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CAN PAYMENTS FOR ECO SYSTEM SERVICES (PES) CONTRIBUTE TO SUSTAINABLE DEVELOPMENT IN SOUTHEAST ASIA?

Andreas Neef and Chapika Sangkapitux

Introduction

The degradation of Southeast Asian ecosystems is progressing at a rapid pace. Large forest areas have disappeared or are threatened by illegal logging, mining and conversion into agro-industrial plantations. River basins are increasingly polluted by agrochemicals, industrial pollutants and sediments, and mountain watersheds have been degraded by unsustainable management practices. The major reason identified by economic theory is that these ecosystems generally belong to the category of ‘common-pool resources’ (CPRs), where there is intense rivalry of consumption, while it is costly to exclude individuals from using the resources for their own benefit or to prevent them from reaping the benefits from their protection (Ahlheim and Neef 2006). While the most common approach in Southeast Asia has been for governments to impose a command-and-control regime of environmental governance (e.g., Neef et al. 2003; Forsyth and Walker 2008), the environmental economics literature suggests a number of different policy measures to address such problems and encourage environment-friendly action. A conventional environmental policy tool is the taxation of activities that are considered environmentally harmful. Yet, given the high number of potential users of a typical CPR, such as a rainforest, a tropical wetland or a river basin, administering such a tax – including its enforcement and monitoring – would be difficult and the transaction costs would be prohibitively high (Ahlheim and Neef 2006). Economists have therefore suggested alternative policy instruments that emphasize economic incentives (Coase 1960; Engel et al. 2008). One approach is to encourage biodiversity conservation and environmentally benign agricultural practices by rewarding activities that preserve CPRs and their associated ‘ecosystem services’ instead of taxing their consumption (Ahlheim and Neef 2006). Such ecosystem services include, for instance, the supply of wild food, fodder, medicinal plants and energy (provisioning services), carbon sequestration, climate regulation and water purification (regulating services), and spiritual, historical and recreational values and benefits (cultural services). Payments for Ecosystem Services (PES) hold the promise of being more effective in halting environmental degradation in ecologically fragile areas than conventional command-and-control approaches that have largely failed in fostering resource
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conservation, particularly in the context of Southeast Asia (Neef and Thomas 2009). PES have been most prominently defined as “a (1) voluntary transaction where (2) a well-defined ES (or corresponding land use) is (3) being ‘bought’ by a (minimum one) ES buyer (4) from a (minimum one) ES provider (5) if and only if ES provision is secured (conditionality)” (Wunder 2008, 280). Local and global demand for enhancing ecosystem services is steadily rising against the background of climate change and increased global ecological vulnerability. Hence, the idea of providing public support for conservation programs and for direct payments to land managers maintaining or restoring such services is slowly gaining currency among national policy-makers and in the international donor community (Rosales 2003; Tomich et al. 2004; Engel et al. 2008; Wunder et al. 2008a; Neef and Thomas 2009; Gómez-Baggethun et al. 2010). Yet the rationale for Payments for Ecosystem Services has been the subject of some controversy since the late 1990s. While the proponents count on new impulses for global biodiversity protection and environmental conservation and even expect positive effects in terms of poverty alleviation and sustainable ‘green’ development, the critics of such market-based concepts and instruments fear the transformation of biodiversity and ecosystem services into marketable commodities, associated with the enclosure and commodification of nature and its biological diversity in the sense of a neoliberal form of “Green Capitalism” (e.g., McAfee 1999; McGregor et al. 2014). Critical scholars and human rights NGOs have also expressed concerns that PES may restrict poor and landless rural people’s access to natural resources that are crucial for sustaining their livelihoods (e.g., McElwee et al. 2014).

The chapter contributes to this debate through providing a comparative perspective of experiences with PES schemes in three Southeast Asian countries. Section 2 describes the various ways in which PES schemes have been classified. Section 3 presents a theoretical-conceptual framework for analyzing processes, relationships and institutional environments related to PES mechanisms and then discusses various PES pilot projects in Vietnam and Indonesia in the light of the framework. A more in-depth case study of a particular watershed in Northern Thailand is provided in Section 4, followed by a summative conclusion in Section 5.

