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Does paying pay off?

Paying for ecosystem services and exploring alternative possibilities

Örjan Bartholdson, Malin Beckman, Linda Engström, Klara Jacobson, Kristina Marquardt & Lennart Salomonsson

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Cover picture: A mix of harvested food crops in the field of Don Andrés in Alto Pucalpillo, Lamas, Peru
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SLU - Swedish University of Agricultural Sciences
Department of Urban and Rural Development
Postal address: P.O. Box 7012, SE-750 07 Uppsala, SWEDEN
Visiting address: Ulls väg 28 A-B
Phone: +46 18 67 10 00
Fax: +46 18 67 35 12
E-mail: sol@slu.se
http://www.slu.se/urd

Innehåll

Introduction

> "We were told that carbon comes from the industries in the western countries and is consumed by our trees. Carbon dioxide feeds the tree and makes it grow strong and also makes it release oxygen that is needed for humans. So the incomes from the factories in the western countries will benefit the poor who are protecting the forest".

This is a quote[1] from a Tanzanian village Chairperson. His village had been included in a REDD project (Reduced Emissions from Deforestation and Degradation, see Box 2) for one year when he spoke these words. With the objective to maintain/improve a globally important ecosystem service: carbon sequestration from the atmosphere into forest trees, the REDD project intends to pay villagers to refrain from using the forest.

Ecosystems, such as forests, rivers and oceans, provide services that are essential for human life: sequestration of carbon dioxide, water retention, erosion control, climate regulation etc. (see Box 1). There is growing global attention on the development of incentive schemes, termed "Payment for Ecosystem Service" (PES, see section 1.1), with the goal being to maintain, develop and protect ecosystem service. REDD is one such initiative in the global climate change arena, aiming at protecting forest land to secure carbon sequestration, protect biodiversity, water and nutrient cycles, etc. PES is one of several key projects that are now changing land use globally. Donors and international development agencies are getting increasingly involved in the funding and development of different PES projects, like paying local communities to protect forest areas. When global plan incentives like PES are implemented in local contexts, both opportunities and challenges arise. Some claim that PES initiatives hold opportunity for poverty reduction, however, although PES initiatives are often implemented in poor regions, poverty reduction is seldom an explicit objective of these projects. In many situations, the ecosystems and the service they provide are very important to poor rural people, who are often directly dependant on natural resources for their daily lives. Projects that restrict the poor to the access of such resources could then even have the opposite effect of increasing poverty. It is therefore important to carefully study the effects on local peoples of the implementation of major PES projects, such as REDD.

Another type of challenge is illustrated by the words of the Tanzanian Chairperson, as quoted above. How can PES initiatives like REDD be communicated in a way so that local people can understand, and how can the relevance of REDD be explained to them? How can they effectively participate in the project? How can a sense of ownership over land and resources be maintained? How is it possible to empower

[1] As translated to us from Kiswahili to English

local people to make independent decisions regarding the REDD project and local resources? These questions are factors that have been proven to be important in order to obtain long term sustainable development (Mosse 1996; Scoones 2007 etc.). Larsen and Ribot (2009) conclude that REDD (Box 2) is more likely to be locally legitimate if the design, implementation and allocation of benefits represent local needs and aspirations. The level at which rules are made and benefits distributed will be a key issue in the legitimacy, effectiveness, efficiency and equity of REDD. The opportunities that REDD offers to smallholders depend on the local context, but could be for example, monetary income, and increased participation by local communities in natural resource management. However, many actors question whether it is likely that monetary incomes actually materialise (see the Tanzanian case) or if PES initiatives actually increase participation (see the Vietnam case).

Our points of entry for this report have been that:

1. Ecosystem services are fundamental for life support.
2. Land where ecosystem service are to be provided is already habitated and used in different ways to provide local people a source of livelihood.

The report directs itself to actors in development cooperation, who engage with policies and programs of PES and REDD. It seeks to draw attention to the range of approaches to ecosystem service provision and management. When major PES initiatives and plans are discussed in the global discussion on climate mitigation, we suggest that there is insufficient attention to the local forms of ecosystem management that already exist. We direct ourselves to decision makers who are not only interested in the quantity of carbon sequestration in the PES initiatives, but who have an interest in how the projects relate to issues like democracy, ownership and, ultimately, a pro poor development. The report builds on conclusions and lessons drawn from case studies carried out in four different continents, describing a range of contexts where PES projects are being implemented, as well as contrasting case studies of alternative forms of ecosystem service provision and management, in which local communities themselves have created provisioning systems (although sometimes with external assistance). With the study, we want to highlight and analyse the potentials of and the problems related to, different approaches to ecosystem service management. This also includes lifting the discussion on how local initiatives, integrating goals of conservation and livelihoods development, to the next level and examine how this information can be brought into the development and donor agenda of supporting climate mitigation, adaptation and sustainable development.

The structure of the report unfolds in four chapters:

- The first chapter is a critical review of the concepts of PES and REDD, the international context of implementing PES programs, as well as alternative approaches to ecosystem service provisioning.
- The second chapter introduces the methodology and scope of the study.
- The third chapter covers the case studies from Brazil, Peru, Tanzania, Vietnam and Sweden.
- The fourth chapter contains the comparative discussion.
- The fifth chapter concludes the report with a concluding discussion and recommendations.

Ecosystem services are defined as 'processes and conditions through which ecosystems support human life' (Daily 1997). The UN Millennium Ecosystem Assessment (MEA) tightly linked the human condition to environmental conditions and established the concept of dividing ecosystem service into four categories: supporting, provisioning, regulating and cultural service (see below). Supporting service are regarded as the most difficult to manage, because they are often taken for granted (Rodríguez et al. 2006).

Box 1.
Ecosystem service

Provisioning Service:

Products provided by the ecosystems

- Food
- Fresh water
- Firewood/fuel/construction material
- Fibers
- Biochemistry
- Genetic resources

Supporting services:

Ecosystem services that are necessary for the production of all the other services in ecosystems

- Maintenance of soil resources
- Water cycle
- Carbon and nutrient cycling
- Maintenance of biological diversity
- Maintenance of disturbance regime

Regulating Services:

Beneficiaries related to regulation of the ecosystem processes

- Climate regulation
- Control of pests, invasions and diseases
- Erosion
- Quantity and quality of water, pollution
- Disturbance propagation
- Pollination

Cultural Services:

Non-material beneficiaries coming from ecosystems

- Cultural identity and cultural heritage
- Spiritual, inspirational, aesthetic benefits
- Recreation and ecotourism

Source: Adapted from the UN Millennium Ecosystem Assessment (2005) and Chapin et al. (2009).

1. Presentation of PES and alternative approaches to support ecosystem service provision

In this report, we discuss two principal approaches for encouraging local ecosystem managers to regulate and value ecosystem service provision:

1. by creating a market system for ecosystem service and paying for ecosystem service provisioning, and
2. supporting forest/agricultural production systems that integrate production of food, fibres and fuel with provision of ecosystem services, often based on local resources or ecosystem services.

1.1. The PES approach

Payment for Ecosystem Services (PES) is an economic instrument designed at a global and national level, with the aim to provide incentives for land users for continued or improved provision of a specific ecosystem service. PES is mainly aimed to be implemented by rural people in developing countries, which is considered cost effective by its designers, and the intention is that paying people to adopt more "environmentally friendly" systems of production could result both in poverty reduction and increased environmental benefits. Moreover, many key global ecosystems are situated in these countries[2].

The core of this approach is to pay social groups, such as indigenous people and smallholders, to protect, manage or restore the ecosystem service provisioning system. For example, payments are made to land users:

- to develop the provision of one specific ecosystem service, e.g. by growing trees for carbon sequestration
- to protect existing ecosystem service provision, e.g. protecting tropical forests, as in the REDD mechanism of the Kyoto protocol
- to refrain from using an area in a way that could threaten the ecosystem service in question, or not to use it at all, for example in wildlife protection projects in tourism areas (Nelson and Sulle 2009).

So far, PES schemes focus mainly on water, carbon, or biodiversity and respond to public, but increasingly also to private, interest in addressing an environmental prob-

[2] http://www.fao.org/es/esa/pesal/aboutPES.html

lem through incentive schemes to land managers. This is happening in a global context where increasing human demands for food, fibre and fuel is accelerating competition for land (Chappell and LaValle 2011). Production of these commodities is dependent on several key ecosystem services, such as pollination, soil fertility and water retention, and it has been recognized that decreasing capacity for ecosystem service provision may jeopardize future food production (e.g. MEA 2005; Rockström et al. 2009). Many PES initiatives are being implemented, more or less solely, with a 'conservation perspective' rather than seeing ecosystem services as integrated with production and livelihoods. This will be further discussed in the case studies and conclusions.

In this report, we have chosen to only use the concept 'Payment for Ecosystem Services' - PES. There are several related terms that are utilised in practice, for example, Payment for Environmental Services and Payment for Forest Ecosystem Services. We use the PES concept to cover all these terms.

1.2. Alternative approaches to ecosystem service management

There are many approaches to ecosystem service management. Some build on the idea that production and conservation cannot be separate in time and space, but will have to be planned for within the same landscape and production systems (e.g. the eco-agricultural approach described by Scherr and McNeely 2008). Many smallholders already practice such approaches that integrate and maintain ecosystem services in agricultural/forest production systems in a long-term perspective. Agricultural land and forests are managed to produce food, fibre and fuel production, for households' own consumption as well as for sale. In such a system, the local communities are totally dependent on ecosystem services to re-generate conditions for agricultural production and/or forest extraction. The focus in farming/forestry systems is on increasing agricultural/forest production by supporting local ecosystem services (such as soil fertility and structure, pollination, micro climate, biological control of crop pests, etc.). The ecosystem service functions, operating on regional and global scales (such as carbon sequestration and climate regulation), will come out as a 'by-product', e.g. carbon sequestration by increased soil humus in a fertile soil, bio mass accumulation, etc. Interest in this approach to ecosystem service provision by small-scale farming is increasing and was recently described in a UN report to the Human Rights Council (De Schutter 2010) and the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD 2007).

The PES approach is widely supported by a number of actors, not least nation states, multilateral development agencies, transnational corporations and international NGOs. The way in which PES is emerging as a large scale global initiative resembles what Scott (1999) refers to as a transnational master plan. A 'master plan' can be defined as an overarching blueprint, consisting of specific discourses and planned actions, which define and implement solutions to large-scale problems, without taking local economic, social and cultural contexts into consideration. Such master plans are often made up of administrative and economic blueprints, spanning everything from the design of cities, cash-crop plantations and economic measures, such as structural adjustment programs (Boli and Thomas 1999; Scott 1999). The PES approach, not least the REDD projects, in many respects function as a master plan. This plan

includes several global tenets; how to interpret the concept of ecosystem services, discourses about how market based solutions can make local target groups abstain from utilizing these services, by using monetary compensations so as to change people's use and imagination of forest resources. Scott draws attention to the fact that implemented master plans often have led to unintended consequences, overthrowing or drastically revising the planned outcomes (Scott 1999). These plans frequently do not have the flexibility to handle the social, economic and culturally unique contexts they encounter in local settings (Appadurai 1996). There are thus strong reasons to scrutinize and analyse the actual outcomes of concrete PES projects at the local level and compare them with the intended outcomes.

PES is rapidly becoming a social arena of specific discourses, actions and contentions (Bourdieu 2007), where a large number of actors struggle with how to define the ecosystem service concept, how the services donations shall be paid for and distributed, how the schemes shall be monitored and audited, how to ensure that local communities benefit, etc. The actors of this social arena create a specific form of interpretive framing of how the problem of degradation of natural resources and green house gas emissions can be mitigated and acted upon.

Box 2.
REDD – Reduced Emissions from Deforestation and Degradation

REDD means 'Reducing Emissions from Deforestation and Forest Degradation'. It is a part of the UNFCCC (United Nations Framework Convention on Climate Change), aiming at enhancing the carbon sequestration capacity of forests, and to prevent green house gas emissions resulting from deforestation. REDD was put on the climate change negotiations agenda for the post Kyoto agreement in Bali 2007, and was further developed at the Copenhagen meeting in 2009. REDD is an effort to create a financial value for the carbon stored in forests, thereby offering incentives for developing countries to reduce emissions from deforestation, REDD is in some countries becoming a mega scale venture, where for example Brazil will offset 320 000 km^2 in the Amazon region (an area equivalent to two thirds of Sweden (Serviço Florestal Brasileiro 2010).

REDD+ and REDD++. REDD has been further developed into what is called REDD+, which goes beyond deforestation and forest degradation, and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. A third version of the REDD scheme is called REDD++, which includes measures impacting on carbon balance; even on land not defined as forest.

REDD and Poverty reduction. The text on REDD produced at the UNFCCC Conference of Parties (COP) 16 does not mention poverty reduction as an inclusive aim. However, the importance of including poor people and their needs and interests when implementing REDD has been emphasized in various contexts (e.g. Eklöf 2011), and are included in the objectives of some REDD initiatives (see the cases from Tanzania and Vietnam).

Sources: Eklöf (2011); http://www.un-redd.org/AboutREDD/tabid/582/, UNFCCC official text on COP 16 REDD agreement; Ministerio do Meio Ambiente (2010).

1.3. Recent criticism requires further research

The PES approach has its origin in highlighting the importance of services from 'nature', which previously have not been paid for. Ecosystems produce services and goods for human societies, but also for general life support to all living organisms. Calling them services can be misleading. On the one hand it makes them easier to be internalized in the global monetary economic discourse. On the other hand it could over-simplify the very complex issue of how these systems provide life supportive functions from natural resources, under human management. These issues have been scrutinized by researchers such as Norgaard (2010), Muradian et al. (2010), van Noordwijk and Leimona (2010) and Shelley (2011). Their criticisms are focused on the concern as to how the PES approach, to a large extent, takes its starting point from a global context of ecosystem service governance. They point to constraints in the process of adapting these schemes to local conditions and the need for developing the approaches in the local context (Gómez-Baggethun et al. 2010; Shelley 2011). There are also critical views that consider the difficulties involved in evaluating the ecosystem service that will be paid for (Kumar and Kumar 2008).

The concept of payment of ecosystem services requires the setting of a price on natural resources that previously have not been part of a market economy, resulting in a so called process of 'commodification' (Gómez-Baggethun et al. 2010; Kosoy and Corbera 2010; Vatn 2010). This price is set within an economy where it is assumed that the price transcends the economic opportunities for alternative usages (cf. Engel et al. 2008), thus gradually introducing the ecosystems into an emerging market economy sphere. Many of the social groups who are potential beneficiaries have never perceived these ecosystems in financial terms (Maybury-Lewis 2006; Århem et al. 2004) but have accorded them a use-value for the members of the community. By the act of giving an economic value to these services, their very economic and symbolic functions risk being transformed from use value to exchange value, which may have considerable social and cultural implications (e.g. Hènaff 2010; Taussig 1980). When for example commons have been awarded a specific economic value, it has often led to social tensions within the group concerned, risks that the elite will appropriate the resources for themselves, and changes in social structure (cf. Gudeman 2001). These plausible impacts on the communities that will sign the PES contracts are not discussed in policy documents and have so far been insufficiently studied.

Several donors believe that the PES approach constitutes a possible approach to poverty alleviation. However, this expectation is heavily questioned (e.g. Plagiola et al. 2005). Recent research sheds light on the challenges involved in the implementation of PES projects from perspectives of pro-poor, democratic and sustainability development. Obstacles that have been described include unequal power relations, corruption, unfair compensation rates, low political will and lack of participation and understanding among target groups – including the poor (Pokorny et al. 2012; Thuy et al. 2010).

Another line of criticism against PES comes from van Noordwijk et al. (2009) who argue that the debate has focused too much on forest conservation, as compared to ecosystem services from a broader range of land use types. They refer to research supporting the position that it is not only forests that can provide the ecosystem services and the watershed functions that we associate with them. This would open up for PES models that have an integrated perspective on forest *and* agriculture, conser-

vation and production, and a larger focus on livelihood than was previously the case.

There are few ethnographic studies on the impacts of PES initiatives on the communities involved. Furthermore, there are few studies made on the ongoing economic, political and social struggles and negotiations over forest management, and the manner in which local communities are engaged with and affected by the changing roles within this field (Corbera and Schroeder 2011). The relative power of the actors within the field varies depending on their economic, political and social capital (cf. Bourdieu 2007). Since so much of the agenda of PES and REDD is being set in international negotiations, there is a great risk that the communities own ability to negotiate the conditions of local implementation is severely curtailed (Dooley et al. 2011; Eklöf 2011).

2. Aim and scope of the study

The study aims to address some of the above mentioned gaps in knowledge on local impact of PES schemes, an understanding of the interactions between stakeholders involved and the dynamics of local initiatives regarding ecosystem services.

We are comparing contrasting cases of PES projects at the local level and alternative forms of ecosystem service provision in local productive systems, and analysing the cases with support from literature reviews. We want to illustrate challenges and potentials with different approaches to ecosystem service provision, and how they are articulated within specific local contexts. We have analysed some general similarities between the cases from four continents that are of importance for policy decisions on incentive structures for ecosystem service provision. The study hopes to contribute to the international discourse and donor approaches to the support for ecosystem service provision by smallholders.

