired effect (Horan et al., 2008).

Experience and studies indicate that there are challenges facing PES schemes as a method of protecting biodiversity. They imply that to successfully use this approach, the contract should be designed in such a way that minimizes leakage and feedback, and ensures effective monitoring.

2.5 Effectiveness is improving local livelihoods

Under a direct payments scheme, the role of residents becomes that of collaborator where it was once adversary. While improving local livelihoods is never the primary objective of a direct payments scheme, many programs have additional side objectives, which include poverty alleviation, regional development and employment creation (Wunder, Engel and Pagiola, 2008). As such, direct payments, in whatever form they take, have the ability to:

- a) improve cash flows of participants and provide a store of wealth, adding to the household budget and reducing their exposure to risk (Ferraro, 2001)
- b) ensure that financial transfers stay in the region (ibid)
- c) provide economic benefits to participants by offering alternative jobs and improvements in human welfare through health or education investments (Niesten and Rice, 2004)

In addition, these schemes, as opposed to previous conservation programs, do not deny the poor or indigenous people involved in the scheme the right or ability to earn a living (Ferraro 2001).

For the schemes to have a positive effect on the poor, the poor must be able to participate in the schemes. As with any other participant a number of conditions must first be met. However, these

conditions may be more problematic for the poor to satisfy than the non-poor (Pagiola, Arcenas and Platais, 2005; Wunder, 2008; Grieg-Gran, Porras and Wunder, 2005).

For all participants, tenure of land must be secure, and the land must be capable of producing the desired environmental service. Security of tenure does not necessarily have to be in the form of formal land titles but without control over land it is impossible to guarantee the delivery of any environmental service (Pagiola, Arcenas and Platais, 2005; Wunder, 2008). The security of tenure criterion already excludes billions of poor people, both the urban poor and the rural landless from participating in direct payment schemes.

Participants must have access to both the capital to meet the investment costs necessary under some programs and the skills and technical assistance to implement the necessary changes. This is already problematic for poorer landholders, however it can be overcome by adapting the payment schedule so that it is front-loaded, thereby taking these financial constraints of poor landholders into account (Pagiola, Arcenas and Platais 2005; Wunder, 2008).

Transaction costs cover negotiation, contracts, monitoring, and enforcement costs. They often form a hindrance for participation of the poor; working with many small landholders results in high transaction costs. These costs have to be borne by the participants. To keep transaction costs low, it is often more desirable to enrol a small number of large landholders rather than many small landholders. By doing so, poorer landholders are almost automatically excluded. To overcome this obstacle and incorporate poorer landholders, a low cost program, with an option for small landholders to join collectively, could be designed from the early stages (Pagiola, Arcenas and Platais, 2005; Wunder, 2008).

Wunder, Engel and Pagiola (2008) found that poor participants in four schemes (running in Bolivia, Ecuador and France) experienced some welfare gains in the form of higher or diversified income as a result of their participation. These programs were not targeted at the poor, although poor landholders had satisfied the necessary conditions in order to participate. The welfare gains indicate that targeting the poor explicitly is not a necessary condition for direct payments to benefit them, but at the same time assumes that poor people are in the desired environmental service supply areas (Wunder, Engel and Pagiola, 2008).

Landell-Mills and Porras (2002) expressed concern that PES schemes could induce powerful groups to force out small landholders, taking control of their land, in the absence of secure property rights. However, Wunder (2008) found that participation actually increased smallholder land tenure security rights in relation to neighbours and squatters in some Latin American schemes, although it is

noted that PES gains are not large enough to really attract the interest of the powerful. In addition to consolidation of land tenure, social institutions may also be strengthened (Wunder, 2008; Grieg-Gran et al., 2005).

Regarding Costa Rica's PSA, Miranda, Porrás and Moreno (2003) and Zbinden and Lee (2005) found that large farmers dedicated to labour intensive and land intensive agricultural activities and forest owners are disproportionately represented in Costa Rica's PSA program. They also found that participants, on average, were better educated, urban dwelling, had higher farm incomes and had more income from non-farm sources than non-participants (Zbinden and Lee, 2005). On the other hand, however, out of the PSA recipients in the Osa peninsula that were under the poverty line, half of them were found to be lifted out of poverty through their participation in the scheme, and the payments amounted to 44 per cent of the primary household income (Muñoz, 2004 cited in Wunder 2008). On a nationwide level, Wunder, Engel and Pagiola (2008) found that Costa Rican PSA program, has an impact on poverty reduction but the extent of the impact is unknown.

In the case of poor non-participants, direct payment schemes may have varying effects. It was noted by Kerr (2002) that the livelihoods of the landless poor-the women and herders who are non-participants in PES programs and who often depend on gathering non-timber products from forests-may be harmed if PES conditions limit their access to forested land. Grieg-Gran et al. (2005) also noted that the poor landless labourers are also likely to be negatively affected by a PES scheme in the case of reduced rural activity levels, but added that these groups may in fact benefit in the case of increased employment derived from tree plantation or agro-forestry schemes.

Generally, direct payments offer a new income source in often cash-poor areas with low diversification, and the cash flow is potentially more stable than common alternative sources, such as cash crops with heavily fluctuating output prices, when the schemes are well-administered and continuously funded (Wunder, 2008; Pagiola et al., 2005).

2.6 Summary

This chapter has established (i) the essential elements that need to be in place or dealt with in order for direct payments for environmental services to be implemented as a tool. It has also identified (ii) the elements or potential obstacles affecting the effectiveness in conserving nature. Lastly, it has identified (iii) the elements required for improving local livelihoods.

In relation to (i) the following elements were identified as necessary for the application of direct payments in any given site:

- an indication of financial opportunity costs,
- clearly defined environmental services,
- the existence of property rights,
- an indication of the form, size and frequency of payments,
- monitoring and enforcement options,
- an indication of transaction costs
- identification of conservation agent, service provider, administrator/funding provider.

In relation to (ii) the evidence has shown that there should be no leakage or feedback in an effective scheme. In addition, there should be adequate monitoring. Finally, in relation to (iii) experience has shown that the poor should be able to participate, tenure should be secure and there should be low transaction costs.

3 Methods and Limitations

3.1 Methodology

The conceptual framework identified the essential elements to implementing a direct payments scheme.

The following will be used in the analysis:

1. an indication of financial opportunity costs
2. clearly defined environmental services
3. the existence of property rights
4. an indication of the form, size and frequency of payments
5. monitoring and enforcement options
6. an indication of transaction costs
7. the identification of conservation agent, service provider, administrator/funding provider.

These elements will be discussed in turn to establish the feasibility of using direct payments schemes in the case study area. Feasibility is determined by the whether these essential elements can adequately dealt with in the case study area.

In addition, in order for direct payments to have an impact on biodiversity protection, the conceptual framework established that there should be no leakage or feedback, and there should be adequate monitoring. These elements will be discussed. Regarding the improvement of local livelihoods, the elements already identified in the conceptual framework will be discussed; poor should be able to participate, tenure is secure and low transaction costs. The level of effectiveness of direct payments in conserving nature and improving local livelihoods is determined by whether these elements can be provided in the case study area.

In order to collect the information necessary to determine the feasibility of using direct payments and evaluate the potential to protect nature and improve local livelihoods in Boruca and Sierpe two methods were adopted. Firstly, a household survey was conducted using a 10 per cent representative sample in the villages of Sierpe and Boruca. To avoid selection bias, a random selection of households was used. The household survey was used to establish monetary incomes of the locals, the number of landholders and their use of land and the relationship with nature.

In addition, a participatory step was used whereby locals were invited to participate in focus groups, facilitated by the case study partners. Three focus groups took place, the first one in Boruca organised by the president of the Grupo del Flor on behalf of the case study partners. Two took place in Sierpe, the first one with the boteros (boat captains) in Sierpe organised by a number of boteros. The final focus group was with the piangueros association (association of those collecting pianguas (clam like

shell fish, *Anadara tuberculosa*)) and was organised by the president of the association, again on behalf of the case study partners. Discussions from these focus groups led to an outline of what the locals perceive as environmental problems, the issues associated with these problems and possible solutions. As there were two focus groups in Sierpe, the notes from both groups were compared to establish the repeated themes in relation to environmental problems and associated problems. These repeated themes are presented together in the results for use in the analysis. A small number of possible solutions arose from both meetings. These are presented together in the results.