Classification of Payments for Ecosystem Services (PES)

Bulte et al. (2008) divide Payments for Ecosystem Services schemes into three broad categories according to their function. ‘Payments for pollution control’ serve as a complement or alternative to the ‘polluter-pays’ principle. For instance, upstream farmers may agree to reduce the use of agro-chemicals and – in return – receive payments for the provision of improved water quality from downstream beneficiaries, such as residents and/or drinking water companies. ‘Payments for the conservation of natural resources and ecosystems’ may include payments by international donors for the conservation of pristine forest areas in Southeast Asia that provide habitats for endangered wildlife species and contribute to global climate regulation through sequestering carbon. An example of the third category, ‘Payments to generate environmental amenities,’ would be when a national government pays upland farmers for setting agricultural land aside to plant trees for stabilizing the soil to prevent flooding of downstream areas (Neef and Thomas 2009).

Another way of classifying PES is to distinguish them according to the spatial-administrative level at which payments are transferred. In a sub-national PES scheme upstream farmers in one watershed may be directly rewarded by downstream residents in the same watershed to switch to environment-friendly practices (cf. Sangkapitux et al. 2009 for the case of Thailand). In a national PES system, resource managers are paid for protecting existing forests or planting new
trees (cf. McElwee et al. 2014 and Pham et al. 2014 for the case of Vietnam). In an international PES arrangement, international donors such as USAID or the World Bank may provide funds for a national government to ensure that rainforests rich in biodiversity are protected from encroachment by illegal squatters. A much debated PES approach at the international level is the so-called ‘Reducing Emissions from Forest Degradation and Deforestation (REDD+),’ which revolves around the idea of paying national governments or local communities for not clearing forestland (e.g., Angelsen (ed.), 2008; see also McGregor and Thomas for the case of Indonesia in chapter 30, this volume).

Wunder et al. (2008a) have classified PES schemes according to the provenance of the payments. In user-financed programs the service buyers are the actual service users, e.g., a hydro-electric power company that benefits from reduced deforestation around a dam reservoir. In government-financed programs the service buyer is a third party, typically a government entity that may or may not receive funding from an international donor. Whereas user-financed programs are fully voluntary for both providers and buyers, government-financed programs tend to be voluntary on the providers’ side only. As the case studies discussed in sections 3 and 4 will show, the distinction between user- and government-financed programs is not always clear-cut. Hybrid forms are more the norm than the exception, with strong government interference on one side of a continuum and weak interference from government actors on the other (cf. McElwee et al. 2014).

Experiences and lessons learned from PES pilot projects in Southeast Asia

Theoretical-conceptual framework

Neef and Thomas (2009) proposed the following theoretical-conceptual framework on the basis of three sets of prerequisites for functioning PES schemes in the context of Southeast Asian countries:

- **Identification of the PES market:** There are three basic components of the PES market that determine whether a PES scheme can be developed: (1) the ecosystem service(s) involved in the scheme need to be specified; (2) the potential providers of the ecosystem services need to be identified and express their willingness to participate voluntarily in the PES scheme; and (3) the potential buyers of the ecosystem services need to be aware of the PES concept and willing to pay for the ecosystem services provided.

- **PES processes and relationships:** Once the PES market components have been identified, key processes and relationships need to be established in a deliberative process that involves all relevant stakeholders: (1) all actors need to agree upon the types and magnitude of the rewards to be provided; (2) the rules for deciding under which conditions rewards will be provided or denied need to be defined, with particular emphasis on transparency and conditionality; and (3) trust needs to be established between the buyers and providers of ecosystem services, preferably through face-to-face dialogue and with support from credible intermediaries.

- **Institutional environment of PES:** PES markets and associated processes and relationships can only function well under a conducive institutional environment. This requires (1) reliable, experienced and well-respected intermediary organizations that facilitate the interaction between ES providers and buyers; (2) a supportive legal and regulatory framework, preferably at national level; and (3) well-defined and officially recognized property rights of the ES providers, including customary rights to communally managed resources.
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Table 29.1 Major prerequisites for PES schemes in the Southeast Asian context

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<th>Components</th>
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Source: Based on theoretical framework developed by Neef and Thomas (2009)

Payments for ecosystem services in Vietnam

Vietnam is currently the only Southeast Asian country that has incorporated PES into its national legislation and mainstreamed the concept as part of their natural resource governance strategy, which warrants a closer look at the implementation of the late socialist country’s nationwide PES scheme and its impact on resource management practices and rural livelihoods.