We have chosen to describe one PES initiative and one alternative approach in the continents of Africa, Asia, Europe and South America (Table 1), respectively. We have selected countries with different social and political structures, and cases with different ecological, social and political backgrounds. Previous experiences and partnerships have also influenced the choice of countries and cases.

Table 1. Selected case studies.

Continent	PES case	Alternative case
South America	Brazil - 7 de setembro	Peru – San Martin, Lamas
Asia	Vietnam - Da Nhim	Vietnam - Hong Ha
Africa	Tanzania - Kolo Hills	Tanzania - Suledo
Europe	Sweden – conventional farm in Uppland	Sweden – organic farms in Uppland

The study does not claim to cover all the impacts of PES and alternative approaches. Some cases focus more on the national context and civil society actors, others more on the narratives at local level, depending on earlier research and partner networks (see each case study section for information about how information has been collected). The level of detail varies between cases and countries.

More research is needed to perform a comprehensive meta-study where patterns identified in this study are more critically examined and further socio-political contexts included.

3. Case descriptions

3.1. Brazil

Author: Örjan Bartholdson

The Brazilian case of 7 de Setembro shows how an indigenous group, Suruí, is struggling to launch a REDD project from the bottom, so as to safeguard their territory, and, at the same time, receive financial support. It discusses the organisational and democratic challenges which the implementation and administration of the REDD projects create, and demonstrates the economic, political and social unintended side-effects.

The case takes place in the indigenous reserve of the paiter/Surui indigenous group, Terra Indígena 7 de Setembro, located within the municipalities of Cacoal, Espigão D'Oeste, and Rondolândia, in the state of Rôndonia in weastern Brazil. The document which describes all details of the Surui REDD project is currently in the process of becoming registered and pending official approval the project will subsequently be launched. The project, covering 2 480 km^2, intends to avoid the emission of 16.5 million tons of carbon dioxide by reducing logging of rainforest and will run until 2050.

Box 3.
Information collection for the Brazilian case

This case is based on a two week field-study in the territory of the indigenous group Suruí, 7 de Septembre, in the state of Rondonia. The field-study was complemented by interviews with NGO representatives and members of the Surui indigenous group, as well as a desk study in Sweden.

The field-study and interviews were conducted by the author and Bo Johansson April-June 2011.

3.1.1. The national context

The Amazon rainforest covers an area of 5.5 million square kilometres, out of which 60 percent is contained within Brazil. There are many reasons for the deforestation of the Brazilian Amazon rainforest, such as establishment of cattle pasture, harvesting of high-priced hardwood, and agriculture - both large and small scale (Bartholdson et al. 2008). Between 2000 and 2005, Brazil accounted for approximately half of

Almir Narayamoga is the most prominent leader of the indigenous people, Suruí. He has received death threats several times because of his struggle to maintain the forests of his people's territory.
Photographer: Lennart Kjörling.

the global deforestation (Houghton 2005). There is also a large risk that the ongoing climate change will affect the Amazon severely; for example, increasing rainfall in the center of the rainforest will cause devastating floods, while, at the same time, the southern regions will suffer from increased periods of droughts, which will ruin agricultural land and increase the dangers of forest fires, primarily in areas with second generation forest. These threats make the Brazilian government eager to implement large-scale PES projects, which are in the nation's best interests, and not necessarily due to global concerns. The government's goal is to reduce deforestation by 70 percent, compared to levels reached between 1996 and 2005.

Brazil is the country with largest area of land set aside for REDD schemes (Viana et al. 2010). The total area is intended to cover approximately 320 000 km^2; 37 percent of this area will be dedicated to REDD, 50 percent to REDD+ and 13 percent to the so-called REDD++ projects. In total, there are currently 16 REDD projects in differing stages of impemenation, from those ready to be implemented to those that have been launched recently. The overwhelming focus of Brazil's

REDD projects is on the Amazon rainforest.

One of the major bureaucratic tensions within Brazil concerning the national PES plan is between the federal government and the states that Brazil is divided into. The states that are located within the Amazon area fear that a large part of the resources channeled through the administration in Brasilia risk being spent on the federal bureaucracy.

3.1.2. Ecological and social background of the area

The classical description of Amazonian soils is that they are naturally acidic, highly weathered, and relatively low in available plant nutrients, which means that it is not primarily geological processes that contribute to soil fertility (e.g. Salati and Vose 1984; Schroth et al. 2001). Most nutrients in the ecosystem are found in the biomass and with a hot and humid climate, where the process of decay goes fast, it is instead the vegetative processes that restore the soil fertility. Consequently, permanent farming in the Amazon is problematic (if external inputs are not added) and historically most farming in the Amazon has been rotational shifting cultivation systems where a relatively short agriculture production period has been followed by a longer tree fallow period. When the farmer stops actively managing the field, the land will slowly return to forest again and depending on the farmers' access to land, the farmer will return to convert the secondary forest into a field once again, in different stages of the development in the fallow succession (see also the Peru case).

A current major threat against the Amazon rainforest emerged during the 1990s: the conversion of land to vast soy plantations. Brazil is currently the second-largest global producer of soybeans (Goldsmith and Hirsch 2006). Between 1996 and 2004 the area planted with soy in the Amazon expanded from 250 km^2 to 3 170 km^2. The majority of this expansion occurred in the states of Tocantins and Rôndonia.

Another issue in the Brazilian Amazon is logging. The most obvious consequences of logging is general land degradation, when the soil's ability to absorb precipitation diminishes rapidly and causes both flooding and droughts. But logging also contributes to the rapid increase of forest fires. Even when the logging is done selectively both the number and the intensity of forest fires increase. Gaps in the canopies of the trees expose the ground to sun light and wind, thus creating a drier micro climate, which increases the risk of forest fires. From 2004 to 2010 the rate of logging in Brazil dropped sharply. In 2010 approximately 8 000 km^2 of land was deforested (INPE 2010), mainly because of improved monitoring, law enforcement and a moratorium on soy plantation expansion (Butler 2011). During the first months of 2011 the logging rate has increased compared to the same period a year ago. The main culprits appear to be soy plantation owners. The major part of this area was logged so as to provide room for cattle rearing, and the NGOs WWF and Greenpeace agree that the main reason attributed to this devastation of rainforest is caused by the continuous expansion of soy plantations, which force the cattle farmers to move further north (Dros 2004; Greenpeace 2006). For every new hectare of savannah that is planted with soy, Dros (2004) estimates that an additional hectare of cattle grazing land will be opened up, either in pristine rainforest, or in the transition area between savannah and rainforest.

The Amazon rainforest has been the habitat used by indigenous peoples for sev-

eral thousand years, and served as a refuge during the initial phase of Spanish and Portuguese colonization of South America. These people have lived in close and sustainable interaction with the ecosystems until present. International agreements, such as the UN's convention on biodiversity, emphasize the unique role of indigenous populations and that they may well play a key role in the conservation of biological diversity, through their traditional knowledge and practices. These populations, in spite of their social fragmentation, have often put up resistance against the economic interests, which intends to exploit the rainforest indiscriminately. The rights of the Brazilian indigenous groups are spelt out in several UN-conventions, as well as in Brazilian legislation. Yet the actual monitoring and protection of their territories and rights have been weak[3]. Both indigenous groups themselves, as well as NGOs, which support them, believe that the REDD system might be a vehicle to strengthen this protection, and offering them financial resources at the same time. Indigenous groups, whose territories are supposed to cover six percent of the total area reserved for REDD projects in Brazil, however, are worried that they will receive low payments from programs such as REDD, since compensation levels often are based on previous levels of deforestation. The deforestation within indigenous reserves tends to be lower than in parks and unprotected areas. The indigenous groups in Brazil have been active in demanding that forests should be included under the Kyoto Protocol and that their own community projects and natural resource management initiatives should be available for payments and credits within Kyoto and other agreements.

3.1.3. Actors involved and implementation of REDD

Indigenous groups

The indigenous people Paiter/Surui live in a demarcated reserve, 7 de Setembro, in the state of Rondonia. They were first contacted by the state of Brazil in 1969, and in 1983 their present territory was officially demarcated. The reserve at present covers 2 480 km^2. The reserve was established only after the Suruí took up arms against landless peasants, who were invading traditional Surui land in order to find land to cultivate. The Surui went through the same ordeal as so many other Amazon indigenous groups. The total number of the people within this ethnic group was decimated from a population of approximately 5 000 to a mere 290 in just a couple of years. Today the Surui have recuperated themselves somewhat and currently number approximately 1 300 people.[4]

NGOs

Associação Metareilá do Povo Indígena Suruí

The Surui's own organisation is 'Associação Metareilá do Povo Indígena Suruí'. The idea to integrate the reserve into a REDD project was taken by the NGO 'A Associação de Defesa Etnoambiental Kanindé', the most local of the NGOs that the Surui work with. This is the first REDD project in Brazil being implemented within an indigenous reserve. The official name of the project is 'Projeto do REDD dos Surui', but the Surui refer to it as the 'the carbon project'. According to Kanindé

[3] Povos indigenas no Brasil. O Instituto Socioambiental (ISA). http://pib.socioambiental.org/en/c/terras-indigenas/introducao/o-que-sao-terras-indigenas (2011-08-23)

[4] These figures are built on interviews with the staff of Kanindé and chief Almir-Surui.

the sum which the Surui will receive through the project will be approximately one million US dollar annually.

Kanindé

The NGO Kanindé was formed by a group of people who worked with the indigenous group 'Uru-eu-wau-wau', who live in the same state as Surui. The majority of the staff of Kanindé consists of people who were previously employed by the Brazilian governmental agency for the protection of the rights of indigenous people, FUNAI. The employees were frustrated with FUNAI and its inability and lack of capacity to help and protect the indigenous people in the state of Rondonia against intruders. Today Kanindé also includes a wide range of professionals, such as biologists, agronomists, and social scientists. As previous employees of a governmental organisation they are intimately aware of the bureaucratic structure both at federal and state level, and are thus highly capable at negotiating, mediating and cooperating with federal and state actors. Kanindé can also be regarded as a grassroots organisation and there are also several young Surui who work in the organisation. The total staff amounts to twenty people; ten of them work in the main office, while the others are fieldworkers.

Part of Kanindé's mandate is to identify indigenous groups that have not been contacted and make develop an estimation of the territorial boundaries within which these groups move within. Once this has been done they then contact the authorities, in order to safeguard the rights of the newly discovered indigenous group, start a negotiation process for the demarcation of their territory and further work on how the new territory should be implemented and monitored. So far, Kanindé has helped the Surui with mapping out and demarcating their territory, creating different projects that may help them politically and economically, helping them to negotiate with state actors, denouncing intrusion and illegal logging. Kanindé is mainly financed by USAID, and also receives financial support from the Swedish branch of Friends of the Earth.

In 2007 the Surui succeeded, with the assistance of Kanindé, to prohibit logging on their land and they actively denounced transgressions. The loggers, mostly small enterprises and small informal groups, reacted with hostility and issued several death threats against the leaders of Surui. The chief, Almir-Surui, who is also the director of the indigenous organisation 'Associação Metareilá do Povo Indígena Suruí', had to escape to the United States in 2008, so as not be assassinated, and only recently returned to his people. His case demonstrates the real danger of trying to enforce the logging prohibition. Kanindé believes that the implementation of the REDD project will make it easier to maintain the ban on logging and track down and prosecute offenders.

Forest Trends and Katoomba Group

Forest Trends is originally a North American NGO, but has subsequently expanded into a transnational NGO by founding and working with NGO in the United States, Russia, Brazil, Malaysia, and Canada. In order to create the REDD project in Brazil, donors have had to be identified and a project proposals designed. Forest Trends, through the Katoomba Group, is an NGO that has conducted the necessary market research to address REDD project objectives. It is run by a conglomeration of forest business people, forest technicians, development banks, and conservation activists. Forest Trends operate in the ecosystem services niche by establishing what

the market value of the ecosystem are based on who the sellers and the purchasers of these services are. They accomplish this aim by making strategic market analysis, finding investors and developing new financial tools to market and sell ecosystem services. The REDD projects comprise all their objectives.

Forest Trends has founded a specific transnational NGO, which exclusively works with designing and implementation of PES projects, the Katoomba Group. Much like its parent organisation, Forest Trends, the Katoomba Group consists of business people, forest experts, environmental experts, and they have been very active in the construction of national funds, which are channeled to PES projects. The Group has launched a global market information service for ecosystem services, The Ecosystem Marketplace[5]. They offer both tools, experiences and contacts to design and implement PES projects, and their donors include the World Bank, the financial corporation Citigroup, the Ford Foundation and UNDP.

Both Forest Trends and the Katoomba Group play central roles in the Suruí's struggle to certify their land as a REDD project and receive economic compensation, as they provide technical support in formulating and implementing the project, legal advice, training in payment for ecosystem services and contacts with investors.

The Brazilian Biodiversity Fund (Funbio)

Another NGO, which has been active in creating a REDD project at the reserve 7 de Setembro is the Brazilian Biodiversity Fund (Funbio). Funbio's speciality is to offer expertise on how resources shall be accumulated, saved and distributed to the final recipients, and, not least, to offer financial resources. Its board members include governmental representatives, business people and researchers. It currently supports 99 projects and it received approximately 10 billion US dollars in 2009 to be rechanneled to different projects.[6]

O Instituto de Conservação e Desenvolvimento Sustentável do Amazonas (Idesam)

Idesam is a local environmental NGO based in the Amazon region of Brazil. Idesam is involved in examining and establishing how the REDD program should be administered on a daily basis, after the project has been implemented. It specifically focuses on the technical aspects of sequestration. Idesam was founded in 2004, by a number of environmental activists, and cooperates with the Katoomba Group. At the core of Idesam´s work they offer local know-how and perspective to both Katoomba and Forest Trends, regarding the Suruí REDD project.

Equipe de Conservação da Amazônia (ACT)

ACT is another local NGO involved in the creation of the Surui REDD project. This NGO is responsible for making an anthropological assessment of Surui's social organisation and culture, so as to be able to inform how the REDD project should be designed, and how the resources are to be used from a social and cultural perspective. It will also be responsible for the analysis of the Geographical Information System data, which will be used to monitor and assess the project.

This REDD project will be especially carefully monitored because the intention is

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[5] www.ecosystemmarketplace.com

[6] http://www.site.funbio.org.br/teste_en/Portals/0/RA2009_funbio_nav_eng.pdf

The logging in the Amazon rainforest has several negative consequences. The fertility of the land decreases, and the erosion and the risk of forest fires increase dramatically.
Photographer: Lennart Kjörling.

that it shall function as a pilot project for other REDD projects focused on indigenous reserves in the Amazon region.

3.1.4. Discussion

The Brazilian case demonstrates several of the unintended consequences of REDD, both positive and negative, which occur in local contexts. REDD projects are designed to achieve a reduction of green house gas emissions on a global scale, primarily through stopping the logging of forested areas. The local people are a tool to achieve this global objective, but these projects have very limited social aims.

The principal lesson learned from this case is that there is a widespread and complicated entanglement of organisations and other collective actors, who are involved in all stages of the REDD project, and their impact on local decision-making processes.

It also demonstrates the relative potential of how groups, whose territories face the threat of continuous destruction or degradation, may utilize REDD projects so as to counteract these negative processes. It is hard to say how this complicated web of donors and administrators can align or fit into the Surui's own leadership system. This a traditional system that consists of a local form of parliament, a council of elders, and the indigenous organisation 'AssociaçãoMetareilá do Povo Indígena Suruí', mentioned above. However, the different clans of Surui, who are gathered in the indigenous parliament, have agreed to accept the REDD project.

Internal strife which might be mitigated by the REDD project

There is a certain resistance towards the ban on logging among some of the Surui. Several Surui have been persuaded by loggers to sell trees, and do not see any reasons to prohibit logging altogether. The leader Almir-Surui argues that the participation of external actors, such as the NGOs, contributes to mitigate this resistance by making monitoring processes transparent and further isolating the dissidents. It is however, important that the financial resources reach the people as fast as possible, without unnecessary bureaucratic delay, so that they won't regard the REDD project as a negative process[7].

The financial resources attract numerous external actors

The large amounts of financial resources, which are brought about by the REDD projects, tend to attract a wide array of actors, who claim that they can be in charge of specific niches and tasks that are entailed in the implementation of the REDD project. The Suruí REDD project also demonstrates the interconnectedness of the NGO's that are involved, forming a network that ties the most local and transnational levels together. This network defies a classic center-periphery image, where global decisions are distributed top-down, turning the actual target groups of the projects into mere proxies.