Collectively, this information was used to evaluate the direct payment scheme in Boruca, and establish the feasibility of implementing a direct payments scheme for Sierpe and possible options for this scheme.

3.2 Limitations

3.2.1 Boruca

There are a number of limitations associated with the data gathered in Boruca that have been identified and acknowledged. Firstly, for operational reasons, the survey was implemented in the village of Boruca with a total number of 260 households, which in itself is the largest village in the district. The district of Boruca however is quite large, and the population dispersed. We observed farmland, forested land, palm plantations, a group of people with a large number of saplings, another group with a pickup laden with timber, and homes and settlements on the two days that we travelled on the 8km unpaved road leading from the highway to the village. It would have been interesting therefore to have had the resources to include a larger sample size to understand better the district. When the data collected established that there already is a direct payments scheme in operation in Boruca it became even more apparent that a larger sample size would have added significantly to the analysis, perhaps providing enough data to make an evaluation of the current scheme.

Also, there were occasions when the respondent did not know the size of the land they were working or the production levels. This was an issue that not only arose in Boruca, but rather it was encountered in all villages where the survey was implemented. The outcome was a loss of information in these cases, taking somewhat from the results.

In addition, the focus group in Boruca only attracted a small number of residents, despite preparations and discussions with the Grupo del Flor to arrange a suitable date and time. While the

focus group was interesting and insightful, out of the small number of residents that attended, only two people engaged in the discussion. These were the president of the Grupo del Flor and another younger member. This meant that the meeting was less of a focus group or a free flowing group discussion, despite the best attempts of the case study partners, and was more of discussion session fuelled by questions from the research team. This detracted considerably from the opportunity to understand better the village on a wider community level.

Also, the administration of the funding received by the AIDRI de Boruca de Buenos Aires (Asociación de Desarrollo Integral del Territorio Indígena) under the PSA program remained unknown. Despite numerous attempts, it was not possible to make contact with the AIDRI de Boruca de Buenos Aires to enquire directly about how the funds are spent. FONAFIFO could not provide an insight into this either. This may be due to its sensitive nature. It is the legal right of the association to administer the funds as it sees fit, and beyond the control of the FONAFIFO. This took somewhat from evaluating the effectiveness of the PSA scheme in place in protecting biodiversity, but more relevant here, the effectiveness of improving local livelihoods.

3.2.2 Sierpe

In Sierpe there were a number of limitations associated with collecting the data. As in Boruca, for operational reasons, the survey was conducted solely in the village of Sierpe. Sierpe is a large district, and within the wetland, which is of particular relevance here, the inhabitants are quite dispersed, with some homes only reachable by boat. While we did meet some of these community members at the focus groups and learned a great deal from this meeting, there were elements about the livelihoods of the households in the wetlands that we did not experience and therefore document. This also meant that the household survey data does not correlate with the information collected at the focus groups. Also, none of the respondents of the survey had agricultural land. This was unexpected as it was thought that the household survey data would be representative. This is most likely due to the sample size. Given the fieldwork restrictions however, it was useful to at least have the opportunity to understand somewhat better the issues in the wetlands by conducting these two meetings.

4 Results

The results are presented in the following manner: firstly the village is presented, followed by the household characteristics in terms of the number of landholders, use of land, local incomes, and the relationship with nature and livelihoods. The results from the focus groups will be presented in the following order: the perceived environmental problems, associated issues and possible solutions. Finally, the feasibility of implementing a direct approach will be presented and discussed, followed by an evaluation of the potential for improving local livelihoods and conserving nature.

4.1 Boruca

4.1.1 Village characteristics

The village of Boruca is located in an indigenous reservation in the district of Boruca. It lies in the mountainous region between the Pacific coast and the Parque Internacional La Amistad in the south of Costa Rica, near the border with Panama. The area surrounding the village is covered in some parts with forest, both primary and secondary, and used for farming and plantations in other parts. The forests provide habitat for flora and fauna, and also carbon sequestration and watershed protection services.

The village is accessible by an unpaved road. The main source of income in the village comes from making and selling artisanal products to international and Costa Rican tourists and the fair-trade indigenous art gallery, Galería Namu, San José. These artisanal products consist mostly of masks crafted from wood by the men, and textiles woven and dyed by the women. The income derived from selling their products fluctuates month-to-month depending on how many items are sold.

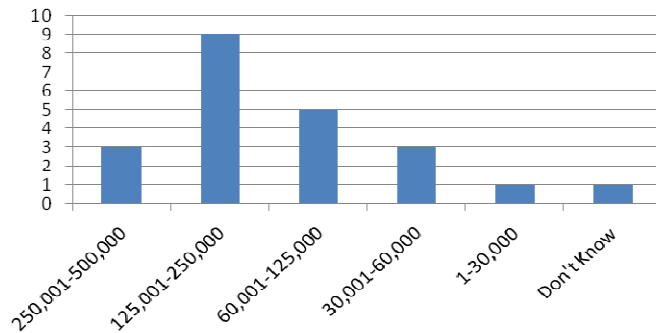
In addition, the community have access to the following facilities: electricity, water supply, school, Ebaís (health service), micro credit COOPEBRUNKA and a shop for basics.

4.1.2 Household survey

The data collected from the household survey, and a total of 22 households, revealed the following information. Figure 1 shows the number of households earning within each income bracket on a monthly basis. It expresses only the monetary income. It is interesting to note that the lowest earners worked in the tourism and crafts sector and the agriculture and livestock sectors. These households either had small plots of land that they used to grow beans, rice or maize, or had no agricultural land. The highest earners worked in the public sector or received a salary plus a pension from another sector.

Interestingly here, these households also had small plots of land that they too used for subsistence farming or had no agricultural land. Of the households surveyed, 59% (13 households) worked in tourism and crafts. 18% of households (4) worked in agriculture and livestock. 13% of households (3) worked in the public sector. 5% of households (1) had no working income, their income coming from a pension or child allowance payments. The remaining 5% of households (1) worked in an unlisted sector. (For reference purposes, the highest income bracket CRC 250, 001- 500,000 equates to approximately US\$ 458- 910. CRC 125, 001- 250, 000 equates to approximately US\$ 230- 455. CRC 60, 001- 125, 000 equates to approximately US\$ 112- 227. CRC 30, 001- 60, 000 equates to approximately US\$ 57- 109. The lowest income bracket, CRC 1- 30, 000 equated to less than US\$ 54.)

Fig. 1 Number of households per income bracket, Boruca

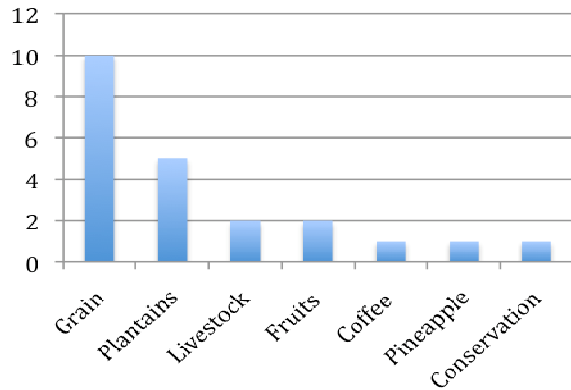


The data collected from the household survey revealed that 55% of the households (12) surveyed had agricultural land. Out of this 55%, 75% (9) responded that the land was privately owned, 8% (1) responded it was communal and 17% (2) responded that it was family land. 75% (9) farmed on 4Ha or less. Figure 2 shows a breakdown of the land use of these landowners. It indicates the subsistence nature of agriculture in this community; 83% of respondents (10) reported producing grains, referring to producing subsistence crops, namely maize, beans and rice. In this sense, it supplements the monetary income for the respective households. It also suggests that a significant number of respondents supplement their monetary income with subsistence farming. All of households surveyed with the exception of one grew more than one crop.