Identification of the PES market in Vietnam

Over the past decade, the PES concept has gained increasing currency in Vietnam. In the mid-2000s, a number of small pilot projects were initiated by international donors, such as Winrock International (USA), the International Development Research Centre (Canada) and the Swedish International Development Cooperation Agency (e.g., The and Ngoc 2006).

Two major pilot projects were set up in the Central Highlands’ Lam Dong Province and in north-western mountainous Son La Province in 2008 under the prime minister’s Decision No. 380 QD-TTG entitled “On the Pilot Policy on Forest Environment Service Charge” (McElwee et al. 2014). Under these pilots, the Ministry of Agriculture and Rural Development started to charge fees from hydroelectric power companies, irrigation projects, water supply works and industrial estates for forest environmental services on a pilot basis. As these pilots were considered successful after a brief trial period of only two years, a new national policy was passed in 2010 under the title “On the Policy for Payment for Forest Environmental Services” (Decision 99 ND-CP). The Decree introduced mandatory PES schemes and required ‘beneficiaries/buyers’ of ecosystem services to pay fees either directly to ‘providers/sellers’ or indirectly into a Forest Protection and Development Fund to be set up at the provincial level (McElwee et al. 2014). Thereby, the government hopes to drastically reduce the use of central government funds for forest conservation efforts (ibid.).

Meanwhile, private sector demand for ecosystem services remains low. As a consequence, the interest in PES schemes has been mainly concentrated in the international donor community. Some 13 smaller-scale PES and PES-style projects were recorded in individual provinces in 2014 that involved donor-funded transfers rather than truly user-funded PES (Pham et al. 2010; McElwee et al. 2014). A major barrier for developing voluntary markets for ecosystem services in Vietnam has been the lack of understanding of the concept by the private sector as potential service buyer and communities as ecosystem service providers alike (Pham et al. 2008; Neef et al. 2013). Studies by McElwee et al. (2014) in the major pilot sites in Son La and Lam Dong found that only about one-third of the interviewed PES recipients had actually heard of PES.
and very few of them were aware that it was a program supported by payments from environmental service users.

**PES processes and relationships in Vietnam**

As discussed above, voluntariness is one of the principal features of PES markets. Yet, in the case of Vietnam’s national PES program, ecosystem service buyers and sellers are “identified by law and must take part in the program” and “[t]he level of PES payments is administratively set by the Vietnamese government through legislation” (Pham et al. 2014, 889), hence both participation and monetary transactions are mandatory and the payments are not determined by a market mechanism as prescribed by PES theorists. Some authors have argued that through mainstreaming PES schemes the Vietnamese government has actually tightened its control over natural resource use and increased state power by using “PES as a potential tool for internal territorialization” (Suhardiman et al. 2013, 66).

Another issue of concern in the Vietnamese context is conditionality. McElwee et al.’s study in Son La and Lam Dong found that “many participants treated PES as a government entitlement fund and not a conditional environmental fund” (2014, 434) and were therefore not inclined to change their land use systems. Pham et al. (2014) also stated that although enhancement of forest quality, soil erosion control and water regulation are targeted outcomes of PES in Vietnam, there are currently no specific requirements for monitoring these ecosystem services. This raises the question whether the payments can be an effective incentive mechanism for environmental protection.

A further challenge to the viability and effectiveness of PES schemes in Vietnam is that transaction costs are very high, because landholdings are often very small and fragmented, the terrain tends to be rugged and communities are often remote, which makes monitoring of compliance and regular transfers of payments to individual land managers an onerous and complicated task (The and Ngoc 2006; Neef et al. 2013; Pham et al. 2014). McElwee et al. (2014) found that in the government-piloted site in Son La Province 52,000 forest owners, of which 45,000 were individual households, have contracted directly with the PES provincial fund, driving up transaction costs. Group contracts were introduced as an alternative, but studies by Pham et al. (2014) in various communes of Son La Province have shown that such contracts are often complex and raise questions of fair distribution of benefits in a local context where village elites and powerful groups dominate the decision-making process. In addition, due to their negative experience with the cooperative period in the 1970s and 1980s many farmers are reluctant to work together toward a common goal, thus reducing the level of collective action that is needed for ecosystem protection at the community level (Neef et al. 2013).

Another major impediment to sustainable PES schemes in Vietnam is the relatively high opportunity costs (Phuc et al. 2012). Son La Province, for instance, is one of the major corn-producing areas of Vietnam, and many farmers have become more affluent through intensive corn cultivation on erosion-prone hillsides. These farmers are not likely to shift to more environment-friendly forms of agriculture, given the relatively low payments from PES schemes and the insecurity of their regular and long-term disbursement.