REDD's potential power as a monitoring mechanism

Indigenous and social groups who try to hinder loggers, and/or stop other groups from logging trees within their territories, and stop other forms of exploitation of their land and water sheds, continue to face oppression and targeted assassinations, despite the federal government's attempts to create a democratic system with specified and allocated rights. These forms of exploitation of the Amazon rainforest are often supported by local political power-holders. REDD constitutes a vehicle to counteract the groups who exercise and support the economic exploitation of areas of rainforest. The plethora of NGOs and their interconnection to a transnational environmental political field contribute to strengthen the economic and political agency of oppressed local groups. At the same time the participation and influence of NGOs on all levels, create a lack of representative and transparent democracy concerning both the implementation and running of the REDD project. It would be hard for any local actor to get an overview of the planning and decision processes; for indigenous people who occupy a marginal political and social position in the Brazilian society it will be extremely difficult. NGOs might help indigenous inquirers trying to understand the REDD process, but these NGOs are not impartial observers, but active stakeholders.

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[7] This argument was brought forth by several indigenous Surui people.

3.2. Peru

Author: Kristina Marquardt

The Peru case focuses on forms of speeding up the natural fallow establishment in an intensive swidden farming system. Such an adaptive response to the decreased possibilities to claim natural forests for agriculture is interesting as a local agricultural practice with potential for ecosystem service management of the future agriculture landscape in the Amazonian region.

Box 4.
Information collection for the Peruvian case

The Peruvian case is based on research made on small-scale intensive swidden farming systems in the north-western Amazon region San Martín, in the district of Lamas, conducted by the author. The case builds on two years post doctoral research on farmers' intensification of the swidden farming system in the region. The research was conducted with the local NGO Waman Wasi and the International Agoforestry Centre (ICRAF). Fieldwork was carried out in 11 villages around the city of Lamas with small scale farmers belonging to the indigenous Kechwa-Lamista people. The material presented here comes from a series of workshops (7) that explored farmers' view of ecosystem services relating to soil fertility and a series of in-depth interviews (20) and field walks (20) with farmers who have a reputation of being particularly skilful in establishing improved fallows, made 2009-2010.

This research has been made in collaboration with the local NGO Waman Wasi, which works with issues concerning agro-biodiversity and food security in villages belonging to the indigenous Kechwa-Lamistas group in the Lamas region. Waman Wasi has received support from the Swedish Society for Nature Conservation (SSNC) during the last ten years.

3.2.1. The national context

Box 5.
Tropical forest and deforestation in Peru

Peru has the fourth largest area of tropical forest in the world. The Amazon area in Peru covers 785 000 km^2, which corresponds to 60 percent of the Peruvian territory. The Peruvian Amazon is divided into the highland forest (*selva alta*) and the lowland forest (*selva baja*) (Gazzo 1982).

The Peruvian government has very ambitious plans to reduce deforestation in the Amazon region by working with national parks, indigenous groups, sustainable forestry development and eco-tourism, with the help of international funds (WWF 2009). In the Peruvian Amazon region, the tendency at present is to include almost all PES incentives towards preservation of large areas of primary forest as part of REDD.

Although the process of setting up REDD in Peru has been ongoing for more than three years, the process has so far not included the participation of indigenous groups

View of the highly deforestated landscape between Lamas and Bajo Mayo in 2011, San Martín, Peru. Photographer: Kristina Marquardt.

and other smallholders, whose livelihood depend significantly on the forest (Che Piu and García 2011). The indigenous organisations have accordingly criticized the REDD process for not including meaningful consultations with forest communities, for whom legal rights to territories is a central aspect, and these organisations argue that it is impossible for REDD to separate the unity between Forests–Territories–Peoples.[8] These groups also state that there is currently an exaggeration and manipulation of expectations around REDD, which includes speculation in land, forests, carbon capture, and assumed future incomes and this is used to pressure indigenous communities to enter into REDD agreements[9]. Other issues raised in the Peruvian REDD debate are based on how to raise REDD to a discussion not only about forest conservation, but also about future intensions for Amazonian development. Furthermore, the debate examines whether or not regional and local governments are prepared to handle social and environmental issues related to natural resource extraction, conservation, and the influx of funds. Peru embarked on a substantial decentralization process in 2002, transferring more political and fiscal control to sub-

[8] See http://www.redd-monitor.org/2011/03/08/aidesep-critique-of-perus-readiness-preparation-proposal/ and http://servindi.org/actualidad/44155?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+Servindi+%28Servicio+de+Informaci%C3%B3n+Indigena%29

[9] See The Peruvian indigenous peoples' organisation, Inter-Ethnic Association for the Development of the Peruvian Amazon (AIDESEP), detailed analysis of Peru's Readiness

national governments. However, in many cases provincial and district governments in areas where REDD funds currently exist, or soon will be, are lacking long-term strategic plans and programs with transparency and accountability mechanisms for tracking revenues and expenditures.

3.2.2. Ecological and social background of the area

Box 6.
Deforestation in San Martín

Between 1961 - 2005 the migrant population in San Martin increased from around 10 000 to around 695 000 persons (INEI 2006). During this time the agricultural area in the province has increased by 36 percent (INEI 2007b) and 18 percent of the natural vegetation has been removed (INEI 2007a). In 2000, 30 percent (1 644 577 hectares) of the San Martín region was deforested. It is estimated that San Martín had the highest deforestation rate per year in Peru between 1985-1990 (INEI 2007a).

The region where this study has been conducted, San Martín, is an area of highland forest which covers the hillsides of the Andes where they meet the Amazon forest (between 500 - 2000 m.a.s.). The highland forest temperature is slightly cooler and not quite as humid as further down in the Amazon basin. Due to its location in-between two ecological zones, it hosts a rich biodiversity and it is considered a bio-diversity "hotspot", which should be prioritized for conservation (Myers et al. 2000).

Fast changing land conditions (see box 8) means that farmers today are experiencing real problems of land management. Most of the small-scale farms are operating in hilly areas with narrow valleys, where numerous small rivers and streams flow down the slopes and into the bigger rivers. The conditions for land management can be divided into three ecological zones: (1) farming land relatively close to the river bank; (2) farming land higher up the slopes – often very poor in vegetation; and (3) areas with some more rainfall and greater access to forested areas. The forest frontier is moving further and further away from the area and a large part of the area is today established agricultural land (i.e. cropping land and secondary forest fallows vegetation) and the shifting cultivation practices is becoming increasingly intensified. The period of fallow in the local shifting cultivation system is decreasing and the regeneration of fallow vegetation is becoming increasingly problematic. However, the local shifting cultivation farmers are entirely dependent on the ecosystem services that come about through the regeneration of the forest, i.e. tree fallows that regenerate soil fertility during the shifting cultivation cycle, for successful agricultural production.

San Martín has a wide spectrum of land use systems of agricultural land uses:

- swidden fields that pass through cycles of field-fallow-field-fallow
- multistrata agroforestry systems (mainly shade coffee and cocoa)
- long-term monoculture (e.g. oil palm, jatrofa, irrigated rice)
- permanent pasture; degraded cropland and degraded pasture (predominance of weeds and bushes)
- primary forest and mature fallows

The Kechwa-Lamista (as well as other shifting cultivation farmers) may have a combination of land belonging to several different categories and hover periodically between annual and perennial crop production and forest fallow, and often have holdings in several different areas (see box 7). Most farms are a mosaic of young secondary vegetation, fields with annual and perennial production and areas of degraded land and sometimes also mature fallow.

Box 7.
Example of what a farm might look like

One of the respondents had areas of mature fallow, fields with annual production and inter-sowed trees in different stages (to become improved fallow), a field of the perennial *sacha inchic* (inca peanut) and areas of degraded land around the house in the village. He also used land on relatives' property (a 3 hours walk distance from his house) for annual and plantain production in an area where there was still mature forest available and where production was better.

Most farmers open up their agricultural field in secondary forest (e.g. a fallow). They convert the forest to annual fields to primarily produce maize and beans. Between such staple crops, in the first year they include upland rice, cassava and other local tubers, herbs, vegetables and chili peppers, planted in smaller quantities. The field is then enriched with plantain and other perennial crops over the coming years. There is thus a large variation of crops during the years the fallow vegetation, before a new clearing, but fallow periods between cropping are becoming shorter.

3.2.3. Actors involved

The state

The Peruvian Ministry of the Environment was created in 2008. The Ministry is now responsible for issues of policies and norms related to ecosystem services, and is leading the government's work on national REDD and climate change mitigation initiatives. The Ministry has declared a strong interest in promoting REDD pilot projects. One of three such pilot projects is found in San Martín. Three REDD regional roundtables have been implemented in order to facilitate the regional discussions, where of one of those is found in San Martín (founded 2009) where 60 public organisations participate. The REDD roundtable in San Martín is the round-table that have made the most progress in developing their REDD project in the Peruvian Amazon. So far 35 REDD projects have been initiated, or in pipeline, in 11 different departments (Che Piu & García, 2011). Currently, there are few on-going PES projects in the department of San Martín.

NGOs

The role of NGOs in the Andean and Amazon regions is often complex. NGOs are assumed to work for sustainability, participation and efficient development, and, in many areas, are also expected to handle roles that were previously handled by the state (e.g. rural credit system, extension, research, management of national parks) or commercial organisations (e.g. promoting certain crops or products) (Bebbington 1997). Many NGOs in the area were created when the state failed to carry forward alternative development strategies, the market failed to do so as well, and the popular

community movements were either too weak or their actions were repressed. The NGOs in Peru take on roles of consultant groups, social enterprises and financial service institutions in order to bridge a gap between farmers, the state and the market, in the absence of domestic, endowed autonomous civil society funding mechanisms (Bebbington 1997). In the work of the REDD round tables, the ideas is that participating NGOs should represent the smallholders interests and consequently the NGOs will have a crucial role in a future REDD implementation.

Farmers

The majority are working with shifting cultivation techniques without using any pesticides or mineral fertilizers (INEI 1994), and it is primarily the vegetative processes that add to the soil fertility. In the study area, it is possible to distinguish three (main) categories of smallholders: indigenous farmers from the Kechwa-Lamista people; people of mixed indigenous and mestizo origin who have lived in the area for several generations, and the recently immigrated colonist farmers (mostly Andean people). Indigenous groups in San Martín have not felt that they are represented at the REDD roundtables and recently several indigenous organisations jointly have established an 'indigenous roundtable'.

Box 8.
Small holders in San Martín

The land holdings in the Lamas area have decreased drastically in size during the last decades and the majority of farmers in San Martín are small-scale farmers; more than 50 percent have access to less than ten hectares (INEI 1996). Many of the interviewed Kechwa-Lamista farmers have as little as 2 hectares per family, and many farming families move their production, or parts of the production, to primary forest areas as an accessible way to improve the household situation.

3.2.4. Implementation of improved fallows

The study demonstrated that farmers perceived changes in what ecosystem services provide in their production system. By discussing soil quality, crop production quantity and quality, burning practices, forest regeneration and farming skills, farmers described the ecosystem services that normally support such systems and how they are being affected. The farmers talked about production in quantity and quality and how these depend on the soil quality, which depends on the kind of vegetation you clear for your field. However, mature forest/vegetation/fallow, which is the best kind of vegetation to clear for a field, is becoming scarce. Farmers confront these problems of ecosystem service management in different ways; some, noticing changes in their production system due to decreasing natural regeneration of their fallows, i.e. when they note the lack of ecosystem services, have started to actively manage their ecosystem services with a long-term perspective. Others further speed up the field/fallow cycle in a short-term perspective. The farmers with a long-term perspective on crop production have actively started to sow/plant trees on their crop-land in order to 'create' improved fallows (see Box 9).

Box 9.
The creation of fallows for ecosystem service provision

An improved fallow must be planned from the time the vegetation is first cleared to create an area for food production. The field area is cleared, the cut vegetation is left to dry and the area is then burned. Shortly after burning, annual food crops, especially maize and beans, are sown and during the first year the field is also used to produce vegetables, cassava, cotton, etc. As weeds start to appear, shoots from voluntarily germinating trees also appear. Some farmers let selected volunteer shoots grow from the first crop season in the new field, while others clear them away during the first harvest season and only let them grow when the perennial crop is established and dominates the field (two to four years after opening up the field). The different tree species allowed to establish in the field are deliberately selected based on the farmers' local knowledge of their properties and growth dynamics. The timing here is essential, as the farmer does not want to let the trees become too big in the field too early, so that they inhibit food production, but also does not want to clear the tree seedlings away for too long as this would hinder enough shoots germinating when the time comes to let the field become fallow again.

Depending on the soil fertility/degradation status of the field, crop yield will decline over time. Declining plantain yield in particular is observed and taken as a sign of field depletion. The plantain may produce two harvests in the more depleted fields, whereas the fertile fields may produce up to five-six harvests of plantain or sometimes even more. When the field is later left to become fallow, the fallow starts to thicken. In some cases farmers do some maintenance work in the growing fallow and some harvesting may still be possible during this intermediate stage between field and fallow, as some plantain varieties, cassava and fruits continue to produce even within vegetation. The fallow will grow until the farmer considers it to be convenient to transform the land into a field again. With improved fallow, it is very clear that the kind of forest fallow the farmers manage to nurture sets the stage for the next production cycle.

One of the participating women expressed it thus: "In the same way you have to sow maize (in order to make it produce), you have to sow huabas, rujindis, fapina (N-fixing tree species) in order to have a fallow" (Farmer in Alto Pucalpillo, November 2009).

The practice of improved fallows can be seen as a long-term soil management strategy and also a strategy to return degraded land to production. The practice is potentially interesting for maintaining fertility in already cleared areas, as well as converting grass/weed/bush land into vegetation with more biomass, which can increase ecosystem services. In this particular case the biodiversity of the swidden system should be compared with a grass and shrub landscape and/or a tree succession landscape, rather than natural forests. Swidden systems and its secondary vegetation has been shown to be more diverse than other land use system, such as commercial agriculture (Padoch et al. 2007). The farmers in the study actively managed 118 tree species (with the diversity on the individual farm varying between 9 and 47 managed tree species). To establish an improved fallow, the farmer uses biological diversity in order to increase biomass production, and he/she needs detailed ecological knowledge of how to identify and manage a diversity of tree species, and a view of field and fallow as a closely integrated system that is beneficial for ecosystem service management. Such an understanding of the link between food production and vegetation is highly useful in future processes of encouraging and developing ecosystem service management in the area.

Agricultural policies in areas where swidden farming is a tradition is often directed towards stabilizing agriculture in permanent agroforestry systems, e.g. coffee and cacao production in San Martín (e.g. Gobierno Regional de San Martín 2008).

Eight years old planted forest (improved fallow) at Don Pedro's farm in Congompera, Lamas.
Photographer: Kristina Marquardt.

However, few farmers would grow only coffee and cocoa, leaving the annual food crops used for household subsistence behind (e.g. maize, beans, plantain, cassava) and these cannot be produced within the mature cacao or coffee plantation. Therefore, the farmer family will open a new field as the canopy encompasses the agroforestry system, for producing annual crops. Thus, the agriculture frontier keeps on advancing into primary and secondary vegetation parallel to the establishment of coffee plantations. Another way to approach future sustainable Amazonian farming would be to include the diverse and complex characteristics of swidden farming and aim for combinations of land use systems, such as permanent agroforestry fields, as well as rotational swidden fields with improved fallows.

3.2.5. Discussion

The need to include agricultural land in REDD

Many farming families (indigenous and non-indigenous) in the Amazon region find themselves in increasingly harder social economical and ecological conditions. In the villages participating in this study, the agricultural frontier has stabilized, and agriculture is practiced in geographically steep zones. The period of fallow in the

local swidden farming system is decreasing and the regeneration of fallow vegetation is becoming increasingly problematic. Moving production, or parts of production, to primary forest areas is one possible adaptive response to improve the household situation. One of the objectives of REDD is to decrease pressure on the primary forest areas. In order to reach such goals, small-scale land users' interaction with different types of landscapes, including agricultural ones, needs to be included in the analyses. That would also allow consideration on how existing swidden farming with its fallows systems contribute to ecosystem service management, and the possibility of including already established agricultural areas in PES programs. Approaching deforestation without including agriculture in the analysis, not only as driver but also as part of the solutions, will not reflect the reality of livelihoods in the Amazon and thereby will have less possibility to succeed.

Agriculture and forestry are often closely interlinked in livelihood systems

In swidden farming, the division between forest- and farming land is blurry over time; forest becomes field, but field also becomes forest. Forest vegetation is part of the farming system cycle. As part of the production cycle the land is covered by perennial vegetation, contributing to biodiversity, generating ecosystem services and soil fertility. Practices, such as improved fallows, that can improve the quality of the farmland and prolong the time the field can be used, decrease the need for the farmer families to move into primary forest areas. Roughly calculated, about 50 percent of the farms in the study were covered by some kind of fallow vegetation (less at smaller farms and more at larger farms), which implies that the fallows are an important land use category, at the farm level as well as on a regional level.

Fallows - important land use with potential for ecosystem service management

In spite of the large areas in a region, such as San Martín covered by fallow, there is little to no attention directed toward fallow and fallow management in future scenarios (for example see Gobierno Regional de San Martín 2008). Though 50 percent of Peruvian CO_2 emissions originate from the burning and deforestation of forests and other land use changes, mainly from smallholder swidden farming (WWF 2009) the agricultural sector is not included in the collaboration plans. Many small-scale farmers have detailed knowledge of how to restore degraded land areas into secondary forest areas, something these programs could benefit from. However, the current situation of REDD negotiations in the Peruvian Amazon setting is characterised by growing conflicts of the control over forest resources and conflicts of interest between production and conservation in the same land use system[10].