Interestingly, of those respondents with use of agricultural land, 8% (1) were receiving payments for conservation under the nationwide PSA program, showing that this community is already participating in a direct payments scheme. Although it is a low number relative to the number of households surveyed, this is an important finding for this report. While fieldwork restrictions allowed for

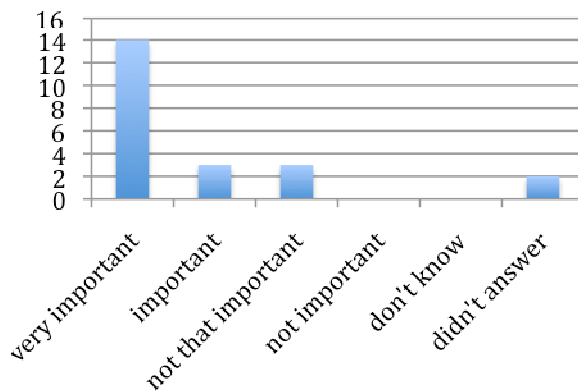
only a 10% representative sample in the village of Boruca, it will provide a basis for analysis in subsequent sections.

Fig.2 Number of households by land use, Boruca



95% of the households (21) surveyed collect products from nature, mostly consisting of fruits and vegetables for own consumption. Figure 3 shows the relative importance of these products to the households, suggesting that most households supplement their monetary income with these products. Out of these households that collect products from nature, 30% said these products were collected from a protected area².

Fig.3 Importance of collecting products from nature to households



² One respondent, surveyed on 6 May 2010, explained that the indigenous people have the right to harvest a certain number of trees per hectare. He did not specify how many.

4.1.3 Focus group

4.1.3.1 Environmental problems

Regarding environmental problems present in the area, water contamination was the first problem mentioned. According to Sr Randell Fernandez, this is due to population growth and the construction of houses close to the rivers and mountain streams. It was also noted that agriculture is not that important in Boruca and that it is subsistent in nature. This means that there are few agrochemicals present in the ground.

Rubbish from the increase in commercial products generating a lot of plastic waste in the village was mentioned. A rubbish van does come to the village every two weeks and while a recycling campaign was initiated, it did not take off.

It was also mentioned that deforestation has resulted in a decrease in access to natural dyes used in traditional art. There is some reforestation activity under a village project, and different crops have been sown. Access to 'balsa' wood for use in carving traditional masks is not difficult although the artisans now have to buy the wood.

4.1.3.2 Associated problems

The president of the Grupo del Flor explained that the Indigenous Reserve is a protected area made up of 14 hectares. Individuals do not generally hold land titles and therefore cannot get loans from the bank. It was noted there are not many people who have land titles, but out of those that do, some receive payments for environmental services (under the PSA program) every six months and do not need to sell artisanal products in order to make a living.

4.1.4 A direct payments scheme for Boruca

The results of the household survey, and focus group revealed that a direct payments scheme under the national PSA program was already in place. While these payments do not cover the perceived environmental problems in the village, the scheme can be evaluated in terms of its effectiveness in improving local livelihoods and conserving nature.

The type encountered while carrying out the household survey was the private ownership type of direct payments under which 8% of landholders surveyed received payments from FONAFIFO under the national PSA program, actually corresponding to one recipient out of those surveyed. The amount

received is US\$60 per hectare per year, and equates to approximately CRC34, 000 (personal communication with recipient Fernandez, 6 May 2010). This particular recipient is receiving payments for conservation.

In addition, further investigation revealed that there is another type of direct payments scheme, a communal type, applying to the district of Boruca. In 2008, the AIDRI de Boruca de Buenos Aires (Asociación de Desarrollo Integral del Terretorio Indígena de Boruca) received a payment of US\$230,560 (CRC130, 696, 191) for the protection of 720.5 hectares of land. The association, which also administers the funds, began receiving payments in 2003 when there were 570.70 hectares in the program (FONAFIFO, 2010). In respect to these funds received by the AIDRI de Boruca de Buenos Aires, it remained unknown to the author about the way in which these funds are administered by the AIDRI (see limitations, section 3.2.1). The payments received by the AIDRI for the 720.5 hectares works out at considerably more per hectare than the payments for private landholders; it totalled US\$320/ha (CRC181, 396) in 2008 (FONAFIFO, 2010), however, without knowing how these funds are administered, it is impossible to evaluate this payment in terms of improving local livelihoods for the village of Boruca.

In terms of the opportunity costs of the respondent who receives payments under private ownership, it is fruitful to compare this amount of the payment in relation to the potential amount of money generated from agricultural activity as a land use option. In the area, the agriculture land is mostly used for subsistence farming. If this payment of \$60/ha/yr is compared with subsistence farming, it would most likely cover the opportunity costs of producing subsistence crops. Some respondents do grow coffee, and it is interesting to make a comparison with this cash crop. The amount received, US\$60/ha/yr, is comparable selling approximately 32kg/ha/yr coffee on the Buenos Aires market. This amount of coffee is well below the national average for coffee production of 1.484 MT/Ha in 1998 (FAOSTAT Data cited in Larson, A., 2000). Coffee is among the most profitable agricultural products in the area, after beef according to the Ministerio de Agricultura y Ganadería³, suggesting that the size of the payments is significantly below the financial opportunity costs of using the land for growing coffee.

This raises the question of why this landowner decided to partake in the PSA program. It was highlighted during the village meeting that agricultural activity is for subsistence. The speakers at the meeting and private payment recipient both spoke of the belief in the existence of Mother Earth and that she must be taken care of. Also, there is the issue of whether the clearing of forest for agricultural purposes is a real option for this community in the first place, or whether the land would have been

³ Information collected directly from the Ministerio de Agricultura y Ganadería office in Buenos Aires in May 2010.

conserved anyway in the absence of payments. Taking in to account the size of the payments, there are two possible reasons for participation; either the participant has included the benefit value of conservation as a factor for partaking in the program, or it was not his intention to convert the land in the first place. If the latter is the case, the participation of this household provides no additionality, and is therefore an efficient payment.

4.1.4.1 Effectiveness in conserving nature

Although there are no data from either the household survey or the village meeting to quantitatively evaluate the effectiveness of the PSA program in protecting biodiversity in this case, the requirements identified under the conceptual framework can be applied. In terms of leakage and feedback which both pose threats to the successful attainment of conservation goals, the case of private ownership, the data from household survey showed that all land was devoted to conservation and therefore there was no place to move any destructive environmental activity. Considering however, that the sample size is 10 per cent of the Boruca village, it may be the case that others participating in the PSA program have not included all of their land. It is therefore possible that there has been some leakage or feedback effect.

In terms of monitoring and enforcement, these requirements are provided by FONAFIFO under the PSA program. Although it is outside of the scope of the project to evaluate the effectiveness of monitoring and enforcement under the PSA program, it is assumed that effective monitoring and enforcement are provided under the program. Successful monitoring and enforcement of the rules will in turn contribute to attaining the desired conservation goals.

4.1.4.2 Effectiveness in improving local livelihoods

In relation to the private ownership recipient, the US\$60/ha/yr (CRC34, 000) received averages to a total of US\$120 (CRC68, 000) per month. This equates to half of the monetary monthly income of the household at the lower end of the income bracket, and a quarter of the households' monthly income at the higher end of the income bracket⁴, contributing a significant amount to the households' budget. The survey results already showed the recipients are relatively well off in their community, earning within the top income brackets of those surveyed.

⁴ Average conversion rates for previous twelve months used. <http://www.oanda.com/currency/historical-rates>. Retrieved on 23 June 2010.

On the village level, this sum, US\$60/ha/yr (CRC34, 000) is also greater than or equates to total monthly income earned by 18% of the households surveyed suggesting that these payments are significant in the community context, although it is important to keep in mind that the stated figures do not include non monetary income derived from subsistence farming and collecting products from nature. In terms of the lower income groups in this community, the data from the household survey shows that 41% of households earn less than CRC125, 000 monthly, and in total, 18% earn less than CRC60, 000 monthly.

Of this 18%, 75% have agricultural land, either private or communal/family which they use for subsistence farming, and the remaining 25% have no agricultural land, actually corresponding to the poorest respondents surveyed in this community. Based on the survey results, it seems that 50% of the poorest households, earning less than CRC60, 000 a month, rely on the inconsistent wage earned through selling artisanal products, and the remaining 50% earn their income in the agriculture and livestock sector. These factors suggest that while the payments are significant to the participants' monthly monetary income, the program does not improve the livelihoods of the poorer community members. The results show that these community members do not have land necessary to partake in the program.