**Institutional environment of PES in Vietnam**

Forests in Vietnam were primarily managed by State Forest Enterprises (SFEs) from the 1950s until the 1980s. The shift from a centrally planned to a more market-driven economy under the doi moi (renovation) policy reduced government control over the country’s forests. Under the
1993 Land Law rural households could obtain forestland certificates in return for signing forest protection contracts. The government also instigated a number of reforestation campaigns to reverse deforestation, such as Program 327 (1993–1998) and its successor Program 661 (1999–2010), popularly called the Five-Million-Hectare Program (Phuc et al. 2012). Pilot PES schemes in Vietnam’s Son La and Lam Dong provinces were initially backed by Decision No 380, which provided general guidance for provincial administrations on how to collect fees from ES service ‘buyers,’ such as hydroelectric power companies, water companies and tourism businesses (Pham et al. 2008). Decision 99 – described earlier – formalized the country-wide introduction of mandatory PES schemes at provincial level.

The formal land allocation and registration system in Vietnam could – in principle – provide a relatively sound basis for the establishment of PES schemes (Neef et al. 2013). Yet, all agricultural and forest land formally belongs to the Vietnamese government, and there are often overlapping land claims, e.g., between formal control rights of forestland and informal customary rights (Pham et al. 2008). In a case study on an international PES pilot project in Ba Vi National Park, Phuc et al. (2012) found that various stakeholders established contrasting claims and rights to land, thus inciting conflicts between park officials and villagers. The authors concluded that the majority of the households were excluded from the benefits of the PES scheme (ibid). In the past, frequent re-allocation of land by the government in many rural areas also led to tenure insecurity and thus reduced the motivation of individual farmers to invest in improved ecosystem management (Neef et al. 2013). The Land Law of 2013 extended the allocation of land use certificates for cropland to 50 years, but it may take several years to establish a sufficiently high level of trust in the new legislation among small farmers, which would then possibly increase their motivation to make long-term investments in more environment-friendly practices.

In sum, the institutional environment in Vietnam does not seem to be very conducive to the establishment of market-based PES systems in their classical definition. The mandatory participation of ‘buyers’ and ‘sellers’ in most existing schemes, the involuntary nature of the monetary transactions, the lack of monitoring and enforcement of ecosystem service provision and the high transaction and opportunity costs raise doubts whether PES can become an efficient, effective and sustainable mechanism to enhance the provision of ecosystem services while at the same time improving the livelihoods of Vietnam’s rural population.

**Payments for ecosystem services in Indonesia**

With its large territory, vast tracts of remaining, albeit dwindling rainforest – the world’s third largest – and recent decentralization processes in natural resource management, Indonesia has become one of the most popular target countries for project-based PES schemes.

**Identification of the PES market in Indonesia**

The PES concept has become popularized in Indonesia in recent years through several pilot projects (Munawir and Vermeulen 2007; Leimona et al. 2009; van Noordwijk and Leimona 2010). In most existing PES schemes the environmental services requested by downstream buyers are (1) provision of reliable water flows and reduced sedimentation, e.g., in the case of hydroelectric facilities (Leimona et al. 2015) and (2) improvement of water quality, e.g., in the case of local water suppliers (Munawir and Vermeulen 2007). Environmental services are mostly provided through tree planting (e.g., Huang and Upadhyaya 2007; Munawir and Vermeulen 2007) or community-based forest conservation or agroforestry schemes (e.g., Leimona et al. 2015). Yet the causality between tree planting and water supply remains a hotly debated issue.
often marked by myths and misconceptions, such as the simple ‘more trees = more water’ equation, which has been refuted by several studies (e.g., Calder 2004).

Flexibility in land use decisions under PES schemes appears to be much greater in Indonesia than in Vietnam (Huang and Upadhyaya 2007; Munawir and Vermeulen 2007). Farmers in the Brantas catchment, East Java, for instance, have dismissed civil engineering measures, such as terracing, as too costly and have chosen high-income tree crops instead (Munawir and Vermeulen 2007, cited in Neef et al. 2013). In other areas, jungle rubber, fruit-based agroforestry systems or organic coffee plantations have been established under PES schemes (van Noordwijk and Leimona 2010; Leimona et al. 2015).