[10] See pagina REDD Peru - No hay Redd+ sin Territorios, Derechos y Autonomía de los Pueblos Indígenas

3.3. Tanzania

Authors: Linda Engström & Klara Jacobson

Presented below are two case studies from Tanzania. The PES project presented is a REDD pilot project that had been ongoing for one year at the time of data collection. The alternative ecosystem service management approach is a Community Based Forest Management (CBFM) project that had been ongoing for nearly 20 years, where communities after a long struggle had managed to get formal ownership of the forest resources and management.

3.3.1. The Tanzania PES Case - REDD in Kolo Hills

Box 10.
Information collection for the REDD study

The study, made by the authors, is based on interviews with:

- one senior expert at Tanzanian Natural Resource Forum (TNRF)
- the REDD coordinator at the African Wildlife Foundation (AWF)
- the REDD community facilitator at AWF
- the Kondoa district forest officer
- the Kondoa district head of natural resource department.

A meeting in one of the villages in Kolo Hills provided information on local perspectives. The meeting was called by the AWF REDD community facilitator, who also took part in the meeting. In the meeting, the chair and secretary of the village council were present, as well as 17 other members of the council and assembly, out of which three were women.

A local extension agent translated during the village council meeting and provided valuable information on the context.

3.3.2. The national context: REDD

An evaluation report of Participatory Forest Management (PFM)[11] in Tanzania (Blomley and Iddi 2009) identifies direct causes of deforestation, such as clearing for agriculture, overgrazing, charcoal making, persistent reliance on wood fuel for energy, lack of land use plans and non-adherence to existing ones. The underlying causes of deforestation have been attributed to rapid population growth, poverty and policy failure, including lack of financial incentives and government inability of effective management. In Tanzania's Strategic Plan for the forestry sector (2010), one of the ways identified for increasing the revenue accrued from natural and cultural resources and tourism is to promote ecotourism and "payment for environmental services" (Ministry of Natural Resources and Tourism 2010). According to the same

[11] A general umbrella term developed by Tanzanian practitioners that describes different approaches to involving community members in the management of forests, both through community management, e.g. CBFM, as well as co-management approaches (Blomley and Iddi 2009).

document, REDD is regarded as a means to "provide economic incentives for stakeholder involvement in conservation" (Ministry of Natural Resources and Tourism 2010:30).

Box 11.
Tanzania Forest Facts

Tanzania has over 335 000 km^2 of forests dominated by Miombo woodlands, and species-rich wooded savannah ecosystem. About half is reserved forest, or proposed to be reserved, and the remaining 165 000 km^2 of forests lie on village and general land. While most of these unreserved forests are poorly managed (partly due to insecure tenure), traditional and customary management practices have supported the conservation and maintenance of forest cover for sacred, religious or social purposes in numerous localities across the country. Deforestation was estimated at 1.1 percent per year (approximately 4000 km^2) of the country's total forest area between 1990 and 2005.

Source: (Blomley and Iddi 2009)

There are currently nine pilot cases for REDD in Tanzania. The aim with these pilot cases is to gain hands-on experience with REDD, feeding into the National REDD Framework and Strategy (Tanzania Natural Resource Forum, year unknown). Initially, the main actors were NGOs, but increasingly the private sector and universities showing active interest in getting involved. The REDD pilot cases are all financed with bilateral support from Norway through the International Climate and Forest Initiative (ICFI) (Tanzania Natural Resource Forum, 2010).

Box 12.
REDD in Tanzania

In 2009, a preliminary National REDD Task Force was established with the Institute for Resource Assessment (IRA) at the University of Dar es Salaam as the secretariat. Today it is mostly government representatives that are included in this task force, but the plan is that the more permanent institution following the Task Force will include sectors and stakeholders such as agriculture, NGOs, Forest Dependent People's Organisations and the private sector. IRA will facilitate the consultation for the REDD Strategy process. In addition, the national Forestry and Beekeeping policy explicitly states that communities must be involved in REDD implementation.

At the time of data collection for this study (February- March 2011) it was not yet clear, even at National government level, who the buyers of the carbon credits would be, or at what level the money would enter. Civil society organisations emphasised the need to connect villagers that implement REDD directly to the carbon market, to ensure that they received the money.

3.3.3. Ecological and social background of the Kolo Hills' REDD project

The Miombo forests in Kolo Hills are located in Kondoa district. The area is characterised by semi-arid to sub-humid conditions with a mean annual rainfall between 600 and 900 mm. Altitude ranges from 1 650 – 2 000 m above sea level. The area is the watershed of Tarangire National Park and has therefore been partly under long term protection. The core of the forest is state owned and has been under long term protection by the government, other state owned parts of the forest are managed through joint forest management (JFM) between local villages and the government. In addition some parts of the forest are owned and managed by the communities since 1998. The protected core of the forest is, however, used illegally by local people to harvest natural resources, which is an important part of their livelihoods (Blay et al. 2004).

Kondoa district has historically suffered from severe erosion problems. A central cause of this was the removal of all vegetation 1927-1949, in an attempt by the former Tangyanika leadership to eradicate the tsetse flies (Mugasha and Nshubemuki 1988). Subsequently, many development projects, including projects by the British colonial rule and later the Sida financed HADO project, have addressed these problems. While erosion was reduced, these initiatives sometimes had devastating social consequences locally, for example by displacing people and cattle. There was little or no participation by villagers in planning and implementation (Blay et al. 2004). Local natural resource management and agriculture has hence been continuously disrupted over a long period and there is widespread skepticism among many villagers against new development initiatives.

3.3.4. Actors involved

The Kolo Hills REDD pilot project is coordinated by the Africa focused international NGO African Wildlife Foundation (AWF), with a budget of 2 million USD for 3 years. AWF collaborates with the Kondoa district council, which leads the district's forest and land management activities, e.g. community forestry and village land use planning. Other partners include:

- IRA (Institute for Resource Assessment) – engaged to perform the socio-economic baseline as well as monitoring.
- Selian agricultural research institute – contracted by AWF to provide agricultural extension services to diversify livelihood options, with the aim to relieve pressure on the forest.
- Camco (the Kenyan branch) – contracted by AWF to perform carbon measurements and marketing.

At AWF, a community facilitator and a project coordinator are employed to work with the REDD pilot project. In total, 21 villages are involved in the plans for REDD implementation. AWF had worked in four of these villages before the onset of the REDD project. During data collection March 2011 there was no contract between AWF and the villages in Kolo Hills regarding their collaboration in REDD.

3.3.5. Implementation of REDD in Kolo Hills

The REDD pilot project started with the African Wildlife Foundation (AWF) managing to secure funding from Norway to implement a REDD pilot case in Tanzania. AWF selected the areas where they wanted to implement their case and then contacted local government and villages. Poverty reduction is an important objective for the Norwegian ICFI, alongside goals for mitigation of climate change and sustainability (Norad, 2010). However, one primary aim of AWF, being a wildlife organisation, was the observed potential to improve the conservation of Kolo Hills forest area and to secure a constant flow of water to Tarangire National Park, which is a regionally important area for wildlife management. AWF was concerned that local over extraction of forest resources caused degradation. They saw an opportunity to use the REDD initiative to increase forest protection.

Village council meeting in Kolo Hills.
Photographer: Linda Engström.

There are 56 000 hectares of forest in the area included in protection under REDD. This includes 22 000 hectares of planned conserved forest, a reference area and a leakage belt (meaning an area that allows some "movement" of the use of the forest due to restrictions within the conserved forest). Parts of this forest has been under long term protection, but this protection has been poorly enforced and villagers have been using the forest and extracted resources for their livelihoods to an extent that the conservation regulation would not permit. Under the REDD initiative AWF sees a chance to extend the protection of the forest area and to better ensure that it is not being violated locally. The forest currently plays an important role for local people's livelihoods. Cattle are grazed mainly in the forest due to lack of other available land for grazing. In addition, a range of other ecosystem services in the forests are used by villagers including timber, firewood, water, poles for construction, stones for construction, sand, and grass for roofing. With the implementation of REDD, the use of these natural resources would be highly restricted.

In the beginning of the project, the Kenyan company Camco performed baseline measurement of carbon in the targeted forest areas. This was done without any local engagement. The reference areas were selected by GPS, and the intention was to later use satellite images to identify changes in forest cover. This was initially done without local participation. The idea was that selected villagers at a later stage would be trained to do the measurement of carbon and a selected number of individuals would then be told the measurement plots.

When the REDD project was presented to the villagers by AWF, they were told that they would receive money from the project if they refrained from using the forest in the ways they used to. The monetary compensation induced the local acceptance of the project.

Both in earlier discussions with AWF, and at the meeting we attended, people expressed concerns regarding how they would sustain their livelihoods without using the forest, if alternative ways of securing a livelihood were not provided. Despite the fact that AWF had been involved in the villages for one year, villagers were still not clear on which resources they could and could not use in the forest under the REDD regime. In addition, the provision of agricultural extension services to improve agricultural production, and thereby provide alternatives for villagers to the extraction of forest resources, had not yet been initiated and the timeline for this had not been clearly communicated to the villagers. The socio-economic baseline survey and feasibility study to map current use of forest products and to see what people needed to secure their livelihoods in the absence of some forest products had been done after the conservation practices were established. Furthermore, while it had become clear to AWF during the designing of the land management plans that there was no available land in the villages for grazing outside the forest, this had not been solved, but people were still prevented from grazing in large parts of the forest area. AWF had contracted Selian Agricultural Institute to provide extension services and help people diversify their livelihoods. The contract, however, was signed after restrictions on forest use under REDD had already been implemented. After one year of engagement of REDD, people had not yet experienced any help with agricultural extension services and livleihood diversification.

In the words of the village chairman:

> "Nothing has started yet. REDD is an initiative from far. It is not our initiative".

While the AWF staff held regular meetings with village councils and village assemblies in the targeted villages they had not been able to make local people engaged. As a measure for resolving the problem of people not showing up at meetings, AWF started paying people for attending. This approach was seen as highly controversial by other actors with knowledge in community based management projects. Moreover, the approach by AWF to engage people by telling them that they would receive money in the future for selling carbon credits is highly questionable since it is not clear at this stage to what extent the money for REDD would actually reach local people. Even if money would reach villagers through a trickle down process, which was in itself highly questioned by many actors, there were other issues that could still reduce the money reaching local people. For example, according to AWF, if the forest protection under REDD would lead to increased pressure on other forests (i.e. that villagers would start extracting products from nearby forests when being excluded from the local forest), so called leakage with REDD terminology. The cost of this 'leakage' would be deducted from the carbon profit to villagers. The hitherto lack of support for alternative livelihood strategies makes it likely that this kind of leakage would occur. Indeed this was what AWF claimed to have happened in nearby areas when people had been engaged in CBFM projects which increased the degree of protection for surrounding forests.

3.3.6. Discussion

Even though the REDD project in Kolo Hills had only been ongoing for one year, and acknowledging that initiating projects like this takes time, we have singled out a few factors that we found unclear when it comes to the future possibilities for this particular REDD project to contribute to improved livelihoods and poverty reduction, as well as some general challenges for implementing REDD.

Lack of local participation

One underlying and critical factor mainstreamed in all points below is that the project does not seem to have its take off point in the local perspectives. As presented above, there are many signs of this, and subsequent symptoms such as lack of local ownership and engagement, which for example results in AWF paying villagers to engage in meetings about REDD.

Forest conservation as a primary focus

AWF has had its primary focus on forest conservation, while engagement, and possibly experience and knowledge, to achieve development through participation and dialogue with local people, have been lagging behind. Conservation goals are communicated by AWF as being in opposition to extraction of subsistence forest products and use of other ecosystem services. This is clear in the way the REDD project was presented by AWF to villagers: if they would not use the forest they would get money from the REDD project. The fact that the problem with lack of grazing land had not been solved also shows a lack of understanding for the needs of local people to use their local environment for their livelihoods.

Forest conservation kept separate from agricultural development

While AWF planned to provide support for essential alternative livelihoods, they had not ensured that this was in place before they implemented restrictions on local forest use. The planned agricultural extension services had, for example, not yet been initiated. The villagers were not even clear about if, in what way, or when, they would get access to these services. Despite the fact that villagers raised many critical questions in the process regarding compensation when not being allowed to extract forest products as before, these had not been answered by AWF in a satisfying way.

REDD – a challenge to communicate

The way the villagers describe how they understand REDD, how the carbon will be measured etc, shows the complexity of this global "initiative from far", and how it creates challenges to communicate it and to build a sense of local ownership and control, leading to engagement.

Failure in REDD planning?

AWF's way to engage in the REDD project is questionable from a social sustainability and poverty reduction perspective. It also casts doubts on the process in Tanzania for selecting future areas to be targeted by REDD. The current approach where NGOs get funding for performing REDD projects without a functioning plan for how local participation and poverty reduction is to be handled has opened up for these problematic initiatives. This might be a result of the relatively fast implementation rate of these projects.

3.3.7. The Tanzania alternative ES management approach - community based forest management (CBFM) in Suledo

Box 13.
Information collection for the Suledo case

The study, made by the authors, is based on the following data:

Interviews made with:

- staff at the Swedish consultancy firm Orgut who organised Suledo forest and Land Management Programme (LAMP)
- the district forest officer in Kiteto
- the forest manager for Suledo
- the secretary for Suledo Zonal Environmental Committee (ZEC).

A two day visit to villages engaged in Suledo and LAMP provided information on the local context. This included brief visits to several forest areas within Suledo, including areas that had recently been selectively harvested and interviews with four families (of which two were longer interviews) in one of the villages. Mainly male farmers were interviewed, but on two occasions wives were present and answered questions. The farmers interviewed in the two longer interviews had been and were highly engaged in farming and had had much contact with agricultural extension services as well as with the Suledo project.

The former forester for Suledo was our interpreter and provided valuable information about the context.

Review of Orgut publications on Suledo and LAMP, and studies on Tanzanian legislation and Strategic Plans, complemented the interview information.

3.3.8. The national context: Community based forest management

Community based forest management (CBFM) was initiated in Tanzania in the early 1990s in the Babati district. At that stage, the national forest law did not allow communities to manage and own forests and the CBFM was a reaction against the restricted access to forests under state ownership (Blomley and Iddi 2009).

The management of the Suledo forest by local communities also commenced in the early 1990s, and was made possible by using existing land and government laws to develop bylaws which facilitated the practice. By demonstrating positive impacts on the ground in terms of forest restoration, the experiences of the Babati and Suledo forests (and others in central and northern Tanzania) were used to influence and inform the development of the Forest Policy (1998), which in turn fed into the formulation of the Forest Act (Blomley and Iddi 2009).

Today, Tanzania is considered to have one of the strongest local institutional frameworks for community-based natural resource management in sub-Saharan Africa (Blomley and Iddi 2009). Key legal and policy instruments provide the legal basis for villages to identify, declare, own and manage forest resources on village land in ways that are both sustainable and profitable. Participatory Forest Management (PFM,

The conflicts between pastoralist maasai people and resident farmers was one of the reasons why Suledo was initiated.
Photographer: Linda Engström.

including CBFM) is either being established or operational in over 2,300 villages, covering over 40 000 km^2 of forest land (ibid).

However, despite its progressive policy framework, Tanzania's overall performance in forest governance is still relatively weak (Kilahama 2010) and local people often get less possibilities for local management than the law provides. Laws and regulations are further constrained by the possibility in the law for government to overrun local management and ownership in case of public interest or if "development" of the locally managed land is not taking place. The legislation can also at times be contradictive.

3.3.9. Ecological and social background of the area

The dry, semi arid area where the Suledo project has been implemented harnesses species rich Miombo forests. The forest has traditionally been used by Maasai pastoralist communities for grazing. During the past decades, there has been immigration into the area from more densely populated districts, and forest land has been occupied and used for swidden agriculture. Lack of local land management plans and corruption in village leadership has allowed for this to take place to an extent that

has been detrimental to the local forests. A common problem which still exists today is that Maasai grazing land is taken over by immigrating smallholder farmers, while the Maasai are grazing their cattle elsewhere during the dry season. The history of immigration has created conflicts in the area, mainly between pastoralists and farmers, and it has also caused large scale deforestation (Sjöholm and Luono, 2003).

A survey carried out in 1994 pointed out that pastoralists were on the losing end. While pastoralists were dependent on the forest as an important resource for grazing, the farmers continued clearing the forest to open up new fields. Due to the increasing deforestation in the area, a national process was initiated to declare the forest area as a central government reserve. It was at this stage that Suledo was initiated by the Swedish consultancy firm Orgut (with financial support from Sida), as a counteraction to this national process, as well as a response to long standing land conflicts. Orgut aimed at establishing a CBFM where the forest was to be managed, owned and protected by the villages surrounding and using the forest area.