4.2 Sierpe

4.2.1 Village characteristics

The village of Sierpe is located on the river Sierpe, in the district of the same name. It is in the south west part of Costa Rica near the ocean. It is a low-lying area surrounded by the Térraba- Sierpe national wetlands. These wetlands contain the most significant quantity of variety of mangroves in Costa Rica, and an ecosystem of great biological diversity providing subsistence to those inhabiting the area. It also provides habitat for numerous tree, plant, insect, animal, and bird, terrestrial and marine species. The area is increasingly becoming a tourist destination.

Among the highest paying jobs in Sierpe are jobs in tourism. A tourist guide earns US\$60 per tour, which amounts to approximately US\$1,000 (CRC566, 864) monthly. A boat captain earns US\$30 per trip, approximately amounting to US\$350 (CRC198, 402) monthly. Agricultural workers earn between US\$280 (CRC158, 402) and US\$400 (CRC226, 745) monthly. Fishermen earn approximately

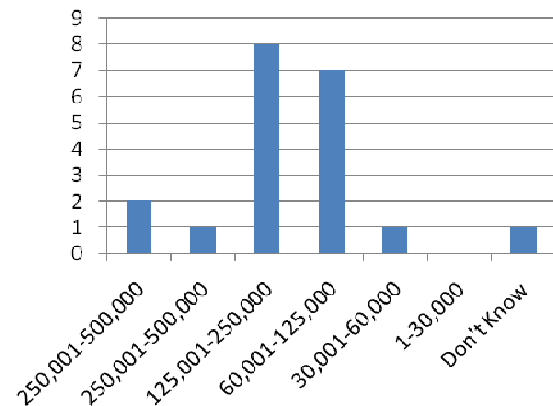
US\$600 (CRC340, 118). A pianguero earns 32 colons per piangua and picks anything between 100-500 pianguas daily, amounting to between 320-16.000 colons daily.

In addition, the community has access to the following important services; public health service, with a clinic and full time doctor located in the village. The village also have a public school, electricity and drinking water supply.

4.2.2 Household survey

The data collected in the household survey from a total of 20 households in the village of Sierpe, revealed the following trends. Fig. 4 below shows the number of households earning within each income bracket on a monthly basis (see section 4.1.2 for an approximation of these values in US\$). It is interesting to note that the lowest earners were pensioners, while the highest earners were also pensioners or pensioners plus a working household member (worked in ‘other’ sector).

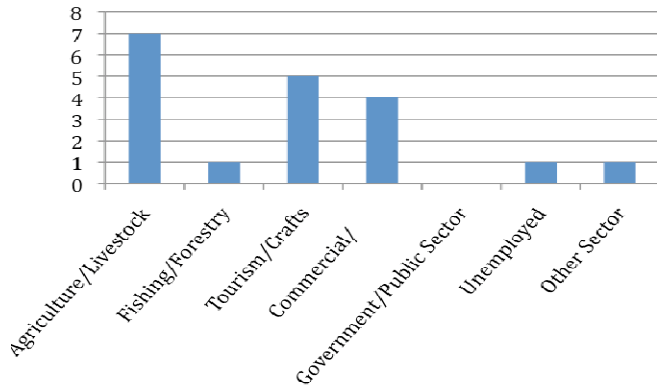
Fig. 4 Number of households per income bracket, Sierpe



A breakdown of the sectors in which the households surveyed earned their income (Fig. 5), shows that the agriculture and livestock, tourism and crafts and commercial and construction sectors are the most important sources on income for those surveyed. It is also interesting to note that 10% of households (2) earned in two sectors and that a total 20% of households (4) had no working income, receiving their income from pensions (15% of total households) or relying solely on child allowance payments (5%).

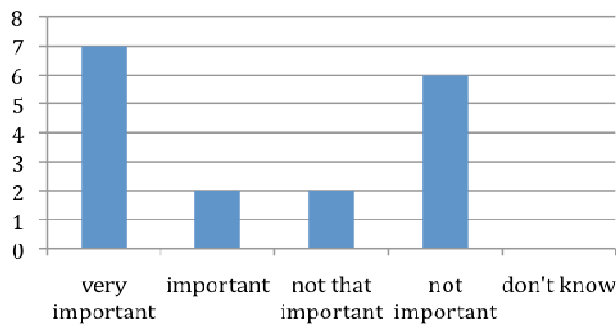
Interestingly, no household had agricultural land. 20% of households (4) kept poultry, 75% of households (3) kept them for private consumption, while the remainder also sold the eggs.

Fig. 5 Number of households working in each sector, Sierpe



Regarding collected products from nature, 85% of households (17) reported that they collected products from nature mostly including fruits, fish and shellfish for personal consumption. Fig.6 shows the relative importance of these products to the households, suggesting that at least 53% (9) of these households supplement their monetary income with these products. Of these households, 18% (3) reported collecting these products from a protected area.

Fig.6 Importance of collecting products from nature to households



4.2.3 Focus group

4.2.3.1 Environmental problems

From the meetings with both the boteros and the piangueros the following environmental problems were identified.

A change in the river was an issue of concern. One aspect is the change in the river due to sediments, for which collectively the following reasons were given; the PINDECO pineapple plantations,

the clearing of the land and burning for the development of agriculture, namely rice and the construction developments in Ballena Marine National Park. The effects of sedimentation cited by the groups are:

1. Riverbed is shallower than it was before; the Térraba River was navigable from the river mouth to Cortes, but that is no longer the case.
2. There is a large amount of sediments in the river during the rainy season. Some areas are now filled with sand and sediments; it is no longer possible to pick pianguos there.
3. There is now a thick layer of mud affecting the fish. This affects both the food supply for the fish and also the presence of predatory tilapias. This species is compared to piranhas, eating other species and don't allow the remaining species to reproduce and grow.
4. Fish cannot come as far as the mangroves any more to reproduce and feed as they used to in the past.

There is more traffic on the river over the last 15 years, since the rise in tourism and this transit has had a visible impact. People used to navigate in with small motors but now they are considerably larger, contributing to the erosion of the land and the mangroves. It was mentioned that the river has 'eaten' more than 60 metres of the riverbank in Juntaderas because of the erosion, partly due to motors.

The river also has more agrochemicals present than previously. There are three reasons cited; agrochemicals washed down river from the pineapple plantations, agrochemicals dispersed by light aircraft that pass over the river, and also chemicals from the shrimp farms. The effects of chemicals are given as damage the river, the animals and the pianguas.

There has been a decrease in the number of pianguas that are picked according to the majority. It was noted that from 2005 to the present, 1.600.000 were picked, while in the past 20.000.000 were picked. An increase in the number of piangueros and purchasers is seen as the main problem.

These environmental problems identified during the aforementioned meetings were compared with the working paper "Biophysical, social, economic and productive diagnostics and institutional analysis" (Documento de trabajo para el Plan de Manejo del Humedal Nacional Térraba - Sierpe: Diagnósticos biofísico, social, económico, productivo y análisis institucional; Sierra, Castillo and Arguedas, 2007). The paper was compiled for the management plan for the Térraba-Sierpe Wetlands. The purpose of this was to verify if these were identified as environmental problems under the management plan.

These problems relating to presence of sediments, agrochemicals and over extraction of pianguas are indeed recognised. In addition a number of other threats to the ecosystem are included:

- Reforestation resulting in the loss of biodiversity and biological connectivity.
- The conversion of land to other purposes namely monocropping (rice), raising livestock and shrimp farming.
- Over fishing.
- Eutrophication and hyper nitrification as a result of an increase of solid and liquid domestic waste in the river,
- Waste from aquaculture.

4.2.3.2 Associated problems

A major issue raised by both groups is the lack of institutional support; the government laws and rules are noted as being unclear and the MINAE (Ministerio de Ambiente y Energía) do not enforce the laws fully or consistently. It is noted that the MINAE used to protect 50 meters from the riverbank, as the law stipulates, but now, their presence is not felt, and rules are regularly broken. In addition, the restrictions imposed by the MINAE on designated fishing grounds mean that only the big boats with the necessary equipment are able to fish. The designated fishing grounds are pushed out to sea and the small fishers do not have the means to fish there. In addition, it emerged from the focus group that currently the number of piangueros stands at 200 however only 78 out of 200 have licences. In Cortés, there are five purchasers, but the participants at the focus groups suggested that probably none of them have permission.