Environmental service buyers are more diverse in Indonesia than in other Southeast Asian countries. Private drinking water companies, hydroelectric power companies, local governments and the central government are all involved in various types of PES schemes across the country (Munawir and Vermeulen 2007; Leimona et al. 2009; van Noordwijk and Leimona 2010).

Because Indonesia is a country that – despite widespread deforestation, e.g., for oil palm plantations – is still endowed with a large area of pristine forests, expectations of benefitting from REDD+ and other international carbon market arrangements are also high, although the experience with voluntary carbon trading projects has been mixed (see McGregor, chapter 30, this volume).

**PES processes and relationships in Indonesia**

Most PES schemes in Indonesia allocate rewards in cash and in kind to groups rather than to individual farmers in order to reduce transaction costs that otherwise would be prohibitively high (Arifin 2006; Huang and Upadhyaya 2007). Yet, there are not enough data available to determine whether PES programs induce lower transaction costs than traditional conservation approaches (Wunder et al. 2008a). It is also difficult to quantify in-kind benefits – such as improved tenure security, development of trust between the government and land managers or enhanced negotiation skills – that accrue to ecosystem service providers.

Appropriate monitoring mechanisms can enhance the viability of PES schemes, but this has often been difficult in Indonesian pilot projects. Hard evidence of delivery of watershed services has proved elusive and reported impacts of PES-induced land use changes are often based more on local perceptions than on measurements, as Porras et al. (2008) have noted (cited in Neef and Thomas 2009). Leimona et al. (2015, 19) found that the preconditions for the Coasean conceptualization of PES as a market-led incentive mechanism have hardly been met in their case studies in Indonesia and argue that it would be more accurate to describe the existing schemes as “co-investment in environmental stewardship as opposed to a strict and prescriptive PES definition.” Pirard et al. (2014) suggest that there is a continuum between large-scale government programs and purely market-based PES. In their study of multi-stakeholder PES partnerships in two Indonesian sites, they found that despite the polycentric governance of these PES schemes one actor was able to dominate the decision-making process.

Lack of trust and power differentials between service providers and buyers were major constraints in other Indonesian PES schemes. In a pilot project in the Brantas catchment, for instance, the district government did not trust in local people’s engineering skills for soil and water conservation and argued that the necessary standards could only be met by professional contractors (Munawir and Vermeulen 2007, cited in Neef and Thomas 2009). The authors also found that sellers of environmental services were not treated as equals in PES negotiations, had
little influence on decision-making and were concerned that trees planted under PES schemes would ultimately be claimed by the government (Munawir and Vermeulen 2007).

An important question is which groups could benefit the most from PES schemes in the complex ethnic and socio-economic setting of Indonesia. Seeberg-Elverfeldt et al. (2009) found in their study on the potential of carbon payments for supporting less intensive, cacao-based agroforestry systems in Sulawesi that poorer, indigenous farmers were more likely to benefit from well-targeted payments than more affluent, migrant farmers. They also concluded that such payments could have positive effects both in terms of fighting deforestation and alleviating rural poverty. Yet, to date, there has been very little empirical evidence that PES as a stand-alone policy has made a substantial contribution to alleviating rural poverty in Indonesia (Leimona et al. 2015).

**Institutional environment of PES in Indonesia**

Among Southeast Asian countries, Indonesia has one of the most advanced and conducive legal and regulatory framework for PES schemes. Although policy-makers have not yet come up with a specific framework for PES in Indonesia, “several laws and policies can be interpreted as providing basic rules and incentives” (Munawir and Vermeulen 2007, 15), such as the Water Resources Act, the Environmental Management Act and a national decentralization program. In 1999, the forestry law was substantially revised, with more provision for local management and with enhanced recognition of customary rights. A decision of the Constitutional Court in 2012 provisioned that the Indonesian government was constitutionally required to recognize and respect the customary (adat) rights of traditional forest communities. Yet, many ambiguities remain, particularly in areas where the economic interests of the state and large-scale agribusiness investors have undermined local communities’ rights, for example in areas suitable for oil palm, rubber or timber plantations (e.g., Li 2002; Gellert 2015).