3.3.10. Actors involved

The Suledo forest project has been initiated and coordinated by Orgut and implemented through district councils and lower level government authorities in the Kiteto district, with financial support from Sida, since the onset in1993. There are 30 000 people in ten villages inhabited by both smallholder farmers and Maasai pastoralists, organized around the 170 000 hectare Suledo Miombo forest. Environmental committees with responsibility to manage the forests have been formed at sub-village, village and zonal level (ZEC). ZEC has been formed by membership of three representatives from each village.

3.3.11. Implementation of Suledo/LAMP

In 1997, the Land Management Programme (LAMP) started in the Kiteto District. Since then, these two initiatives, LAMP and Suledo, have been strongly interlinked. The communities have been provided with directed measures of support throughout this period of time, with the aim to build local capacity and long term sustainability. For example, villagers have been trained in knowing and implementing their legal rights to their natural resources. They have also been given financial management training and legal assistance in negotiations with local and national government officials and harvesting companies. The training has to a large extent been carried out by local experts. Those who have received training have in turn trained others. In this way, the costs for Suledo have been kept to a minimum and local capacity has been strengthened.

With the long term aim to enable local and sustainable management of the Suledo forests, the villages have received support in the long process of demarcating land and obtaining a Village Land Forest Reserve title (obtained in 1997 but not gazetted until 2007). At the outset of the project, a land use planning exercise was undertaken in each village, where an area of forest was set aside for each village and local bylaws were enacted to protect the forest, generate income, harvest and issue permits and fines. The forest itself was then divided into three zones – grazing zone (80 percent), agriculture expansion zone (5 percent) and totally protected forest zone (15 percent). The primary focus was put on grazing since it was the greatest incentive for local

participation (Sjöholm and Luono, 2003). In the beginning there were strong restrictions regarding what the villagers could extract from the forest, these restrictions have been eased as forest quality has improved. The initial restrictions were made possible since LAMP simultaneously provided possibilities to intensify agricultural practices in an ecologically sustainable way, providing alternative livelihoods.

Land management within Suledo/LAMP has focused on supporting different land uses needed for a sustainable land management – i.e. of the forest, as well as for agricultural practices. LAMP has introduced agricultural extension services adjusted to local needs and possibilities. An important concept in LAMP was the practice of arranging field visits with other smallholders in more intensive agricultural systems in the region as a way of introducing more intensive and soil conserving practices that were adapted to local social and ecological systems. Through these field visits some farmers had for example adopted terracing and agroforestry to reduce soil erosion.

Villagers used the forest, and still use it, for grazing, collection of fire wood, fruits, medicine etc. During interviews the villagers expressed how the improved condition of the forests had benefitted their livelihoods. For example, several villagers perceived that there was more rain, and that there were sufficient amounts of fire wood and grazing in the forest. People also stated that there were fewer conflicts since there was enough grazing for everyone. Some villagers also highlighted the increased water availability and quality, although the women interviewed affirmed that water collection still is a heavy task.

In 2010, the forests were rehabilitated to an extent that made it possible to start logging trees selectively. The tender process to select a local forest company and a local saw mill took a long time, since it was aiming at finding companies willing and able to be transparent, produce harvesting plans and budgets, etc. However, the company selected eventually saw the benefits from this arrangement. The villages are now starting to make money from timber sales. Two species are harvested: ntondoro (*Jubernadia globiflora*) and msane (*Brachystegia microphyl*a). The villagers estimated to be paid Tsh 120 000/m^3 dollar for the first harvest, according to national standards. However, due to suboptimal timber quality only Tsh 66 000/ m^3 was paid for the 2010 harvest. The profit went to ZEC and was evenly distributed to the village councils, despite the fact that different villages own different amount of land within the forest. One purpose of this was to create acceptance of the forest conservation measures in all the villages using the forest resources, and thereby reducing illegal entrances into the forest. The money received by village councils from the harvests were used in accordance with a decision made at the village assembly, following a proposal made by the council. In Sunya village, the profit from 2010 was approximately 1 million TSh (5000 SEK) and it was used to pay for new school desks in the village school.

Some events presented to us showed that the management set up had good potential to work in a transparent and accountable manner and villagers were able to take action against management problems. For example, the former financial manager, who was recruited from outside the villages, was fired after problems arose with the finances. The new financial manager was recruited from within the villages and was previous a member of ZEC. She was trained by an independent national NGO before she became manager. Villagers believed that the recruitment of a local villager for the job would reduce the risks of corruption.

3.3.12. Discussion

The long term capacity building in Suledo has clearly increased the level of awareness within the participating villages regarding their rights to resources, business management and their responsibilities as forest managers. However, in some situations, e.g. in negotiations with the private sector, they still express the need for external support, and there are still challenges remaining to be solved. Nevertheless, in many ways, the Suledo/ LAMP case shows many positive results. Apart from the overarching aim of building a local transparent organisation for a better forest management, there seems to be fewer conflicts over grazing land, more fire wood in the forests, income from timber harvesting, more precipitation and easier access to water. Key success factors include:

Local livelihoods in the centre of forest management

The Suledo project has worked with the understanding that local natural resource use is a central part of local livelihoods and that local people will benefit when conserving these resources, but that local ownership has to be strong to provide long term sustainability and acceptance.

Forestry and agriculture are interlinked

The Suledo project departed from the idea that it is possible to make local people interested in conserving forest, but that this must be done alongside with providing alternative livelihood options. The collaboration with LAMP, providing important extension services adjusted to local conditions and needs, has been crucial for the acceptance of local communities for restricted use of the forest. The benefits for agriculture from improved forest management are now starting to show.

Building on existing local institutions and knowledge

Orgut worked with existing local institutions, built on existing local knowledge, and used local government laws. We see this as a key reason for the success in developing and sustaining Suledo.

Long term commitment

The approach to give selected measures of support during a long period of time has also been important, not least since many processes take a long time, such as capacity building, implementation of new agricultural practices, obtaining legal titles to land as well as a continuing dialogue with the private sector and government officials.

The profits made by villagers from the harvesting is an example of how local communities which are already managing ecosystems and benefitting from them for their livelihoods, can also profit monetarily. However, the new situation where the Suledo villages will be able to extract substantial amounts of money from harvesting timber will be a test of the local capacity to negotiate with the private sector and government and to hold back corruption. The increasing abundance of wildlife in the forests is also contributing to enhanced external pressure, not least because ownership of forests and wildlife is subject to conflicting legislation. Other challenges can be found in the retention of capacity in managing the conservation and harvesting procedures, and withstanding corruption as donor support is withdrawn or reduced.

3.4. Vietnam

Author: Malin Beckman
Written in collaboration with Hoang Minh Ha, Tran Duc Luan and Hoang Thi Sen at ICRAF Hanoi.

The Vietnamese case study looks at two cases in Vietnam. The first is an account of a government trial of PES in the Lam Dong province in southern Vietnam, as part of the national PES piloting program 2008-2011. Payments are mobilized from state-owned companies to pay the Forest Management Boards and Forest Enterprises, who in turn contract the farmers to protect the forest. The second case is an account of a community in Thua Thien Hue province, central Vietnam, which previously had its livelihood based on the forest, through hunting, gathering and shifting cultivation. Now it is settled with fixed cultivation and increasingly closed off from access to the forest, without PES. We look at their perceptions of risks, opportunities and visions of a forest based livelihood.

3.4.1. The national context

Between the 1940s and early 1990s the forest cover in Vietnam decreased from 45 percent to 28 percent, due to the war and logging. Since the early 1990s there has been great attention by the Vietnamese government, donors and NGOs to increase forest cover in Vietnam, which has been steadily increasing again to around 38 percent. However, the forest that was lost is mostly natural forest, while the forest cover that is replacing it is planted forest, with less value for carbon sequestration, biodiversity and other ecosystem services. An important focus of forest policies has been on the role of the forests in binding the soil and water and thereby decreasing the risk of erosion, landslides and floods during heavy rains, and decreasing the sedimentation in lakes and dams.

The Vietnamese government has launched a series of forest-related support programs between the mid1990s and 2010[12]. The programs have paid farmers to plant trees and protect the forest. Tree planting contracts have provided income for farmers in the short run, but often with unclear benefits and limited rights to the forest in the long run (Beckman 2006). Protection arrangements have included the payment to some farmers of 3-10 USD/year to patrol the forests and report illegal logging, illegal hunting and illegal agricultural cultivation to authorities. Payments have often been marginal, in relation to the loss of livelihoods from shifting cultivation and hunting that villagers previously have depended on. The fines for breaking forest protection rules have, however, had a deterring effect. The PES policies being piloted in recent years do not differ significantly in what is required from the households. However, the size of payments and frequency of monitoring has increased, as will be discussed below.

The Vietnamese government wants to avoid dependency on donor funded initiatives, and is developing its own policies, and has established a Forest Protection Fund for the long-term financing of PES through contributions from a range of actors in society who benefit from maintained ecosystem service provision.

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[12] The programs are named after the number of the government decrees; Program '327' in the mid 1990's, followed by program '661' from 1998 to 2010 and recently, the pilot program '380' 2008-2011.

View of the landscape around the Lieng Bong Village (Da Nhim Commune, Lac Duong district, Lam Dong province).
Photographer: Tran Duc Luan.

Box 14.
Forests and forest policies in Vietnam

- Seventy percent of the forests in Vietnam are managed by state forest enterprises or state forest management boards.
- Community management of forests has been recognized in the legal framework since the Land Law 2003 and the Forest Protection and Development Law 2004.
- Government pilot program for Payment of Forestry Environmental Services (hereafter referred to as PES) from 2008. The full implementation of PES in the whole country started in January 2011.
- Vietnam is one of nine countries identified for country programming under the UN-REDD program, and is preparing for the introduction of REDD schemes, as well as one of fourteen countries under the World Bank's Forest Carbon Partnership Facility (FCFP).

The reforestation policies also have the objective of improving livelihoods and reducing poverty for the 25 million people in Vietnam (almost one third of the population) who are directly dependent on forests for their livelihoods (Swinkels and Turk 2006). Approximately 85 percent of the natural forests are located in areas of high poverty. The piloted PES projects include poverty reduction objectives too and give priority to ethnic minority households for protection contracts.

Poverty in Vietnam is unevenly distributed. There is a much higher level of poverty, around 40 percent, in the mountainous areas, which are largely populated by ethnic minorities (World Bank et al 2003)[13]. Many of these ethnic minorities have historically had a livelihood based on shifting cultivation in the forests. Since the 1960s the Vietnamese government has had programs to resettle the minorities in the upland river valleys, banning shifting cultivation and introducing intensive irrigated rice production as an alternative. There have also been several government programs focusing on improving the livelihoods of the mountain population[14], investing in infrastructure like roads, irrigation systems, schools and health care. In this respect the livelihoods have been significantly improved. The basic issue of how people can make a living is, however, still problematic.

3.4.2. Vietnam PES pilot project, the Da Nhim commune case

Box 15.
Information collection for the Vietnamese PES study

This PES case is based on a field work report by Tran Đuc Luan (2011). His fieldwork included interviews with representatives of concerned stakeholders in the Lam Dong PES project and 30 households in Lieng Bong village, Da Nhim commune regarding their experience of the PES implementation. Tran Duc Luan's work contributes to an ICRAF report from 2011 (Catacutan et al. 2011).

3.4.3. Ecological and social background of the area

Lam Dong Province People's Committee started a project for implementation of the pilot policy of Payment for Forest Environmental Services in the Da Nhim, Dai Ninh and Dong Nai watersheds in 2008. After two years of implementation, the total area of experimental forest for PES in the province is 2 100 km^2, which accounts for 35 percent of the forest in the province.

The forest landscape provides benefits in terms of non-timber forest products, tourism, agricultural production, fish farming, exploitation of hydropower, water supply, watershed protection, climate regulation, soil erosion protection, etc, for the local population as well as for the region of South East Vietnam, Ho Chi Minh City and the Mekong River Basin.

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[13] 13 percent of the population of Vietnam belongs to around 50 ethnic minorities. The level of poverty in the low land areas, is around 15 percent.

[14] Program '134' and '135'

Box 16.
Field site information: Da Nhim commune

- Cil ethnic minority are 89 percent of the population (in the province as a whole they are 12 percent).
- Poverty level is 41 percent (Commune socio-economic data 2010).
- The main agricultural crops are coffee, persimmon and maize.
- Average area of agriculture land is 0.61 hectare per household.

Prior to the PES there have been state induced forest protection programs in the province, including in Da Nhim commune for a decade, in which the state has provided payments to the villagers of the equivalent of 2.5 - 5 USD/year for forest protection. The protection contract meant that households would commit themselves not to do shifting cultivation, hunting or logging in the forest, and to patrol the forest to detect any outsiders cultivating, hunting or logging. The remuneration, however, proved to be insufficient to improve people's life, and forest resources continued to be exploited by the communities for their livelihoods.

The current PES project studied by Tran Duc Luan, appears to have been more successful. The objective, according to the interviewed households, is "*We protect the forests to maintain the water and soil"*. The state formulates the objective as: "Paying households for the provision of services of regulating water supply, providing soil conservation, limiting erosion and preventing sedimentation of the lake."

3.4.4. Actors involved

The forests covered by the Lam Dong project are managed through State Forest Management Boards and State Forest Enterprises, who in turn contract nearly 10 000 households for forest protection, of which around 70 percent are ethnic minority households.

Box 17.
The Lam Dong PES project

- Funds for PES are contributed by: the Nhim and Dai Ninh hydropower companies, the Saigon Water Supply Company (SAWACO), ten other water supply institutions, and fourteen small tourist companies.
- Payments are made to the Lam Dong Forest and Development Fund.
- The Fund contracts State Boards and Enterprises involved in forest management for PES.
- The project is administered by the province Department of Agriculture and Rural Development (DARD).

DARD also coordinated with Winrock International's Program on Biodiversity Conservation in Asia region (ARBCP), which contributed to the financing and implementation of the PES. The Winrock program conducted research to estimate the economic value of the ecosystem services provided in the watershed and sup-

ported the province efforts to raise awareness about conservation of biodiversity and environmental values.

3.4.5. Implementation of PES in the Da Nhim commune case

In Da Nhim commune the forest, which is managed by the State Forest Management Board, includes the Bidoup National Park. The regulations for protection are similar between the 'regular' forest and the National Park. The Da Nhim hydroelectric plant pays money for PES to the Lam Dong Forest Protection and Development Fund, which transfers the money to the State Forest Management Board, who in turn contracts households in Da Nhim commune for forest protection. The contracted households patrol the forests to discover instances of violation, i.e. illegal harvesting of trees or illegal hunting. They report to the district Forest Inspection unit, who also monitors their activities together with the Forest Management Board. This way of working is not new to the community. Up to 95 percent of participating households have been involved in the earlier government forest programs. The main difference now is that they get twice or three times better pay[15] and that there are stricter regulations and monitoring of their activities.

Box 18.
Da Nhim commune PES contract 2008-2011

- Allocated forest land for protection: 15 000 hectares.
- Number of households: 558.
- Average hectares per household: 28.
- Percentage of households having contracts: 84 percent.

The 16 percent of households who have not received forest contracts are non-eligible Kinh households, and households who lack labour. The forest area was allocated to larger groups of households, by the State Management Board. These groups then divided the forest area equally between households, irrespective of being rich, medium or poor.

The interviewed households claimed to be satisfied with the fact that land was allocated equally. However, they were not happy with that the payment was the same for different types of forest and irrespective of whether the forest is near or far from the household settlement. In Lieng Bong village, 54 percent of households received payment for protecting the forest of the Da Nhim watershed, which is nearby their houses, while 46 percent of households protect the forest of Bidoup national park, which is far away, requiring more labour efforts for the same payment.

The two forest areas are also different in terms of the type and amount of forest products that may be extracted for household use. The forest at the head of the watershed is pine trees with low biodiversity, while the national park forest has a larger diversity

[15] Under the PES project the farmers received payments of 290,000 VND/ha/year (approx. 15 USD) in 2009 and 350,000 VND per ha per year (approx. 18 USD) in 2010.

Group discussion in Da Nhim commune, Lac Duong district, Lam Dong province.
Photographer: Tran Duc Luan

both regarding plants and animals. The possibility of collecting minor forest products like firewood, forest leaves/vegetables, mushrooms and fish, continued to be important for the household food security. From the national park forest they could also collect bamboo shoots and honey. Households could clearly indicate which species were permitted and not permitted for them to collect. Some household would admit taking some prohibited things like retsin from the pine or shooting birds. The households estimated the value of NTFPs (non-timber forest products) collected from the forest to around 1 million VND per year per household (approximately 50 USD).

Commitments and regulations in the contract

Responsibilities of households with forest protection contracts include watching out for forest fires, protecting and maintaining the status of the forests and forest land. This means regular patrolling[16] and reporting signs of illegal extraction. Preserving the existing status, means preventing land use for agricultural activities, even on patches with no forest.

[16] In the rainy season, every household goes to the forest for patrolling about 3 days per month. In the dry season, the average is 6 days per month.

The forest protection staff that was interviewed claimed that in practice the most common way of handling households violating the contract was through 'blame' in front of the village, and with education. However, if someone cuts down red pine he/she will be prosecuted, as this is a criminal act. Most households said that the PES policy has increased their sense of responsibility. The number of cases of illegal exploitation of forest products in the pilot region decreased by 50 percent in 2009, as compared with 2008, according to local government and Forest Management Boards.