Some people are receiving pockets of land from the Instituto de Desarrollo Agrario (IDA), while on the other hand rich people are buying up the land from these small landholders and planting rice fields. The feeling among the participants at the focus group was that many households with small pockets of land do less damage than the few people who plant rice in 200ha.

The management plan made by the MINAE for the wetlands, although not yet in operation, was discussed. It emerged from this discussion that while the community was involved in the development of the management plan, changes were made to it without consulting the community. A halt to fishing and to collecting pianguas as an economic activity has been put forward under the management plan; the government doesn't want either fishing activity or collecting pianguas within the mangroves. It was noted however at the focus groups that the economic support offered by the government to stop these

activities, 20 million colons, is not enough to maintain all those involved. It was put forward at the focus groups that such a management plan would require the government to propose an alternative activity for those working in the sector to provide a balance between conservation and development.

The lack of employment opportunities for the locals was also noted and the need for a plan 'B'. It was suggested that strengthening national tourism may be a good option (there is a plan for a new airport in the region, which brings mixed feelings). The participants at the focus groups identified about 80% of the community as being affected, either directly or indirectly, by tourism and directly, about 40% of the community works in tourism. During the high season for tourism in the area, there is more of an interest in conserving nature, but during low season, which lasts approximately four months, this interest diminishes and people turn to nature to meet their basic needs of finding food and generating income. Some people resort to fishing with trammel nets despite the fact that it is not permitted due to its destructive nature.

A closely related issue is the influx of people from outside of the community who come to the area. From the focus groups the general feeling was that these migrants occupy local jobs; they learn the trades from the locals, conduct these trades, including tours without permits (the locals are required to have the necessary permits and documentations), and picking pianguas without permits often ones that are too small and haven't finished their growth cycle. This problem has increased in the last 2-3 years. If the plan for a new airport is to materialise, according to the participants this problem would be greatly exacerbated, as would the sediments problem due to increased construction in the area, and increase the impact on the environment, especially the river.

4.2.3.3 Possible solutions

The following possible solutions were mentioned to overcome these issues. One solution presented was to gain access to training. Also, it was suggested that they need information and help to integrate the members of the community and organise themselves into a cooperative or some form of group in order to make progress and prosper. Another suggestion came from an attendee at the pianguero meeting; she doesn't want the government to stop the activity because they (the pianguero community) don't know anything else other than picking pianguas. Rather, they could get involved in tourism giving tours about picking pianguas and that they need a night school or a college to learn something else, something different. It is also suggested that the locals need support in order to effectively control piangua collecting and look after the pianguas.

4.2.4 A direct payments scheme for Sierpe

The results from the household survey and village meetings suggest that a direct payment for biodiversity protection scheme may be an option in the case of the piangueros and fisherman in Sierpe. While wetlands are generally abundant in biodiversity, the piangueros and fisherman are specifically considered for protection because of the importance of these activities to the local economy and the noted decrease in stocks. In addition, offering a direct payments scheme may be a possible solution to getting the management plan for the wetlands out of its current state of limbo regarding this particular issue; it is the strong desire of the government to curtail such activities but a suitable alternative for those engaged in these activities has not been supplied.

To understand the feasibility of implementing a direct payment for nature conservation scheme or payment for environmental services scheme under the PSA program as an option for improving local livelihoods and conserving biodiversity, it is necessary to go through a number of criteria and issues as outlined in the framework.

In terms of financial opportunity costs relating to picking pianguas, piangueros receive a payment of 32 colons per piangua and can pick between 100-500 daily. At the lower end (100 pianguas daily), this amounts to a mere CRC3, 200 daily or approximately US\$5, considerably less than the agricultural and construction workers, who are among the lowest earners in this community, even if piangueros work 30 days a month. At the higher end (500 pianguas daily), this amounts to some CRC16, 000 daily or approximately US\$28, comparable to a boat captains salary of US\$30 per trip, greater than a fishermans salary if pianguas are collected 19 or more days a month, but still less than a tourist guides salary of US\$60 per trip.

In relation to the payment size and form there are a number of options to consider. The payment, of course, needs to be of sufficient size to dissuade the participants for engaging in the undesired activity, in this case collecting pianguas. The financial opportunity costs outlined in the analysis are between US\$5-28 a day. It was noted previously, that a number of suggestions came to the fore during the meeting with the piangueros. It has already been suggested that a night school, or education service for those involved in these activities to learn another way to earn a living. In practical terms, this could entail English classes for those who wanted to pursue the suggestion of giving piangua-picking tours to tourists, or it may entail training as a tourist guide or tourism related activities in the

area. In offering training or educational services, it would be necessary to consult with those wishing to participant to establish a training service that meets their needs.

An additional option, coming from the meeting with the boteros could also be obtaining a land parcel from the IDA. This would of course require considerable negotiations with the IDA to establish a suitable agreement. The benefit of such a land parcel is that it would provide equity with which to obtain a loan. A major question here really is what would the people do with these land parcels? It was already noted that some of the community received land from the IDA, but sold to the rice farms, essentially adding to the environmental degradation in the wetlands and surrounding rivers. It is therefore important to consider the land use possibilities in terms of the environmental and economic consequences of making more land available to the local piangueros instead of to the rich rice growers.

Another alternative, although not mentioned by either group, is for a buyout of either the equipment used by piangueros or the permits issued, or even both in conjunction. This alternative has been successful in the Northern Gulf, Mexico (Gjertsen and Niesten, 2010) and may in fact be possible option here. The drawback in this case is that it does not offer an alternative means of generating income; rather recipients rely on this buyout payment. In this case it may be used alongside either of the aforementioned options. The possible program may include all of these options, out of which participants chose the incentive that works best for them, offering them more diverse alternatives, and hopefully encouraging the participation of many.

In considering the use of either scheme, it is necessary to bear in mind the importance of whether the agreements should be made with the community of piangueros or with the individuals. This aspect will affect the transaction costs, which would be lower if the agreements are made with the community. This would be a possible option for the piangueros, considering that there already is a pianguero association that could most likely play a key role in negotiating the agreements.

Two major issues need to be overcome in order to implement an efficient and effective scheme: strict enforcement of rules to stop the currently illegal nature of much of the pianguero activity (only 78 piangueros out of 200 have permits) and second, regulation or control on the migration to the area. The first issue is largely a question of suitable monitoring and enforcement of rules in the area. It has already been widely noted from the village meetings the lack of MINAE presence, the unclear rules, and lack of enforcement. For effective monitoring, it may be necessary to look beyond the MINAE, if they are not currently enforcing rules effectively it may point to financial or manpower constraints. Monitoring and enforcement may provide employment options for people those interested in partaking in a program,

although funding for these jobs will need to be supplied. This may be from private funds if the monitoring and enforcement scheme is to be set up outside of the MINAE or from the MINAE if these jobs are created within that particular ministry. Again, this is an important element of negotiations, which will have to include the ministry to ensure legitimacy in the scheme.

The second issue of regulation and control on migration to the area is largely a governmental matter and most likely outside of the scope of either a PES or direct payments scheme. However, it is likely that the successful implementation of either scheme would deter migrants seeking to collect pianguas, considering they must hold a contract in order to gain any benefits for the scheme, and monitoring and enforcement would result in punishment of those without permits.

This in turn brings us to who will provide funding for and administer the program. It may be necessary to look to an external donor to fund the program. Although biodiversity protection comes under the scope of the PSA program, agreements made to date are not intended to be renewable, and efforts to generate long term funding locally to sustain biodiversity payments have not yet borne fruit (Pagiola, 2008), posing a serious challenge to adding to the biodiversity payments portfolio of the PSA program. A suggestion in this case is to look to organisations like Conservation International to provide funding. CI has already worked with FONAFIFO by donating funds for biodiversity payments in the past (ibid). An additional suggestion is The Nature Conservancy, who worked on the previously mentioned 2008 Management Plan for the National Wetlands Térraba-Sierpe. Considering the international interest in protecting mangroves and wetlands, and the number of organisations currently working in the area, there are in theory a number of funding options.