Intermediaries play a pivotal role in the success of PES mechanisms, particularly in cases where providers of ES are not familiar with formal contracts, are not formally registered as a group and cannot operate bank accounts (as in a case reported by Munawir and Vermeulen 2007 and cited in Neef and Thomas 2009) or where corporate buyers are not used to negotiating directly with farmers. The majority of intermediaries in Indonesian pilot PES projects have been local NGOs and international donors and organizations (Suyanto et al. 2005; Huang and Upadhyaya 2007; Pirard et al. 2014). Evidence from these case studies suggests that intermediaries can both reduce and increase transactions costs, depending on the experience of mediating agencies, scale of interventions and local contexts (Neef and Thomas 2009).

Several pilot case studies in Indonesia suggest that improving tenure security can provide additional incentives for reliable ES provision (Munawir and Vermeulen 2007; Huang and Upadhyaya 2007; Leimona et al. 2009; Leimona et al. 2015). In the case of weakly defined property rights in Kalimantan, PES were found to induce more secure property rights by raising the value of natural resources to local people (Wunder et al. 2008a). A pilot project in Sumberjaya has helped farmer groups to get access to conditional community forestry permits that subsequently covered around 70 percent of the protection forest in the area (Suyanto 2007). In other settings, however, donors that had been approached for funding PES schemes eventually withdrew their support because of uncertain land tenure and the perceived risk of PES money exacerbating inter-village conflicts over land (Wunder et al. 2008b).

In sum, the Indonesian case studies suggest that the configurations and outcomes of PES schemes can vary substantially and are contingent upon how economic, social, political and institutional factors intersect in a particular local context.
Andreas Neef and Chapika Sangkapitux

From hypothetical PES markets to sustainable PES schemes?
A case study of Mae Sa watershed in Northern Thailand

The following case study is based on our long-term research in the Mae Sa watershed, spanning from 2000–2015. While our initial studies have laid the theoretical and conceptual foundations of PES schemes, we have also looked at the practical implementation of a number of pilot PES projects in the watershed.

Thailand’s PES policy background

Natural resource governance in Thailand has mostly followed a command-and-control approach from the second half of the twentieth century onwards. The Thai government continues to regard the state as the major, if not sole protector of forest resources, particularly in ecologically sensitive upland watersheds and protected areas where neither individual nor communal rights to resource management are recognized under the official legal framework (Walker and Forsyth 2008; Neef and Thomas 2009).

At the national level, the concept of PES was mentioned for the first time in the 11th National Economic and Social Development Plan (2012–2016). The establishment in 2007 of a specialized government agency, the Biodiversity Based Economic Development Office (BEDO), with the responsibility of implementing PES programs in various parts of the country signals that the government wants to place more emphasis on economic instruments and market-based mechanisms to maintain and improve ecosystem services and biodiversity in the Kingdom. However, most PES pilot projects that were in operation in various parts of Thailand at the time of writing (September 2015) had been implemented under the leadership of the Department of National Parks, Wildlife and Plant Conservation (DNP), an agency that is better known for its uncompromising ‘fortress approach’ to forest and nature conservation than for the establishment of multi-stakeholder partnerships that are an essential component of viable PES schemes.

Background of the study area

The Mae Sa watershed is located in Mae Rim district, Chiang Mai Province in northern Thailand, about 35 km northwest of Chiang Mai city (Figure 29.1). It is inhabited by northern Thai people (khon muang) and Hmong, an ethnic minority group that migrated to this area from Southwest China several decades ago. While the northern Thai communities are found both in the upstream and downstream parts of the watershed, the Hmong villages are all situated in upstream hillside. Other major stakeholders in the area comprise tourist-related companies (such as resorts, restaurants and elephant farms), a communally managed drinking water company, a public tap water provider (Mae Sa Waterworks) and non-farming communities.

Some of the areas occupied by the Hmong communities overlap with the Suthep-Pui National Park, hence farmers have no secure land rights, but are allowed to practice agriculture on those plots that they already used before the establishment of the park in 1980s. While none of the Hmong farmers have official land titles, more than 50 percent of the northern Thai farmers in the watershed have some form of legally recognized land documents. Both groups engage in highly intensive, commercial cultivation of fruits, vegetables and cut flowers with detrimental impacts on the environment, expressed in high rates of soil erosion, agro-chemical pollution and unsustainable groundwater extraction. Researchers from the Uplands Program – a Thai-German collaborative research program – worked with local communities from 2000–2014 to find alternative land use practices that would be less harmful to the environment.
Figure 29.1 Map of Mae Sa watershed, Chiang Mai Province, Northern Thailand
Studies on hypothetical PES markets