Survey results show that the forest related income (both PES and forest product collection) constitutes nearly 50 percent of the total income of households, with an even larger percent for the poor households. Households use the money to buy rice, fertilizer, clothing and medication treatment. When the income from forest protection increased threefold with the PES program, households perceived a significant improvement in their livelihoods.

The opportunity cost of their labour time was not perceived as high, as households have so little agricultural land and little alternative use for their labour capacity.

3.4.6. Discussion

No sustainable livelihoods

In general, the way of forest protection is the same before and after the pilot policy for PES. Similar to previous policies, the pilot PES policy has emphasized the objective of poverty reduction, in which the contracted households are selected based on poverty criteria and priority for ethnic minorities. This appears to have been fulfilled also in practice.

However, the way of providing households with payment, is like they are being employed as forest guards. With PES, the income from such contracts has improved substantially. But there is a lack of long term livelihood security as people become more and more restricted from using the forest, without the opportunity to maintain or strengthen agricultural production or income from NTFP (non-timber forest products). Thus, they become more and more dependent on the income from PES schemes. The fact that payments for forest protection have been improved with the new PES scheme eases the poverty to a certain degree, but does not address the long-term problem. People, who have previously made a living from forest products and agricultural cultivation in the forest, have lost this source of livelihood and have to find alternatives. It is hard to argue that incomes from PES can be long term sustainable, since they are small and unlikely to continue 'forever'. People are locked into a livelihood model, which is not sustainable for them.

PES schemes would need to provide support to improved agricultural practices and to develop other alternative livelihood strategies to compensate for their reduced livelihood opportunities from the forest. Further, it would be important to include costs of foregone income from agriculture cultivation, resulting from forest protection, into the payment.

Top-down decision on regulations

Luan's study suggests that participation may have improved a little with the new PES scheme compared to the previous state forest programs. The sense of local ownership of the scheme, however, remains low, as long as management of the forest lies with the State Board, and households are mainly contracted and paid.

Interviewed households were not fully content with the principles of the size and distribution of payments. The uniformity of the PES schemes creates problems, when the payments are made irrespective of the type of forest. There are tensions arising in and between communities, as a result of that the benefits are very different depending on the quality of the allocated forest land, the access to and availability of NTFPs and access to markets, as well as the distance to the forest that must be protected. There is a lack of equality in conditions between the contracted households in different watersheds, because of different estimations of the environmental services provided. This is perceived as unfair by interviewed households.

These impressions are reinforced by the research on the implementation of earlier forest protection programs in Lam Dong (Dang Thanh Ha 2009). This shows concerns that the schemes are top-down initiatives with little or no regard for local people's livelihood strategies and needs. The research suggests that more effort would need to be invested in capacity building so that the ethnic groups understand their rights and obligations and can take an active role in the negotiations and drafting of agreements for PES.

Furthermore, understanding the contribution to ecosystem service management of different forest types and different land uses, including agro-forestry systems would be needed as a basis for determining land-use strategies and linkage to payment level. The monitoring system today is limited to measuring forest cover and tree stock, but does not assess changes in access to or the quality/quantity of ecosystem services.

3.4.7. Vietnam: Alternative approach to ecosystem service management, the Hong Ha commune case

Box 19.
Information collection for the alternative Vietnamese case

The data comes from doctoral fieldwork in Hong Ha commune between 2000 and 2006, conducted by the chapter's first author. There has been continuous contact with the commune until now (May 2011) for development updates. The fieldwork data includes household interviews, group discussions with villagers, local organisations, commune and district authorities. The research has been done in collaboration with researchers at Hue University of Agriculture and Forestry.

3.4.8. Social and ecological background of the area

The commune population in Hong Ha is around 1 200 people (2002), the major groups being K'tu and Ta Oi, who have traditionally lived in this area. A small percentage are Kinh (the majority in Vietnam), who have moved to the commune during the past 20 years.

Traditionally the people of Hong Ha had shifting cultivation in the forest as the basis for their living, cultivating cassava, rice, maize, beans, banana, etc. They would cultivate the same plot 2-4 years and then let the forest regenerate for around 15 years. They practiced planting in small holes made with a pole – i.e. not ploughing, with selective weeding in order to avoid soil erosion. They developed local knowledge in for example, assessing soil quality and type of soil, suitable for what type of cropping. This local knowledge has been studied and documented by Nguyen Xuan Hong (2002). Apart from the cultivation they also hunted, collected wild vegetables, medical herbs, firewood and construction materials in and from the forest.

In 1976, the Vietnam government organized the settlement of Hong Ha commune in the Bo river valley. Shifting cultivation was banned, and hunting and collecting wood was regulated and restricted. Gradually the government has invested more and more in irrigation systems to make wet rice cultivation possible. The commune land area used for agriculture has been heavily reduced in favor of state forest programs, and there is now approximately 200 hectares of agriculture land while there is 14 000 hectares of forest land. However, the livelihoods of many households have continued to depend on forest resources, like non-timber forest products (NTFPs) and returning to old fallows for cultivation, in order to survive.

3.4.9. Implementation of forest protection and forest planting

The forest in the commune is managed by the state Bo River Watershed Management Board. Between the 1990s and 2001, the Board organized planting large areas of hill land, mainly with acacia, with the dual objectives to increase forest cover and improving livelihoods. Agricultural production has to an increasing extent

been transferred from the hills to the river valleys. During the time of tree planting the relation between the Hong Ha commune and the forest Management Board was still perceived as beneficial to the households, because they received tree-planting contracts, which gave them an income of around 50-100 USD per year for 1-2 hectares. All households who had enough labour were involved in the tree planting.

In the disastrous floods of 1999, the commune became harshly aware of how vulnerable they had become when moving the agricultural production closer to the rivers. The flood inundated or destroyed practically all their agriculture land with growing crops. In order to solve the immediate food needs people returned to hill land cultivation. They did not dare to open up new swidden fields in the forest, and thus only used old fields that had not had the possibility to regenerate any fertility. They lacked seed for dry land cultivation and thus output was very low. Many of their old seed varieties had been lost in the process of trying to transfer to wet land cultivation by the river.

The head of the A Luoi district Agriculture Section argued in 2001 that riverbed erosion is a more serious problem in the district than hill land erosion, and that bamboo planting along the rivers should be encouraged. According to household interviews, the people of Hong Ha commune had been planting bamboo along the river to protect the riverbanks from erosion during the 1980s. They also used to plant bamboo and indigenous forest species for protection of agricultural and residential areas. With the transfer of control over forest management to the Bo River Management Board, the incentives for community forestry initiatives decreased. There is also increased competition over land now when the villagers only have the river valley for cultivation. The riverbanks are thus still largely without protective bamboo planting.

The Commune People's Committee has been arguing for the allocation of rights over the tree plantations and natural forest to households. The commune also argues that households should be allowed to enrich forests with indigenous species, as a lot of forest diversity has been lost, partly due to US chemical bombings ('agent orange'). Moreover, they argue that erosion control and watershed protection is workable with agro-forestry production on the slopes, hill land gardens, with cash oriented trees (like fruit, rubber, cinnamon, etc) and forest trees and bamboo, intercropped with food crops on a long-term basis, could combine environmental and livelihood needs. This would make use of the available land resources, improve income and food security and reduce the risk of flood damage, without compromising environmental protection. The district government backs up the commune perspective. They are concerned that people will destroy the forest if they do not have enough food or enough land for agriculture production. The commune never got any response regarding their agro-forestry proposal, but in 2005 the province DARD decided that the forest could be harvested if it was replaced with rubber, with an intercropping of cassava or other food crops during the first two years.

There has been a series of efforts by the state to develop profitable export oriented crops. In A Luoi district these have included cinnamon and sugarcane (1996-99), which failed due to insufficient market. From 2000-2002 the Department for Fixed Settlement encouraged production of pineapple and pepper, which have now also been more or less been dropped due to low market prices. 2005 all effort was put into encouraging rubber production. In June 2005, at least half of all households in Hong Ha were planting rubber trees**.** Inputs for planting are provided as credit in kind. Labour costs are paid for but adds to the credit, which is to be paid back by the

households as a percentage of the harvest every year, once the trees give harvest after 7-8 years. According to staff of the Hue University of Agriculture and Forestry, many people did not have a clear idea of the credit conditions, and some were not even aware that they were meant to pay back the money they received for their labour. It is not clear what happens to the credit if the project fails to give the expected returns (Beckman 2006).

Households in Hong Ha commune argued that the main way to reduce vulnerability is to spread risk. Ways to spread risk include cultivation in different types of places, with different risk pictures and cultivation of many different crops. Traditionally people have responded to high production risks by not investing so much in any one area of production. The present development strategies require higher investments (in rice and rubber in the case of Hong Ha), which appears to increase the livelihood risks, given the increasing uncertainty and instability of both climate and markets.

3.4.10. Discussion

Alienating people from the forests leads to higher risk of poverty

The government reforestation programs in Hong Ha have had the dual focus of increasing forest cover and improving livelihoods. These programs have provided short-term income from tree planting for households in the mountains/hills, but have aggravated the problem of lack of land for food production as well as alienating people from access to the forests for their livelihoods. Blockhaus et al. (2001) argue that the forestry programs underestimate the needs of land for food production.

Several other authors argue that lack of access to the forests is a contributing factor behind the high levels of poverty among ethnic minorities in the mountains in Vietnam in general (Nguyen Van Chinh 1999; Sunderlin and Ba 2005; Swinkels and Turk 2006). Limited access to forests also impacts on household capacity to manage risk, as forest resources have previously had an important buffer function for mountain households, when coping with crises like floods and drought, as well as market stress when prices are low (Beckman 2011).

Unnecessary conflict between forest protection and development

Land use planning categories tend to define land as either agriculture or forest land, resulting in missed opportunities for diversification and integrated land use options. This results in unnecessary conflicts between environmental objectives (forest cover) and livelihood objectives (income and food from agro-forestry).

Van Noordwijk et al. (2009) argue that it is a misconception that it is only forests that can provide the ecosystem services and the watershed functions that we associate with them. They refer to many examples of watersheds with mosaics of forest patches, agro-forestry zones and paddy fields that provide a regular water flow with low sediment. Payment for such ecosystem services therefore needs to be considered in a wider context than only for forest management entities. They support a focus on actual infiltration capacity of the soils, rather than on the forest as a distinct land use category (van Noordwijk and Budidarsono 2008; van Noordwijk et al. 2009). A FAO/CIFOR study (2005) also points at results that suggest that the forest cover

is overrated as a means of reducing flood impacts. They point to the fact that the important aspect is ground cover, which could be other types of land use than forest. This speaks in favour of more attention to the livelihood conditions of people in areas under forest protection.

3.5. Sweden

Author: Lennart Salomonsson

The Swedish case study focuses on farmers' reflections on the PES schemes of the Europe Union (subsidies/support for environmental protection actions), and reflections from organic farmers on their organic practises in relations to ecosystem services and in relations to the EU's PES schemes.

Box 20.
Information collection and structure for the Sweden cases

This case study is based on semi-structured interviews with four farmers in the Swedish region Uppland, conducted by the author and Kristina Marquardt. It also includes a literature study on different evaluations of the Swedish implementation of the EU subsidies/support for 'environmental protection' actions in agriculture. In this report we refer to these subsidies as EU's agricultural payment for ecosystem service systems (or EU-PES).

Three of the farms (all organic farmers) are situated in the eastern part of Uppland, and have been part of a biodiversity study (see Belfrage et al. 2005). Two of the organic farms (farm 1 and 2) are classified as 'small-scale', (operating 30-60 hectars of arable land) and one of them (farm 3) can be classified as 'large-scale' (operating more than 150 hectares of arable land). All of these farms apply what this report terms as 'alternative strategies for ES provision', to their organic farming practice. These farmers have practiced organic farming for more than 10 years and their farms are all certified organic, according to the KRAV certification (see www.krav.se). They also receive EU-PES payments.

The fourth farm is a conventional dairy farm that operates about 450 hectares of arable land, and is situated 15 km east from the city of Uppsala. This farmer, has been signed up for another form of certification that aims to address 'environmental friendly practices', the 'Swedish Seal of Quality' ("Svenskt Sigill", see www.svensktsigill.se) and also receives some EU-PES payments.

Since this study has its main foundation in the literature study of different evaluation of EU's PES, the discussion is based on reflections from the literature studies, organized into thematic areas, and complemented with reflections on these thematic areas from the interviews we conducted with the farmers. The intention with the interviews was to complement conclusions from the literature, with example situations from concrete cases, and follow up on questions that arose from the interviews concerning issues on PES that have been raised by the research groups during PES literature studies.

3.5.1. The national context: EU-PES

The Swedish case is part of this study mainly because it represents a PES system that has been implemented during a longer period of time, and thus can provide important lessons learned. In the EU Common Agricultural Policy (CAP), agriculturally

focused subsidies for environmental protection action (here classified as PES) are rather important (see more in Box 21).

The combined total EU in subsidies (the SPS and the EU-PES together) given to farms in Sweden are a very important part of the farms' economic viability, often amounting up to half of the farmers net income (even if it is just a smaller part of the total economical turnover). For the organic farmers, their PES is a more important part of their farm economy, compared to the conventional farm (where the PES was just a minor part of the income as well as the net income). If more of the SPS (*Gårdsstöd*) is channeled to PES, it also means that PES will be an increasing part of Swedish farmers net income, and consequently the incentives to sign up for these PES will increase.

All of the four farmers that participated in this case study had signed up for different PES payments, directed towards specific environmental protection actions, and have been active in these schemes for many years, but none of them have chosen to re-sign for some of them (this will be further discussions below).

Box 21.
EU as part of the EU CAP

A substantial part (23 percent) of the total EU budget is allocated to the Common Agricultural Policy (CAP). Of the CAP budget, 57 percent is allocated for SPS ('single payment scheme', in Sweden called 'Farm support' (Gårdsstöd in Swedish) and about 25 percent goes to support 'Rural Development and Environmental Protection activities' ('pillar II' in CAP). The SPS subsidy is a conversion (from 2003) from the older production subsidy, and gives a farmer a fixed payment per hectare cultivated land, and the support for 'Environmental Protection activities', is the EU payment to farmers equivalent to what we in this report have classified as 'Payment for Ecosystem Services' (in this context called EU-PES). The discussion on the future of agricultural subsidies has intensified within the EU, and a reformation of CAP will take place in 2013. In these discussions, there is an increasing acceptance for an adjustments of resources within the CAP, taking resources from SPS and to increase the support to rural development and environmental protection actions (Ekman et al. 2010).

For the period 2007-2013 the budget for different environmental protection actions in agriculture (here classified as PES), is about 3-3.5 billion SEK per year (Rabinowicz 2010).

3.5.2. Ecological and social background of the case area

From an agricultural perspective, the climate conditions are very similar for all four of the farms, with a precipitation of about 600 mm per year (with rather large annual variations), and a similar crop establishment potential. They also have similar soil conditions, where variations probably are larger within each farm than between the farms.

The landscape is rather similar on all of the farms, with a mixture of open farm land, semi natural grassland, and forested land, with open ditches to provide drainage to many of the fields. The organic farms, by their closer connection to the Baltic Sea, have more influences from the sea (such as local climate in the spring, autumn and winter), and also in respect to potential pollutants from farmland to the Baltic Sea,

In EU´s PES schemes for 'environmental protection', farmers get support for the establishment of buffer zones with permanent grass close to water courses.
Photo: Division of Communication, SLU.

which is threatened by eutrophication. Generally, the similarities in the landscape structures also gives a similar environmental protection demand (and potentials) on all farms, but the farming strategies makes the local (farming) landscape vary greatly from farm to farm, and also between large-scale and small-scale organic farms (a study described in Belfrage et al. 2005).

3.5.3. Actors involved and implementation

EU-level

In the Swedish agricultural PES, the overall regulations are made up in negotiations within the EU commission. Usually, the main work is done by experts who represent each member states' agricultural authority, and finally decided upon, after submission for comment from the EU parliament, at a meeting with the Ministries of Agriculture from the member states. These EU regulations address such issues as regulations of the values for PES, the main principles for the size of the payment, conditions for payment, how payment should be organised, how control of the payment of PES shall be organized, etc. At this level, the main influences in the process are coming from what happens in the domestic political process in each member state, on one side, and on the other side, it is influenced by global trends (especially WTO negotiations),

interpreted by the EU commissionaires and their expert groups. Stakeholders outside these decision-making forums (national parliaments, EU Commission and the EU parliament) usually act through lobbing in these forums.