4.2.4.1 Could a scheme conserve nature?

A well-designed and adequately monitored scheme certainly has the potential to conserve the pianguas. However, there are two very important things to consider in relation to their conservation; firstly there remains the issue of sediments affecting the course, contour, depth and clarity of the river affecting the habitat and secondly the presence of chemicals in the river that are damaging the pianguas. Both of these issues are beyond the control of the piangueros and to a certain extent come from outside the wetlands area. Both of these issues have the potential to continue to harm and alter the river habitat, not only affecting the pianguas, but other river species. These issues constitute serious threats to both success of this suggested conservation scheme, but also the possible future expansion of the scheme.

4.2.4.2 Could a scheme improve local livelihoods?

In terms of the livelihoods of the piangueros, as the targeted group, it is expected that a well-designed scheme would offer livelihood improvements to the participants through the incentives offered. However, considering that currently only 78 piangueros have permits and could therefore participate in the program, and the remaining 122 are operating illegally, and therefore following the theory would not be eligible to partake in the programs, it raises the question of how much of an improvement could a scheme potentially make on the livelihoods of the piangueros. The successful implementation of a scheme would essentially leave 122 people unemployed, more than double of those who could partake in the scheme, and vulnerable in an area that lacks employment opportunities.

As discussed in the previous section, transaction costs could be kept low by operating the scheme through the pianguero association. Keeping transaction costs low will reduce obstacles of the poorer eligible piangueros of partaking.

5 Discussion

The results presented offer an insight into the potential of using direct payment schemes in both Boruca and Sierpe. This section will consider the results again and discuss the findings from both communities together and also the effects the study limitations may have had on the results.

It is interesting to look at Boruca and Sierpe together on a livelihoods level. The respondents in Sierpe generally earned on a higher scale than those in the Boruca. However, the respondents at the indigenous community in Boruca supplemented their income through their use of nature more than the respondents in Sierpe. Also, more of the respondents in Boruca (11) have access to agricultural land that allowed them to cultivate subsistence crops. It is expected that this may somewhat balance the scales regarding income.

The results of the analysis indicate there is a trade-off involved for conservation and development for both communities. A direct payment scheme does not provide a win-win situation in Boruca, considering the indications from the results that the participants were comfortable within their community. The poorer respondents did not prove to have means to allow them to participate in the program. In this case, the program has the potential to conserve nature, improve the livelihoods of participants, but will not have an effect on the poorest members of the community. It is unlikely that a scheme will be the silver bullet for the community of Sierpe either. Out of the potential participants, the piangueros, approximately 122 do not have the permits, and cannot partake in the suggested program. In fact, it is likely that these people will be worse off than they were before, resulting in increased economic vulnerability and potentially significantly decreasing the quality of their livelihoods. If the program is adequately enforced and monitored, it could have the potential to protect the piangua population. While it will guarantee and perhaps improve the livelihoods of those meeting the requirements to participate, it will negatively affect those who have illegally relied on their extraction for their income.

It is interesting to consider whether the direct payments scheme for the piangueros in Sierpe proposed under this report can be extrapolated to fit the wider wetlands area and be a solution to the problems of over extraction of pianguas and over fishing. The experience of a successful scheme in Sierpe could potentially be used to create similar schemes for piangueros in the wider wetlands area, learning and building upon the knowledge and practical issues arising from an initial scheme. Indeed, a successful scheme could also provide the experience and basis for including the fishermen operating the wetlands considering over fishing has been noted as a threat to the ecosystem under the management

plan (see section 4.2.3.1). The ecosystem will remain threatened due to the presence of sediments, agrochemicals and waste in the water system. Stringent measures to regulate monocropping (rice) and the conversion of more of the wetlands for agriculture and aquaculture purposes could potentially provide some relief, but the sediments and chemicals washed downstream will continue to have a negative effect.

Returning to the study limitations outlined in chapter 3, the direct payment scheme in place in Boruca does not directly address the perceived environmental problems discussed at the focus group, particularly the problem of water contamination that potentially poses a threat to biodiversity. It does however deal somewhat with the issue of deforestation considering land has been specifically designated for conservation and protection purposes. The scheme in place was evaluated in terms of effectiveness in conserving nature and protecting biodiversity. This study was limited to 10 per cent of the households in the village of Boruca. While the results formed a basis for evaluation, it is expected that on the community level, there are aspects of farming and land use that may have not been noted by either the household survey or the focus group. In addition, the district is considerably larger than the village area and it is expected that a greater understanding of the current PES scheme and a more comprehensive evaluation would have been interesting and fruitful in the absence of time and resource restrictions. It is also expected that even among the respondents there may be some discrepancies or bias resulting from a lack of trust. It was noted that some respondents participated with willingness and curiosity, others responded with caution and scepticism. This may also have affected the outcome of results, in the case particularly the information about land ownership, and size and also regarding the monetary income earned by the household. This may have resulted in respondents deflating their earnings and indeed potential earnings. Also due to the relatively small turn out at the focus group, and the fact that only two participants contributed to the discussions, these may also have affected the conclusions drawn regarding the perceived environmental problems and associated problems. It may also have affected the possible solutions to these problems, as ideas were not put forward here. Collectively, these aspects may have affected the results although it is not expected that they would make a significant change to the evaluation of local livelihoods, they may affect the evaluation in terms of biodiversity conservation.

In relation to Sierpe, it was expected that the household survey would provide a representative sample for analysis, however it was noted that the results from the household survey and the village focus groups did not correlate. Only 5% of respondents were working in the fishing and forestry sector

and 25% in the tourism and crafts sector. It was expected that the percentage of respondents operating particularly in the fishing and forestry sector would be higher, and that the information gathered from the focus groups would supplement this information. Nonetheless the data provided an interesting insight into local livelihoods, and environmental problems threatening the diverse ecosystem. This study could also be seen as a departure point for establishing the feasibility of implementing a direct payments scheme to conserve nature and improve local livelihoods. In the broader context of the environmental problems threatening in the wetlands area, the results certainly proved to correlate with those identified under the management plan and the solutions offered supported the outlined strategy. This is not a surprising outcome considering the community has been involved in making the management plan.

6 Conclusion

The report has shown that direct payment schemes for Boruca and Sierpe are a feasible option for conserving nature and improving local livelihoods; in Boruca a PSA (Pagos por Servicios Ambientales) scheme is already in place while in Sierpe, the necessary requirements for implementation outlined in the conceptual framework can be met.

The report has also shown that some of the environmental problems affecting both communities can be dealt with under this option. The PSA program does provide an incentive to protect the land against destructive land uses and deforestation by compensating landowners for conserving their land. Water contamination and rubbish are a current problem for the community to contend with. The direct payment scheme for Sierpe discussed in this report can provide a solution to the problem of over extraction of pianguas and even potentially the problem of overfishing. It does not protect the ecosystem from the threats that sediments and chemicals pose to the biodiversity of the wetlands.

In relation to improving livelihoods the report has shown however that the direct payments option is not the silver bullet. There are trade-offs involved: while on the one hand nature conservation can be achieved and the livelihoods of those who are eligible to participate can be improved, in the case of Boruca, the poorest are not eligible to participate. In the case of Sierpe, non-permit holders could potentially become worse off as their livelihoods are threatened.

Direct payments can therefore play a role in the case study site for conserving nature and improving local livelihoods but it does not provide a complete solution. To truly conserve nature and improve local livelihoods additional measures need to be considered. This may provide a departure point for future research. Further research based on these findings and using a more robust representative sample may uncover other potential measures. These may include tighter regulation or enforcement of existing rules within the case study areas to minimise legal activities. These could be implemented alongside tighter regulations over or indeed taxes on activities outside of the case study areas that have negative knock on effects on the ecosystems in question. The simultaneous adaption of a number of measures may be necessary to tackle the broad number of conservation and development issues facing the communities in this case study. It is unlikely that any one measure can adequately deal with these issues.