An empirical study conducted by a research team under the leadership of the second author of this chapter and based on choice experiments found that upstream Thai and Hmong farmers in the Mae Sa watershed would be willing to adopt more sustainable and environment-friendly farming practices (for instance, by planting vegetative strips against soil erosion and by adopting less harmful pest-control measures and water-saving irrigation technologies) if adequate financial compensation were provided (Sangkapitux et al. 2009; Neef 2012). Interestingly, one of the findings of the study was that the poorer farmers in the upstream communities were more likely to accept regular payments from a PES scheme as this would provide secure and regular economic benefits, while the more affluent farmers did not see a reason why they should change their practices, which they deemed successful and profitable. Poor upstream farmers expected that the establishment of such schemes would enhance their tenure security in this protected watershed area (Sangkapitux et al. 2009; Neef 2012). In downstream farming communities and among tap water users, there was a clearly stated willingness to contribute financially for obtaining better water resources, although the overall amount proposed was only a fraction of what would be needed to adequately compensate upstream farmers for switching to environment-friendly farming practices (Sangkapitux et al. 2009; Punyawadee et al. 2010). Subsequently, our research team organized a meeting in 2010 with all major stakeholders in the Mae Sa watershed to gauge the opportunities and constraints of developing a viable PES scheme. The model proposed for the PES scheme in Mae Sa watershed is depicted in Figure 29.2.

Results from the stakeholder meeting suggested that other stakeholders such as the private sector engaging in tourism, industrial activities and government enterprises like Mae Rim Water Works were also in the position to pay for acquiring better water resources and ecosystem services. This was seen as a positive sign for the prospects of developing a market for environmental services in this watershed under broad stakeholder participation.

Figure 29.2 Proposed PES Model for Mae Sa watershed
However, barriers to put the PES into practice – as mentioned in the stakeholder meeting – were the following:

1) PES are based on locally driven and decentralized systems of managing natural resources, while the existing national policy approach continues to rely on a centralized command-and-control system. Hence, changes in laws and regulations, such as land titling, definition of resource ownership and water and forest resource management, would be needed as a basis for negotiation between service providers and beneficiaries of environmental services.

2) Downstream water users showed a tendency to believe that it is the government’s duty to compensate the upstream farmers for their shift toward agricultural conservation practices. This group also expressed relatively strong mistrust that upstream communities would indeed change their farming practices if they received compensation.

3) Environmental services in the form of an improvement in quality and quantity of water resources were difficult to define, underscoring the need for independent monitoring to help provide further evidence. A workable monitoring and enforcement system needs to be established to help facilitate the effective implementation of PES.

**Practical implementation of PES schemes**

Hmong communities in northern Thailand tend to have a reputation for being notorious shifting cultivators and forest destroyers. Yet, in several Hmong villages in the Mae Sa watershed, a range of traditional and contemporary forest protection strategies can be found. Villagers in Mae Sa Mai and Mae Sa Noi hold an annual ceremony to protect a large area of forest around the tallest tree (*ntoo xeeb*), which is believed to be the residence of the guardian spirit of the community (Neef 2012). Several community members founded a Natural Resource and Environment Conservation Club in the early 1990s, initially to engage in forest fire prevention activities. In 1997, it linked up with the Forest Restoration Research Unit (FORRU), an international NGO based at Chiang Mai University’s Faculty of Science, and established a community-based tree nursery to produce tree seedlings from local species for reforestation purposes on abandoned land. A number of organizations (e.g., the World Wildlife Fund Thailand, the PATT Foundation and various private companies) sponsored a range of forest restoration activities. One example is a local news magazine – *Citylife Chiang Mai* – which provided funds for the annual planting of 0.56 hectares of forest over several years to offset the company’s annual carbon output (Neef 2012).