The national level

The next level in handling the Swedish agricultural PES, is the Swedish Board of Agriculture (SBA). It supports the Swedish Ministry of Rural Affairs with expertise for official reports, as basis for Swedish implementation of the EU regulations. SBA also administrates the PES, through the County Administrative Boards (*Länsstyrelser*). Stakeholders outside these boards have very little influence on processes within these administrative boards. If they want to have an influence, they need to lobby politicians in the parliament, or in the government. Stakeholders could argue for the release of new official reports (*utredningar*), based on need for information, or the political directive for an already initiated official report. They could also lobby by arguing to be a body to which a proposed measure from an official report is submitted for comment (*remissinstans*). A dominating discourse at these administrative authority/boards will have a great impact on final suggestions that will be generated by their official reports. The on-farm control and administration actions of the PES are in the hands of administrative people at the different County Administrative Boards. Their educational background and competences, including communication skills and abilities, will have some influence on *how* this control will be handled in the practical contact with the farmers, even if the instructions for these administration and control practices are increasingly regulated on national level by SBA.

Subsequently, after all policy and regulations have been established, PES are presented to stakeholders, i.e. farmers, for implementation. The farmers can volunteer and individually sign up for a PES, and usually they have to sign up for the subsidy for a period of 5 years. If they, during these five years, do not fulfil the management requirement for the PES, they will be obliged to pay back all money received for the PES during the whole period. Some 'cross-over conditions' have also been introduced, saying that you can lose your PES if you do not fulfil environmental protection laws concerning other parts of the farm. The combinations of a five-year long contract, often for management work that can be hard to make realistic estimations of, and increasing cross-over conditions, have made many of the PES less attractive for farmers to sign up for. If a farmer wants to influence the PES system, she/he needs to act through some organisation that can lobby Swedish politicians at a higher political level (according to what has been described above).

Box 22.
The EU-PES applied by the interviewed farmers

The environmental protection schemes that was included in the case study was:

- Organic farming (Farm 1-3).
- Semi-natural grassing land (Farm 1-4).
- Pesticide free zones (close to rivers, streams, and ditches) (Farm 4).
- Nitrogen leakage protection (Farm 4).
- Open landscape of small farmland (Farm 1 and 2).

3.5.4. Implementation

Box 23.
Organic farming and ecosystem services

The organic farmers in this study have subscribed to certified organic programs, fulfilling the certification for both EU regulations for organic production, and the Swedish KRAV certification regulations (which have a more demanding regulation for applications of organic farming principles). The organic farming principles have intentional aims for ecosystem services in:

- Soil fertility (by grassland/ley in the crop-rotation and no pesticide residues), including carbon sequestration (by increasing soil humus content).
- Pollination and biological control by natural predators (by not using pesticides on insects).
- Increased biodiversity (by not using herbicides on weeds, and by a diverse crop rotation system).

3.5.5. Discussion

The evaluation of the Swedish 'Rural Subsidy Scheme' (Rabinowicz 2010), which also include a substantial PES (almost 19 billion SEK over the period 2007-2013, 53 percent of the total program budget) indicates how this EU subsidy system is a result of many different political formulated goals, and implemented as subsidies based on expected effects and pragmatic administrative realism in implementation. The subsidies in the program are divided into different sub-groups, and sub-sub-groups to which the PES, "Support to Sustainable Agriculture", is the largest.

Hard to evaluate environmental protection effects

The Swedish 'Rural Subsidy Scheme' (Rabinowicz 2010), as well as the study by Hasund (2009) on the impact of PES for semi-natural grassland, strongly highlighted the difficulties of evaluating the real effects of most of the agricultural PES, as they are embedded in many different, and sometimes contradictory, agricultural regulations and subsidy systems. Still, they seem to have an increasing significance for some environmental landscape elements, Hasund argues (2009), but their economical efficiency is hard to estimate. There are many studies, according to Hasund (2009), making the same deductions, as the indicated effects diverge greatly between the studied samples. There are both samples of very good effects of the PES on the target environmental problems, but also examples of contradicting effects, or simply no effects at all.

This is also in line with the interviews we had, where the farmers adapted very little, or not at all, to PES schemes, but signed in for the ones that fit their own farming system and management planning. They were also discontented with the detailed, and de-contextual, regulations and control systems of the different PES, as well as the difficulties in finding information on the different kinds of PES and their regulations.

Important incentive structures?

When comparing the amount of PES to the farm and their net-income, it was clear that PES made up a significant part of the organic farmers income, especially for the small-scale organic farms (Hasund 2009; Rabinowicz 2010). The PES can in that way have a higher significance to the local economy in rural areas, than first indicated in comparison to the total economic turnover on a farm. However, it also indicates that the food production systems internalize the PES into the food production costs and income situation, which means that it lowers the price for the harvested agricultural products and makes the end costs higher, especially in relation to land prices.

For the interviewed farmers, the total support by PES and 'farm support' (SPS), were significant and made up 10-30 percent of the total economic turnover, which was almost as big as the net-return for the farm. The 'farm support' subsidy made up the largest part of the received funds and the PES made up only a minor part of the income.

Effect on farmers' attitudes?

The Hasund's study concludes that PES has an impact on farmers' knowledge and attitudes on environmental issues in agriculture (Hasund 2009:77). The interviewed farmers all seem to have been in some way influenced by the EU-PES system and in turn this has had an impact on how they think and act on agricultural environmental issues. Especially with respect to the "signals" from society, what it asks for concerning ecosystem service management could be of importance, and in that way have an impact on how the farmers themselves start to reflect and turning into creative problem solvers by taking initiative in improving their systems to address on-farm environmental issues. The farmers' own engagement and interest in environmental issues seems to be the driving force for environmental protection actions on their farms, and not the potential for obtaining subsidies by PES. An example of this was given by the interviewed conventional farmer, who had implemented some environmental protection actions (such as buffer zones with permanent grass close to creeks/rivers, and pesticide free zones close to water resources and environmental hot spots) to be certified by the 'Svenskt Sigill'. He has now left the certification system, but still applies the environmental protection actions as they were "environmentally sound and important", even if it costs him money to do so.

Inflexible and non-contextual adaption can have counter effects and reduce socio-economic efficiency

Hasund (2009), Nitsch (2009) and Rabinowicz (2010) all highlight the problems with the highly detailed regulations and the inflexibility in applications of the PES, and how this can have contradicting results on the aims that are striven for through PES. This was supported by our interviews with the farmers, as they stated that PES schemes with detailed regulations, such as how they should be implemented and high penalties for non-compliance, made them very unattractive to sign up for. We also saw in our interviews the contradictory properties on the existing PES (in line with the conclusions from Hasund 2009:82) that the technical focus on the PES has counter productive results, as they do not adapt to contextual situations. This exact reason is why those farmers interviewed for this study have decided not to renew some of the PES projects they previously signed up for, after the first contract period was finished.

One example, mentioned by all of the interviewed farmers, is the contradictory regulations for caring for semi-natural grazing lands. The farmers get paid for maintaining traditional pastures open in order to *maintain the particular flora diversity* in these areas. As most of the specific grazing land flora does not grow in shady areas, the maintenance is done by letting animals graze the pasture and thus avoid forest regeneration. However, the regulation for required *grazing intensity* in the PES is so high that the requested flora does not reach flowering stage.

The importance of the farmers' own knowledge, initiative and creativity

In both Hasund's and Nitsch's evaluation, the importance of farmers own knowledge and engagement were discussed. The three organic farmers interviewed all reflected on how a contextually adapted 'management plan' could be a much more attractive

One example mentioned by the farmer as a PES with contradictory regulations was the support for caring for semi-natural grazing lands. Hereford cow at Krusenbergs gård, Uppland.
Photographer: Viktor Wrange, SLU.

possibility, it involved the farmers own initiative, creative solutions and local knowledge. One of the farmers also assessed this kind of system in the environmental forest certification she is a part of. She highlighted very clearly the difference in attitudes from how the control of the certification was implemented, compared to her organic certification contracts for the agricultural part. In the forest certification system, the person who made the inspection also gave advice, and constructive discussions often took place during these farm visits, which was described as very inspiring for her to try to develop the ecosystem service support on the farm's forest systems even more. The organic farmers also referred to 'older' certification audit strategies, where the external auditors also were farm advisors who could discuss and offer insights on how to improve the certification practice and also get input of innovative ideas from other farmers, delivered by the certification auditor.

All four farmers interviewed had been taking their own initiative to find and participate in different learning environments for improving farming and to make it more sustainable and environmentally friendly.

Expensive way to support ecosystem services and environmental protection

In a national investigation (SOU 2009) the direct and indirect cost of administration of the agricultural PES and the SPS (the 'Farm Support') were estimated to about 500 million SEK per year, or about 10 percent of the total cost for the Swedish Agricultural 'subsidy system'.

The focus on creating a market based system on quality, that does not have an exchange value (in contrast to the PES concept), also creates a huge administrative economical transfer system, that needs a similar huge administrative controlling and evaluation system, as normal market feedback between producer and consumer does not exist. In the evaluation of the PES system, both Hasund (2009) and Nitsch (2009), also recommend that the system needs to be re-designed into a more simple format, and they ask for new ways to connect farmers and authorities that handle the PES, which also should include advising the farmer on what would work and not work on specific farms. This was also highlighted by the two small-scale organic farmers in our interviews, where they were proposing some kind of farm management plan contract, as well as their request for a more constructive dialogue and relation with the auditors and the authorities.

Alternative perspectives on securing ecosystem service provision

Many of the landscape structures that now are supported by PES in the Swedish application of EU CAP, has in fact been formed by earlier agricultural activities (Nitsch 2009; Stenseke 2006). These production systems had production and not environmental protection in focus, but was based on local ecosystem services as the main input. The high biodiversity in the meadows for example, came out as a 'by-product', while other ecosystem services was consciously supported (as biological nitrogen fixation, good soil fertility by high activities of soil organisms, predator support for insects control in crops).

A final conclusions from the evaluation of the Swedish 'Rural Subsidy Scheme' (Rabinowicz 2010), is that there is a need for a revised indicators and data set to be launched, if a relevant and effective evaluation can be constructed. The evaluation of the PES system comes up with suggestions of new biological 'effect indicators', PES

systems that operate on landscape level, and new contracts model with farmers.

This phenomenon was highlighted and discussed by the small scale organic farmers in our interviews, and they addressed a better 'natural' integration between production and conservation. Below are some of the thoughts shared with us through the interviews:

> "It would be better that the farmer got paid for the real production cost, including environmental consideration actions that would make the product more costly"

> "It is offensive that peoples can get farmland environmental subsidies without producing anything"

> "I would prefer an individual 'management plan' on farm level, to see how the farm could develop its ecosystem service management"

The 'small-scale' organic farmers talked about the importance of a knowledgeable engaged person that can set aside time for contextual adapted ecosystem service supporting actions (or the 'caring/nursing hand'), which implies needs of labour on such a farming system. In connection to this discussion they also highlighted that good ecosystem services elaborated on farms could only be implemented on small-scale farming. In connection to these discussions they also highlighted the very special situation with farming as an enterprise, in that biological and ecological changes take times, and that 'good farm practice' needs to have a long-time perspective (as operating with crop-rotation and working with soil fertility improvements). In contrast many political decisions on changes in PES regulations are taken in short-term perspectives.

4. Comparative discussion

Our study shows some of the very different contexts in the world into which PES projects are now being implemented. It reveals some striking similarities and thereby general key factors to consider for a pro-poor development, when PES/REDD schemes. are being implemented

4.1. The contradiction between the overarching PES schemes and local contexts

In this study we discuss PES, and specifically the REDD projects, in terms of their character as transnational master plans, which share major objectives and schemes of implementation. However, their outcomes are very dependent on local economic, political and social contexts. The case studies show that the impacts of the PES projects vary due to a number of factors:

- The political strength and influence of the target group.
- The political structure and functioning at state and local level.
- The brokers involved in the various processes of implementation of the PES projects.
- How these brokers interact with the target group, with each other and with the state and local political actors.
- The economic, social and cultural composition of the target group.
- The political decision process within the target group and its economic and political links to external actors; and not least the group's livelihood systems and strategies. Yet these intricate structures and interconnections are often insufficiently considered when designing PES schemes and projects.

There is risk of a democratic deficit in the PES projects. The complex nature of the PES projects and their implicit "initiative from far", and thus top-down, approach demand various forms of expertise; which often are filled by NGOs, acting as brokers between donors, national political actors and the target groups. The Brazilian case demonstrates this vividly; it is difficult to have an overview of the political implications of the interactions in the entangled web of actors involved in a PES project. This has consequences for how actors in the PES projects harmonize with the indigenous group's internal political processes. These political complications are not addressed in the PES schemes. On the contrary, the PES projects are often so complex that they are almost impossible to implement without the contribution of a wide array of brokers/NGOs.

In the Brazilian case the NGOs may also have important supporting functions for the target groups, who are encompassed by a PES project. The political support and monitoring may counteract the activities of external groups who try to extract natural resources within the target group's territory. NGOs at local level function as whistle-blowers that can alert the international environmental community in case of transgressions. The NGOs might also be able to help the target group to better comprehend economic and political decision structures and how they are executed.

4.2. Participation and trust in local capacity

The PES case studies in this report show that the smallholders' participation in the formulation of objectives and mechanisms of implementation of the PES has been very limited. The case studies furthermore demonstrate the importance of building on local capacity, i.e. seeing the local communities as part of the solution and building on existing knowledge, needs and local institutions.

The Tanzanian cases, for example, show two contrasting approaches to local engagement. In both cases, the forest ecosystem services are under threat from increased human pressure and environmental change. However, in the REDD project, local people are seen as the main threat to the forest and the project is based on an attitude that the local people will not understand their own benefit from managing the forest. In Suledo, on the other hand, the entry point is that it is possible to make local people see the benefit from conserving the forest, but that it must be done simultaneously with providing alternative livelihood options, and that local ownership has to be strong so as to provide long term sustainability and acceptance.

With time, several of the benefits from the forest management are becoming visible to the Suledo farmers. Suledo farmers have also had the possibility to strengthen their agricultural outputs, e.g. by participating in national workshops and exchanging knowledge with farmers in other parts of the country. With the long term commitment in the Suledo-case the implementing NGO has focused on processes that provided tools for the local people to independently manage their forests, e.g. by training in law, regulation and financial management, as well as strong emphasis on building on and strengthening existing local village organisation to become more transparent and accountable. In the REDD project, the link between current livelihood strategies and changes under the REDD scheme was unclear, as well as what type of compensation local people would receive for not using the forest.

In Sweden, where PES arrangements have been implemented for a long time with increasing impact from limiting EU regulations, the development has been pushed in a direction of reduced trust in local farmers by the project designers. Discussion and advice between authorities and farmers have been replaced by short term relations and inspections. Farmers express frustration over this development.

In Vietnam we see a contrast between, on the one hand, the government PES system, which pays the farmers to stay out of the forest, and communities wanting to take more responsibility, on the other. In the latter case, the Hong Ha community has previously had systems of bamboo planting against erosion. The local system has been undermined by the lack of trust from the authorities in the local knowledge systems, replacing it with restrictions on access to forest land. The consequence is not

only a loss of farmer initiative for provision of ecosystem services, but also problems of food insecurity. The Peru case shows farmers' own initiative to provide ecosystem service management and increase food production at the same time, without incentives from the outside. Good farming practices (such as improved fallows) has a potential to provide ecosystem services as positive biproducts.

We argue that it is important that approaches to PES recognise that local communities have the capacity to contribute, that their participation is crucial for sustainability, and to show awareness that such learning processes take time. There is a need to give attention to how the concept of a PES initiative like REDD can be conveyed to the villagers in a comprehensive and meaningful way. There are several examples in the cases presented where villagers express a dissatisfaction with the limited way in which they have been involved in setting up the project and/ or lack of understanding the reasons for why the REDD project was implemented on their land areas. For example, in the Tanzania REDD case there were carbon measurements made by an external actor on secret plots, which would serve as a baseline for future payments, without engaging the villagers. Even though the plan is supposed to involve some of the villagers later on, the approach made villagers confused and alienated. The concept of carbon trading is an abstract term, which does not make sense to most local social groups, thus making it more difficult to achieve the local villagers' understanding and engagement in the project.

The Brazilian case shows another type of situation where it is difficult for local people to get an overview of the project plan, its implementation and levels of negotiation, thus making participation and ownership difficult to achieve. It becomes unclear who represents who; who is paid by whom; and what is the agenda of different actors? In Peru, indigenous communities regard REDD as a threat to land access and land rights and express a dissatisfaction of not being consulted in a meaningful way. In Vietnam, top down national forest programs with little or no participation processes have been on-going for decades, and PES schemes have so far not lead to any radical changes in forest management. Nevertheless, PES incentives have the potential to be an opportunity for increased local participation in ecosystem service management if the focus is shifted towards ecosystem service provision and livelihood strategies as interrelated issues, rather than just paying farmers to patrol the forest and report illegal activities.

4.3. Consequences of the conflicting approach for production and conservation

In all cases it can be seen how agricultural and forestry uses compete for the same land. This is one of the reasons why a large PES initiative as REDD currently is internationally ventured and that several other PES initiatives have been introduced in order to ensure the maintenance of ecosystem services from forests. There is often a conflictive division between forest and agricultural land, as well as between production and conservation, in the PES discourse and debate. We want to question if this division is useful for an effective management of ecosystem services.