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Appendix

**UNIVERSIDAD NACIONAL
FACULTAD DE CIENCIAS SOCIALES
ESCUELA DE RELACIONES INTERNACIONALES
PROYECTO LIVE DIVERSE**

GRUPO FOCAL EN BORUCA, PUNTARENAS

Fecha: 11 de Mayo de 2010

Presentes:

- Aurora Hernández.
- Ernesto Villalobos.
- Nazareth Porras.
- Paulina González.
- Aine Ni Riain.

Comentarios de asistentes:

1. MAYORES TRANSFORMACIONES EN LA COMUNIDAD

Antes de la década de los setenta Boruca no era Boruca, era un territorio perdido. Se empezó a dar un avance enorme al decidir rescatar la cultura para identificarse como indígenas. Se ha dado un éxito económico, ya se ha dejado de lado la pobreza. La mujer ha obtenido participación, antes era como una esclava, no tenía derecho a expresar lo que sentía ni a la planificación familiar.

Además, ahora se cuenta con un colegio, el mismo se fundó en 1997, esto representó un gran avance porque antes los jóvenes eran marginados cuando asistían a otros colegios. Por otra parte, el ingreso de la electricidad hace 25 años permitió conocer el mundo exterior, todos tienen acceso a

esta (quienes no tienen es porque no quieren pagarla). También se tiene acceso a tecnología como internet y celulares.

Los turistas, e incluso nacionales piensan que al visitar boruca se van a encontrar con personas en taparrabos, animales en las calles y chozas. Pero la población no es así. La condición económica ha mejorado desde el rescate de la máscara; porque la mayoría de la población se dedica a artesanía (no hay muchos profesionales formales); el maestro para esculpir máscara fue don Ismael. Para la confección de las máscaras se utiliza la madera de balsa, que no es difícil de obtener, en Boruca no se puede tener acceso porque está en área protegida, pero la llegan a vender.

Decir que las transformaciones son buenas o malas depende de la perspectiva de cada persona. Por ejemplo, el colegio representa un avance, pero (aunque hasta el momento no se ha dado) pueden llegar a olvidarse de la raíz indígena porque saben mucho, o no querer aprender la lengua brunka porque no es importa, sino aprender inglés porque es el idioma que facilita recursos económicos.

La cultura Brunka casi se pierde, pero ahora se está rescatando, esto para identificarse y por orgullo, no para fines económicos. Se es indígena por nacimiento, aunque no exista un documento legal que lo indique, es en la comunidad en donde se da el reconocimiento, aunque a los no indígenas no se les discrimina o aísla.

2. TRANSFORMACIONES EN LOS RECURSOS NATURALES

El MINAET limita las formas en que se desenvuelven en cultura. Hay que solicitar permisos. Existe la creencia de que a la Madre Tierra hay que cuidarla. Además, se da una confusión entre los campesinos y los indígenas, porque como los campesinos no saben cómo hacen las cosas los indígenas dañan la naturaleza (ejemplo: animales que se les extrae el tinte).

Como problema ambiental se puede identificar la contaminación del agua, esto por el crecimiento del pueblo, y la construcción de casas cerca de las quebradas, aunque no es mucho. También se da la contaminación por basura, por el ingreso de productos comerciales se generan muchos desechos plásticos (el camión de basura pasa cada 15 días). Se han hecho campañas de reciclaje pero no han perdurado.

En el suelo hay muy pocos agroquímicos porque la agricultura no es muy importante, es básicamente para la subsistencia. Existen personas que reciben cada seis meses ingresos

importantes por el programa de Pago por Servicios Ambientales. Los indígenas no tienen teoría en medio ambiente, pero sí conocimiento tradicional. Por la deforestación ya casi no hay tintes naturales.

3. BORUCA EN UN FUTURO

Es preferible vivir en Boruca que en otra comunidad, no se da mucha emigración, al contrario hay gente que se asienta en la comunidad. Hay reforestación, se siembran diferentes cultivos, pero son por proyectos para el pueblo.

El territorio indígena es de catorce hectáreas, pero no está en manos de indígenas, sino del gobierno. Es un problema porque no se puede tener acceso a préstamos en bancos.

En Boruca la infraestructura no puede avanzar más. En otros aspectos ojalá que retroceda para que se rescate la cultura. Debe haber un equilibrio entre lo externo y las raíces para que se beneficie.

Existen lugares representativos como las cataratas, el ceibo, mambrán, montañas de cuastrán.

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PROYECTO LIVE DIVERSE

GRUPO FOCAL EN SIERPE, PUNTARENAS

GRUPO DE BOTEROS

Fecha: 12 de Mayo de 2010

Presentes:

- Alexander López.
- Aurora Hernández.
- Ernesto Villalobos.
- Nazareth Porras.
- Paulina González.
- Aine Ni Riain.
- Mónica Uribe.

Comentarios de asistentes:

1. MAYORES TRANSFORMACIONES (últimos diez años)

Hay más desarrollo en la costa más tránsito en el río. Entre mejor este la carretera hay más turismo. El río es la base para movilizar a todo el mundo, porque es más seguro, hay mejor paisaje y no hay que hacer transbordo.

Sierpe puede ser navegado por botes grandes, entre más crecimiento haya en la zona el río va a ser más afectado por tránsito.

El impacto sobre el río ya es visible, el río se ha comido más de 60 metros de orilla cerca de Juntaderas por causa de los motores. Y entre más tránsito haya, más daño va a haber. Esto pasa desde hace como quince años, desde el auge del turismo porque a gente navegaba pero en motores pequeños, ahora el motor más pequeño es de 50.

Con los botes se erosiona la tierra y los manglares. Antes había muchos animales. Hace un año había mucha melina que se cortó o quemó y ahora siembran arroz, el MINAE debería protegerlo.

Hay mucha palma de Palmatica. Antes se veían boas ya no, seguro los peones las matan. El gobierno debería proteger mínimo 50 metros de la ribera para que no pase eso.

También hay avionetas que todo el tiempo vierten agroquímicos.

- ¿Son los asentamientos del IDA un problema para el Humedal?

A uno le dan una parcela, pero los millonarios compran muchas y los ricos hacen un arrozal, el problema no es la gente que recibe del IDA sino quienes lo compran. El IDA se da cuenta y no hace nada, ya no son asentamientos del IDA. Hacen menos daño varias personas con sus parcelas que los dueños de muchas.

El MINAE antes protegía 50 metros de la orilla del río, ahora uno hace denuncias y no hacen nada. Se le propuso a una persona del MINAE llevarla a ver las acciones ilegales, y no quiso ir ni hacer nada.

La carretera ha sido positiva por el turismo, no sólo de extranjeros, también de nacionales; y por ende se genera empleo.

Hay una necesidad de organizarse.

Entre más nos favorecemos los boteros, más sufre el río y los recursos naturales.

No haya distribución de la riqueza.

¿Qué pasa si el turismo se viene abajo? ¿Qué hago yo sin turismo? Voy a tirar un trasmallo para generar ingresos.

Muchos tenemos préstamos para pagar la compra del bote.

Sería bueno tener un plan B, puede ser el turismo rural.

La temporada baja son cuatro meses pero segmentados.

Hay malos niveles de coordinación.

Los aviones de fumigación pasan sobre el río y dañan el mismo y matan animales.

Ya no se puede hacer pesca deportiva, antes sí.

La piña es un problema, antes el Térraba era navegable desde la desembocadura hasta Cortés. Por la sedimentación ya no se puede, por culpa de PINDECO, también hay agroquímicos.

El cauce del río era más profundo antes.

- Proyecto Hidroeléctrico Diquis

No nos perjudica pero a otros pueblos sí, afecta a Palmar Norte y a Puerto Cortés. El río Térraba no es fácil de controlar por ser un río madre. Si se reventara la represa todo Palmar, Sierpe y Cortés desaparece.

El ICE ha venido sólo al colegio a explicar pero era con la represa de Boruca no la nueva.

Como opción de trabajo es bueno.

- Principales Problemas

1. Papel Institucional: Las leyes no son claras. Nada es claro: los planes reguladores, que es legal y que no, que se necesita para hacer las cosas legales, falta consistencia en el control (a unos sí a otros no).

Se quiere meter una compañía minera cerca de Corcovado, dar una concesión.

Para la gente que vive dentro del área marítima le es difícil desarrollarse porque se necesitan papeles para pedir préstamos y los trámites son costosos y burocráticos.