Since 2012, the USAID-funded *Lowering Emissions from Asia’s Forests* (LEAF) project – implemented by Winrock Foundation – has sought to establish a viable PES scheme in the wider Mae Sa watershed area. According to one of the project managers, initial attempts were unsuccessful, as it was difficult to identify private sector actors that were willing to engage in a long-term commitment as ‘buyers’ of ecosystem services. Major progress was made in the course of 2015 with the conclusion of a contract with the AURA mineral water company, a subsidiary of Tipco Foods Public Company Limited, that operates in the Mae Sa watershed. Using groundwater from the watershed, this company relies directly on the surrounding ecosystems and the communities as potential ‘service’ providers. The company agreed to provide regular payments to a local northern Thai community – Ban Pong Khrai – over an initial period of two years to restore 1.6 ha of forests in a sub-catchment area related to the groundwater supply of the company. The community has a long-standing history of collaboration with the Royal Forest Department (RFD), which needed to give permission on using the land for restoration.
The local subdistrict (tambon) administrative organization (TAO) has provided logistic support for implementing the PES scheme, while the DNP and the Royal Project Foundation has given technical support to the community. FORRU, the organization that had previously supported small-scale forest restoration schemes in neighboring Hmong communities, has provided ecological and technical knowledge through restoration training and regular monitoring of the site. Only native species have been used for the reforestation scheme, and the initially planted 3,340 tree seedlings were bought from a nursery of the Hmong community of Ban Mae Sa Mai, thus providing a one-off financial benefit to another village in the watershed. All relevant stakeholder groups are represented in the AURA PES Committee. The role of the committee is to approve the action plans submitted by Ban Pong Khrai community, recommend the evaluation criteria for planned activities, approve the self-reports submitted by the community, oversee the payment process and resolve disputes and disagreements among the various actors (S. Soonthorn-nawaphat, personal communication).

While the AURA PES scheme does not closely resemble the PES model that was earlier proposed by Thai researchers for the Mae Sa Watershed (cf. Figure 29.2) – as it does not include downstream residents and involves only one private actor as an ES buyer and a single upstream community as an ES provider – the scheme may be a first step toward a more comprehensive PES program encompassing all major stakeholders in the watershed. Yet it still needs to stand the test whether it is sustainable beyond the two-year PES contract and viable without continued support from external donors and intermediary organizations.

Summary and conclusions

Payments for Ecosystem Services (PES) have been promoted in several Southeast Asian countries as alternatives to traditional command-and-control approaches to environmental conservation. Drawing on the theoretical-conceptual framework developed by Neef and Thomas (2009), this chapter has provided a review of experiences and lessons learned from various PES schemes in Vietnam and Indonesia, where recent policy changes have made the institutional environment more conducive to such approaches. Yet, securing long-term commitment of corporate ‘buyers’ of environmental services has proven difficult, making such schemes overly reliant on donor and/or national government funds and on intermediary roles played by academics and external experts. Voluntariness and conditionality – two important principles of the PES approach – are particularly difficult issues in late socialist, semi-authoritarian regimes, such as Vietnam. There are also well-founded concerns that government-implemented PES schemes may enhance state control of forestland rather than support community- or household-based conservation based on economic incentives.

Most PES schemes in Thailand have been tested at the pilot project and small catchment level because a comprehensive legal framework at the national level is still lacking and government officials remain reluctant to devolve decision-making power over forest conservation and use to local communities. Our long-term research on the theoretical foundations and practical implementation of PES approaches in Thailand suggests that small-scale user-financed schemes may be more efficient than large-scale government-financed ones, as they can be better targeted, monitored and tailored to particular local needs and conditions. Such small-scale schemes are also more conducive to face-to-face social exchange between providers and ‘buyers’ of ecosystem services, which is oftentimes an important prerequisite for building trust and converging expectations among the two parties.

However, in a context where local communities traditionally do not have a strong voice in managing forests and other natural resources – which is the norm rather than the exception in
most Southeast Asian countries – PES schemes have yet to provide evidence that they can help strengthen customary land rights and increase local control over natural resources.

In terms of their contribution to alleviating rural poverty, most studies confirm that PES schemes tend to provide only supplemental income to low-income ecosystem service providers and in many cases do not even match the opportunity costs of alternatives, often environmentally damaging land uses. Therefore, even in those rare cases where PES schemes can be successfully implemented without unsustainable external support, they should only be regarded as a small component of a more comprehensive strategy toward environmental conservation and rural development.

Experiences from case studies in the three countries suggest that in their current manifestation and scale of implementation, PES schemes in Southeast Asia are neither a panacea for solving pressing environmental problems (as originally suggested by PES theorists and proponents) nor do they represent a major shift toward the commodification of nature by corporate actors (as feared by critical scholars and activists). Yet they need to be seen as evolving and contested policy spaces in which government entities, private actors, NGOs, local communities and individual land managers constantly renegotiate the degree of control over natural resources and the environment.

References


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