A broad livelihood perspective is necessary

In the cases presented, the smallholders have expressed a broad livelihood perspective when describing how the families use the land to support themselves, including components such as food production, cash income, firewood collection, grazing, access to medicine and construction material, coming from both forestry and agricultural activities. The natural resources and ecosystem services used in all cases presented are integrated, and land uses overlap in several ways. For example, in the Tanzania-Suledo case cattle is grazing in forests, in the Peru case the farmers regenerate forest on agricultural land, and in Vietnam the commune expresses wishes to intercrop forest trees with cash crops and food. There is no clear line between forest and agriculture, cash and subsistence farming, annual and perennial farming etc. For smallholders, it is a constant trade off between conservation and production. Shifting cultivation (found in all cases except the Sweden) is one land use system that brings this conflict to a head. Shifting cultivation is generally described as a farming system, which implies destructive and undesired farming practices that contribute to deforestation of tropical forest areas and therefore has to be replaced with other land uses (FAO 2001; Meza et al. 2006; Palm et al. 2005). However, looking at shifting cultivation from another perspective, as in the Peruvian and the Vietnamese cases, shifting cultivation can also be viewed as a form of agroforestry in which trees and crops are intimately interspersed in time rather than space (Pfund et al. 2011). The potentials of shifting cultivation are seldom expressed. It is often more diverse than other farming systems, and integrating fallow vegetation as part of the farming system cycle makes it possible to integrate production and conservation objectives.

In many REDD projects, carbons sequestration has been interpreted as 'closing off' the forests rather than focusing on management models building on the capacity of local communities to manage, maintain and develop the ecosystem services which they protect. The PES/REDD initiatives that we have studied in Tanzania and Vietnam, for example, focus on paying farmers to stay out of the forest. In Brazil the indigenous groups live within the forest, but it is unclear what and how much they will be able to harvest and extract from the forest. Underlying such an approach of 'closed forests', and the conversion of shifting cultivation into permanent farming systems, builds on an implicit view of the forest dependent population as being incapable of managing the forest in a way that is coherent with environmental goals.

When restricting the smallholders' access to forest resources, the need arises to strengthen other livelihood strategies, including agricultural production. The experience in Vietnam suggests that the villagers have too little land (0,16 ha per family) to make a living from agriculture. In the Hong Ha case this leads to the development of intensive agriculture production in the river valleys, which leads to increased livelihood risks, as the farmers are inexperienced in handling the erratic and uncertain markets and climate.

The focus on environmental conservation, contrasting to (agricultural or forest) food production, in the PES/REDD cases, creates a great conflict between production and conservation. There is a risk of losing the focus on ecosystem service provision as the goal. In the alternative approaches we have described how instead the production activities are integrated with securing ecosystem service provision, as local ecosystem services are the most important production support inputs. By this arrangement, the incentives for securing ecosystem service provision are integrated with the incentives to increase food production. The key question is how such systems can be supported from outside, if it means more human work (making the products more

expensive to produce). Alternatively, could societies tax production systems that do not provide (or even threaten) ecosystem service provision (in accordance with the 'Polluters Pay Principle')?

Agriculture and forestry are integrated in smallholders' livelihood strategies

Many farming families in forest areas find themselves in increasingly harsh social, economic and ecological conditions. Moving production, or parts of production, to primary forest areas is one of their possible adaptive responses to improve the household situation (as in the Peru and Vietnam cases). This means that in order to decrease pressure on forest, farming has to be included in the discussion. In the Tanzania Suledo case the approach for forest conservation was to include agricultural activities and farmers' views of their agricultural production into the forest conservation approach. The Tanzania-Suledo case stands out as different as it has taken a particularly integrated livelihood approach when working for conserving the forest, which we see as one of the components to why Suledo has been successful. Such an approach where production and conservation are integrated, would also be valuable in other areas, where for example shifting cultivation is practiced and would have the potential to find environmental management approaches feasible and beneficial for local smallholders.

In several of the cases the PES initiative limited the focus to one ecosystem or singeled out a specific ecosystem service, for example carbon sequestration in the REDD cases of Brazil, Tanzania, and forest cover the Vietnam case. However, ecosystem services in a landscape are not fragmented, they interact in complex patterns, and if aiming for increasing ecosystem service provision they need to be handled as the interacting web of services they are. There are several examples on how the promotion of one particular ecosystem service might affect other ecosystem services negatively or how contradictory PES systems might impede the good management of several ecosystem services implemented on the same land (as the Swedish example with for caring for semi-natural grazing lands). When PES/REDD schemes focus on a narrow forest protection approach it misses the opportunities of building on local knowledge systems in integrated agriculture-forestry systems and thereby long-term sustainable management of forests. The non-PES cases presented from Peru, Tanzania and Vietnam illustrate that there are valuable local capacities in community forest management and integrated agriculture-forestry systems that could be improved, developed and built on at larger scales. There is a need to include agriculture in the forest management solutions, as it is part of local livelihood strategies, i.e. to have an integrated livelihood perspective in ecosystem service management initiatives. We argue that such an integrated approach to ecosystem services is likely to be more successful in maintaining ecosystem services than for example REDD initiatives, focusing on forest conservation, because it does not clash with livelihood interests of the forest dependent communities.

How to include farmers' knowledge, initiative and creativity

The PES concept is focused on economical incentives, environmental conservation, and a control paradigm for administration and evaluation, which all have been challenged in recent research (see section 1.4). As ecosystem services are not operating as solitary activities, but as interactive processes in an open, dynamic complex reality under constant changing conditions, there will be a need for incentive structures that also operate in such dynamic settings. The economical incentives focus take an per-

spective on changing peoples behaviour based on an individualistic and profit driven view, instead of challenging peoples' social responsibility as citizens. This also have consequences for how such incentive structures will be organized and implemented, especially on the degree of participation of the actors that are supposed to change their behaviours (especially farmers and foresters), i.e. extensive management rules and control of action taken. A problem with such an approach is that it fails to include the resource of farmers' own (contextually adapted) knowledge, as well as their initiative and creativity. This has been formulated as a problem in all our case studies, as well as documented in literature. In our PES case studies, all cases were top down initiatives, with no or little participations from the actors to whom it should be implemented, and who should secure the ecosystem service provision on their land. In all cases farmers also highlighted this as a problem, or/and showed very little knowledge about the underlying thinking of the PES they were supposed to subscribe to or be indirectly involved in. On the other hand, the Brazilian case also shows how the implementation of REDD, as a transnational control-system, can strengthen a local group's right to their own territory, and, ideally, obtain a transnational monitoring system, which makes it harder for local power holders to invade and log their forests.

In the 'alternative' approaches to PES, the involvement of the farmers' own knowledge, initiative and creativity is on the other hand highlighted in this report as one of the most important properties for securing ecosystem service provision. In those case studies, the incentives come either as a conscious management strategy, based on the understanding of the underlying environmental problem (as the conventional farmer in the Swedish case), or/and an understanding how the chosen alternative production system is related to, and based on, the capacity of the local ecosystem services (the organic farmers in the Swedish case, the innovative farmers in the Peruvian case, and the Tanzania Suledo case).

From a poverty perspective the payment local communities will receive through the PES projects may be valuable contributions, but in reality they may actually inhibit local groups' capacity to secure people's livelihoods. There is an urgent need to conduct economic and social evaluations of the actual impacts of the PES payments. The compensation is often low. In Peru it is calculated that indigenous groups will receive less than 4 USD per hectare and year for maintaining their forest. One might also question how long the global community will be ready to continue to pay for forest conservation incentives such as REDD? Will these compensations be around two decades from now? Two decades is a very short period in forest management context, but a quite long time period when it comes to transnational agreements. This raises questions about long-term sustainability of an initiative such as REDD.

REDD is the main focus in the current PES debate. Since REDD's main objective focuses on carbon sequestration, there is a risk that attention to ecosystem services connected to water, soil and food is reduced. This is not in the interest of the poor. The tension between environmental goals and livelihoods is likely to continue unless there is a clear recognition of the connection between improved access to the forests and improved livelihoods of the poor. An attitude shift would be required, where the smallholders can be seen as knowledgeable managers of local ecosystems, rather than people who need to be paid to stay away from the forest.

Livelihood priorities and concerns of poor households need to be considered to a larger extent than today. The proverb of 'not seeing the forest for all the trees' gets a new meaning in that, when the policy makers focus only on the trees, they become

blind to the possibilities of developing systems where the households take care of the soil cover, soil quality and water systems, because their livelihoods depend on it, e.g. integrated production systems of food crops, forest trees, fruit trees, cash crops, medical herbs etc.

The concept of PES puts the focus on the ecosystem services, which could be an advantage if taken seriously. It moves attention away from the trees per se, to a view of the landscape in terms of what it produces; reduced soil erosion, improved water access, food, medicine, firewood, carbon sequestration, etc. The focus is also on who benefits from the different 'services' that the environment/ecosystem produces, both locally and regionally.

Concluding discussion and recommendations

The focus of this study is to discuss the implications different strategies to support ecosystem service provision have on local livelihoods in distinct settings. The study is based on both literature reviews and on case studies in five different countries in four continents. One of the studied approaches to increase the provision of ecosystem services is to economically reward local groups of people who maintain the ecosystem services, provided on their land and water resources. This approach, called payment of ecosystem services (PES), is becoming increasingly common, and can be regarded as an internationally designed 'Master Plan' for future ecosystem service provision. We have also explored alternative initiatives that can contribute to securing the provision of ecosystem services, mainly within smallholder farming systems. The focus in this approach is on how to achieve an increase of agricultural/forest production by supporting local ecosystem services (for example, soil fertility and structure, pollination, micro climate, biological pests control). Other forms of ecosystem services, operating on a bigger scale, will emerge as a 'by-product' (e.g. carbon sequestration caused by increased soil humus in a fertile soil, biodiversity).

Our points of entry have been that:

1. Ecosystem services are fundamental for life support.
2. Land areas where ecosystem services are to be provided are already inhabited and used in different ways to provide local people's livelihood.

There are no global solutions….

In this study we discuss PES (and specifically REDD) in terms of their character as transnational master plans, which share major objectives and schemes of implementation. As ecosystem services are not operating as solitary activities, but as interactive processes in an open, dynamic complex reality under constant changing conditions, there is a need for incentive structures that also operate in such dynamic settings. The outcomes are thereby very interconnected to local economic, political and social contexts. For example, in the case studies from Brazil REDD appears to have offered a possibility for local people to make their voice heard against exploitation of their land and water sheds to a greater extent than previously. In the Tanzanian case REDD was implemented top down, there was very little local understanding about goals and potential benefits for the local villages, and thus little engagement to make the project work. We argue that initiatives that aim to support ecosystem service provision must be adjusted to their local context, to existing institutions, and to local people's prevailing livelihood strategies and needs

… but certain factors must always be addressed.

Even though we argue that there are no overarching global solutions and every project must be adjusted to its own context, our case studies reveal some striking similarities and thereby general key factors to consider for a pro-poor development, when implementing PES/REDD schemes. These conditions are based on the premises that people are engaged in a process of continuous learning, that they are able to use their own creativity in the construction and maintenance of their own systems of livelihood.

Local people must be involved in planning, design and implementation processes

The PES concept is focused on economical incentives, environmental conservation, and a control paradigm for administration and evaluation (which all have been challenged in recent research). The economic incentives focus take an perspective on changing people's behavior based on an individualistic and profit driven view, instead of challenging people's social responsibility as citizens. This also have consequences for how such incentive structure will be organized and implemented, especially for the actors' degree of participation, who are supposed to change their behaviours, i.e. extensive management rules and control of actions taken. A problem with such an approach is that it fails to include the resource of farmers' own (contextually adapted) knowledge, as well as their initiative and creativity.

In our PES case studies, all case-studies, except the Brazilian one, were top down initiatives with no or little participations from the local target groups, who are supposed to secure the ecosystem service provision on their land. In all case-studies farmers also highlighted this as a problem, or/and showed very little knowledge about the underlying rationale of the PES they were supposed to subscribe to or be indirectly involved in. In the 'alternative' approaches to PES in this report, the involvement of the farmers' own knowledge, initiative and creativity is highlighted as one of the most important properties for securing ecosystem service provision. In these case-studies, the incentives are either a conscious management strategy, based on the understanding of the underlying environmental problem, or/and a comprehension of how the chosen alternative production system is related to, and based on, the capacity of the local ecosystem services

We therefore argue that targeted local communities must be active in the planning from the beginning, so that their own experiences, and creativity are integrated into the planning process. The case studies demonstrate the importance of building on local capacity, i.e. seeing the local communities as part of the solution and building on existing knowledge, needs and local institutions. Local people should not be looked upon as a problem (as destroyers of ecosystem services), but a central component of the solution (as managers of maintained/increased ecosystem service provision). However, they should not be delegated the role of employed forest guards, as in the Vietnamese case, but helped to maintain and improve agricultural practices and to develop other alternative livelihood strategies, which emanates from local people's practices, learning processes, and creativity (as the Tanzania Suledo case).

The payment local communities will receive through the PES projects may appear to be a valuable contribution to decrease poverty, but in reality such projects risk inhibiting local people's capacity to secure their livelihoods. The compensations are often very small and one might also question for how long the global community will be ready to continue to pay for forest conservation incentives, such as REDD.

These risks raise questions about the long-term sustainability of an initiative such as REDD.

Ecosystem service provision and production needs to be integrated

All case-studies demonstrate how agricultural and forestry uses compete for the same land, and land uses overlap in several ways. There is often a conflicting division between forest and agricultural land, as well as between production and conservation, in the PES discourse and debate. We want to question if this division is useful for an effective management of ecosystem services. In practice the division between forest and agriculture is blurred, and shifting cultivation (found in all cases except in the Swedish one) is a land use system that brings this tension to a head. For smallholders, it is a constant trade-off between conservation and production.

There is a need to include agriculture in the forest management solutions, as it is part of local livelihood strategies, i.e. to have an integrated livelihood perspective in ecosystem service management initiatives, but also because good farming practices has potential to provide ecosystems services as positive byproducts. The Tanzania-Suledo case stands out as different since it has taken a particularly integrated livelihood approach when working for conserving the forest, The alternative non-PES case studies from Peru, Tanzania and Vietnam illustrate that there are valuable local capacities inherent in community forest management and integrated agriculture-forestry systems, which could be improved, and developed on larger scales.

In several of the case-studies the PES initiative limited the focus to one ecosystem or singled out a specific ecosystem service, thus risking to lose focus on ecosystem service provision as the main goal. However, ecosystem services in a landscape are not fragmented, they interact in complex patterns, and if there is an intention to increase ecosystem service provision they need to be handled as the interacting web of services they are.

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Rural **Development**

The ongoing degradation of ecosystems threaten future food production and the international community thus urgently has to plan for how to secure fundamental life-support services for the future, so called ecosystem services (ES). Examples of such ES are climate regulation, nutrient cycles, fresh water provision, etc.This report is focused on two distinct strategies to make land users in tropical rainforest areas continue to provide ecosystem services.

The first approach, Payment for Ecosystem Services (PES), is an economic instrument designed at global and national levels. Several PES schemes are currently implemented in a global context where increasing human demands for food, fibre and fuel are accelerating competition for land. The overall aim of the PES projects covered by this report is to lower the emission of green house gas on national and global levels and they are especially directed towards forest areas. The PES projects specify that specific rural groups are paid if they agree to protect, manage or restore the ecosystem service provisioning system within their forest territories. This report highlights that many PES initiatives are being implemented with a 'conservation perspective', rather than seeing ecosystem services as integrated with production and livelihoods.

There are also alternative strategies to manage ecosystem services. In this report we put an emphasis on an approach where production and conservation are planned for within the same landscape and production systems. Many smallholders already integrate and maintain ecosystem services in their agricultural/forest production systems in a long-term perspective, while producing food, fibre and fuel for the households' own consumption as well as for sale. In such a system, the local communities are totally dependent on the ecosystem services to re-generate conditions for their agricultural production and/or forest extraction. The focus in such farming-forestry systems, using little or no inputs, which are totally dependent on renewable resources, is on how to increase agricultural/forest production by supporting local ecosystem services, such as soil fertility and structure, pollination, micro climate, biological control of crop pests, etc. The ecosystem services functions, such as carbon sequestration, then emerge as a 'by-product' out of these production systems. Increased soil humus in the soil and biomass accumulation are other examples of such 'by-products'.

We want to illustrate potentials and challenges with the aforementioned two approaches to secure ecosystem provisions, and how they are articulated within their specific contexts. This report explores these two approaches by examining case-studies in tropical forest areas in Peru, Brazil, Tanzania and Vietnam, as well as the experiences of EU-designed PES schemes for subsidies/support so as to achieve environmental protection in Sweden.

This report is a collaboration between Sida's external expert function for environmental assessment (helpdesk) and the division of Rural Development at the Department of Urban and Rural Development both placed at the Swedish University of Agricultural Sciences in Uppsala. Within the series are published reports from the four units at the department: Environmental Communication, Landscape Architecture, Rural Development and the Swedish Centre for Nature Interpretation.

The subject Rural development has a special focus on the interaction of social systems with natural resource management. Rual development is an interdesciplinary subject which includes anlysis of rural change processes in a comparative perspective.

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