Hay falta de oportunidades para los nacionales, el trasmallo llega a ser la única fuente de ingresos.

Todo queda en el papel, ej: documento del MINAE.

La presencia institucional ha aumentado, por ejemplo el INA, que ha dado cursos y resultados positivos. También la presencia del MINAE ha aumentado pero sin resultados positivos.

2. Sedimentación: los peces no tienen alimento por la sedimentación. Es una capa de barro muy grande. Y también por tilapias que son depredadoras.
3. Trasmallo: El MINAE sabe que están y nada hace. Están destruyendo todo lo que viene de Sierpe. La pesca deportiva se ve afectada.

- Crecimiento Poblacional

Sierpe puede seguir creciendo, hay mucha tierra. Parece que hay proyecto habitacional para Sierpe (Estero Azul).

Además está la propuesta del aeropuerto que puede dar trabajo.

El turismo puede crecer si todas las personas se organizan, porque el gobierno ayuda si se está organizado.

Con el aeropuerto también va a haber más gente y más competencia, podemos ser desplazados, por ejemplo por no hablar inglés.

Nosotros vivimos bien, y un aeropuerto puede traer impactos negativos. Puede generar mucha inmigración por fuentes de trabajo.

Aeropuerto/Represa/Hoteles= Las actividades que tengan impacto fuerte son una amenaza.

2. FUTURO DE SIERPE

Que haya menos inversión extranjera.

Que no haya discriminación, porque a los locales les exigen permisos y a los extranjeros no, los extranjeros no deberían trabajar acá.

El gobierno debe ayudar. Por ejemplo, no podemos acceder a PYMES. (El INA podría ejecutar una línea estratégica para emprendedurismo).

Que Sierpe sea igual que ahora, sin mayores cambios pero con mejor organización.

La posible solución a todo es una mejor organización y luego capacitaciones.

Que el sector turismo sea amigable con el ambiente pero es relativamente pequeño, concientizar al resto. Aunque toda la comunidad está involucrada en turismo indirectamente, al menos un 40% directamente.

Al manglar se puede incorporar la práctica de ved pero con la condición de que el gobierno de oportunidades de trabajo en época de veda y de apoyo económico.

Lo primordial es conservar el humedal, al paso que vamos se va a destruir, ya hay áreas donde el manglar se está secando y perdiendo por relleno que provoca la sedimentación.

Hace cinco años se pavimentó la carretera y desde ahí se disparó el precio de las tierras y bienes raíces, hay dos oficinas de bienes raíces en Sierpe. Y un proyecto “Villas de Sierpe” de 70 lotes para casa costosas.

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GRUPO FOCAL EN SIERPE, PUNTARENAS

GRUPO DE PIANGUEROS

Fecha: 13 de Mayo de 2010

Presentes:

- Alexander López.
- Aurora Hernández.
- Ernesto Villalobos.
- Nazareth Porras.
- Paulina González.
- Aine Ni Riain.
- Mónica Uribe.

Comentarios de asistentes:

1. MAYORES TRANSFORMACIONES (últimos diez años)

La gente de Puntarenas está viniendo, necesitamos apoyo para el control de eso, necesitamos lugares para sembrar.

Gente de afuera viene a pianguar y los que vivimos acá somos los perjudicados.

Carretera nueva influencia eso.

Control de quienes vienen a pianguar porque tienen permisos entonces no los pueden parar.

Organizarse con el MINAE.

Nosotros podemos proteger lo que nosotros trabajamos pero no el resto.

Que el permiso para pianguar diga en qué lugar, para que no anden por todo lado.

No se puede decir nada malo del turismo porque mucha gente vive de eso. El turismo no afecta la actividad de la piangua.

INCOPECA y MINAE no han apoyado, implantan leyes que no paran en nada.

Lo que hace falta es la conciencia de cada pianguero y unirse y colaborar.

MINAE ya no deja trabajar, equipos vienen y si pueden entrar, pero nosotros no podemos salir al mar.

Hay 78 licencias para piangueros y somos 200.

Hay personas vendiendo clandestinamente.

Vienen de Puntarenas sin permisos y matan el Humedal.

Sacan pianguas pequeñas porque ofrecen un colón más y quien la compra no calibra, y son pianguas que no han terminado su ciclo de crecimiento.

Del 2005 al presente se sacaba 1600 000 pianguas, mientras antes se sacaban 20 000 000.

Debe haber mayor control del calibre tanto de piangueros como de compradores.

El inspector de INCOPECA dejó de venir desde hace diez años.

La piangua que produce es la peluda, la pelona no. Debemos sacar la pelona y dejar la otra.

Antes había menos compradores, la piangua no se está acabando, si hay que cuidarla, pero es que hay más compradores.

¿La piangua ha disminuido? Cuatro a favor, uno en contra.

Muchos compradores pagan a MINAE para que lo dejen llevar piangua pequeña.

Se debe controlar al comprador y no tanto al pianguero porque si uno no la recoge otro sí, generalmente de Puntarenas.

En Cortés hay cinco compradores y probablemente ninguno tiene permiso.

Para que voy a acoplarme a sólo piangua grande si otros no lo hacen y pierdo yo.

La piangua pequeña mide 47 milímetros. Hay unas que no crecen más de eso y aún así o dejan sacarla.

Si las personas se quedan sin trabajo tienden a pianguar.

No estamos capacitados para trabajar en otra cosa. Que cada uno piangue en su sector.

El gobierno ha restringido mucho la pesca, entonces hay que pianguar.

Pocos piangueros se dedican también a pescar, como de 70 sólo 10.

No se hace nada con vedar, porque se incumple ya que vienen otros de afuera que no respetan. Además que el apoyo económico que da el gobierno es muy bajo (30 000 colones).

La veda está en controles que cada uno aplica.

La piangua es el sustento diario.

El calor está afectando, mata la piangua. Hay partes donde el mar no llega y se muere la piangua. Ya hay lugares donde no se puede pianguar porque el mar se metió y rellenó con arena y seimentos.

En Bocachica llega la sedimentación del Térraba y también de las piñeras por el movimiento de tierras que hacen y los agroquímicos que utilizan. La piñera nos afecta hoy y nos va a seguir afectando.

No es la Fila Costeña lo que daña es la piñera.

El MINAE no quiere que nadie trabaje aquí, no se preocupa porque dependemos del manglar. Estoy de acuerdo en conservación y desarrollo pero debe haber un equilibrio.

Al lado de la Bruja y de Bocachica hay sedimentos.

La camaronera también mata pianguas porque tira desechos.

2. FUTURO

Si la piñera continúa Boca Chica se va a perder, a como estamos esto se va a terminar si no hay controles.

Hay que organizarnos como institución para controlarnos y apoyarnos. Hubo una organización de piangueros en 1988, pero hubo problemas porque se creía que quien la organizó iba a beneficiarse sólo él. Había un precio de compra establecido por año: 32 colones la piangua. Organizarse nos hace fuertes, si hubiéramos proseguido con organización tendríamos la fortaleza que necesitamos.

Si no hay apoyo del MINAE y de INCOPECA vamos a empeorar, pero si nos apoyaran nosotros nos esforzamos por ayudar y todo mejoraría.

El mar se está comiendo parte de los manglares, desapareció la Isla de la Temblona hace 25 años, hay mareas muy altas en Guacamal. Antes vivía más gente, la población del Humedal ha disminuido porque los bonos de vivienda los dan en Cortés. Actualmente viven estables como 48 personas.

Situación no va a cambiar porque el gobierno no da suficiente ayuda, para mejorar tenemos que organizarnos nosotros, el gobierno no va a ayudar.

Si los botes pasan muy rápido afectan la piangua, si no lo hacen el turismo no es problema.

Que siga el trabajo en la misma actividad, no queremos que eso cambie. No permitir que el gobierno nos saque y nos quite la piangua. No queremos porque no sabemos más que pianguar.

Tal vez incluir turismo, tener otra opción de trabajo, podemos hacer tour de piangua.

Necesitamos una escuela nocturna y colegio. Somos muy pocos los que sabemos leer. Algunos salen a estudiar a Sierpe y a Cortés pero no tienen con qué mantenerse.

Tener propiedades que puedan servir de respaldo para préstamos en los bancos.